Measuring the Impact of Tourism Upon Urban Economies: A Review of Literature

Ugo Gasparino, Elena Bellini, Barbara Del Corpo
and William Malizia

NOTA DI LAVORO 52.2008

JUNE 2008

KTHC – Knowledge, Technology, Human Capital

Ugo Gasparino, Elena Bellini, Barbara Del Corpo and William Malizia,
Fondazione Eni Enrico Mattei

Corso Magenta, 63, 20123 Milano (I), web site: www.feem.it, e-mail: working.papers@feem.it

Measuring the Impact of Tourism upon Urban Economies: A Review of Literature

Summary

Tourism is increasingly seen as a potential lever towards high economic growth, measured both in terms of income and employment. In recent years, interest in tourism has spread rapidly throughout many small and medium European cities, which previously have not considered themselves as tourist destinations. This paper reviews and summarizes the existing literature on the economic assessment of tourism with the objectives of, firstly, identifying the main categories of impacts and, secondly, constructing an inventory of methodologies available to assess them. We will progress step by step, starting from the most simplistic approaches and relaxing assumptions as we proceed. Firstly, we assume a static setting, with spare capacity. In such a setting (partial equilibrium), prices do not respond to demand shocks: only quantities (production, income and jobs) adjust. Secondly, we relax this assumption and assume that there is no spare capacity: prices respond to increasing demand (general equilibrium), leading to reallocation of resources across sectors. We then move from a static to a dynamic setting and survey those contributions that look at the relationship between tourism specialisation and long-run growth.

Keywords: Tourism, Economic Impacts, Input-Output Analysis, General and Partial Equilibrium Analaysis

JEL Classification: B41, C67, C68, L83

This paper is an outcome of the work done in the context of Task 1.4 (Effects of cultural tourism upon urban economies) of the PICTURE project "Pro-active management of the Impact of Cultural Tourism upon Urban Resources and Economies", financed by the European Commission, Sixth Framework Programme of Research. Contract no. SSP1-CT-2003-502491.
For further details on the analysis of the impacts of tourism, see PICTURE "D13-Impact of Cultural Tourism upon urban economies" and related Case Studies Annexes, available at http://www.picture-project.com (Deliverables section).
We are mostly indebted to Dr. Dino Pinelli for fruitful discussions and for his insightful contribution and support in the early stages of this work.

Address for correspondence:

Ugo Gasparino
Fondazione Eni Enrico Mattei
Corso Magenta 63
20123 Milano
Italy
Phone: +3952036934
Fax: +3952036946
E-mail: ugo.gasparino@gmail.com

1 The partial equilibrium analysis

Partial equilibrium analysis assumes that there is spare capacity (i.e., unemployed resources) and that, as a consequence, prices do not respond to increasing demand (perfect elastic supply). Adjustment takes place only through quantities (production, jobs, and therefore income).

The basic concept of partial equilibrium analysis is that of 'multiplier' although, as noticed by Archer, «there is perhaps more misunderstanding about multiplier analysis than almost any other aspect of tourism research» (Archer, 1982). Multipliers measure the present economic performance of the tourism industry and the effects of short-run economic adjustments to a change in the level of tourist expenditure.

The definition of multiplier, in terms of Keynes (see Section 1.1.1), is unequivocal: the multiplier measures the increase in economic activity (e.g., incomes, employment) generated in an economy by a unit increase in tourism (or other export) expenditure. A tourism income multiplier is a coefficient that expresses the amount of income generated in an area by an additional unit of tourist spending: for instance, if tourists spend an extra EUR 1 million in the area and this generates EUR 800,000 of income, the Keynesian multiplier is 0.8[1]. However, alternative definitions of multipliers can be found in tourism literature. The most popular of these is the use of 'ratio' multiplier, where for example the income multiplier tends to be expressed as the ratio of a 'total' income generated by tourism expenditure (see Section 1.1) to the 'direct' income. Depending on what is meant by 'total' income, three types of 'ratio' multipliers – Type I, Type II, Type III – can be generated (see Section 1.1.2).

Despite the strong assumptions implicit in their calculation, multipliers are widely used in policy-making. They are used to study the impact of tourism on business turnover, income and employment and can be used to compare the impact of increased demand on other sectors of the economy or different policy options.

In what follows, we firstly introduce the economic meaning of multipliers, analysing how the tourist expenditure ripples through the economy. Secondly, we present two widely used methodologies to calculate multipliers. Finally, we briefly discuss and compare some of the empirical results.

1.1 The economic meaning of multipliers

In the destination tourists spend their money to buy certain goods and services. This initial tourist expenditure is generally directed to very specific sectors of the economy (lodging, restaurant, amusement, retail trade, transportation – which we will refer to as

[1] Although the correct methodology would require the calculation of the multiplier at the margin, it is common practice (mainly because of data limitation) to calculate income effects in terms of *average*, rather than *marginal*, tourism expenditure and to assume that there is no significant difference between them. This implies that the economy has available capacity to meet future demand (see Section 1.2).

'tourism industries') and represents additional revenues for these activities. These are the so-called *direct effects.*

Part of those revenues is used to buy intermediate goods and services that will be used in 'future production cycles' (intermediate demand). A remaining part will be used to buy the services of production factors: labour, capital and land (wages, interests and profits, and rents – gross value added), to pay taxes to central and local governments, or saved. In all cases, some money could go outside the area, to intermediate producers and production factors located outside the area (i.e., it 'leaks' out of the local economy). However, some will remain within the area: local tourism industries will hire new local workers (paying a bigger number of wages) and demand additional goods from local producers. As a result, local output increases, employment opportunities increase and local income rises (due to the increase in the number of wages). These are the so-called *indirect effects.*

The increase in employment brings to an increase in the total income of local residents. Part of this income is saved and part is spent in consumption goods. This in turn generates additional demand which, as before, translates into additional production and employment (and so on). These are the so-called *induced effects.*

Indirect and *induced* effects are often called *secondary effects*.

The dynamics of the effects caused by tourist spending on an economy is represented in

Figure 1.

The effect of tourism on the local economy is influenced by a few key factors:

- The characteristics and the spending patterns of the local tourists, affecting the direct impact on the economy. Essential features here include:
  - The reason for travel (tourists travelling for cultural reasons spend more/less and put more/less pressure on natural and cultural resources than sun&beach tourists);
  - The length of stay (tourists staying for the day are likely to spend a smaller share of total expenditure in locally produced goods);
  - The accommodation chosen (hotels are more expensive than campsites).
- The characteristics of the tourism industries and of the local economy. Key features here include the ability of local economy to satisfy the demand of tourism industries, as well as the size and the shares of tourism industries that are locally owned. The extent of the indirect effects depends on the size of the area under study (e.g., municipal, regional, national) and on the extent to which business firms in the area supply each other with goods and services (the more likely the more diversified and interlinked is the local economy). In general, the smaller the scale of the economy and the higher the share of initial expenditure that leaks out of the local area, the fewer are these linkages and the smaller are the indirect effects. Moreover, the magnitude of indirect and induced effects depends on the share of capital, land and labour that is locally owned. For instance, small family-owned hotels and restaurants are more likely to buy local intermediate inputs than chain hotels and tourist villages. If factors are

locally owned, their remunerations – profits, rent and wages – will stay locally and local community will strongly benefit from them.

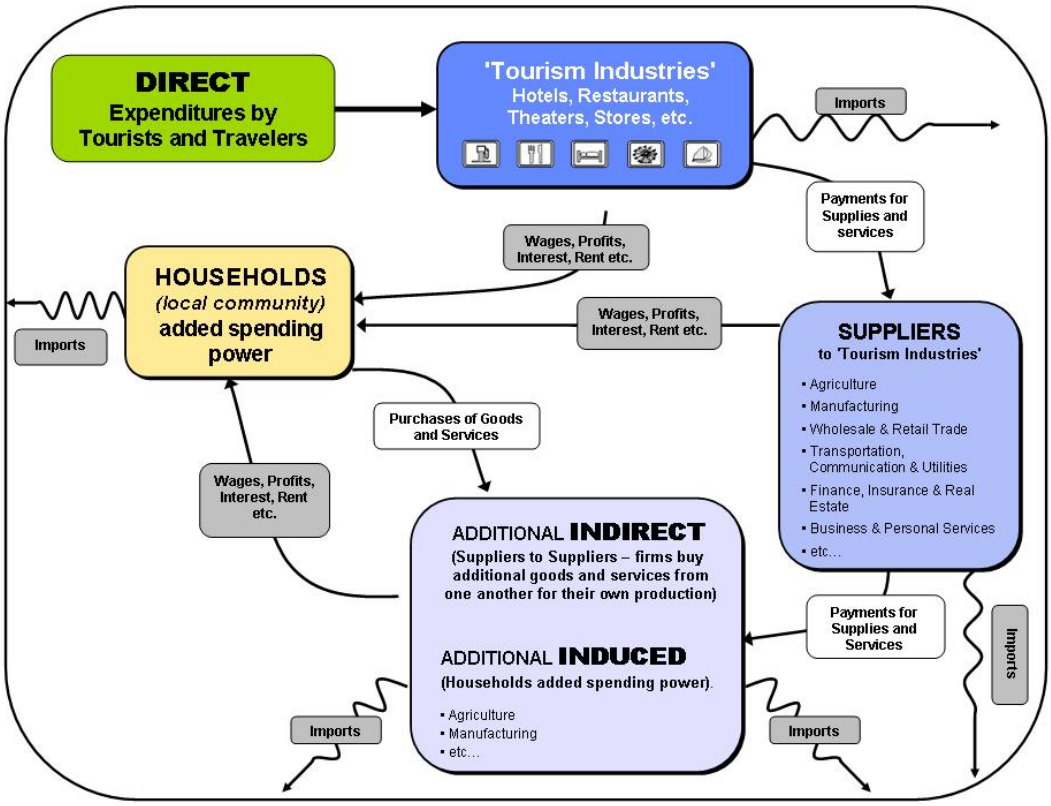

Figure 1: Direct, indirect and induced benefits and effects on the economy triggered by tourist spending

Several types of *multiplier* are commonly used:

- *Sales* (or *transactions*) *multiplier* refers to the effect on business turnover (value of business turnover created by a unitary increase in tourism expenditure);
- *Output multiplier* refers to the effect on the level of output of the economy. With respect to the sales multiplier it does not only take into account the impact on turnover of local businesses, but also any changes in the level of stocks they hold. This can be useful in identifying potential supply shortfalls, or bottlenecks;
- *Government revenue multiplier* refers to the effects on governmental revenues from all sources (e.g., direct and indirect taxation, duties, licenses and fees);
- *Income multiplier* refers to the effect on incomes (sales net of intermediate consumption, including wages, salaries and profit). This is commonly regarded as the most important indicator of the economic performance of tourism industry. Income multipliers vary depending on whether they include or not incomes accruing to non-nationals residing in the region under investigation, and whether they include or not income accruing to governments. The multiplier can be measured as disposable

income – the income available to individuals to spend or save, which is net of tax – or value added income – the income which includes tax and other expenditures which are defined according to national income accounting rules;

- *Employment* multiplier refers to the effect on employment. It is usually derived from the output or income multipliers. It can be expressed as the ratio of the number of 'total' additional jobs (e.g., direct and indirect or direct and secondary) to either the number of direct jobs ('ratio' multiplier) or to the initial tourist expenditure (Keynesian multiplier). Employment can be measured in terms of full time equivalent jobs, or the actual number of jobs including part-time jobs.

