Is Agriculture an Important Component of Rural Tourism?

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In many rural regions, tourism is accepted as a natural part of the socio-economic fabric juxtaposed with agriculture. It is clear that rural tourism is based on rural amenities; however, it is not clear how this relates to agriculture. Are these inter-relationships of mutual benefit, in the sense that while rural tourism provides the farmer with auxiliary funding to continue his/her agricultural activity, the latter is an important or even necessary component of rural tourism? Do active farms with rural tourism enjoy economies to scope and run their businesses more efficiently than firms with only a single activity? The focus of this paper is on these inter-relationships and their impact on the supply and demand for rural tourism accommodations.

The demarcation between farm tourism and rural tourism is somewhat hazy. Nilsson (2002), in his work on farm tourism, defines farm tourism as a subset of rural tourism. According to him, rural tourism is based on the rural environment in general whereas farm tourism is based on the farm and the farmer. This means that within the framework of rural tourism, farm tourism enterprises are more closely related to agriculture than other rural tourism operations. Clarke (1996) elaborates further and claims that there is a difference between tourism on farms and farm tourism. When accommodations are divorced from the farm environment then it is 'farm tourism' while in 'tourism on the farm', the farm environment and its essence are incorporated into the product.

These links not only differ, they also change over time. Busby and Rendle (2000) claim that the link between farm tourism and agriculture is getting weaker. They describe the transition from tourism on the farms to farm tourism. This transition

occurs as farmers who got engaged in tourism on their farms as an alternative source of income to agriculture, slowly divorced themselves from agricultural activities. According to Busby and Rendle (2000), with this transition the active farm is no longer a necessary component. Clough (1997) extends this argument further by claiming that most of the visitors would be happy not seeing the active farm. It seems that many researchers agree that the role of the farm and the farmer is to supply the background that provides farm tourism with its unique features (Pearce, 1990; Nilsson, 2002). This is strengthened by Walford's (2001) findings that successful farm accommodations are located in an aesthetically pleasing, tranquil countryside environment; there is no reference to farm activities. These observations lead to the conclusion that there is a range of links between agriculture and tourism and that these links are getting weaker, especially from the visitor's point of view.

If benefits do not accrue to the farmer from the demand side, then they may accrue from the supply side. That is, farmers involved in tourism and agricultural production might do it more efficiently and thus have an incentive to continue the farms' activity. Farming problems have given a big push to farmers and policymakers to seek alternative activities, tourism being one of them (Ilbery et al., 1998). The diversification of farm activities to tourism has in some cases fulfilled expectations, whereas in other regions it has not: this issue has been the predicate of many works. Fleischer and Pizam (1997) depict different cases and elaborate on the causes of their success or failure. However, the topic at issue here is not the success of tourism as an alternative activity but the level of symbiosis between tourism and agriculture from the supplier side. Only a few papers refer to this relationship, mostly contending that the coexistence is mutually beneficial. For example, reallocating farm labor results in more efficient use of this resource as tourism employs idle farm manpower, or visitors' exposure to the farm products, while on the farm, can help market those products (Hjalager, 1996).

Although mentioned in the relevant literature, the level and extent of the links between tourism and agriculture in rural accommodations have not being rigorously examined. This paper delves into these specific links in rural tourism accommodations in Israel by analyzing in depth about 197 rural accommodation enterprises. Rural tourism in Israel is a relatively new phenomenon in which similar to other rural

regions, farmers and rural residents were searching for an alternative source of income (Fleischer and Pizam, 1997). Rural accommodations were established in different types of rural residences. Some of them were established on active farms, others on non-active farms, and some in small, non-agricultural rural settlements. Unlike some countries, an active farm was not a prerequisite for receiving public support (Fleischer and Felsenstein, 2000). The existence of these two types of accommodations, one based on active farms and one based in rural settlements provided us with an excellent opportunity to examine the impact of agriculture on tourism by comparing them. By using hedonic price analysis and Cobb-Douglas production estimation for rural accommodations, we discovered that the active farm is not a necessary attribute of rural accommodations for the visitors. However, farmers enjoy a higher productivity level in their tourism enterprise than non-farmers.

