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Clashes and Compromises: Investment Policies in Tourism Destinations

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Abstract The authors solve a linear problem where a potential conflict between two agents (Destination manager and Firm) arises in a tourism destination. Destination manager has to choose how to allocate limited resources (capital and land) between either second homes or hotels. This conflict stems from the assumption of agents who have different linear preferences with respect to the allocation of limited resources. As a solution to this policy problem the authors consider three different policies: no intervention (*laissez faire*), taxation and temporary de-taxation policy. Comparing these different policies, the authors show that a compromise solution (internal solution), which results from the de-taxation policy, may be preferred by both agents over the clash of interests outcomes (corner solutions). Thus, the authors show that in a framework of 'conflict' between agents a compromise solution may be preferable to both the absence of public intervention and the imposition of a tax by a public policy maker who has the discretionary 'power to regulate' conflicts.

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1. Introduction

A potential policy dilemma arises particularly in Lesser Developed tourism Destinations (LDDs) when policy makers attempt to support economic growth by adopting policies designed to attract Foreign Direct Investments (FDI) or encouraging Technological Transfers (TT) in tourism investments[1]. In order to implement these strategies, policy makers must face a specific problem related to tourism investments: how to allocate the land, by definition a limited resource, between two possible utilizations, either to hotels or to private holiday accommodations (second homes).[2] In spite of its importance, the phenomenon of second homes has rarely been the focus of studies in the tourism economics literature[3].

In this paper, we propose a theoretical model to analyse the optimal development strategies for attracting FDI and/or TT in tourism. Firstly, we are interested in those destinations where policy makers (public agents) do not have sufficient financial resources or know-how to initiate tourism investments in second homes and/or hotels, while firms (private agents) do not have sufficient financial resources (which is equivalent to the usual "credit rationing" hypothesis). Secondly, we want to solve a specific policy problem in which the two agents want to choose the optimal tourism investment between second homes or hotels when they have clashing interests for the allocation of the limited resources of land and capital. This is a typical case for LDDs, but the introduction of incentives to investments, in order to attract financial resources, is a common policy for both developed and developing countries (Jenkins, 1982; Wanhill, 1986; Ward, 1989).

A case history inspired this research. In 2006, to promote the development of tourism sector, Sardinia earmarked 30milion Euros to finance private investments in restyling of hotels and in building

[1] Kumi (2006), estimates an increase over time of FDI in tourism (by using FDI in hotels and restaurants as a proxy), though their relative size remains low. Instead, practices of multinational firms, like hotels, shows that the use of TT is more frequent than FDI. Barrowclough (2007), stresses the implications for Small Island Developing States (SIDS) of FDI and TT, and presents some evidence of the scale and impact of FDI.

[2] "Second homes" are private holiday accommodations which are left unoccupied for most of the year and are mainly used during periods of peak demand for tourism accommodation.

[3] See, for examples, Jaakson (1986), Deller *et al.* (1997), Hjalager *et a.l.* (2011), Saló and Garriga (2011).

of second homes. As a consequence, Firm "Chia Invest S.p.a." presented a local development project for the South of Sardinia. The target of the investment project was to create a network of luxury resorts, and the project also included a large investment in second homes[4]. Thus "Chia Invest S.p.a." requested a building permit from the Sardinian government but this request created a policy conflict between them, given the preference of Sardinian government for hotel with respect to second homes.

The general idea of our contribution is that political economy is a political science regulating and limiting the potential conflicts between different agents or aims[5]. We analyze situations where the policy maker has economic or institutional discretionary "power to regulate" conflicts, in order to determine when a compromise solution is preferable to a clash solution and under what conditions such a solution is preferable to the other. To answer these questions, we analyse a conflict resolution model, where a public agent and a private agent have clashing interests: the public agent wants to entice the private agent to make a specific choice through a given set of available policies. Our model shows that in cases of extreme conflict (as required by conflict economics), a solution only exists if the agents have at least some common interests (as required by principal-agent theory).

From a theoretical point of view, these economic and policy problems can be studied as a conflict resolution model or as a principal-agent model in the context of an investment problem. Economic literature on conflicts can be traced back to seminal studies of Hirshleifer (1989) who developed the first model of conflicts among rival groups. The economics of conflicts analyses the allocation of resources among different productive utilizations and the distribution of the corresponding products. The economics of conflicts defines these problems as distributive conflicts among groups,

[4] Chia Invest S.p.a. invested 60milion Euros in the "Chia area" and 70million Euros in the "Arbus area" ("Chia area" extended from the City of Pula to the City of Teulada, while "Arbus area" was the area of the municipality of Arbus). In particular, the investments in the "Chia area" included the construction of two golf courses with one club house, one indoor pool, the expansion of the Hotel Laguna (50 rooms) with swimming pool and spa. Finally, Chia Invest S.p.a. planned the Hotel Baia Chia renovation, the creation of a nature park and the transformation of 81 rooms into second homes to be sold on the market.

[5] "As in political science, we study collective choice political institutions. We want to understand how policy decisions are made, what shapes the incentives and constraints of the policymakers taking those decisions, and how conflicts over policy are resolved" (see Persson and Tabellini, 2000, p. 1-2).

usually dealing with countries that have to take investment decisions in armaments (guns), while under the threat of war. Conflict resolution models develop several hypotheses and analyse the conditions for solving conflicts in a rational and effective way[6].