Suppose additional tourist expenditure of EUR 1 million generating EUR 2.5 million of extra output and EUR 500 000 of direct and secondary income. It also creates 200 jobs directly and 180 secondarily. In Keynesian terms the multipliers are, respectively: 2.5 (output), 0.5 (income) and 3.8 jobs for 10 000 EUR of tourist expenditure (employment). On the other side employment, in terms of 'ratio' multipliers (i.e., total employment generated to direct employment) can alternatively be expressed as 1.9 (i.e., 380/200).

The various multipliers are inextricably linked to each other. Sales and Output multipliers have limited use from the policy point of view, except as an indicator of the degree of economic internal linkages. On the other side, it is important for policymakers to be aware of the income and employment effects of any anticipated changes in final demand, making income and employment multipliers the most often quoted types of multipliers.

Multipliers are not only influenced by the economy and tourism characteristics of the area of concern, but they also reflect its size (and population). Studying the impact of local tourism one of the most common errors, when the available resources do not allow independent and consistent estimations, is to 'borrow' multipliers evaluated at national scale (or in areas erroneously considered to be 'equivalent' to the area of concern) and to apply them uncritically to sub-national areas (e.g., municipalities, regions). The use of national multipliers tends usually to yield inflated estimates of impacts.

Two main approaches are used to estimate the multipliers: simple analytical economy-based models and Input-Output modelling of local economy (I-O henceforth). They are discussed in turn below.

1.1.1 The Keynesian multiplier

The simplest representation of local economy is given by a completely closed economy (i.e., no import and export activities) without taxation, where all activity is collapsed into a single representative sector ('households'). Let ΔY be an additional spending of tourists visiting the area under study. In this simple representation of local economy, the initial (direct) shock to income is given by $\Delta X = \Delta Y$. This tourism-related additional income partly translates into saving and partly into additional consumption. Let c be the share of income that is consumed by households (exogenous). The original tourist spending, ΔY, will therefore generate a second-round increase of income, given by $c\Delta Y$, related to the additional consumption induced by tourism. As before, this additional income translates partly into saving and partly into a further additional (consumption) demand ($c^2\Delta Y$). The process continues through a series of successive $c^n\Delta Y$ increases of income:

$\Delta Y ... c\Delta Y ... c^2\Delta Y ... c^3\Delta Y ..... c^n\Delta Y$

The sum of these partial effects is given by:

(1) $$\Delta X = \frac{\Delta Y}{1-c}, \text{ where } k = \frac{1}{(1-c)} \text{ is the income multiplier.}$$

In this simple relationship, the Keynesian multiplier includes induced impacts. Furthermore, under the simplifying (and often unrealistic) assumptions imposed in the derivation of (1) (in particular, the absence of imports, i.e., the possibility for the tourism direct revenues to 'leak' out of the local economy), $k > 1$.

A more general and realistic expression (especially in relation to the impact of cultural tourism in urban economies, where the study area tends to be limited in size – usually at municipal/regional level – and therefore relatively open to 'leakages') includes the possibility to estimate the impact of imports, taxation and first-round leakages:

(1') $$\Delta X = \frac{(1-l)\Delta Y}{1-c(1-t)+m} \text{ where } k = \frac{(1-l)}{(1-c(1-t)+m)} \text{ is the income multiplier;}$$

as before, c is the marginal propensity to consume, t is the share of income going to the government (tax rate), m is the share of income spent on foreign goods (propensity to import) and l is the 'first-round' or 'direct leakage', i.e. the share of tourist expenditure never entering the destination economy (e.g., in the case of package tours, especially for holidays overseas, a large part of money paid by visitors accrues to the airlines, coach operators, travel agents outside the holiday regions and never even enters the area of concern).

From (1'), it is clear that l, c, t and m are key parameters to determine the final effect of the initial additional tourist expenditure. The smaller the leakage into saving, imports and taxation, the bigger the final impacts (any money 'leaking out' of the economy ceases to generate further increases in income and employment). The value assumed by the multiplier represents a balance among these multifaceted effects and the condition $k > 1$, met under the generally oversimplifying assumptions of (1), is not necessarily fulfilled anymore.

It is also of extreme importance to underline the role played by l, the share of tourist expenditure never entering the destination economy, as some 'confusion' is often found in literature. Archer, as a matter of facts, identifies the neglect or incorrect estimation of 'direct leakages' as one of the main sources of misuse and abuse in the application of multipliers (Archer, 1982).

Keynesian multipliers are numbers (coefficients) which, when multiplied by an 'additional tourist expenditure', allow to estimate quantities of interest. The term 1-l at the numerator in (1'), related to the 'capture rate' (i.e., the percentage of visitor spending captured by the region's economy), can be alternatively included in the definition of the multiplier, as in (1'), or in the definition of 'additional tourist expenditure' (in this case, the multiplicand is not the total tourist spending, but the fraction of total tourist spending 'captured' by the area of concern in the first-round, i.e., $\Delta Y(1-l)$). The multiplier and the 'additional tourist expenditure' used in the application should therefore be consistently estimated.

In the case of tourism, the identification and estimation of 'direct leakages' is not a simple and straightforward task. A common example is related to spending on not locally produced goods: in this case only the trade margins for the purchased products enter the local economy (see Section 1.2). For other kinds of expenditure, the identification of 'direct leakages' can be rather subtle. An example is reported in Archer (1982), in relation to rental of caravans in coastal areas of the UK. Although, as a matter of facts, the money is spent locally, it could happen that most of these caravans are owned by people who themselves live outside the area of concern. Thus, many rental charges paid by visitors (to use caravans) don't go to the holiday's area, but to the owners of the caravans who live outside the study area. The flow of money into the area of concern, therefore, is only limited to the parking (or site) fees paid by the caravan owners to the site owner (supposed to be a local resident). This sum is considerably lower than the rental fees paid by the tourists using the caravans.

In the case of tourism, an 'aggregated capture rate' generally ranges between 70% and 90% depending on the size of the region and the proportion of goods relative to services purchased by visitors. Forgetting to correct for the 'first-round direct leakages' results therefore in inflated (i.e., erroneously overestimated) impacts.

The main advantage of the Keynesian multiplier lies in the limited number of information needed for its implementation. However, it has strong limitations deriving from both the strong hypotheses (static setting, fully elastic supply) imposed by the model and the aggregated nature of the results (no sectoral disaggregation is given). Variations in tourist spending patterns cannot be easily captured by a single coefficient (e.g. EUR 100 spent on accommodation and EUR 100 spent on souvenirs, although equally treated, will have a different impact on local economy).

The economy-based model can however be further refined: different rates for direct and indirect taxes can be calculated, first round leakages can be tailored to the specific nature of the initial shock (Sinclair, 1998), propensity values can assume different values for the short and long-term (leading to short and long-run multipliers – Archer and Owen, 1971) or be sector-specific (leading to sector-specific multipliers – Milne, 1987). For instance, in the development of the "Tourist Regional Multiplier" (Archer and Owen, 1971) include two important components: the propensity to consumption by different visitor segments and the shares of tourist spending in different industries. The "Tourist Regional Multiplier" tends therefore to become rather equivalent to a weighted aggregation of I-O multipliers (see Section 1.2).

1.1.2 The ratio multiplier

While the use of multipliers based on Keynes and standard I-O methodology is unequivocal (the multiplier measures the increase in economic activity – as incomes, employments, etc. – generated, in the economy under study, by a unit increase in tourist expenditure), alternative definitions can be extensively found in literature.

The most common of these is the use of 'ratio' multipliers, given by the ratio of 'total' to direct increase in economic activity (generated from the additional tourism expenditure)[2]. As a consequence of their definitions, ratio multipliers will always be greater than one. Ratio multipliers provide a measure, specific to the area under study, of the degree of the linkage between the sectors which supply tourists and the other sectors of the economy, as well as of the internal linkage among the various economic sectors themselves: i.e., it is a kind of indicator of a region's 'economic self-sufficiency'. The greater the values of the 'ratio' multiplier, the stronger are these internal linkages.

Keynesian and 'ratio' multipliers are not irreconcilable. They need the same basic data and very similar modelling techniques. It is mainly the choice of the quantity where the tourism economic impact is 'condensed' that is different in the two approaches. It is therefore mandatory not to confuse, misuse or misunderstand the different approaches.

Keynesian multipliers give a straightforward indication of 'how much tourist expenditure' is needed to obtain a 'unit impact' on the local economy under study (e.g., to create a unit of income or a new employment). They tend therefore to be 'more direct' and attractive for policymakers and planners. For example, jurisdictions can use such multipliers to determine the impacts to be derived from stimulating an additional EUR 1 million in tourism spending in the area, through marketing programs. In this kind of analysis, however, one has always to keep in mind that multipliers do not represent the full picture of the impacts of tourism on local economy. Multipliers rely on a number of (often oversimplifying, see Section 1.2) assumptions and they don't even try to account for the negative external costs (see Section 3.3). Therefore, they often tend to present an incomplete (over-optimistic) picture of reality.

Keynesian multipliers tend to combine direct and secondary effects. The ratio multipliers, on the other side, focus on a quantitative measurement of the additive contributions coming from secondary effects. From this point of view, ratio multipliers tend to better indicate the extent of industry and employee linkages within the local economy than Keynesian multipliers do (Frechtling and Horváth, 1999). The larger the 'ratio' multipliers, the more visitor spending cycles within local economy producing income and jobs before it leaks out. For instance, a sales 'ratio' multiplier of 1.8 for the accommodation service would mean that a visitor spending of EUR 100 on lodging will have a total effect of EUR 180 in sales within the area of concern; that is, EUR 100 received by the hotel as direct sale effects and another EUR 80 received by other related industries, located in the area of concern, as secondary effects.

1.2 The Input-Output (I-O) methodology

The I-O matrix describes the interactions (sales and purchases) among all the sectors in the economy. Its application, through the possibility of tracing the flows of spending associated with tourism activity, allows the estimation of the impacts of tourism by economic sector (and not just an aggregated impact as in the case of analytical multipliers).

---

[2] Three Types of 'ratio' multipliers are present in literature: Type I refers to the ratio (direct + indirect) / (direct), whereas Type II and Type III to the ratio (direct + indirect + induced) / (direct). The distinction is that in Type II households are treated as a sector of the economy, in Type III as exogenous.