Description of Data and Variables

The data used for our analysis originate from a cross-sectional survey of rural accommodations operators during 2000. The survey included an interview, in which the respondents were asked to answer a questionnaire, and a tour of the hospitality units, the garden, and all other related facilities.

The questionnaire included a wide range of questions concerning the elements of the hospitality. These included a description of the hospitality units, the garden, the view from the units, the tourist activities related to the hospitality, and the service orientation of the owner. Other kinds of questions referred to the capital and labor inputs of the owners in the business and the annual performance of the business for the year 1999. Owners with an active farm were also asked about the agricultural elements relevant to the accommodations. Finally owners were asked about their demographic and personal characteristics.

Sample Construction

The sources of information on rural tourism in Israel are decentralized. Entrepreneurs tend to operate independently and advertise their business via one or more channels (e.g. special guidebooks for rural tourism, regional tourism associations, the yellow pages, and several Internet portals for local rural tourism). As a result, all of these sources had to be integrated in order to establish the population size and the distribution of rural tourism operators in Israel. Rural tourism operators in the

different areas and different rural settlements in Israel were found to account for 886 owners who operate about 3,150 hospitality units, as any as half of them in the Galilee area.

Sample size was set on 200 operators (22.6% of the population). The sample construction was based on a cluster-sampling model. First the country was divided into eight regions, only five of which were relevant for sampling (Northern Galilee, Western Galilee, The Golan Heights, the Sea of Galilee and its vicinity, and the Arava region in the south); the other three had very little rural tourism activity. Next, in each of the regions, several settlements were selected according to the region relative weight in the population. Settlement selection was done according to three settlement types: Moshav, Moshava and community settlement. The first two types combine active farm owners with residents that are either former farm operators or new residents who do not practice agriculture. The third type includes residents who do not practice agricultural at all. Twenty settlements were selected. Each was allotted a number of respondents according to its relative weight of operators in the population. Within each settlement, respondents were selected randomly.

Eventually, 197 interviews were completed successfully, in which there were no missing observations for the main variables.

Measurement of Variables

Table 1 presents the means and standard errors of the variables relevant to the current study for the whole sample, for the group of operators with active farms, (82 owners), and for the group of operators who do not operate active farms (116 owners).

The key variable for the production function estimation is the rural tourism annual revenue for 1999 in NIS. In order to calculate the revenue, the respondents were asked about their occupancy rate in 1999 during different periods of the year, mainly the holidays and summer vacation (high season), weekends and mid-week days during the off-season. Hospitality prices in general are highest in the high season, lowest in the mid-week off-season, and in between these levels on weekends during the off-season. Since hospitality prices are published by the operators and are publicly available, by multiplying occupancy by hospitality tariffs we estimated annual revenue for each operator. Among other important variables were: primary capital investment, labor in terms of annually working hours (both self and hired), and managerial skills, measured by education category and experience.