Jensen and Meckling (1976) define the agency relationship between two agents (a principal and an agent) as a contract where the agent acts on behalf of the principal. Therefore, principal-agent is a theory on contractual relationships under conditions of incomplete and asymmetric information between two agents (e.g. sellers and buyers). The problem of clashing interests arises when the principal needs to convince the agent to pursue the principal's interests. The solution of the principal-agent problem or of the agency dilemma may be found in the contractual mechanisms that allow the interests of the agent to align with those of the principal. Principal-agent theory only provides solutions when potential conflicts in contractual relationships include at least a minimum common interest between the agents[7].

The paper is structured as follows. In Section 2 the main stylized facts and the theoretical framework of the model are presented. In Section 3 the model is set up. In Section 4 three different economic policies are analyzed and compared in terms of political consensus for the policy maker and of profits for Firm: *laissez faire* (no intervention), taxation (indirect control) and a contractual solution that we define as de-taxation policy (de-taxation of reinvested profits). The Conclusions summarize the main results of the paper.

2. Stylized facts and theoretical framework

To study this policy dilemma, we take into consideration two agents in the same tourism destination, who usually interact in the real world in the following way: (i) a Destination manager (public agent) who sets up the tourism destination-planning scheme, and (ii) a Firm (private agent)

[6] For a review see Garfinkel and Skaperdas (2007).
[7] For a microeconomics foundation of tourism supply, which is based on transactions cost and principal-agency theory, see Stabler *et al*. (2010).

which builds second homes and/or hotels, according to the planning scheme, and then sells them on the market. In particular, second homes are sold to individual buyers, while hotels are sold in bulk to buyers who then rent them out a room at a time on a nightly basis.

To emphasize the conflict between agents (arising when Destination manager chooses to grant building permits for second homes or hotels), we represent the optimization problem as a linear model, where a potential conflict stems from the assumption of the two agents who have different linear preferences about the allocation of limited resources and thus clashing interests. The linear optimization problem allows for a comparison of two extreme solutions: a corner solution (clash) and an internal solution (compromise). In addition, if one agent has the "power to regulate" the conflict, she can enforce different policies to reach a given aim. Three different policies are considered: *laissez faire* (no intervention), taxation (indirect control) and de-taxation policy (de-taxation of reinvested profits) which is a temporary tax exemption on a share of reinvested profits. An example of implementation of the de-taxation policy is the partial de-taxation of reinvested profits introduced in Italy by the Law 383/2001. More recently, a similar policy has also been recommended by the European Economic and Social Committee[8].

Laissez faire represents a conflict solution in which Firm wins, taxation policy is a conflict solution in which the policy maker wins, while de-taxation policy is a compromise solution based on a mutual agreement between agents (*synallagmatic contract*)[9]. Accordingly, given that the policy maker prefers to implement an "authoritative policy" (taxation policy), while Firm prefers no intervention

[8] On 2008, September 11th the European Economic and Social Committee in the "Proposal for a Regulation of the European Parliament and of the Council on the voluntary participation by organisations in a Community Eco-Management and Audit Scheme (EMAS)" has recommended to better promote and give more support at the national and Community levels, by drawing on the Competitiveness and Innovation Framework Programme (CIP), European Investment Bank (EIB) and Structural Funds resources, as regards public procurement, tax relief, keeping registration and renewal fees down, and de-taxation of reinvested profits.

[9] In civil law systems, a "synallagmatic contract" is a contract in which each party is bound to provide something to the other party. In common law jurisdictions, it is the equivalent of a bilateral contract in which each party makes an enforceable promise.

(*laissez faire*), we want to discover when a "contractual policy" (de-taxation policy) is preferred by both agents.

Two main stylized facts emerge in this policy issue: (i) the average market price (market value per square meter) of new second homes is often higher than new hotels market price; (ii) the economic impact effect, in terms of costs and employment, and the environmental impact effect of the two alternative investments is analogous, but the tourism multiplier effect on local economic development is higher for hotels. In fact, hotel guests tend to have higher average daily per capita expenses, in terms of indirect tourism expenses, with respect to second home occupants (Piga, 2003b).[10] Because of the first stylized fact (different average market prices) Firm would prefer the investment in second homes, while according to the second stylized fact (different impact effects) Destination manager would prefer the investment in hotel[11]s.

Regarding the first stylized fact, the characteristics of hotels and second homes which can justify their different market prices are: (i) second homes may represent a final durable consumption good while hotels are an instrumental good, thus hotels represent a riskier investment; (ii) Firm's production function yields, *ceteris paribus*, a higher number of marketable square meters (output) for second homes than for hotels; (iii) second homes last longer than hotels and therefore have a lower depreciation rate; (iv) hotels have higher management and maintenance costs since their occupation rate is higher than for second homes. Because of these reasons, for a firm the profit margin of investments in second homes can be considerably higher than those of investments in hotels (Mazzucchelli, 2007).