Tourism economic impact is complex because it does not occur within the framework of a single commonly acknowledged industrial sector, but its 'shock to final demand' tends to be spread across several sectors. This positive 'shock' tends to ripple through the economy: in order to be able to satisfy the 'shock to final demand', the involved firms are forced to increase their input purchases from other sectors, and so on. The use of the I-O matrix allows tracing all these effects through the various sectors of the economy.

Let ΔY be the (n x 1) vector of the 'shock to final demand' (with n equal to the number of sectors; A be the (n x n) matrix of '*technical coefficients*' of the economy; and X be the (n x 1) vector of gross output. Then $\Delta X = A \cdot \Delta Y$ will be the first-round vector of increases of gross output, leading to additional intermediate demand and therefore to a second round increases of gross output $\Delta X = A \cdot (A \cdot \Delta Y)$. The process continues through a series of successive increases of gross output $\Delta X = A \cdot (..(A \cdot \Delta Y)..)$., whose sum is given by:

$$\Delta X = (I-A)^{-1} \cdot \Delta Y, \tag{2}$$

where $(I-A)^{-1}$ is known as the Leontief inverse matrix. In order to simulate the impacts of tourist spending on the economy of a tourist region, ΔY, the vector of shocks to final demand has to reflect the distribution of tourist spending to the industrial sectors that participate directly in tourism-related activities (i.e., the initial recipients of tourists' money). Due to the linearity of the I-O relationship, it is furthermore straightforward to take into account the varied consumption patterns of different types of visitors in an additive way, disaggregating the final demand vector into 'sub-vectors' representing different categories of tourists (e.g., a day visitor who spends most of his budget on souvenirs would have a very different spending pattern than an overnight tourist who spends the bulk of money on lodging and restaurants).

This sectoral disaggregation of the tourist spending (for the different categories of tourists) is a crucial step in I-O analysis and it relies generally on tourist surveys indicating, e.g., how much visitors spend on accommodation, food, local transportation and other goods and services in the local economy. Each of these categories should then be matched to one (or disaggregated on more than one) of the economic sectors used in the construction of the I-O matrix (usually a standard classification as, e.g., the ATECO).

In the specific case of urban cultural tourism, where the area of interest is limited in size (e.g., municipality), several expenditure categories as airplane/train/coach transportation or fixed auto expenses should generally be excluded, since they are likely to be made in the tourist's residence area rather than in the area of concern. The main categories of interest for cultural tourism are related to: local transportation (taxis, public transports, car rental, gasoline), accommodation, food, entertainment, cultural recreation and shopping.

For 'service industries' (e.g., local transportation, automotive rental, accommodation) tourist expenditures can be assumed to directly represent tourist output. However for retail trade (e.g., gasoline purchase and shopping in the city), if the purchased goods are not produced within the area of concern, tourist expenditures have to be previously transformed into tourist output through the estimation of the trade margin for the purchased products. This is the difference between the price the retailer charges to the consumer and the cost to the retailer:

(3) Trade margin = Purchaser Price – Producer Price.

This margin includes labour earnings, sales and excise taxes, profits and certain other expenses (Frechtling and Horváth, 1999). Therefore, if goods purchased by the visitor are not manufactured in the local region, there will be no direct effect for the manufacturing sector in the region. Only the margins will stay in the region. It has already been noticed in Section 1.1.1 that tourism analyst using aggregate multipliers could have the wrong tendency to apply them to all spending, even if the goods bought by tourists are not locally made.

While the analytical approach, introduced in Section 1.1.1, tends to aggregate the effects of tourism in a single coefficient (e.g., economy-based models to estimate an overall aggregated "Tourist Regional Multiplier" – Archer and Owen, 1971), I-O model represents the most common tool to generate sector-specific multipliers. One major advantage of I-O model is that it provides, for each sector of the local economy, detailed information on direct, indirect and induced effects of tourist spending on all economic measures (i.e., sales, income, employment). It also allows a deeper understanding of the impacts of tourism. In fact, e.g., 1 EUR worth of retail trade output would have a rather different ultimate value than 1 EUR worth of a museum's output in a distributional sense: the first accrues to an individual in the private sector and the second to the public sector. On the other side, the development of I-O models requires considerably more data and efforts than simple economy-based models. First of all it relies on the existence and availability of a reliable case study-specific I-O matrix.

An effective aggregated 'tourism multiplier' can be evaluated as a weighted average of these sectoral multipliers, assuming that a unit of tourist spending is distributed to certain sectors according to some known proportions. Consequently, the value of the aggregated tourism multiplier obtained depends, in addition to the technical coefficients adopted, on the assumed sectoral distribution of tourist spending. As suggested by Briassoulis (1991), it seems advisable to provide a range of different multipliers calculated on the basis of alternative sectoral distribution schemes of tourist spending. This may be of greater utility to policymakers in assessing the implications of promoting certain tourism-related sectors in a region.

I-O model can be used to calculate different categories of multipliers. Two basic distinctions are made.

The first distinction is based on the range of effects included. Type I multipliers include only direct and indirect impacts. Type II multipliers consider direct, indirect and induced effects as well[3].

The second distinction is made in reference to the variable affected (e.g. output, as in equation (2), or income). Using sectoral productivities, the effects on employment can also be derived (by dividing sectors' income changes by sector productivity) and consequently, an employment multiplier calculated. One has to notice that multipliers can

[3] A Type III multiplier is also sometimes found in literature. As Type II, a Type III multiplier includes induced effects, the distinction involves a technical difference in how the induced effects are computed. Type II multipliers are obtained by considering household income and expenditure as endogenous within the transactions matrix, while in Type III households are treated as an exogenous sector of the economy.

be calculated for any activity that can be reasonably assumed to change in proportion to the level of output, as e.g. water and energy consumption and pollution (this, of course, requires the availability of, respectively, consumptions and emission coefficients for each economic sector).

In that it provides a detailed map of the effects of tourism on the different sectors of the economy, the I-O methodology is very useful for policy-making. However, it also has some limitations deriving from the rather strong hypotheses imposed on the model:

- The model is linear. Production functions are considered to be linear; if additional output is required, all inputs increase proportionally;
- The model is static and assumes that there are (unlimited) idle resources (including labour, natural resources and capital goods), which means that any increase in final demand can simply be met by proportionally increase in sectoral outputs. As a consequence, prices do not respond to increasing demand (perfect elastic supply) and the growth of tourism do not lead to a reallocation of resources across sectors. Even granted that in most economies there is some unemployment of labour, this assumption seems rather unlikely (see Section 2). The ability of the economy of a study area to respond immediately to changes in final demand (i.e., the absence of capacity and supply constraints) has seriously been questioned by many researchers (Briassoulis, 1991);
- Technologies are fixed. All firms in each sector employ the same technology, and there are neither economies nor diseconomies of scale and no substitution among inputs;
- The outputs of each sector are homogeneous. An industrial sector cannot increase the output of one specific product unless it proportionally increases the output of all its other products;
- In calculating the employment effect, the model assumes a fixed employment/output ratio. Productivity increases are not taken into consideration (any additional demand for labour translates into a proportional increase in the number of employees);
- It is a 'data hungry' methodology, as it relies on the existence and availability of a reliable case study-specific I-O matrix;
- The I-O matrix approximates the actual economy with respect to the year it is estimated. The farther away we are from the I-O table year, the less the evaluation corresponds to actual economy. Tourism, as any economic activity, passes through several stages during its development. The early stages of tourist development of an area are characterized by dynamic, short-term changes implying that technical coefficients do not remain stable at least for some period. Furthermore, tourism can induce developments and infrastructures in the host region that otherwise would not probably occur. As a tourist region matures, the assumption of constant coefficients may be more acceptable (but the coefficients cannot be assumed to remain constant for time periods longer than, typically, five years). At the level of multipliers, it has to be noticed that the income multiplier, expressed as ratios of money to money may not significantly change over time; Keynesian employment multiplier, however, being

expressed as a ratio of number of employees to tourism expenditures, will be affected by inflation.

These limitations become increasingly binding the greater the simulated change in demand. Although real world production relationships are most probably non-linear, it is not unreasonable to approximate these with linear specifications as long as the changes from the starting point remain relatively small. On the other hand, simulations that involve drastic changes from the means are likely to have poor predictive abilities. Despite of these limitations, an understanding of the caveats can help the analyst to overcome the weaknesses.

Depending on the characteristics of the area of concern and on the tourist spending patterns, the assumptions at the base of I-O analysis could bias the values of the derived tourism multipliers (Fletcher, 1989; Briassoulis, 1991). As already noticed, for the employment multiplier values to hold true, it must be assumed that an increase in final demand will result in each sector increasing their demand for labour in a linear way. This will only be reasonable if every sector is operating at full utilization. Any under-utilization will mean that sectors can expand output without resorting to employing additional staff. In the short run it is likely that most sectors will meet additional demand by either better utilization of existing personnel or by increasing over-time. In such cases, the employment multiplier will over-estimate the effects on employment. This can be particularly critical in the case of tourism, where the restaurant & hotel industry is typically characterized by capacity under-utilization (reflected in hotel occupancy rates lower than 100%). This means that additional tourists can be accommodated by existing hotels and restaurants with only a marginal increase in employment and in the inputs required from the other sectors of local economy. Further difficulties inherent to the assessment of employment impacts are related to seasonality problems (particularly important for sun&beach tourism) and to the fact that it is very common in tourism-related establishments that many people employed in tourism also hold another job and part-time employment.

Furthermore, it is also quite conceivable that some industries will not be able to respond to an increase in demand (particularly in the short-term run) and any increase in demand will need to be met by an increase in imports rather than an increase in the level of output of the domestic industries.

1.3 Empirical results

There is a wide range of literature on (tourism) multipliers. We do not aim at discussing all findings, but rather at identifying those factors that influence the values of multipliers and that might be relevant to our discussion. We will firstly discuss issues relative to the calculation of multipliers. This part will help to clarify some of the definitions presented in previous sections and to assess the range of changes involved with the different definitions. Secondly, we will discuss issues relative to the destination regions (and how they influence the value of multipliers). This will help to clarify the regional factors that we need to take into consideration in the empirical studies. Thirdly, we will discuss the relevant features of tourism and tourists' patterns. This is very relevant for policy-making in the field of tourism; different strategic choices must be compared. Finally, we will discuss the issues concerning the impact on employment.

Caution must however be exercised when comparing quantitatively multipliers from different studies, since multipliers might have been generated by different methodologies, include different assumptions, reflect different distributions of expenditures (e.g., more on hotel, less on shopping).

1.3.1 Types of multiplier and their range of values

Multipliers have been widely used in research and policy support. However, their use has been often characterized by confusion and misunderstanding concerning the typologies of the used multipliers (Archer, 1982). Here we discuss the range of changes in empirical findings involved when different typologies of multipliers are used.

A first distinction refers to the range of effects taken into account by the multiplier. In Singapore, income and output multiplier increase by 30% when induced effects are included (Heng and Low, 1990); the increase in the income multiplier, when also induced effects are considered, is found by Del Corpo *et al* (2008) to vary from 20% in Sicily to 65% in Spain. Feedback effects from surrounding regions can also be considered. Sinclair and Sutcliffe (1988) take into account feedback effects from surrounding economies and show that the size of multiplier increases by 2-7%.