Table 1. *Variable Descriptions and Summary Statistics by Active Farm Group*

Variable	Description	Total sample	Active farm	Non-active farm
Revenue	Annual revenue per square meter in NIS	1500 (959.6)	1422.6 (675.4)	1554.6 (1117.5)
Price	Annual average price for one night of hospitality in NIS	299.8 (69.2)	295.1 (68.6)	303.1 (69.7)
Breakfast*	=1 if breakfast included in the hospitality price	0.29 (0.45)	0.29 (0.46)	0.28 (0.45)
Luxury	Summation of all prestigious elements in units see note (a)	3.07 (1.76)	2.81 (1.87)	3.25 (1.67)
Size	Average unit size in square meters.	33.71 (11.18)	33.24 (7.96)	34.04 (13.0)
Service	Service orientation of hospitality operators See note (b)	7.03 (0.95)	7.043 (0.98)	7.021 (0.92)
Firm size	Number of units per operator	3.64 (2.8)	4.09 (2.53)	3.32 (2.96)
Experience	Number of years in the rural hospitality business	6.27 (5.35)	7.16** (5.33)	5.65 (5.31)
Activities	Summation of tourist activities accompanying the hospitality	0.66 (0.9)	0.66 (0.83)	0.66 (0.95)
Attraction1	Tourist attractions at the operators' settlement	5.83 (5.14)	5.7 (4.6)	6.01 (5.51)
Attraction2	Special tourist attraction in the vicinity of the settlements	24.16 (9.04)	21.9** (7.62)	25.75 (9.64)
Landscape1*	=1 if landscape visible from the units is open and rural in nature	0.85 (0.35)	0.84 (0.37)	0.86 (0.35)
Landscape2*	=1 if landscape visible from the units is particularly beautiful	0.46 (0.5)	0.46 (0.5)	0.47 (0.5)
Education	See note (c)	2.89 (0.92)	2.72** (0.91)	3.01 (0.91)
Capital	Capital investment in rural hospitality per square meter	2861.5 (1541.6)	2732 (1418.7)	2953 (1622.6)
Labor	Annual labor hours per square meter	18.54 (9.76)	16.66** (7.8)	19.86 (10.8)
Marketing	Number of marketing and Advertising channels	4.21 (1.9)	4.41 (1.71)	4.06 (2.04)
Farming*	=1 if the operator is also an active farm operator	0.41 (0.49)		

Notes: Standard deviations are in parentheses. One asterisk indicates that the variable is a dummy variable. Two asterisks indicate that the difference between means is significant at a 0.05 level of confidence. (a) The values for the Prestige variable rank from 0 - 9. (b) The values for the Service variable rank from 0 - 8.5 and are a summation of aspects of good service towards the guests.
(c) The values for the Education variable are: 1 = elementary school or less; 2 = high school graduates or less; 3 = more than high school; 4 = academic first degree; 5 = academic master's degree; 6 = Ph.D. degree.

The variable 'Luxury', is a score variable who measures the extent in which the hospitality units are uniquely designed, comfortable, fancy, and accessorized. The Service Orientation variable is also a score variable, based on several questions which describe, for instance, how the operator welcomes his guests, and any other personal gestures that are being demonstrated towards the guests. Output and input variables are presented per square meter of hospitality unit.

Table 1 shows an annual revenue per square meter of hospitality unit averaging 1500 NIS, with a standard error of 960 NIS. Service orientation appears to be quiet homogeneous between the groups and its standard deviation, relatively, is the smallest. This is so despite the common belief that farmers are somewhat less suited to serving the public.

The wide heterogeneity of the units is demonstrated by large standard deviations of variables such as: capital investments and luxury (standard deviations account for 54% and 58% of those variables' means, respectively).

Significant differences between the two groups were found in the following variables: 1) Seniority: farmers had engaged in rural tourism longer than non-farmers- 7.16 years compared to 5.65 years. 2) Attraction2: non-farmers enjoy the presence of more attractions in the vicinity of their settlements than do farmers- 25.75 attractions compared to 21.9 attractions. 3) Education: farmers are less educated than non-farmers- their average education rank is 2.72 compare to 3.01 for the non-farmers. 4) Labor: farmers invest less working hours than non-farmer- 16.66 hours per square meter compared with 19.86 hours per square meter for non-farmers.

Hedonic Price for Rural Accommodations

Just how much visitors value the existence of an active farm can be examined by using hedonic price analysis. Rural tourism accommodations vary widely in their attributes. Some of these attributes are similar to those of a hotel, e.g. the level of luxury of the unit or a special view, but some are unique to rural tourism. Among the latter is the existence of a working farm with all of its implications. The importance of this attribute has been hypothesized and discussed in the aforementioned literature but was not checked using market transactions. Assuming that the rural accommodations market is in equilibrium during the tourist season, the visitors' willingness to pay

depends on the attributes of the unit. Thus, using actual transaction prices shows the revealed, not stated, preferences for an active farm on the rural accommodations' premises. The prices in the rural accommodations market can be considered hedonic prices. The price that a unit is rented for depends on its characteristics, including the existence of an active agricultural farm. Hedonic prices of housing (Ridker and Henning, 1967), grapes (Golan and Shalit, 1993), and fish (McConnell and Strand, 2000) all depend on the characteristics of the good and its value as revealed by its marginal contribution to the price.