According to the second stylized fact, investments in second homes yield immediate employment growth but, at the same time, lead to a type of tourism with lower development rates.

[10] "Moreover, self-catering accommodations, such as second homes, do not generate as high multiplier effects as hotels" (Piga, 2003b, p. 900).
[11] Since in practices of multinational firms, like hotels, the use of TT is more frequent than FDI, Destination manager could prefer the investment in hotel to support growth of LDDs countries (Kumi, 2006).

Moreover, tourism investments, both in second homes and hotels, may generate environmental negative externalities (Piga, 2003a), though investment in hotels may also bring about positive externalities (tourism multiplier effect) which can offset, at least partially, the negative ones. On the contrary, investments in second homes may induce a net negative externality because the positive effects (tourism multiplier effect) do not necessarily offset the negative effects (environmental effects).

Within the historical and theoretical framework that inspired this research, Destination manager: (i) has a limited financial budget (liquidity constraint) and cannot finance the investment choices alone[12]; (ii) does not have sufficient know-how to make investments herself. Destination manager aims at maximizing her political consensus, so that her objective function can be interpreted as a measurement of the gain or loss of its political consensus, like gained or lost votes. For example, a zero value means no gained votes, a positive value signals a certain amount of gained votes, etc. (Girard and Gartner, 1993). Moreover, Firm: (i) has a limited financial budget (liquidity constraint) to invest in tourism destination; (ii) is a "price taker", since it acts in a small tourism destination, where market prices are fixed by the rest of the world.

Firm's financial resources and the second homes/hotels market prices are therefore taken as constant (exogenous variables), as well as building costs and thus profit margins, while the control variables are the square meters (SM) of area chosen for building second homes and/or hotels, given the disposable land (physical constraint) and capital (budget constraint). Firm, as usual, is profit maximizing. Firm's profits do not enter into Destination manager's objective function because Firm is a non-local company and its profits do not belong to the tourism destination.

As in the real world, Firm also has the opportunity to exercise a third "outside option", if it is preferable, consisting of building a third type of buildings in a different location. For example, Firm could prefer to build homes in a different location, i.e. private accommodations which are occupied throughout the year by local residents and workers.

[12] For the same reason the policy maker can not provide subsidies to local firms.

Finally, coherently with the above stylized facts we assume the following parameters affect Destination manager's objective function: (i) a high positive effect (gain of consensus) for hotels built by Firm; (ii) a low positive effect (at the limit null effect) for second homes built by Firm; (iii) a negative effect (loss of consensus) for unutilized land, i.e. the square meters of building area (planned in the planning scheme) not actually utilized. The utilized land can be regarded as a proxy variable of the employment in the tourism destination: in other words, if the square meters of actually built area are less than those planned in the tourism destination-planning scheme, land, labour and capital in the tourism destination may be underemployed[13].

3. The model

We assume there are two agents, agent *X* and agent *Y*. Agent *X* is a policy maker (Destination manager) having an economic or institutional "power to regulate", while agent *Y* is a private agent (Firm) having to choose how much to invest in two distinct investments *x* and *y*. Investments *x* are the Square Meters (SM) built as hotels; *y* are the SM built as second homes; $s = x + y$ are the SM of total area actually built up by Firm in the tourism destination *S*. Furthermore, we suppose $0 \leq s \leq S$ and $0 \leq (x; y) \leq S$, where *S* is the total available land in the tourism destination (building area), according to the tourism destination-planning scheme. The allocation of variable *s* is the cause of a conflict between the agents, since we assume they have different preferences on the division of *s* between their choice variables *x* and *y*.

Firm also has the opportunity to exercise an "outside option", which consists of choosing a third type of investment *z* in a different location *Z*, with $0 \leq z \leq Z$. Investments *z* are the SM built by Firm as alternative and different building investments. The physical constraint $z \leq Z$ is a constraint in the alternative location.

[13] In the real world Destination manager may have a lot of other preferences or issues, e.g. if there are enough local workers to staff the hotels, housing for hotel workers, etc.

For simplicity and without losing generality of results, we assume the general condition that Firm's investments costs $c > 0$ (building costs per SM) are the same for each investment x, y or z (hotels, second homes and homes), while building market prices are not equal according to the above stylized facts. This assumption implies that Firm has a budget constraint[14], because it cannot spend more than the total available financial resources $F > 0$, such that:

$$c(x + y + z) = c(s + z) \leq F \qquad \text{therefore } s \leq F/c \text{ ; } x, y \text{ and } z \leq F/c \qquad [1]$$

Additionally, Firm can reinvest the net profits made on investment s, such that the value of its financial resources F increases. In that case, the budget constraint [1] is no longer binding, such that x, y or $z > F/c$, but costs increase to a higher level $c' > c$, according to the law of diminishing returns (piecewise function).

3.1. Clashing interests

Firm's preference function is linear[15] and it is characterized by different coefficients when Firm invests within the limits of the budget constraint [1] or in the case of reinvested profits. Defining p as hotels market price, v as second homes market price and q as homes market price per SM, given c (the building cost per SM), we can define profit margin per SM: $m = p - c$ for hotels, $n = v - c$ for second homes and $r = q - c$ for homes.