The second distinction refers to the affected variable (sales, output, income or employment multiplier). This is a simple and clear issue, but it is very relevant when comparing different values of multipliers. It is important to note that different definitions of multipliers are relevant for different policy objectives. The relevant multipliers should be therefore chosen when comparing different policy options with respect to a specific objective (either the maximisation of the employment, income or government revenues effect). Sales and output multipliers tend to be around the double of income multipliers (Heng and Low, 1990).

1.3.2 Multipliers and features of destination region

The value of the multipliers crucially depends on leakages, and therefore on the share of imports to total output. In turn, the share of import is heavily dependent on the size of the region (small economies are relatively less self-contained than larger economies). In the specific case of tourism multipliers, the interrelationships of tourism industries with the rest of the local economy (and specifically the extent to which demand from tourism industries is satisfied with imports), is also a crucial factor.

Income multipliers reach a maximum for large countries such as Turkey and the UK (Fletcher, 1989) and in self-contained small island economies (Jamaica, Mauritius), where they vary in the range 0.50-1.20. They are just smaller for US states (range 0.40-0.90 – Archer, 1988), but sensibly lower in very open regional and urban economies such as US and UK counties (range 0.20-0.50 – Fletcher, 1989; Archer, 1982). Baaijens *et al* (1998) analyzed statistically (regression models) income multipliers extracted from 11 studies. A positive relationship was found with the logarithm of the population (several alternative regional characteristics – as area size, number of tourist arrivals – were also tested). A similar result was found by Chang (2001), analyzing more than 100 regional I-O models varying in size and economic development (covering five US-states: California, Colorado, Florida, Michigan and Massachusetts), generated by means of the IMPLAN I-O modelling system. A 'tourism multiplier' was defined as a weighted sum of

multipliers derived from four tourism-related sectors (lodging, eating and drinking, recreation and retail). For all the four analyzed Type II 'tourism multipliers' (sales, income, value added and job) the most significant predictor, in a stepwise regression analysis, was found to be the logarithm of population. While sales, income and value added multipliers increased almost linearly with the logarithm of population, the employment multiplier showed a negative correlation (interpreted on the basis that, in the contest of the analyzed dataset, regions characterized by a smaller number of inhabitants tend to correspond to less economically developed rural areas). Using hotels as an example, higher job to sales ratio could be a result of lower room rates, or more part-time and seasonal jobs (resulting in lower average wages).

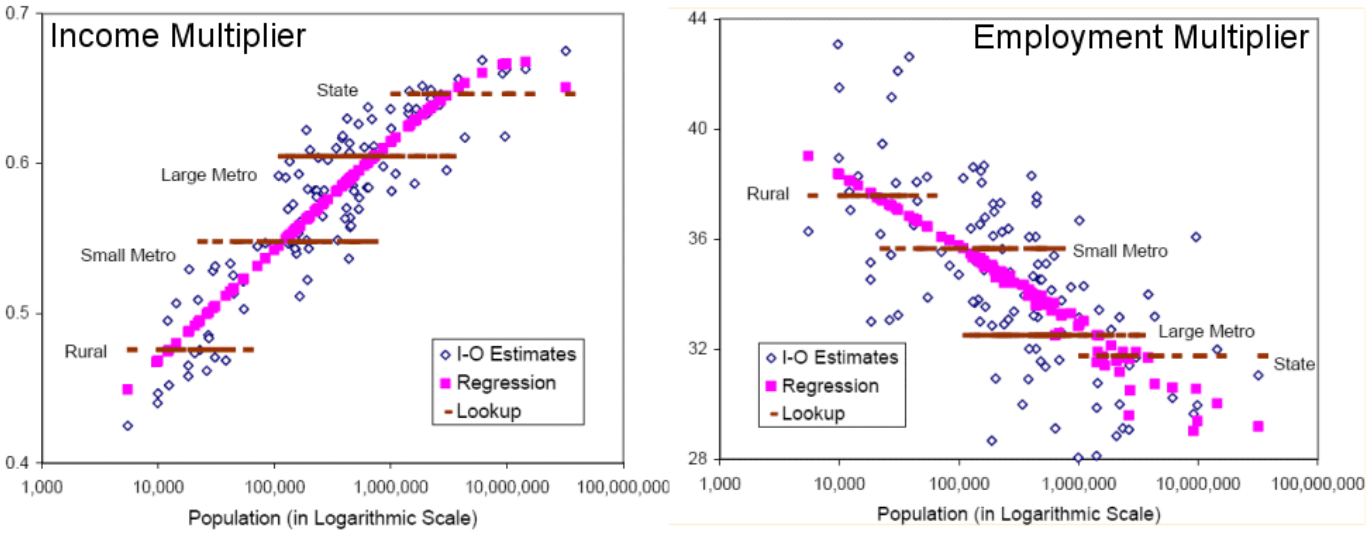

Figure 2: Distribution of income (left) and of employment (jobs per million dollars in sales, right) Type II multipliers vs. Log (Population) for 114 US regions. The empty diamonds report the results obtained through I-O modelling (IMPLAN), while the squares correspond to the corresponding results from a statistical regression analysis with Log (Population) as dominant predictors. The lines report empirical multipliers proposed from a straightforward classification of the different regions in: 'rural', 'small metro', 'large metro' and 'State' (Chang, 2001)

1.3.3 Multipliers and features of tourism and tourists' patterns

Tourists differ in behavioural and expenditure patterns. This has consequences for the size and range of economic effects. This question is crucial when confronting different policy choices for tourism development (e.g., privileging short vs. long stays, beach resort vs. cultural tourism, etc.). Two key issues must be taken into account here.

Firstly, the impact on the local economy varies not only depending on the value of the multipliers, but also on the value of the multiplicand: even if the multiplier is high, the final impact on local income will be low if the direct injection of tourist expenditure in the destination region is low. Previous research shows that tourist spending taking place through tour operators, international airlines and chain hotels often leaks out immediately without even reaching the destination economy. For example, only 42% of the price of a package holiday was received by Spain when tourists travelled on a non-Spanish airline

(Istituto Espanol de Turismo, 1987). Similar results hold for Kenya: only 38% of UK tourists' spending travelling in package holidays reached Kenya.

Improving options locally available to tourists would magnify the size of economic impacts. In the case of Kenya, the use of local airlines could considerably increase the share of expenditure accruing to the Country: up to 66% if local airlines are used for internal travels, up to 80% if Kenyan airlines are used for international flights also (Sinclair, 1991).

Secondly, the impact on the local economy varies with the patterns of tourist's expenditure, in turn influenced by the motivation of the trip (pleasure vs. business, for example), the nationality of tourists, the accommodation chosen. Research shows that accommodation is a key factor, as confirmed among others by Del Corpo *et al* (2008). Sinclair and Sutcliffe (1988) find that the income multiplier in Malaga is lower for tourists staying in flats or villas and higher for tourists staying in hotels. This is due to the different relationships that these types of accommodation create with the local economy. On the contrary, the nationality of the tourist does not seem to be so relevant. Archer and Fletcher (1996) find no evidence that nationality of tourists made a significant difference to the size impact of tourism on the economy of Seychelles. The difference is found to be negligible also in the three case studies used by Del Corpo *et al* (2008), that is Bergen, Elche and Syracuse, even though in general Spanish tourists in Elche present a higher direct impact than foreigners. Finally, Heng and Low (1990) find no evidence that tourists from developing countries had a different impact than tourists from developed countries.

1.3.4 The impacts on employment

The ability of tourism to create jobs is of high relevance for policy-makers.

As discussed in Section 1.1, employment multipliers are easily calculated in multiplier exercises. The values of the multiplier are influenced by the same factors discussed in previous sections, and therefore differ quite widely. Heng and Low (1990) find that tourism in Singapore creates over 30 jobs per million dollar of expenditure when induced effects are included and just above 25 jobs when only direct and indirect effects are calculated. Fletcher (1989) finds a similar value for Jamaica. He shows that values might be even higher for smaller economies such as Gibraltar, where he also finds that the employment multiplier of tourism expenditure is nearly the double than Ministry of Defence and other Government departments' expenditure.

Sinclair (1998) discusses few additional features concerning employment effects of tourism (based both on case studies and multiplier analysis):

- Tourism industries are relatively skill-intensive. This was pointed out by Diamond (1974), in his research on Turkey, and confirmed by following studies. Delos Santos *et al* (1983) further noticed that only 16% of employment in the tourism sector in the Philippines was unskilled and that nearly 40% was semi-skilled;
- Much of the employment in the catering and accommodation is on a part-time seasonal basis or family-related without a formal wage. Sinclair and Bote Gomez (1996) find that just below 10% of part-time workers in hotels and guesthouses in Spain were without a formal wage. Farver (1984) finds that hotel employment in

Gambia nearly doubled in the high season with respect to the low season. He also finds that top managerial posts are usually occupied by foreigners. This appears to be true also for the Fiji Islands (Samy, 1975). However, in Kenya this trend has been reversed and top managerial posts are now being taken by residents (Sinclair, 1990).

These results point out to potential important employment gains from tourism, under both a quantity and a quality perspective (although seasonality remains a problem).

2 The general equilibrium analysis

In the general equilibrium analysis, the basic assumption of spare capacity of the partial equilibrium analysis is removed. Resources are scarce and prices (as well as quantities) tend to respond to increasing demand; in this case some of the output (and employment) gains, potentially induced by the 'multiplier effect', are dampened by price increases and resources are reallocated across sectors with potentially strong distributional impacts.

In a general equilibrium model, in fact, the labour for the increased production would have to come from additional hours or workers (lured to work by higher wages) or from the other sectors of the economy (or imported, see Section 2.2). Thus, an I-O model can be considered as a very special case of a general equilibrium model: the case where labour and other factors are available in limitless supply at the current price. Put somewhat differently, an I-O model is a particular and often 'unrealistic' representation of the production side of an economy (the less the idle resources the less realistic would be a partial equilibrium approach). General equilibrium analysis allows to generalize I-O analysis by making demand and supply of goods and factors dependent on price.

We consider now a local economy with different quantities of local amenities (either natural resources or cultural heritage). In the next section we describe a class of models in which local amenities attract tourism flows but do not induce migration flows. These models allow a careful analysis of both the aggregate welfare and distributional consequences of tourism on local economies (Section 2.1). We then relax the assumption of labour immobility and consider models where local amenities affect migration flows (Section 2.2). These models do not consider tourism *per se*, yet they are crucial for assessing the value of the amenity for the local economy.

2.1 Local amenities and tourism impacts in general equilibrium models with no labour mobility

In this set of models, local amenities affect tourism flows but do not induce any migration flow, or labour mobility. These models help to analyse welfare and distributional effects of the growth of tourism flows.