In the long run in the hedonic model, the incremental change in price due to a unit increase in one of the characteristics, equals the buyers' marginal willingness to pay for that characteristic as well as the marginal cost of producing that characteristic. In the short run, equality is more likely to hold only for the willingness to pay and not for the marginal cost due to adjustment problems.

Following Freemans' (1993) presentation of the hedonic price analytical framework, let P_i represent the price of an ith rural accommodations unit in a given season. Let $\mathbf{Z_i} = (Z_{i1}, Z_{i2,....} Z_{ik})$ be the K attributes that determine the price of the rural accommodations. The hedonic price equation receives the following form:

(1) $P_i = F(\mathbf{Z_i})$

where F is the function that relates price P_i to the attributes of accommodations unit i. The incremental contribution of the kth attribute to the price is given by the following partial derivative:

(2) $\partial P_i / \partial Z_{ik} = \partial F(Z_i) / \partial Z_{ik}$

The functional form we chose for the estimation of the hedonic price function is linear. Cropper, Leland and McConnell (1988), in their comparison between different functional forms of hedonic prices, found that when some attributes are replaced by proxies, the linear form performs best. Since some of the attributes of rural accommodations are difficult to quantify, proxies were used, and thus a linear functional form seems to be the best choice. Accordingly, the functional form of the hedonic price function is:

(3) $P_i = \beta Z_i + \varepsilon_i$

where β is a vector of K coefficients and ε_1 is a random error.

We assume that the characteristics are known to the visitors at the time they make their reservation. Returning visitors have the necessary information while new visitors receive theirs mostly from word of mouth (Fleischer, 1996). Information is also available on the Internet and while making the reservation, potential visitors tend to inquire at length about the different characteristics of the place.

Attributes of rural accommodations are divided into four groups. Attributes of the unit itself, attributes of the owner, the level of touristic activity, and the agricultural activities. The luxury level of the unit, its size, and the serving of breakfast characterize the unit. For the first group we expect that the higher the level of luxury and unit size, as well as the existence of serving breakfast, the more people will be willing to pay for it. The owners' personality and his/her orientation to serving visitors are an important characteristic of rural accommodations because of the personal touch in this type of hospitality. The level of tourism orientation is reflected in the number accommodations units, number of touristic activities being offered on the premises and number of tourist attractions in the same rural habitation and surrounding area. Agriculture as an attribute of the unit is reflected if the visitors are exposed to an active farm and/or open green rural landscape.

We expect that for each unit improvement in the attribute (in case of a continuous variable) or the existence of an attribute (in case of a dichotomous variable) visitors will be willing to pay for it and thus the hedonic price will increase. If visitors do not value the attribute then the coefficient of its variable will not be different from zero. An ordinary least-squares model of the hedonic price function is presented in Table 2. Of the three variables that reflect the attribute of the unit, only the level of luxury is significant, i.e., for each increase in level of luxury the hedonic price increases by 15 NIS (1 NIS=$0.25). Serving of breakfast and the size of the unit are not valuable enough for the visitors. Similarly, the personality and service orientation of the owner were not found to be valuable. Although we expected them to be an important attribute for rural hospitality, they do not seem to have a significant impact on the hedonic price. The third group of variables, tourism orientation of the accommodations, has the highest impact on the hedonic price. This is true at the unit level (Activities), at the settlement level (Attraction1) and at the regional level (Atrraction2). The incremental contribution to the price fades with increases in

distance. For each increase in activity or attraction at the unit location, the price increases by 9.7 NIS, at the settlement level by 5.3 NIS and in the area by 1.9 NIS. The last group of variables, existence of an active farm and open rural landscape, are not significant. Not only does the farm not make a significant contribution, but the rural landscape, to which the visitor is exposed from the unit he/she is renting, is also not significant.