If Firm invests within the limits of the budget constraint [1], according to the above stylized facts we can assume that $q < p < v$ or, alternatively, the following profit condition:

$$n > m \geq 0 \qquad [2]$$

[14] Taking into consideration a budget constraint is equivalent to introducing in the model a "credit rationing" hypothesis.

[15] In order to emphasize the clash of interests between the agents, we specify their preferences as linear functions, such that their corresponding optimal solutions yield opposite results, $x > 0$ and $y = 0$ or vice versa, since the linear preference functions do not allow for internal solutions. As mentioned above, we define "compromise" as a solution characterized by equilibrium values of x and y where x and $y > 0$.

such that Firm strictly prefers *y* to *x* as far as the investment in *S* is concerned. If Firm reinvests the profits made out of investments *s*, the value of its financial resources *F* and its costs will increase (from *c* to *c'*). So, Firm profits of investments in *S* will decrease to lower levels $m' < m$ for investment *x*, and $n' < n$ for investment *y*. Even in this case, Firm continues to strictly prefer *y* to *x*, that is $n' > m' \geq 0$.

Let us now take into consideration the alternative investments *z* in the different location *Z*. For Firm we assume that *r* is the profits of investment *z*, where $m > r > n'$ if $z \leq F / c$, while if $z > F / c$, according to the law of diminishing returns, the profit decreases to the level $r' < r$. This means that if Firm is investing within the budget constraint [1] it is convenient to invest only in *S*, but in the case of reinvested profits it will be convenient to invest the extra budget coming from the profits made out of investments in *S* only in *Z*. Therefore, Firm profits conditions can be summarized as follows:

$$n > m > r > 0 \qquad \text{if } x, y \text{ and } z \leq F/c \qquad [3]$$

$$r > n' > m' > 0 \qquad \text{if } x \text{ or } y > F/c \text{ and } z \leq F/c \qquad [4]$$

such that within the limits of budget constraint [1] the best option for Firm is investment *y*, while in the case of reinvested profits, Firm strictly prefers to choose the alternative investment in homes, *z*.

For Destination manager we assume that $d > 0$ is the political consensus gained for *x* (the SM actually built as hotels), while $b \geq 0$ is the political consensus gained for *y* (the SM actually built as second homes). According to the above stylized facts, we can suppose that:

$$d > b \geq 0 \qquad [5]$$

such that Destination manager prefers that Firm chooses to build hotels[16]. Therefore, from [2] and [5] we can see that agents have clashing interests by construction: Firm strictly prefers *y* to *x*, while

[16] Since voters always prefer full employment of all inputs (labor, capital and land), Destination manager always prefers hotels to second homes.

Destination manager strictly prefers *x* to *y*. Moreover, as is typical for LDDs, we assume that the budget constraint [1] is binding:

$$F/c < S \qquad [6]$$

which means that Firm's financial resources are limited and not sufficient to use all the available land. In other words, both agents will be negatively affected by this lack of financial resources. This assumption also implies that Destination manager herself does not have sufficient financial resources in order to build directly on all the available land and fill the gap (S – s), or to give incentives to Firm.

3.2. Common interests

As we mentioned in the Introduction, the "compromise" solution is a possible solution only if agents have common interests. Thus we assume that both Firm and Destination manager are also interested in the gap $(S - s) \geq 0$, that is the difference between the SM of building area and the SM of the area actually built up. The agents' common interest is therefore to minimize the unutilized land. Weighting the gap by the coefficient $a_Y \leq 0$, for Firm, and $a_X < 0$, for Destination manager, agents' preferences are negatively affected by the gap $(S - s)$.

According to these assumptions, agents preference functions become as follows:

$$P_Y(x,y,z) = \begin{cases} a_Y(S-s) + mx + ny + rz & \text{with} \quad n > m > r \quad \text{if} \quad x, y \text{ and } z \leq F/c \\ a_Y(S-s) + m'x + n'y + rz & \text{with} \quad r > n' > m' \quad \text{if} \quad x \text{ or } y > F/c \text{ and } z \leq F/c \end{cases} \qquad [7]$$

$$P_X(x,y) = a_X(S-s) + dx + by \qquad \text{with} \quad d > b \qquad [8]$$

In order to prove that a compromise solution does exist, it is sufficient to include a common interest at least in one of agents' preferences. Therefore, it is sufficient that only Destination manager is actually affected by the gap $(S - s)$, while Firm is just indifferent, such that $a_Y = 0$. Therefore,

Destination manager strictly prefers hotels to second homes but also prefers the lowest unutilized land, while Firm prefers second homes to hotels and neglects the loss for the unutilized land.

4. The policies

Given agents' objective functions [7] and [8], Firm's optimal choice does not overlap with Destination manager's preference and this situation generates a policy problem. To face this policy problem, we compare three different possible policies: (i) *laissez faire* policy, where Destination manager allows Firm to freely choose; (ii) taxation of investment in second homes by levying a tax on second homes, which needs to be high enough to reverse the profitability for Firm to build hotels instead of second homes[17]; (iii) de-taxation policy, consisting of taxation of investment in hotels together with a temporary tax exemption on a share of reinvested profits in second homes.