General equilibrium models of tourism follow the 'Dutch disease' literature (Corden and Neary, 1982), which studies the economic consequences of an export boom. Despite tourism can be considered as an 'invisible export' (Archer, 1982), tourism-related transactions have some peculiarities that need to be discussed before presenting the model.

Tradable goods can be exported across national borders and consumed by residents in foreign countries. On the contrary, tourists move across national boundaries and consume on-site local amenities, together with a bundle of locally provided goods and services.

The implications of this crucial difference are that:

This crucial difference has three main consequences:

- Priced goods and services are consumed jointly with unpriced (site-specific) amenities;
- Normally non-tradable industries (such as restaurants and hotels) are affected directly (and not only indirectly through the increase of residents' income, as in the case of an export boom);
- Tourists select the destination based on the price of a bundle of goods (and not on the price of the export good).

In his model Copeland (1991) considers three final goods: agriculture, manufacturing (which are both tradable) and services (which are non-tradable in the absence of tourism). The economy is assumed to be small in world markets for tradable goods, implying that their prices are fixed at world level. The prices of non-tradable goods are instead determined by local supply and demand. The economy is characterized by a vector of factor endowments (land, labour, capital) that are freely mobile across these three sectors.

The prices of both tradable and non-tradable goods and local amenities (which are assumed to be exogenous and unpriced) affect tourist demand. The existence of local amenities plays a key role, as they make tourist destination a differentiated product. As goods and services are consumed together with the unique amenities of the destination locality, tourism demand is not perfectly elastic (despite the small size of the economy), and price effects on tourist demand are negative: when the price of non-tradable goods increases the tourist demand for non-tradable goods decreases (as overall tourist inflows decrease in response to the increase in local prices and remaining tourists substitute towards other goods).

At first we discuss the welfare effect, considering a basic model with no international mobility of production factors (factors are supplied inelastically), no foreign ownership of local factors and no taxation, and then remove these three assumptions (Section 2.1.1). Secondly, in Section 2.1.2, we discuss the distributional effects (using both a general and a restricted model). Finally, we discuss relevant empirical findings (Section 2.1.3).

2.1.1 Aggregate welfare effects

At first we consider a basic model with no foreign ownership of local factors, no international mobility of factors and no taxes.

In this model an increase in tourism is welfare-improving as prices of local services increase with respect to prices of tradable goods (thereby affecting the economy's real exchange of rate). In fact, an increase of tourism is welfare improving *if and only if* it leads to an increase of the price of non-tradable goods. Since priced goods are consumed jointly with local (unpriced) amenities, local services increase partly reflecting the rents created by the local amenities. If there were no service sector there would be no welfare

gain: goods that were previously exported directly (i.e., sold abroad to foreigners) would be simply exported indirectly (i.e., sold locally to tourists) at the same price. Tourism affects the price of local services through two channels (Copeland, 1991): a *direct* effect, due to the increase in tourists' demand, holding constant the residents' spending; and an *indirect* effect, due to the increased demand of residents following the increase of real incomes. If services are a superior good, the indirect effect reinforces the direct effect. The opposite is true if services are an inferior good (which can be the case if residents take vacation abroad). However, for the market to be stable, the direct effect must be dominant.

Now we relax some of the assumptions of the basic model.

At first, we analyse the situation in which non-locals own parts of local endowments of factors (e.g., hotels, restaurants and other services can be owned by 'foreigners'). In this case, part of the returns to the foreign-owned factor is repatriated (i.e., it leaves the area of concern). As a result, welfare gains from tourism are dampened the more, the bigger the share of income repatriated. A negative effect of tourism on welfare is possible if the share of repatriated income is sufficiently large. This is the case when initial tourist spending on services is less than total foreign earnings repatriated (i.e., if non-residents take out of the economy more than they spend in services).

Now we introduce the possibility that a subset of factors is internationally mobile. In this case, the supply curve of services is elastic and increased demand is adjusted through both prices and quantities. Since tourism improves local welfare only through an increase of the price of services, the gains from tourism are dampened: the rents created by local amenities are dissipated through factors mobility. However, differently from the case of foreign-owned factors, in this case there is no possibility of a negative welfare effect of tourism.

Finally, we consider the introduction of commodity taxes or subsidies. Such taxes are often rebated when goods are exported. This is usually not possible (or very costly) when goods are sold to tourists. Copeland (1991) shows that when tourists pay a tax-inclusive price on goods consumed in the destination, the increase in tourism has two major effects on welfare. As usual, there is an (usually positive) effect on the price of services. This effect may be smaller than in the basic case due to the distortions introduced with the taxation (but not negative, if taxes are not too high). Secondly, tax revenues increase represents an additional contribution to welfare. In this case an increase in tourism can produce benefits, even if there is no change in the price of non-tradable goods. Taxes provide a means to extract the rents created by local amenities, even when the price of services is relatively insensitive to changes in demand (either because tourism expenditure is relatively small or factors are highly mobile).

2.1.2 Distributional effects of tourism

In the general case (with international mobility of factors) the results are not 'unambiguous' (Copeland, 1991). However, a more restricted model (with sector specific factors) does yield interesting insights. In this model there are three factors of production: labour, land and capital. Capital is internationally mobile, whereas land and labour are not. The service sector employs both land and (service-specific) capital; agriculture uses agriculture-specific land and manufacturing uses capital. Labour is used by all sectors and

is assumed to be fully mobile across sectors. This model does reflect important characteristics of each sector: factors used in agriculture are much less mobile than those used in manufacturing, while the service sector (hotels, restaurants, etc.) relies on both capital (mobile) and local amenities (land).

It can be shown that:

- An expansion in tourism stimulates output in the service sector (and attracts foreign capital for services);
- Capital leaves the manufacturing sector in the local economy and moves to the tourism sector, leading to a reduction of manufacturing output;
- All social gains from an increase in tourism accrue to the owners of the land specific to services;
- The increase in the price of services produces a decrease in real return to all other locally owned factors.

In such a restricted but quite realistic model, an increase in tourism is undesirable for everybody apart from owners of non-mobile factors specific to services.

With respect to these results there are three qualifications to be made:

- There is no super-complementarity[4] between land and labour (and between land and capital) in the service sector. This super-complementarity is often considered implausible and sometimes ruled out by assumption (Jones *et al*, 1987);
- If foreigners own a large share of service-specific land, then the welfare effect of tourism expansion can be negative (see previous section);
- Complete de-industrialisation cannot be ruled out. In this case, the increased demand for labour in services leads to an increase in nominal wages, which implies a reduction in the real return to land in the agricultural sector and a dampening of the increase in the real return to land in the service sector. However, even in this case, unless services employ a sufficiently small share of labour, all the gains from tourism still tend to accrue to owners of land in the service sector.

2.1.3 Empirical findings

Some recent studies have simulated the effect of tourism expansion on economic variables using Computable General Equilibrium models (CGE).

CGE models combine a general equilibrium setting (market clear and agents maximize their objective function) with numerical simulation and therefore expand the I-O model to include behavioural equations. As I-O, CGE models are able to simulate the response of the economy to exogenous shocks. However, differently from I-O models, the assumption of spare capacity can be removed: prices are allowed to respond to increasing demand and resources to reallocate across sectors.

[4] Super-complementarity condition requires that a 1% increase in rents reduces the use of labour in the service sector by a higher percentage than the decline in the use of land itself.

Zhou *et al* (1997) simulate the effect of a 10% decrease in tourism expenditure in Hawaii, using both an I-O and a CGE modelling approach. They find that the decline in expenditure affects the industries closely related to tourism such as hotel and restaurants, transportation and food and drink industries. However, the I-O model shows larger effects than the CGE model. This happens because CGE models allow prices to decrease in response to the decline demand and a reallocation of resources takes place.

Blake and Gooroochurn (2004) use a GCE model of the Spanish economy to simulate the impact of a 10% increase in tourism expenditure. The result is an increase in welfare equal to 0.05% of GDP over the long term. Hotels and restaurants (output increases by 3-4%), transportation (+ 3% in air transport) and food and beverages are the most heavily affected sectors. Some displacement effect does take place as manufacturing output decreases by more than 1%. Here again, they find that foreign tourism activities are highly taxed, but domestic tourism is in fact subsidized, because of low tax rates on tourism and subsidies to domestic travel. Yet, increasing taxation on foreign tourists may increase welfare as it reduces some of the distortions created by the low levels of tax on domestic tourism.

Adams and Parmenter (1995) simulate the effect of a 10% increase in tourist arrivals on the economic industrial and regional structure of Australia. As expected in Copeland (1991) some sectors gain and others lose out. As in Blake and Gooroochurn (2004) and Zhou *et al* (1997), sectors directly affected by tourism (hotels, restaurants and transportation industry) gain sensibly. The other sectors, affected only indirectly (clothing and food), still gain. Finally, traditional export industries reduce their output in response to the appreciation of the real exchange rate and increased competition for production factors. They show that Queensland, the most popular tourist destination in Australia, would experience an overall negative effect on output. This is due to the decline of traditional export industries, which are even more heavily concentrated in the region.

2.2 Tourism impacts in general equilibrium models with labour mobility

Now we relax the assumption of no labour mobility. We consider very general models where local amenities affect both aspects related to quality of life (consumption amenity) and productivity levels (production amenity). Some recent studies have applied Roback (1982) model to human capital spillovers in cities (Ciccone and Hall, 1996; Ciccone and Peri, 2002) and the economic impact of cultural diversity in U.S. cities (Ottaviano and Peri, 2004) and European Regions (Bellini *et al*, 2007).

The model considers firms and workers' decision to locate themselves across different cities endowed with different quantities of amenity (which is assumed to be exogenously given, i.e. local community cannot change it). While labour and capital are completely mobile across cities, land is fixed (and so is the quantity of amenity). The residents of each city consume and produce a composite consumption commodity, whose price is fixed by world markets. Issues of commuting are ignored. The spatial equilibrium is shown in Figure 3.

Errore. Non si possono creare oggetti dalla modifica di codici di campo.

Figure 3: The spatial equilibrium

For the sake of argument, we assume that the only non-traded good is land, which is used by workers and firms for residential and production purposes respectively. Since land is the only non-traded good, regional price differentials are entirely driven by rent differentials. Figure 3 measures regional nominal wages (w) along the vertical axis and regional land rents (r) along the horizontal one. There are many regions, so average real wages and average normal profits are independent from what happens in any specific region.

Downward sloping lines depict the combinations of wages and rents that make firms indifferent about the region to locate. Their downward slope reflects the fact that firms can make the average normal profits in different regions provided that higher wages correspond to lower rents and vice versa. Upward sloping lines depict the combinations of wages and rents that make workers indifferent about the region to locate themselves. Their upward slope reflects the fact that workers can achieve the average real wage in different regions provided that higher rents correspond to higher wages and vice versa. The positions of the two lines depend on region-specific characteristics. For example, solid lines correspond to the average region. Then their intersection identifies the combination of nominal wages (w) and land rents (r) that make local workers and firms achieve the average real wages and average normal profits respectively (point A).

