Chapter 5

# Short-Run Output and Employment Effects Arising from Assistance to Tourism SMEs: Evidence from Israel

Aliza Fleischer and Daniel Felsenstein

## Introduction

To a great extent, tourism small firms share much in common the general small business population. Barriers to entry are low, activities generally center on niche markets, the entrepreneur is the center of the small firm universe and personal equity capital is likely to form the initial resources of the business. Furthermore, tourism SME's like other small firms invariably have a distinct local orientation. They are likely to be locally owned, consume local inputs and generate larger local multipliers than larger enterprises. More than anything else however, interest in tourism SME's has been centered on their perceived employment benefits (Hudson & Townsend 1992; Wanhill 2000). Public support for small tourism enterprises is often couched in terms of creating job opportunities to deal with cyclical unemployment, diversifying economic opportunities and generating supplementary income. Small tourism enterprises ranging from family lodgings, through low-investment recreation operators (jeep rides, cycling trails) to traditional food and transportation activities (country restaurants, guided tours, etc.) are often viewed as having under-utilized capacity. When demand picks up they can easily assimilate under-used resources, accommodating extra labor without the need for extra investment. In this way, assistance for small tourism business should yield positive employment effects.

But do small tourism firms really warrant a plethora of dedicated assistance programs aside from the regular arsenal available to small firms? Is their response to public support schemes any more pronounced than that of the general small firm population? This chapter endeavors to answer these questions by comparing the short-run effects of an assistance program on small tourism firms and a sample of other similar (non-tourism) small firms.

The attention given in the literature to the employment effects of small firms (for a review and critique see Davis *et al.* 1996), often means a neglect of other indicators of SME performance such as output growth and productivity. In the context of assistance programs, the effects on different performance measures, such as employment and output

**Small Firms in Tourism: International Perspectives**

**ISBN: 0-08-044132-7**

are of course linked. Capital assistance to small firms can result in differing short-run impacts on firm output and employment. This chapter investigates whether these effects are more pronounced in the context of small tourism firms. Our a-priori hypothesis is that small tourism firms respond even more vigorously than other small firms to assistance programs in the area of employment over the short run because of the immediate absorption capacity of small scale tourism activity. In terms of output however, we do not expect to find any differences in short-run effects. Assuming a u-shaped short run cost function common to all small firms, there is no reason to believe that a small tourism firm's output rate will respond any differently to a sudden injection of capital to that of any other small firm.

These hypotheses are tested empirically below using a unique data set of small firms that were recipients of public assistance via a nation-wide small firms loan guarantee program, over the period 1993–1995. Distinguishing between small tourism firms and other small firms, the data set includes performance indicators collected from the firms on the basis of site visits both before and after receipt of assistance thereby adding a measure of actual short-run performance change. The chapter proceeds by setting up a simple model of output and employment response to capital assistance and estimating its results.

## Assistance Programs for Tourism SMEs

The promotion of tourism small business is inevitably linked to the creation of local employment and output. However, the case for public support of tourism SME's is not unequivocal. On the one hand the typical tourism SME such as a bed and breakfast operation is perceived as having low barriers to entry and employing existing and under-utilized capital. This relates to both fixed and human capital. Assisting such an effort would seem to be promoting the highest and best use for local resources. On the other hand, the small-scale character of these operations can often render them marginal in terms of effecting any real local or regional economic change (Fleischer & Felsenstein 2000).

Furthermore, while much of the public rhetoric for assisting tourism SME's is bound up with employment creation, small-scale tourism is also charged with creating low-wage and seasonal employment in weak and unstable markets (Fredrick 1993; Shaw & Williams 1990). The same is true for claims relating to new tourism SME output. Some claim that new tourism small firms simply serve to displace or uproot existing output in the tourism market (Hoy 1996). In fact, nearly all the arguments for assisting small tourism activities are met with counter arguments opposing such activity. Small scale tourism as a local revenue source is challenged by claims that it is revenue-draining and a burden on the local service base. The claim that much small-scale tourism is environmentally sustainable is matched with the charge that it depletes valuable and finite resources.

A familiar array of instruments is available for assisting small tourism enterprises. On the supply side, capital assistance (grants and loans), tax concessions, business and management advice and tourism incubators are available (Fleischer 1999; Wanhill 2000). On the demand side, marketing efforts, local vacation campaigns, preferences for local content and input suppliers and the development of "export" (i.e. non-local markets) through visitor exchange programs are all utilized (Gibson 1993). While all of these mediate the failure of markets in the tourism sector in one way or another (failure in capital markets, asymmetric information

and so on), none of them directly address the issue of risk associated with the small firm. Intuitively, this factor is considered a barrier to assisting small firms, which are perceived as likely to fail over time. However, Wren (1998) has shown that in fact smaller and newer firms are more responsive to assistance and that the risk involved in supporting them is therefore minimized.