Through the third policy (temporary tax exemption regime), Destination manager levies a limited tax on second homes and gives Firm the freedom to build either second homes or hotels, in exchange for its commitment to reinvest the profits from building second homes into the destination. We shall show that this de-taxation policy represents a compromise solution between agents, since it yields an equilibrium with $x, y > 0$. However, before analyzing the compromise solution, to better show the clash of interests between agents, we define the conflict solutions as benchmark against which to compare other solutions.

Destination manager makes her optimal choice according to the following maximization problem:

$$\begin{aligned} &\max_{x,y} P_X(x,y) = a_X(S-s) + dx + by \\ &\text{s.t. } s = x + y \leq S;\ x, y, s \geq 0 \end{aligned} \qquad [9]$$

[17] An equivalent policy would be a direct control regulation, that is introducing within the planning scheme some quantitative constraints on second homes. One example would be denying planning permission to build second homes (that is setting $y \equiv 0$) enforced by a penalty. This direct control policy would yield exactly the same solution as taxation ($y = 0$), but in the case of taxation the solution is the outcome of a firm's choice, while in the case of regulation it is the consequence of conformity with the law.

Given previous assumptions on parameters $d > b$ and $a_X < 0$, problem [9] has the following straightforward solution:

$$x^* = s = S;\ y^* = 0 \qquad [10]$$

according to which Destination manager prefers that Firm invests only in hotels, for an amount equal to the maximum value of $s = S$. This solution yields the following value for Destination manager preference:

$$P_X(x^*, 0) = dS \qquad [11]$$

Before checking if a compromise solution between agents is feasible, and under what conditions an equilibrium based on a compromise (with $x, y > 0$ and $s \to S$) is an optimal solution, we define as *Laissez faire* policy the suboptimal solution for the policy maker, which instead corresponds to the optimal solution for the private agent.

4.1. *Laissez faire* policy

Without any intervention by Destination manager, Firm has the possibility to choose its optimal investment. In order to simplify the computations, we shall logically split this optimization problem into two separate stages: (i) maximization of $P_Y(x, y) = mx + ny$, and (ii) maximization of $P'_Y(z) = rz$. Therefore, given conditions [3] and [4] the two problems can be solved sequentially stage by stage. This procedure gives the same results of solving the problem in one stage, because it is a separable optimization problem (since we assumed agents linear preference functions).

In the first stage Firm makes its optimal choice, solving the following maximization problem:

$$\begin{aligned} &\max_{x,y} \ P_Y(x, y) = mx + ny \\ &\text{s.t. } s \le F/c;\ x, y \le F/c;\ s = x + y \le S;\ x, y, s \ge 0 \end{aligned} \qquad [12]$$

Given conditions [3] and [4], and taking into consideration only the solution which respects the binding budget constraint [6], problem [12] has the following straightforward solution:

$$x^{**} = 0; y^{**} = F/c = s < S \quad [13]$$

which is consistent with coefficients *n* and *m* in condition [3]. Therefore, Firm chooses to invest *F* only in the variable *y*, but for a lower value than the maximum *S*. The solution [13] is drawn in the Figure 1 (see point E).

***** Insert Figure 1 approximately here *****

In Figure 1, the two bold vertical and horizontal lines represent the compatibility constraints *x* and $y \leq F/c$; Line AA' represents the physical constraint $s = x + y \leq S$; Line BB' represents the financial constraint $c(x + y) \leq F$; Dotted Lines (DL) represent Firm's iso-profit curves: $\forall P_Y$, $x = P_Y/m - ny/m$.

In the second stage, Firm reinvests the extra budget coming from the profits made on investment y^{**}, and therefore the budget constraint [1] is no longer binding. Since Firm's profits decrease to *n'* and *m'*, condition [4] represents the new margin profits. Therefore, Firm reinvests in *Z* all the profit made out of investment y^{**}, and its profit becomes $P_Y(0, y^{**}) = n(F/c)$, solving the following maximization problem:

$$\begin{aligned} &\max_z \quad P_Y'(z) = rz \\ &\text{s.t. } z \leq P_Y(0, y^{**})/c;\ z \leq F/c;\ z \leq Z;\ z \geq 0 \end{aligned} \quad [14]$$

Given condition [4], problem [14] has the following straightforward solution:

$$z^{**} = P_Y(0, y^{**})/c = n(F/c^2) \quad [15a]$$

$$P_Y'(z^{**}) = rn(F/c^2) \quad [15b]$$

which is consistent with the coefficient r in the objective function [14] if and only if $z^{**} \leq F/c$, that is $n \leq c$. Therefore, *laissez faire* solution yields the following preferences values:

$$P_Y^{tot}(0, y^{**}, z^{**}) = P_Y(0, y^{**}) + P_Y'(z^{**}) = n(F/c)(1 + r/c) \quad [16a]$$

$$P_X(0, y^{**}) = -a_X(S - F/c) + b(F/c) \quad [16b]$$

By a comparison between preferences of Destination manager [11] and [16b], it is easy to verify that $P_X(x^*, 0) > P_X(0, y^{**})$, given that $d > b$ by definition. Moreover, solutions [10] and [13] yield opposite results for both agents ($x > 0$ and $y = 0$ or vice versa), such that they have an extreme clashing interests as a result of our assumption of linear preferences.