Figure 3 allows us to determine whether the amenity has a prevailing effect on productivity or on 'quality of life'. If we observe a region different from the previous one where nominal wages are higher ($w'>w$), this could be associated either with an upward shift of the firm indifference line (point B) or an upward shift of the worker indifference line (point C). In both cases the nominal wage is higher than the average but for very different reasons. In the first situation, the upward shift of the firm line implies that firms are able to earn the average normal profits even though they face higher nominal wages and land rents. This is possible only if they are more productive in that region than in the average region. The upward shift of the worker line implies, instead, that for workers to be as 'happy' as in the average region higher nominal wages have to be associated with lower land rents. This reveals the presence of a real wage premium that compensates for poorer than average quality of life. To distinguish whether higher nominal wages signal higher productivity or worse quality of life, additional information is needed. In Figure 3 this could be analysed looking at rents: whereas higher productivity is associated with higher nominal wages and higher land rents (point B), worse quality of life is associated with higher wages but lower land rents (point C). Consequently, it is possible to input a price on local attributes. At the margin, the value to consumers is given by the amount of income required to compensate for a small change in the amenity, measured by the sum of the changes in wages and the value of the land they must forgo. From that, the aggregate willingness to pay can be derived. Roback (1982) shows that the incremental value of local willingness to pay for a change in the amenity is given by the incremental value of land (as the effect on wages cancels out because any gain to firms is exactly matched by the loss to consumers).

2.2.1 Empirical findings

Roback (1982) estimates the effect of natural amenities on wage and price differential across US cities. She finds that the climate variable performs well in the wage

regressions. The number of clear days has a negative coefficient in the wage regression and positive coefficients in the rents regressions, suggesting that clear days is a (consumption) amenity. On the contrary, heating degree days, total snowfall and the number of cloudy days have strong positive coefficients in the wage regressions (and are not significant in the rent regressions), which suggests that these are (consumption) disamenities. She then derives the implicit value of clear days (nearly 70$) and cloudy days (nearly -80$).

3 The dynamic analysis

Sections 1 and 2 have analysed the impact of tourism in a static setting. A model is said to be static when the number of employees and total amount of available capital do not respond to economic incentives. This is thought to be the case in the short-run: perhaps a year or so. By allowing labour and capital to respond to economic incentives over time, the analysis becomes dynamic. The responses of capital are investment and depreciation. The responses of labour are migration, labour-force participation, and more hours worked. The simplest way in which a model is made dynamic is for it to be solved for more than one year. The capital stock and labour variables are adjusted in each succeeding year by the amount of investment and changed number of workers and hours.

This section analyses the impact of tourism on the perspective development pattern of the economy. The question is whether and to what extent a specialization in tourism increases (or decreases) the growth potential of the local economy (compared with, for example, a specialisation in knowledge-intensive industries).

3.1 Tourism impacts in endogenous growth models

Lanza and Pigliaru (1994), Lanza (1997) and Brau *et al* (2003) consider the question in the context of a Lucas (1988) model of endogenous growth.

They consider a two-sector economy: the manufacturing (relatively more knowledge-intensive) and the tourist sector (relatively more resource-intensive). Countries specialize in manufacturing or tourist sector depending on comparative advantages: countries relatively more endowed with natural resources (which is often the case for small countries) specialize relatively more in the tourist sector. The relative output growth in the two sectors depends on three factors: the relative rate of technological changes, the relative growth of prices and the rate of exploitation of natural resources by the tourism sector.

By assumption, technological change is faster in the knowledge-intensive manufacturing sector. However, with Cobb-Douglas (or CES) international preferences, the rate of change of relative prices moves in favour of the slow-growing economy, thereby completely offsetting the slower rate of technological change: given a constant rate of exploitation of natural resources, tourism specialization is neutral to growth. Faster growth in tourism-specialized countries compared to manufacturing-specialized countries occurs only if:

- The rate of exploitation of natural resource increases. In this case, the long-term sustainability of growth is difficult, as exploitation of natural resources approaches its limits;
- International preferences are such that tourist goods are increasingly valued in international markets to more than offset the gap in the rate of technological change[5]. In this case, long-term sustainability of growth is easier, as it does not depend on increasing exploitation of natural resources.

From a policy point of view, these conclusions favour the development of tourism models based on quality (with tourist goods increasingly valued by consumers in international markets) with respect to development models based on increasing exploitation of natural resources (e.g., mass tourism). The latter may temporarily hide the gap in the technological pace, but it is not sustainable in the long run.

3.2 Empirical results

Brau *et al* (2003) compare the growth performance of 14 'tourism countries' within a sample of 143 countries, observed during the period 1980-1995. They show that tourism-specialized countries grow significantly faster than other countries. Besides, they show that this positive differential is not explained by other variables used traditionally in the growth literature, such as the initial level of income per capita, the rate of investment or the openness of the economy. The specialisation in tourism seems to provide an additional independent explanation of growth with respect to the types of endogenous growth models such as in Mankiw *et al* (1992). Martin (2004) analyses growth performance of Latin American countries over the period 1985-1998 and provides additional evidence that tourism-specialized countries tend to grow faster. However, their result holds true only for low and medium-income countries implying that tourism expansion is a suitable option for growth only before a certain threshold of income per capita is reached. Even in this case, we must consider that these results do not imply *per se* that tourism specialisation is beneficial for long-run growth. Faster growth in a period, in fact, could simply be explained in terms of an increasing exploitation of natural resources, and therefore be not sustainable in the longer period.

3.3 Tourism and external costs

Tourism depends from cultural, natural and environmental assets which are available in fixed supply. Furthermore, these assets constitute an important part of the quality of life level of resident communities and the deterioration of these assets reduces not only the tourism attractiveness of the country but also the quality of life of the residents.

Natural and cultural resources, which are at the basis of tourism supply, are in some cases public goods. Indeed everyone can benefit by clean air, everyone can swim in the sea, everyone can admire a cathedral and so on. One of the characteristics of this kind of resources is that they are unpriced. But in most cases price is the better measure to reduce consumption and overexploitation.

---

[5] This result holds with non-homothetic preferences with tourism as a luxury good (Brau *et al*, 2003, p. 15).

In absence of well-defined property rights on natural, cultural and environmental resources the tourism sector does not compensate resident communities for the consumption of resources due to tourism development.

Public intervention has to regulate tourism expansion through adequate taxation, the definition of land use, the redistribution of the additional income (Novak *et al*, 2004).

Pressure on natural and cultural resources and publicly provided goods and services (including a quantification of the external costs and excess of burden on residents) is measured by specific techniques, such as the conjoint analysis.

4 Conclusions

Based on the review of literature, we can propose a rather general classification of the impacts of tourism on urban economies:

- The impacts that take place through market interactions;
- The impacts that do not involve market interactions;
- The key issues that affect the size and sign of the impacts.

4.1 Impacts taking place through market interactions

Tourists typically demand a set of services and goods. Some of these are provided by the market, such as restaurants, hotels, private transportation (we referred to them as *tourism industries*). This additional demand generates a series of impacts on the local economy:

- Increased expenditure by tourists increases local production (and incomes). Assuming that there is idle capacity (and prices do not respond to increased demand), the final increase is bigger than the initial increase (multiplier effect);
- The additional income brings with it additional jobs: directly, in the tourism sector and indirectly in the sectors serving the tourism sector;
- When relaxing the assumption of idle capacity, prices (as well as quantities) respond to the additional demand. Theory shows that, finally, the benefits of tourism are capitalized in higher prices of non-tradable sectors (hotels, restaurants, houses, prices of locally produced goods) and that they finally accrue to the immobile factors (e.g., land) employed in the non-tradable sector (which is able to charge higher prices);
- The above effects imply that there is a distributional issue, as tourism leads to a contraction of the traded sector (e.g., manufacturing) and to a decrease of real returns to all the other factors;
- The structural change induced in the economy may affect its capability to grow in the long run. The crucial question is whether a region relatively specialized in tourism will grow slower or faster than, for example, regions specialized in knowledge-intensive industries. Theoretically, the answer depends on the long-run dynamics of prices of tourist goods compared to, for example, knowledge-intensive goods.

4.2 Impacts taking place through non-market interactions

Tourists do not only demand goods and services provided by the market. They also demand access to natural and cultural resources and to publicly provided goods and services (such as water, public transportation, health and security, a clean environment). This additional demand generates the following impacts.

Firstly, the additional pressure on natural and cultural resources can lead to their overexploitation and degradation.

Secondly, the pressure on public services will also increase, as a consequence of the additional demand for water, waste and water treatment, public transportation. The additional costs will be compensated (to some extent) by an increase of fiscal revenues following the increase of incomes and jobs.

Thirdly, there is a pure external effect in terms of the congestion (noise, traffic jams) caused by the arrival of tourists.

4.3 Determinants of the size and sign of impacts

From the discussion above it follows that the size and sign of impacts will depend on the following main variables:

- The level of tourist expenditure (determining the initial shock);
- The share of additional demand that can be satisfied by local production (determining the final shock to the local economy);
- The amount of idle resources (determining how much of the shock is accommodated by increases in prices or quantities);
- The long-term dynamics of the prices of tourist goods (determining the long-term growth potential of tourism-specialized economies);
- The pressure on natural and cultural resources and publicly provided goods (determining the external costs associated with tourism).

In turn, those variables are influenced by the following factors:

- The characteristics of tourists. Key features here include:
  - The reason for travel (tourists travelling for cultural reasons spend more/less and put less/more pressure on natural and cultural resources than sun&beach tourists);
  - The length of stay (tourists staying for the day are likely to spend a smaller share of total expenditure in locally produced goods);
  - The accommodation chosen (hotels are more expensive than camping sites).
- The structure of the local economy and its relationships with the tourism industries. Key feature here is the ability of the local economy to satisfy the demand of tourism industries (the more likely the more diversified is the local economy). Important factor also is the size and the share of capital, land and labour that is locally owned. For instance, small family-owned hotels and restaurants are more likely to buy local intermediate inputs than chain hotels and villages. If factors are locally owned, their

remunerations (profits, rent and wages) will stay locally and benefit the local economy.

- The amount of idle resources. If there are idle resources (unemployed labour, no used land), the initial additional demand of goods and services from tourists will be reflected in increased production and income, rather than in higher prices, and displacement and re-distributional effects will be reduced.
- The design of public policies. Public policies are important under three dimensions:
  - Specific policies can be designed to reduce the exploitation of natural and cultural resources (i.e., taxing access to specific sites) and extract the rents generated by the resources;
  - The structure of financing of publicly provided goods and services influences the relative burden borne by residents and tourists (e.g., additional demand for water, waste and water treatment, public transportation);
  - Last but not the least; public policies can operate indirectly acting on the characteristics of tourists and local tourist industries and the structure of the local economy.

Two contributions developed in the framework of the PICTURE project present, among others, a practical implementation of the methodologies described above:

- The application in three case studies of an Input-Output-based approach for the estimation of direct, indirect and induced effects of tourist spending on local economies, in a static partial equilibrium setting (Del Corpo *et al*, 2008);
- A pan-European econometric exercise aimed at the assessment of the dynamic effects of tourism specialisation on local income and prices (Bellini *et al*, 2007).