One financial assistance instrument that directly addresses the small firm risk issue is the loan guarantee. Using this instrument, the onus of loan recovery is shifted to the loan guarantor (generally a public agency) and in this way the risk associated with small firm lending is mediated. The stereotypical small tourism enterprise operating in unstable markets, invariably under-capitalized and with weak management skills is particularly exposed to risk with all the concomitant difficulties in capital markets. Rather than attach a subsidy directly to the borrower (the small firm), the loan guarantee program changes the behavior of lenders encouraging them to lend to firms they would not otherwise consider. In this respect, the program represents the operation of a "second best" decision rule under conditions of market failure.

Analyses of the effectiveness of loan guarantee programs point to their relative cost-effectiveness and their ability to deliver assistance on the basis of area targeting (Cowling & Clay 1994; Harrison & Mason 1986). However, as in all assistance schemes, the litmus test lies in the true "additionality" of the subsidy and the extent to which the small firm would not have found any alternative in the absence of the assistance. The higher risk the market, the more likely this condition will be fulfilled. High levels of uncertainty associated with small tourist enterprises imply that assistance is less likely to be "deadweight."

## Modeling the Output and Employment Effects of a Capital Assistance Program

While a firm receiving capital subsidy is expected to register an increase in output, the impact of assistance on employment is ambiguous. The standard approach to looking at the effect of a capital subsidy is to assume a substitution effect. Upon receipt of assistance labor becomes relatively more expensive than capital and firms will tend use relatively less workers per unit of capital. An output effect can arise if the capital subsidy reduces average costs allowing the firm to produce additional output at a fixed cost level. While the substitution effect clearly reduces demand for labor, the effect of additional capital is less clear. If the output effect is greater than the substitution effect a capital assistance program can result in increased demand for labor. If the opposite is the case and the substitution effect is greater than the output effect, the result is less determinate: employment may both increase and decrease with capital assistance program (Swales 1981).

Our approach is to model output and employment effects as separate but structurally linked phenomena. By modeling the optimum output level of the firm with respect to capital and labor, we estimate the adjustment in output resulting from the capital assistance program. This is done while distinguishing between tourism firms and all "other" firms. We then proceed to model new employment as a function of previous employment and additional capital (i.e. the assistance program), differentiating again between tourism SME's and the other recipients of assistance. These models can be empirically tested and enable us to

investigate the differences in the adjustment processes between tourism firms and other small firms.

### *Output Effects*

In order to estimate the impact of the assistance on output we assume the following production function:

$$Q_{ij} = f(K_{ij}, E_{ij}) \tag{1}$$

where: $Q_{ij}$ is the level of output for firm $i$ in sector $j$, $j = 1, \ldots m$ (in our case $m = 2$, i.e. tourism and other firms), $K_{ij}$ is the level of capital for firm $i$ in sector $j$, $E_{ij}$ is the level of employment for firm $i$ in sector $j$.

Change in the output level, $dQ_{ij}$ can be written as follows:

$$dQ_{ij} = f_j^k dK_{ij} + f_j^e dE_{ij} \tag{2}$$

where $f_j^k$ and $f_j^e$ are the partial derivatives of $Q$ with respect to $K$ and $E$ respectfully. $f_j^k$ and $f_j^e$ are constant for each sector in competitive markets. Under the assumption of a competitive market, firms from all sectors face same price for capital ($r$) and labor ($w$) while firms from sector $j$ face the same product price ($p_j$). In equilibrium, the value of the marginal product of input equals the input price. Thus, the following equations hold:

$$f_j^k = \frac{r}{p_j} \tag{3}$$

$$f_j^e = \frac{w}{p_j} \tag{4}$$

Based on Equations (1)–(4), Equation (5) is estimated. For our purpose, we assume two sectors, tourism and other. Accordingly, the dummy variable ($D$) equals 1 if the firm belongs to the tourism sector and 0 otherwise. The coefficients in Equation (5) are the partial derivatives of the output with respect to capital and labor. The dummy variable allows variability of the coefficient between the two sectors. In our case, a significant positive (negative) coefficient of the dummy variables means that the marginal product of labor or capital in the tourism sector is higher (lower) than the other sectors. In order to get values per worker, both sides of the equation are divided by $E$.

$$\frac{dQ}{E} = f^k \left(\frac{dK}{E}\right) + f^k D \left(\frac{dK}{E}\right) + f^e \left(\frac{dE}{E}\right) + f^e D \left(\frac{dE}{E}\right) \tag{5}$$

### *Employment Effects*

Equation (5) allows us to assess the contribution of the assistance program to output. Since one of the major justifications for assistance programs such as the current is the need to create jobs, it is also necessary to focus on the employment impacts of SME support programs.

Wren & Waterson (1991) develop a framework to compare the employment impact of different industrial assistance programs. This is based on a combination of two frequently-used approaches. The first, in line with the current paper, is based on modeling the optimization problem of the firm. The second specifies the employment level as a loosely defined function including variables that theory dictates are likely to affect the level of employment.

Starting from the second approach we can write the partial adjustment model for firm employment in any sector *j* in the following form:

$$E_t - E_{t-1} = \lambda(E_t^* - E_{t-1}) + u_t \tag{6}$$

where: $E_t$ is the level of employment in time *t*, $E_t^*$ is the planned level of employment, $\lambda$ is an adjustment coefficient, $0 \leq \lambda \leq 1$, $u_t$ is random error.