Given these results, it is clear that Destination manager prefers to enforce some policy in comparison to the choice of no intervention at all. Since the policy maker can use always its "power to regulate" to set conflict rules, Destination manager can enforce a policy by imposing restrictions and/or constraints to Firm's behaviour in order to win the conflict.

4.2. Taxation policy

To pursue her strict preference for investment in hotels with respect to investment in second homes, Destination manager can enforce an indirect control consisting of levying a tax $0 < t \leq 1$ on n (profits of the investment y). In this sense, tax t represents an instrument of indirect control like an "environmental tax" or "Pigouvian tax in tourism", because it is only directed at stimulating the investment in hotels, and not at collecting tax yields. For this reason, tax t does not explicitly enter into Destination manager's objective function.

Moreover, from now on we assume that if Firm is indifferent about its investment choices, then it has an *epsilon* preference for Destination manager's optimal solution, that is for investment in hotels. Therefore, the Destination manger needs to levy a tax t such to modify Firm profits in the following way: $n(1 - t) \leq m$.

Given this condition, the optimal tax $t°$ needs to be included in the following threshold:

$$0 < \frac{n-m}{n} \leq t° < 1 \qquad [17]$$

which means that Destination manager needs to set a minimum limit for the tax. In this case, in the first stage Firm maximization problem becomes:

$$\begin{aligned} &\max_{x,y} \; P_Y(x,y) = mx + n(1-t°)y \\ &\text{s.t. } s \leq F/c;\; x,y \leq F/c;\; s = x+y \leq S;\; x,y,s \geq 0 \end{aligned} \qquad [18]$$

whose solution is:

$$x_1 = F/c = s < S;\; y_1 = 0 \qquad [19]$$

According to solution [19], Firm chooses only investment in hotels, but for a lower value than the maximum *S*. Once again, solution [19] is consistent with coefficients *n* and *m* in objective function [18]. The solution [19] is drawn in the Figure 2 (see point E), where the two bold vertical and horizontal lines represent the compatibility constraints, Line AA' represents the physical constraint, Line BB' represents the financial constraint, and Dotted Lines (DL) represent Firm's iso-profit curves: $\forall\, P_Y,\; x = P_Y/m - n(1-t°)y/m$.

***** Insert Figure 2 approximately here *****

Then, in the second stage, given condition [4], Firm reinvests in *Z* the extra budget coming from the profits made out of investment x_1, and its profit becomes $P_Y(x_1, 0) = m(F/c)$. By following the same procedure used in problem [14], the solution is given by $z_1 = P_Y(x_1, 0)/c = m(F/c^2)$, under the condition that $z_1 \leq F/c$, that is $m \leq c$, which is already implied by the more binding condition $n \leq c$. Therefore, taxation policy yields the following agent' preferences:

$$P_Y^{tot}(x_1,0,z_1) = P_Y(x_1,0) + P_Y'(z_1) = m(F/c)(1+r/c) \quad [20a]$$

$$P_X(x_1,0) = -a_X(S - F/c) + d(F/c) \quad [20b]$$

Comparing Destination manager's preferences [16b] and [20b], it is easy to verify that $P_X(x_1, 0) > P_X(0, y^{**})$, given condition [5]. In other words, the policy maker strictly prefers taxation policy to *laissez faire*.

4.3. De-taxation policy

Destination manager can implement another policy in order to pursue her strict preference for investment in hotels with respect to investment in second homes, and also the aim of decreasing the gap $(S - s)$. In fact, through de-taxation policy the Destination manger aims to avoid the drawback of taxation, that is the exclusion of profitability of investment in second homes; at the same time she wants to provide an effective incentive for Firm to use all the available land, reinvesting the profits made out of investment in second homes. If a compromise solution based on a mutual agreement between agents exists and if this policy is preferred by both agents, a contractual agreement between them can be realized. We check now under which conditions this agreement can be made.

Destination manager levies a tax $0 < t < 1$ on n and in addition grants a temporary tax exemption on a share of reinvested profits. Due to this tax exemption, Firm's financial resources F increase, so that it may invest enough to fill the gap $(S - s)$. The value of Firm's financial resources F increases by the amount $\Delta F = ny$. Under this condition, Firm's financial resources becomes equal to $F + \Delta F = F + ny$. Consequently, in the first stage the new maximization problem becomes:

$$\begin{aligned} &\max_{x,y} \; P_Y(x,y) = mx + n(1-t)y \\ &\text{s.t. } s \le (F + ny)/c;\; x, y \le F/c;\; s = x + y \le S;\; x, y, s \ge 0 \end{aligned} \quad [21]$$

The solution of problem [21] is not straightforward, so it is helpful to use Figure 3.

***** Insert Figure 3 approximately here *****

In the Figure 3, the two bold vertical and horizontal lines represent the compatibility constraints x and $y \leq F/c$, while the other lines represent the implicit functions of maximization problem [21]: Line AA' represents (as in Figures 1 and 2) the physical constraint $s = x + y \leq S$ (or $x = S - y$); Line BB' represents the financial constraint $c(x + y) \leq F + ny$ (or $x = F/c - (c - n)y/c$), where we assume the condition $n \leq c$; Dotted Lines (DL) represent Firm's profits (iso-profit curves): $\forall\ P_Y$, $x = P_Y/m - n(1 - t)y/m$.