References

Adams P. D. and Parmenter B. R. (1995), *An Applied General Equilibrium Analysis of the Economic Effects of Tourism in a Quite Small, Quite Open Economy*, «Applied Economics», 27, pp. 985-994.

Archer B. H. (1982), *The Value of Multipliers and their Policy Implications*, «Tourism Management», 3(4), December, pp. 236-241.

Archer B. H. (1988), *Tourism and island economies: impact analyses*, in: Cooper C.P. and Lockwood A. (eds.), *Progress in Tourism, Recreation and Hospitality Management*, Vol. 1, Wiley, Chichester, pp. 125-134.

Archer B. H. and Fletcher J. (1996), *The economic impact of tourism in the Seychelles*, «Annals of Tourism Research», 23(1), pp. 32-47.

Archer B. H. and Owen C. (1971), *Towards a Regional Multiplier*, «Regional Studies», Vol 5, No. 4, pp. 289-294.

Ashworth G. J. (2001), *Conservation of the built environment in the Netherlands*, in: Phelps A., Ashworth G. J. and Johannson B. (eds.), *The construction of Built heritage: a north European perspective on policies, practices and outcomes*, Ashgate, London.

Ashworth G. J. (2004), *The blue - grey transition: heritage in the reinvention of the tourism resort*, paper presented at the conference "The Best of Heritage", University of Dubrovnik, 21 September 2004, http://www.thebestinheritage.com/library/the_blue-grey_transition.pdf.

Baaijens, S. R., Nijkamp P. and Montfort K. V. (1998), E*xplanatory meta-analysis for the comparison and transfer of regional tourist income multipliers*, «Regional Studies», Vol. 32, pp. 839-849.

Bellini E., Gasparino U., Del Corpo B. and Malizia W. (2007), *Impact of Cultural Tourism upon Urban Economies: An Econometric Exercise*, FEEM working paper series, No. 85.2007.

Blake A. and Gooroochurn N. (2004), *Tourism Immiserisation in Sub-Saharan Countries, Fact or Fiction?*, paper presented at "European Trade Study Group, Annual Conference", Nottingham, 9-11 September 2004.

Brau R. (1995), *Analisi econometrica della domanda turistica in Europa: Implicazioni per lo sviluppo economico delle aree turistiche (An Econometric Analysis of Tourist Demand in Europe: Implications for the Economic Development of Tourist Areas)*, Contributi di ricerca C.R.E.No.S., 1995/2, Università degli Studi di Cagliari.

Brau R., Lanza A. and Pigliaru F. (2003), *How Fast are the Tourism Countries growing? The Cross-Country Evidence*, FEEM working paper series, No. 85.2003.

Briassoulis H. (1991), *Methodological Issues – Tourism Input-Output Analysis*, «Annals of Tourism Research», Vol. 18, pp. 485-495.

Candela G. and Figini P. (2005), *Economia dei sistemi turistici*, McGraw Hill.

Caserta S. and Russo A. P. (2001), *Spatial Displacement and Sustainable Heritage Tourism*, Tinbergen Institute Discussion Paper, TI 2001-035/2.

Chang W. H. (2001), *Variations in multipliers and related economic ratios for recreation and tourism impact analysis*, PhD Dissertation, Michigan State University.

Ciccone A. and Hall R. (1996), *Productivity and the Density of Economic Activity*, «American Economic Review», 86(1), pp. 54-70.

Ciccone A. and Peri G. (2002), *Identifying Human Capital Externalities: Theory with an Application to U.S. Cities*, IZA Discussion Paper, No. 488.

Copeland B. R. (1991), *Tourism, Welfare and De-industrialization in a Small Open Economy*, «Economica», 58, pp. 515-529.

Corden W. and Neary J. (1982), *Booming sector and de-industrialisation in a small open economy*, «Economic Journal», 92, December 1982.

Creaco S. and Querini G. (2003), *The role of tourism in sustainable economic development*, paper presented at the "43rd Congress of the European Regional Science Association", 27-30 August 2003, University of Jyväskylä (Finland).

Del Corpo B., Gasparino U., Bellini E. and Malizia W. (2008), *Effects of tourism upon the economy of small and medium-sized European cities. Cultural tourists and "the others"*, FEEM working paper series, to be published.

Delos Santos J. S., Ortiz E. M., Huang E. and Secretario F. (1983), *Philippines*, in: Pye E. A. and Lin T-B. (eds.), *Tourism in Asia: The Economic Impact***,** Singapore University Press, Singapore.

Devereux M. B. and Engel C. M. (1999), *The Optimal Choice of Exchange-Rate Regime: Price Setting Rules and Internationalized Production*, NBER Working Paper No. 6992.

Diamond J. (1974), *International Tourism and the Developing Countries: a Case study in Failure*, «Economia Internazionale», Vol. 27, pp. 601-615.

Eugenio-Martín J. L., Martín Morales N. and Scarpa R. (2004), *Tourism and Economic Growth in Latin American Countries: A Panel Data Approach*, FEEM working paper series, No. 26.2004.

Europa Inform (2004), *The Economic Impact of Historical Cultural Tourism*, Community Initiative INTERREG III B - ROMIT – Roman Itineraries.

Europa Nostra (2006), *The encouragement and control of cultural tourism in Europe*, position paper, http://www.europanostra.org/downloads/documents/EN_position_paper_cultural_tourism.pdf.

European Commission (2003), *Basic orientations for the sustainability of European tourism*, Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM(2003) 716 final.

Farver J. A. M. (1984), *Tourism and Employment in the Gambia*, «Annals of Tourism Research», Vol. 11, pp. 249-265.

Fletcher J. (1989), *Input-Output Analysis and Tourism Impact Studies*, «Annals of Tourism Research», 16(4), pp. 514-529.

Frechtling D. C. and Horváth E. (1999), *Estimating the Multiplier Effects of Tourism Expenditures on a Local Economy through a Regional Input-Output Model*, «Journal of Travel Research», Vol. 37, pp. 324-332.

Gooroochurn N. and Sinclair T. (2003), *The Welfare Effects of Tourism Taxation*, Discussion Paper 2003/2, Tourism and Travel Research Institute, University of Nottingham.

Heng M. T. and Low L., *Economic Impact of Tourism on Singapore*, «Annals of Tourism Research», Vol. 17, pp. 246-269.

Istituto Espanol de Turismo (1987), *El gasto turistico: Analisis del escandalo de los paquetes turisticols*, «Estudios Turìsticos», 93, pp. 3-26.

Jones R. W., Neary J. P. and Ruane F. P. (1987), *International capital mobility and the Dutch disease*, in: Kierzkowski H. (ed.), *Protection and Competition in International Trade: Essay in Honor of W. M. Corden*, Basin Blackwell, Oxford.

Keillor G. (1995), *White House Conference on Travel & Tourism*, http://www.suite101.com/article.cfm/travel_with_disabilities/114769.

Klein R. (2001), *Public Policies and Cultural Tourism - EU activities*, paper presented at the "1st Conference on Cultural Tourism Economy and values in the XXI century", 29-31 March 2001, Barcelona.

Lanza A. (1997), *Is Tourism Harmful to Economic Growth?*, «Statistica», n. 3.

Lanza A. and Pigliaru F. (1994), *The Tourism Sector in a Small Open Economy*, «Rivista Internazionale di Scienze Economiche e Commerciali», 41.

Lanza A. and Pigliaru F. (2000), *Tourism and Economic Growth: Does Size Matter?*, «Rivista Internazionale di Scienze Economiche e Commerciali», 47, pp. 77-85.

Lucas R. (1988), *On the Mechanics of Economic Development*, «Journal of Monetary Economics», 22, pp. 3-42.

Mankiw N. G., Romer D. and Weil D. N. (1992), *A Contribution to the Empirics of Economic Growth*, «Quarterly Journal of Economics», 107, pp. 408-437.

Martín R. H. (2004), *Impact of Tourism Consumption on GDP. The Role of Imports*, FEEM working paper series, No. 27.2004.

Milne S. (1987), *Differentiation multipliers*, «Annals of Tourism Research», 14(3), pp. 498-515.

NIEC – Northern Ireland Economic Council (2002), *Response to Committee for Enterprise, Trade and Investment – Tourism Inquiry*, NIEC Advice and Comment Series 02/1.

Nowak J., Sahli M. and Sgro P. M. (2004), *Tourism, Trade and Domestic Welfare*, FEEM working paper series, No. 24.2004.

Ottaviano G. I. P. and Peri G. (2004), *The Economic Value of Cultural Diversity: Evidence from US Cities*, FEEM working paper series, No. 34. 2004.

Rey-Maquieira Palmer J., Lozano Ibáñez J. and Gómez Gómez C. M. (2004), *Land, Environmental Externalities and Tourism Development*, FEEM working paper series, No. 22.2004.

Roback J. (1982), *Wages, Rents and the Quality of Life*, «Journal of Political Economy», 90, pp. 1257-78.

Samy J. (1975), *Crumbs from the Workers' Table? The Workers Share in Tourism*, in: Finney B. R. and Watson K. A. (eds.), *A New Kind of Sugar: Tourism in the Pacific*, East-West Center, Honolulu.

Sinclair M. T. (1990), *Tourism Development in Kenya*, World Bank, Washington DC.

Sinclair M. T. (1991), *The Tourism Industry and Foreign Exchanges Leakages in a Developing Country*, in: Sinclair M. T. and Stables M. J. (eds.), *The Tourism Industry: An International Analysis*, CAB International, Wallingford.

Sinclair M. T. (1998), *Tourism and Economic Development: a Survey*, «Journal of Development Studies», Vol. 34, pp. 1-51.

Sinclair M. T. and Bote Gomez V. (1996), *Tourism, the Spanish Economy and the Balance of Payments*, in: Barke M., Newton M. and Towner J (eds.), *Tourism in Spain: Critical Perspectives*, CAB International, Wallingford.

Sinclair M. T. and Sutcliffe C. (1988), *The Estimation of Keynesian income Multipliers at the Sub-national level*, «Applied Economics», 20, pp. 1435-1444.

Stynes D. (1999), *Economic Impacts of Tourism*, Michigan State University, East Lansing, http://www.msu.edu/course/prr/840/econimpact/pdf/ecimpvol1.pdf.

UN ESCAP – United Nation Economic and Social Commission for Asia and the Pacific (2001), *Managing sustainable tourism development*, ESCAP Tourism Review, No. 22.

WTO – World Tourism Organization (2006), *Tourism Highlights*.

WTTC – World Travel & Tourism Council (2006), *European Union: travel and tourism, sowing the seeds of growth*, The 2005 Travel & Tourism Economic Research, London.

Zhou D., Yanagida J. F., Chakravorty U. and Lung P. (1997), *Estimating Economic Impacts from Tourism*, «Annals of Tourism Research», 24(1), January, pp. 76-89.