Table 2: Hedonic Prices For Different Characteristics of Rural Hospitality

Variable	Coefficient	Std. Error
Breakfast	6.862	9.375
Prestige*	15.38	2.628
Size	0.461	0.391
Service	-2.44	4.458
Firm Size*	3.699	1.696
Activities*	9.739	4.854
Attraction1*	5.354	1.052
Attraction2*	1.98	0.638
Landscape1	8.263	11.79
Farming	6.307	8.664
Constant*	143.75	43.43
R^2	0.35	
Number of observations	197	

Notes: The dependant variable is the annual average price for night hospitality for each operator in NIS in 1999. Variable definitions are in Table 1. An asterisk indicates significance at 5%.

These results support the impression of some researchers that the agricultural activities and the active farm are not important for the visitors. It actually means that a farmer does not have any advantage from the visitors' point of view over a non-farmer operating a rural accommodations business. On the other hand, a business offering intensive tourist activities on and around the premises is valued at a higher price. The activities in the rural settlement and its surrounding area are mostly run by different entrepreneurs, and thus their contribution to the hedonic price can be interpreted as a positive externality. That is, an additional tourist business or attraction will contribute to all the existing businesses. Our findings suggest that there

is an advantage to a concentration of tourist activities while none whatsoever to agricultural ones. These conclusions should be made with a caveat, namely, that this still does not mean that the rural environment in general is not important. The visitors are exposed to the rural ambience during their recreational activities; however, comfortable accommodations and a large array of tourist activities are the attributes they value in their accommodations.

Cobb-Douglas Production Function of Rural Accommodations

We expect farmers with an active farm to be more efficient or more productive tourism producers. This is due to the following intrinsic characteristics of the farm: 1) Most farmers have cheap hired labor available on the farms. Thus we would expect them to use more hired labor and less own labor than non-farmers. 2) A large portion of the entrepreneurs' time (19% on average) is spent on phone calls while making reservations and other arrangements. The farmers take the mobile phone with them and while working on the farm, they conduct the tasks of their tourist business. 3) For the most part, the visitors need the owner in the morning before they leave for their activities and in the evening when they come back. Farmers are flexible in their time and can adjust their work schedule to meet the needs of their visitors.

Production Factors

Rural accommodations firms differ in their production factors such as labor and capital, advertisement efforts, and a variety of qualitative and quantitative shift factors. The following factors were hypothesized to affect the level of output in the rural accommodations, besides labor and capital.

Marketing efforts: Entrepreneurs using more advertising channels will enjoy more visitors and thus higher output. Another important factor that acts in the same direction is the availability of tourist attractions in the area. They attract visitors to the area and thus create externalities for the producers.

Luxury: In this group, different aforementioned luxury features and breakfast are included. Including them means that the entrepreneur receives more than the returns to labor and capital. Not all accommodations serve breakfast. Those who do naturally charge a higher price. However, in some cases breakfast plays an important role in positioning the unit as a luxury unit. These entrepreneurs offer homemade specialties

that differentiate them from the rest of the accommodations and thus give them some market power. The same holds for other luxury features.

Firm size: The average firm contains 3.7 accommodations units. This firm size is still small enough, being characterized by relatively large constant costs and small variable costs, to suggest that the enterprises enjoy economies to scale.

Managerial skills: We approximated managerial skill of the firm owner with education level and years of experience in the business. We hypothesized that the more time the entrepreneurs have been in the business and the higher their education, the more efficient they will be in their production process.

Agriculture: The existence of an active farm is expected to increase the productivity of the labor for the aforementioned reasons. Beautiful landscapes has been found to create externalities (Fleischer and Tsur, 2000), thus units enjoining such views will demonstrate a higher productivity level.