The necessary condition to solve problem [21] in point E, and therefore make compromise a feasible solution, is that $\text{grad(AA')} < \text{grad(DL)} < \text{grad(BB')}$, which is solved by:

$$-1 < -\frac{n(1-t)}{m} < -\frac{c-n}{c} \qquad [22]$$

Condition [22] implies that Destination manager needs to impose a tax which is included between a minimum and a maximum limit, in order to have a contractual solution preferred by both agents. If the Destination manger levies the optimal tax t^* at the minimum value, we obtain:

$$0 < t^\circ - t^* \leq \frac{m}{c} \qquad [23]$$

which is always true if $n \leq c$.

Given conditions [3], [4] and [22], in the Figure 3 it is easy to verify that at the equilibrium point E Firm maximizes its profit function $P_Y(x, y)$ subject to all the constraints in [21], i.e. the possibilities frontier[18]. Therefore, point E represents a compromise solution between the clashing interests of agents, with $x, y > 0$.

The equilibrium values of x and y can be computed through the constraints intersection:

[18] From the "simplex method" we know that the maximum of a linear function coincides with the "peak" of the possibilities frontier.

$$y_2 = \frac{Sc - F}{n} \quad [24a]$$

$$x_2 = \frac{F - S(c-n)}{n} \quad [24b]$$

$$x_2 + y_2 = s = S \quad [24c]$$

According to solutions [24], Firm chooses both investment in hotels and in second homes, which represents a compromise solution, and thanks to the additional financial resources stemming from the tax exemption on reinvested profits, Firm's optimal choice is exactly equal to the total available land, so that there is no unutilized limited resource: $(S - s) = 0$ [19].

Overall, being $P_Y(x_2, y_2) = \frac{m[(F - S(c-n)] + n(1-t)(Sc - F)}{n}$ the profit in destination *S* and $P'_Y(z_2) = \frac{rP_Y(x_2, y_2)}{c}$ the profit in location *Z*, the de-taxation policy yields the following agents' preferences:

$$P_Y^{tot}(x_2, y_2, z_2) = P_Y(x_2, y_2) + P'_Y(z_2) = \left\{\frac{m[(F - S(c-n)] + n(1-t)(Sc - F)}{n}\right\}\left(1 + \frac{r}{c}\right) \quad [25a]$$

$$P_X(x_2, y_2) = \frac{d[(F - S(c-n)] + b(Sc - F)}{n} \quad [25b]$$

In order to implement the compromise solution as a *synallagmatic contract*, it must be preferred by both agents: Destination manager gives the permission to build second homes and Firm agrees to reinvest de-taxed profits. Therefore, it is necessary to verify if this solution dominates, or at least is indifferent to, the other solutions in terms of preferences. This is true when conditions [26] and [27] are verified (see Appendix A and B). Under these conditions, Destination manager proposes the contract to Firm, and Firm accepts the compromise solution proposed by Destination manager, because both strictly prefer the de-taxation policy to taxation.

[19] See Appendix for a check of the sufficient conditions for the existence of a solution.

In summary, with our model we prove that the policy maker needs to set a minimum tax (but not a maximum one) in order to implement an “authoritative policy” (taxation policy). On the contrary, a “contractual policy” (de-taxation policy) is preferred by both agents only if there is also a maximum limit for the tax. Obviously, this policy can be implemented only if conditions [26] and [27] are verified.

5. Conclusions

Lesser Developed tourism Destinations (LDDs) often do not have the know-how and financial resources sufficient to undertake tourism investment in second homes and/or hotels. So when Destination managers want to support economic growth, they have to adopt policies designed to encourage TT by attracting FDI. However, a potential policy dilemma arises when Destination manager and the non-local Firm have clashing interests in the allocation of limited resources of land and capital, and they have to decide an optimal tourism investment between second homes or hotels. If financial resources are not sufficient for full utilization of the land, as a solution to this policy problem we analyzed three different policies: no intervention (*laissez faire*), taxation and de-taxation policy. The idea of our contribution is that it may be preferable, for both agents, to regulate their potential conflicts by enforcing a compromise solution, which consists in a de-taxation policy, rather than by implementing a taxation policy (indirect control).

Our model proves that some parameter values exist for which the de-taxation policy dominates, or at least is indifferent to, the taxation. Specifically, the de-taxation policy is preferable when the financial resources of Firm are not sufficient to utilize all the available land. In this case, Destination manager prefers to grant the building permit for second homes, but in exchange for a commitment from Firm to reinvest its profits from selling second homes into the destination. Under certain parametric conditions, this compromise solution may be preferred by both Destination manager and Firm, since they reach a higher optimal solution.

Regarding Destination manager, the de-taxation policy dominates the other policy if: (i) Firm decides to reinvest the profits from second homes, such that its financial resources are high enough to utilize all the available land; (ii) Destination manager attaches more importance to the aim of full utilization of the building area (as planned in the tourism destination-planning scheme) than to the lower positive externality on tourism economy (and thus lower gain of political consensus) brought about by building second homes instead of hotels.