NOTE DI LAVORO DELLA FONDAZIONE ENI ENRICO MATTEI

Fondazione Eni Enrico Mattei Working Paper Series

Our Note di Lavoro are available on the Internet at the following addresses:

http://www.feem.it/Feem/Pub/Publications/WPapers/default.htm
http://www.ssrn.com/link/feem.html
http://www.repec.org
http://agecon.lib.umn.edu
http://www.bepress.com/feem/

NOTE DI LAVORO PUBLISHED IN 2008

CCMP	1.2008	*Valentina Bosetti, Carlo Carraro and Emanuele Massetti*: Banking Permits: Economic Efficiency and Distributional Effects
CCMP	2.2008	*Ruslana Palatnik and Mordechai Shechter*: Can Climate Change Mitigation Policy Benefit the Israeli Economy? A Computable General Equilibrium Analysis
KTHC	3.2008	*Lorenzo Casaburi, Valeria Gattai and G. Alfredo Minerva*: Firms' International Status and Heterogeneity in Performance: Evidence From Italy
KTHC	4.2008	*Fabio Sabatini*: Does Social Capital Mitigate Precariousness?
SIEV	5.2008	*Wisdom Akpalu*: On the Economics of Rational Self-Medication
CCMP	6.2008	*Carlo Carraro and Alessandra Sgobbi*: Climate Change Impacts and Adaptation Strategies In Italy. An Economic Assessment
ETA	7.2008	*Elodie Rouvière and Raphaël Soubeyran*: Collective Reputation, Entry and Minimum Quality Standard
IEM	8.2008	*Cristina Cattaneo, Matteo Manera and Elisa Scarpa*: Industrial Coal Demand in China: A Provincial Analysis
IEM	9.2008	*Massimiliano Serati, Matteo Manera and Michele Plotegher*: Econometric Models for Electricity Prices: A Critical Survey
CCMP	10.2008	*Bob van der Zwaan and Reyer Gerlagh*: The Economics of Geological CO_2 Storage and Leakage
KTHC	11.2008	*Maria Francesca Cracolici and Teodora Erika Uberti*: Geographical Distribution of Crime in Italian Provinces: A Spatial Econometric Analysis
KTHC	12.2008	*Victor Ginsburgh, Shlomo Weber and Sheila Weyers*: Economics of Literary Translation. A Simple Theory and Evidence
NRM	13.2008	*Carlo Giupponi, Jaroslav Mysiak and Alessandra Sgobbi*: Participatory Modelling and Decision Support for Natural Resources Management in Climate Change Research
NRM	14.2008	*Yaella Depietri and Carlo Giupponi*: Science-Policy Communication for Improved Water Resources Management: Contributions of the Nostrum-DSS Project
CCMP	15.2008	*Valentina Bosetti, Alexander Golub, Anil Markandya, Emanuele Massetti and Massimo Tavoni*: Abatement Cost Uncertainty and Policy Instrument Selection under a Stringent Climate Policy. A Dynamic Analysis
KTHC	16.2008	*Francesco D'Amuri, Gianmarco I.P. Ottaviano and Giovanni Peri*: The Labor Market Impact of Immigration in Western Germany in the 1990's
KTHC	17.2008	*Jean Gabszewicz, Victor Ginsburgh and Shlomo Weber*: Bilingualism and Communicative Benefits
CCMP	18.2008	*Benno Torgler, María A.GarcíaValiñas and Alison Macintyre*: Differences in Preferences Towards the Environment: The Impact of a Gender, Age and Parental Effect
PRCG	19.2008	*Gian Luigi Albano and Berardino Cesi*: Past Performance Evaluation in Repeated Procurement: A Simple Model of Handicapping
CTN	20.2008	*Pedro Pintassilgo, Michael Finus, Marko Lindroos and Gordon Munro* (lxxxiv): Stability and Success of Regional Fisheries Management Organizations
CTN	21.2008	*Hubert Kempf and Leopold von Thadden* (lxxxiv): On Policy Interactions Among Nations: When Do Cooperation and Commitment Matter?
CTN	22.2008	*Markus Kinateder* (lxxxiv): Repeated Games Played in a Network
CTN	23.2008	*Taiji Furusawa and Hideo Konishi* (lxxxiv): Contributing or Free-Riding? A Theory of Endogenous Lobby Formation
CTN	24.2008	*Paolo Pin, Silvio Franz and Matteo Marsili* (lxxxiv): Opportunity and Choice in Social Networks
CTN	25.2008	*Vasileios Zikos* (lxxxiv): R&D Collaboration Networks in Mixed Oligopoly
CTN	26.2008	*Hans-Peter Weikard and Rob Dellink* (lxxxiv): Sticks and Carrots for the Design of International Climate Agreements with Renegotiations
CTN	27.2008	*Jingang Zhao* (lxxxiv): The Maximal Payoff and Coalition Formation in Coalitional Games
CTN	28.2008	*Giacomo Pasini, Paolo Pin and Simon Weidenholzer* (lxxxiv): A Network Model of Price Dispersion
CTN	29.2008	*Ana Mauleon, Vincent Vannetelbosch and Wouter Vergote* (lxxxiv): Von Neumann-Morgenstern Farsightedly Stable Sets in Two-Sided Matching
CTN	30.2008	*Rahmi İlkiliç* (lxxxiv): Network of Commons
CTN	31.2008	*Marco J. van der Leij and I. Sebastian Buhai* (lxxxiv): A Social Network Analysis of Occupational Segregation
CTN	32.2008	*Billand Pascal, Frachisse David and Massard Nadine* (lxxxiv): The Sixth Framework Program as an Affiliation Network: Representation and Analysis
CTN	33.2008	*Michèle Breton, Lucia Sbragia and Georges Zaccour* (lxxxiv): Dynamic Models for International Environmental Agreements

PRCG	34.2008	*Carmine Guerriero*: The Political Economy of Incentive Regulation: Theory and Evidence from US States
IEM	35.2008	*Irene Valsecchi*: Learning from Experts
PRCG	36.2008	*P. A. Ferrari and S. Salini*: Measuring Service Quality: The Opinion of Europeans about Utilities
ETA	37.2008	*Michele Moretto and Gianpaolo Rossini*: Vertical Integration and Operational Flexibility
CCMP	38.2008	*William K. Jaeger and Van Kolpin*: The Environmental Kuznets Curve from Multiple Perspectives
PRCG	39.2008	*Benno Torgler and Bin Dong*: Corruption and Political Interest: Empirical Evidence at the Micro Level
KTHC	40.2008	*Laura Onofri, Paulo A.L.D. Nunes, Jasone Cenoz and Durk Gorter*: Language Diversity in Urban Landscapes: An econometric study
CTN	41.2008	*Michel Le Breton, Valery Makarov, Alexei Savvateev and Shlomo Weber* (lxxxiv): Multiple Membership and Federal Sructures
NRM	42.2008	*Gideon Kruseman and Lorenzo Pellegrini*: Institutions and Forest Management: A Case Study from Swat, Pakistan
SIEV	43.2008	*Pietro Caratti and Ludovico Ferraguto*: Analysing Regional Sustainability Through a Systemic Approach: The Lombardy Case Study
KTHC	44.2008	*Barbara Del Corpo, Ugo Gasparino, Elena Bellini and William Malizia*: Effects of Tourism Upon the Economy of Small and Medium-Sized European Cities. Cultural Tourists and "The Others"
CTN	45.2008	*Dinko Dimitrov and Emiliya Lazarova*: Coalitional Matchings
ETA	46.2008	*Joan Canton, Maia David and Bernard Sinclair-Desgagné*: Environmental Regulation and Horizontal Mergers in the Eco-industry
ETA	47.2008	*Stéphane Hallegatte*: A Proposal for a New Prescriptive Discounting Scheme: The Intergenerational Discount Rate
KTHC	48.2008	*Angelo Antoci, Paolo Russu and Elisa Ticci*: Structural Change, Environment and Well-being: Interactions Between Production and Consumption Choices of the Rich and the Poor in Developing Countries
PRCG	49.2008	*Gian Luigi Albano, Federico Dini Roberto Zampino and Marta Fana*: The Determinants of Suppliers' Performance in E-Procurement: Evidence from the Italian Government's E-Procurement Platform
CCMP	50.2008	*Inmaculada Martínez-Zarzoso*: The Impact of Urbanization on CO2 Emissions: Evidence from Developing Countries
KTHC	51.2008	*Michele Moretto and Sergio Vergalli*: Managing Migration through Quotas: an Option-theory Perspective
KTHC	52.2008	*Ugo Gasparino, Elena Bellini, Barbara Del Corpo and William Malizia*: Measuring the Impact of Tourism Upon Urban Economies: A Review of Literature
ETA	53.2008	*Reyer Gerlagh, Snorre Kverndokk and Knut Einar Rosendahl*: Linking Environmental and Innovation Policy
KTHC	54.2008	*Oguzhan C. Dincer and Burak Gunalp*: Corruption, Income Inequality, and Poverty in the United States
PRCG	55.2008	*Carmine Guerriero*: Accountability in Government and Regulatory Policies: Theory and Evidence
KTHC	56.2008	*Tanmoyee Banerjee (Chatterjee) and Nilanjana Mitra*: Export, Assembly-line FDI or FDI with the Possibility of Technology Diffusion: Optimal Entry Mode for Multinationals
ETA	57.2008	*Xavier Pautrel*: Environmental Policy, Education and Growth: A Reappraisal when Lifetime Is Finite
CCMP	58.2008	*Natalia Zugravu, Katrin Millock and Gérard Duchene*: The Factors Behind CO2 Emission Reduction in Transition Economies
NRM	59.2008	*Benno Torgler, María A.García-Valiñas and Alison Macintyre*: Justifiability of Littering: An Empirical Investigation
SIEV	60.2008	*Paolo Rosato, Anna Alberini, Valentina Zanatta and Margaretha Breil*: Redeveloping Derelict and Underused Historic City Areas: Evidence from a Survey of Real Estate Developers

(lxxxiv) This paper was presented at the 13th Coalition Theory Network Workshop organised by the Fondazione Eni Enrico Mattei (FEEM), held in Venice, Italy on 24-25 January 2008.

2008 SERIES

CCMP	*Climate Change Modelling and Policy* (Editor: Carlo Carraro)
SIEV	*Sustainability Indicators and Environmental Valuation* (Editor: Anil Markandya)
NRM	*Natural Resources Management* (Editor: Carlo Giupponi)
KTHC	*Knowledge, Technology, Human Capital* (Editor: Gianmarco Ottaviano)
IEM	*International Energy Markets* (Editor: Matteo Manera)
CSRM	*Corporate Social Responsibility and Sustainable Management* (Editor: Giulio Sapelli)
PRCG	*Privatisation Regulation Corporate Governance* (Editor: Bernardo Bortolotti)
ETA	*Economic Theory and Applications* (Editor: Carlo Carraro)
CTN	*Coalition Theory Network*