Production Function

Assuming constant returns to scale, the production function per square meter of rural accommodations output in firm *i* can be approximated by the following Cobb Douglas production function:

(4) $\log y_i = A_i + \alpha \log L_i + \beta \log K_i + \varepsilon_i$

where the efficiency factor A_i consists of the four groups of factors: luxury, managerial skills, firm size and agriculture.

Regression estimates for equation (4) are reported in Table 3. Coefficients of labor and capital are both positive and significant, as expected. All variables in the marketing group are positive and significant. It should be noted that the attractions variables are external to the firm and thus, here again we see that a firm located near tourist attractions enjoys positive externalities. In the hedonic price analysis this was reflected in the higher price the visitors were willing to pay for this benefit. Here it is reflected in the higher productivity a firm enjoying these attributes demonstrates.

In the luxury group, the luxury variable has a positive significant coefficient while breakfast has a negative positive coefficient. This means that the firm owner gets more than just returns to capital from his/her investment in the luxury features of the

unit while breakfast draws more on labor than the output received for it. Our original hypothesis about breakfast was thus proven to be incorrect.

Table 3: *Cobb-Douglas Production Function Estimation for Rural Hospitality*

Variable	Coefficient	Std. Error
Log capital*	0.192	0.57
Log labor*	0.603	0.073
Marketing*	1.528E-02	0.007
Breakfast*	-9.736E-02	0.027
Luxury*	1.890E-02	0.008
Activities*	2.8727E-02	0.014
Firm Size*	2.759E-02	0.005
Experience	-4.121E-03	0.002
Education	2.535E-03	0.013
Landscape2	-5.976E-03	0.023
Farming*	4.927E-02	0.025
Attraction1*	1.325E-02	0.003
Attraction2*	4.856E-03	0.002
Constant*	1.318	0.175
R^2	0.61	
Number of observations	197	

Notes: The dependant variable is the annual revenue per square meter of hospitality units in NIS in 1999. Variable definitions are in Table 1. An asterisk indicates significance at 5%.

Firm size receives a positive and significant coefficient, which means that at this level of production, the rural accommodations firms enjoy economies to scale.

In the last group of variables reflecting the agricultural activities, the coefficient of the dummy variable of farming is positive and significant. Our original hypothesis about the rural accommodations with the active farm being more efficient was proven correct. A firm with an active farm will have a higher output for the same levels of labor and capital. Landscape, however, does not have a significant impact on the production function.

Conclusions

The link between agriculture and rural accommodations is somewhat obscure. By using detailed data from 197 operators we demonstrated that the active farms' impact is embodied in two aspects of the enterprise: in the visitors' valuation of the accommodations and in the enterprises' production efficiency. Accordingly, potential benefits can accrue to a farmer running a tourist business from visitors willingness to pay more for accommodations on active farms and from more efficient use of labor and capital.

In the case researched in here, we found that the active farm does not have any value for the visitors. However, on the production side, farmers seem to benefit from the existence of an active farm. A firm producing agricultural goods and tourism services appears to use its production factors more efficiently in producing tourism than firms managed by non-farmers. This means that although it seems that rural accommodations are divorced from agriculture a farmer will still benefit from his/her hours per square meter active farm.

Another important finding is the effect a concentration of tourist activities in the region has on the firm. In this case, visitors are willing to pay a higher price for a firm located in a region that is rich in tourist attractions. Additionally, a firm located in such a region demonstrates a higher productivity level. Since this attribute is external to the firm, it means that tourism firms enjoy positive externalities and a concentration of them creates a synergetic affect.

The policy implications of these findings are that, in some cases support for agricultural production is indirectly channeled into support for tourist activities. Thus, it may be that reducing support for agriculture while increasing support for non-agricultural activities such as tourism might not have an impact on firms with these two activities. It also can be seen that support for one tourist firm has an echo effect on the others nearby and thus its impact is amplified.

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