Regarding Firm, thanks to the de-taxation policy its profit function achieves a higher value with respect to taxation if there is a maximum limit for the tax. In this case, Firm prefers the policy of partial de-taxation of the reinvested profits instead of being subject to simple taxation (or to an direct regulation policy). In particular, we found that while the policy maker only needs to set a minimum limit for the tax (but not a maximum one) to implement a taxation policy, a de-taxation policy of reinvested profits is preferred by both agents only if there is also a maximum limit for the tax. An example of possible application of this de-taxation policy within this economic framework, is given by the Italian Law 383/2001, which still has not been applied to this type of issues.

Finally, an alternative policy that could be implemented instead of the de-taxation policy consists in relaxing the liquidity constraint of Firm, and thus the credit rationing hypothesis. All the possible public interventions that facilitate borrowing for Firm (like credit facilities) represent possible examples of such a policy (public-private partnerships, project financing, subsidized credits, no-interest bearing credits, public credits, etc.)[20].

In general, our application proves that if there are clashing interests between agents (as required by conflict economics) and the agents have at least some common interests (as required by principal-agent theory), a compromise solution for the conflict may exist.

[20] Nevertheless, since we do not consider the implementation costs of the economic policies, we cannot say which is the more efficient one (second best analysis).

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Appendix

A) *Condition for the existence of a compromise solution.*

Solution [24a] is consistent with coefficients *n* and *m* in [21] under the condition that $0 < y_2 \le F/c$, where: $y_2 > 0$ by assumption [6] and $y_2 \le F/c$ if and only if $Sc \le F[(c+n)/c]$, which entails the parametric condition $F < Sc \le F[(c+n)/c]$. Accordingly, solution [24b] is consistent with coefficients *n* and *m* in [21] under the condition that $0 < x_2 \le F/c$, where: $x_2 > 0$ if and only if $S(c-n) < F$ and $x_2 \le F/c$ by assumption [6]. Overall, solutions [24] are consistent with coefficients *n* and *m* under the parametric condition $S(c-n) < F < Sc \le F[(c+n)/c]$.

Then, in the second stage Firm reinvests the extra budget coming from the profits gained by investing in *S*, $P_Y(x_2, y_2)$, only in *Z*, given that through this policy all the land *S* is utilized in equilibrium (see [24c]). By following the same procedure, the solution is given by $z_2 = P_Y(x_2, y_2)/c$, under the condition that $z_2 \le F/c$, that is $P_Y(x_2, y_2) \le F$, which is true if and only if:

$$\frac{m[(F - S(c-n)] + n(1-t)(Sc - F)}{n} \le F$$

This last condition is always verified for any parameter values.

B) *Condition for Destination manager's proposal*.

We have to compare Destination manager preferences with de-taxation policy [25b] and with taxation [20b], in order to verify that $P_X(x_2, y_2) \ge P_X(x_1, 0)$, that is:

$$\frac{d[(F - S(c-n)] + b(Sc - F)}{n} \ge a_X\left(S - \frac{F}{c}\right) + d\left(\frac{F}{c}\right).$$

After some simple steps we obtain:

$$d \le \frac{-a_X n + bcn}{c-n} \qquad [26]$$

C) *Condition for Firm's acceptance*.

We have to compare Firm profits under de-taxation policy [25a] and under taxation [20a], in order to verify that $P_Y^{tot}(x_2, y_2, z_2) \geq P_Y^{tot}(x_1, 0, z_1)$, or:

$$\frac{m[(F - S(c-n)] + n(1-t)(Sc - F)}{n}\left(1+\frac{r}{c}\right) \geq m\left(\frac{F}{c}\right)\left(1+\frac{r}{c}\right).$$

After some simple steps, we obtain:

$$t \leq 1 - \frac{m(c-n)}{nc} = t^{\circ} + \frac{m}{c} \qquad [27]$$

which is the same upper limit we found in [23].

Figure 1. *Laissez faire* policy.

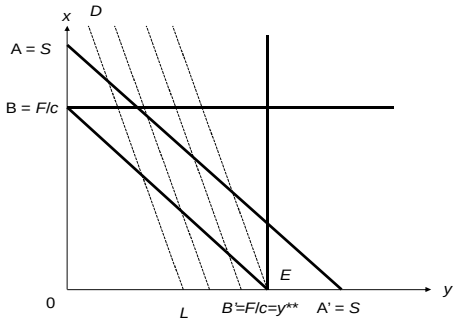

Figure 2. Taxation policy.

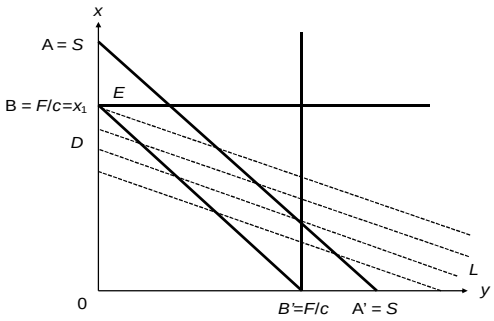

Figure 3. The de-taxation policy.