The difference between $E_t^*$ and $E_{t-1}$ is comprised of $L^*$ and some proportion of $E_{t-1}$:

$$E_t^* - E_{t-1} = L_t^* - \delta E_{t-1} \tag{7}$$

where: $L^*$ is the planned level of employment to be induced by the assistance program, $\delta$ is the proportion of redundant employment expected to be absorbed due to the assistance program.

The relationship between $L^*$ and the receipt of financial assistance is derived from the structural model depicted in Equation (1). Dividing Equation (3) by Equation (4) produces the following relationship between additional labor and level of assistance.

$$\frac{f_j^k}{f_j^e} = \frac{r}{w} \tag{8}$$

Using our notation where $L^*$ is the additional labor and $K^*$ additional capital and assuming a homothetic production function leads to the following:

$$\frac{K^*}{L^*} = \alpha \tag{9}$$

where $\alpha$ is a constant ratio between the capital and labor since in a homothetic production function the firm expands along a ray. $\alpha$ is a parameter that depends on *r*, *w* and the firm's production technology.

Additional capital ($K^*$) can come from the assistance program (AP) and/or private funds. Since we want to investigate the impact of the assistance program we assume that additional capital comes solely from the program and thus $K^*$ equals AP.

$$K^* = \text{AP} \tag{10}$$

By substituting (10) into (9), (9) into (7) and (7) into (6) and rearranging, we get the following equation:

$$E_t = \left(\frac{\lambda}{\alpha}\right)\text{AP} + (1 - \lambda\delta)E_{t-1} + u_t \tag{11}$$

Following Wren & Waterson (1991), the equation for estimation equation takes the following form:

$$E_t = a + b\text{AP} + cE_{t-1} + dD + u_t \tag{12}$$

where *a*, *b*, *c* and *d* are the estimated coefficients and *D* is a dummy variable with a value of 1 if the firm is in the tourism sector and 0 otherwise.

## The Assistance Program and Data

The small firms assistance program examined here is the national small firms Loan Guarantee Program (LGP). This was initiated in 1991 in response to the mass immigration of Jews from the former USSR, the specter of large-scale unemployment and a general public sector infatuation with the role of SME's as job generators. The program was administered jointly by the national Small Business Authority and a local commercial bank. Loan terms offered up to $165,000 over a 5-year period with 100% loan guarantee provided by the government (80%) and the commercial bank (20%), respectively. Cost-of-living linked interest rates rose over the period 1993–1995 from 3.75 to 5.35%. All authorized loans needed to be backed by personal funds to the extent of 25% of the loan with assets of the small business acting as loan collateral.

Table 1 presents basic indicators of the operation of the loan guarantee scheme over the period 1993–1995. This is the period covered in our empirical analysis and represents the most active years of the program. As can be seen, the average size of the loan was less than half of the loan ceiling. While more than 5,500 loan applications were submitted, some 44% were authorized. The level of actual loan utilization (loan materializations as a share of loan authorizations) was even lower and stood over the study period at 39%. The sectoral distribution of loan authorizations closely reflected the sectoral distribution of small firms in the economy (42–46% of authorizations) industry (33–39%) with tourism SME's in third place (8–10%).

The empirical data used below represents a unique longitudinal sample of 285 firms that received assistance over the period 1993–1995. The data were collected by a management consulting firm mandated by the government to monitor the program. All firms that received government guarantees were visited at least once by the consulting company, subsequent to having received assistance. This visit took place roughly two years after receiving the loan guarantee and represents our short-run time frame. The data set therefore contains output and employment observations for each firm both before and after receiving assistance.

Table 1: National small firms loan guarantee fund — basic indicators 1993–1995.

| | **1993** | **1994** | **1995** |
|---|---|---|---|
| Requests submitted | 1529 | 2265 | 1767 |
| No. of guarantees authorized | 588 | 1190 | 665 |
| Total value of guarantees authorized | 140 | 265 | 170 |
| Total value of guarantees materialized ($m) | 26.5 | 31.4 | 19.1 |
| Average value of guarantee ($ Th) | 83.5 | 74.3 | 75 |
| Anticipated employment increase | 2596 | 6109 | 2950 |
| Loan period (months) | 60 | 60 | 60 |

While the loans were administered over the period 1993–1995, the monitoring process for this period extended up to 1998.

Table 2 presents a description of these variables and their summary statistics for the entire sample and for the sub-groups of tourism SME's and others. The variables relate to output and employment before and after receipt of assistance, level of assistance and period of

Table 2: variable description and summary statistics by sectors.

| **Variable** | **Description** | **Total Sample** | **Tourism** | **Other** |
|---|---|---|---|---|
| emp_t-1 | Number of employees before receiving assistance | 5.78 (8.2) | 6.16 (9.5) | 5.74 (8.1) |
| emp_t* | Number of employees after receiving assistance | 10.77 (15.6) | 19.84 (19.3) | 9.91 (15.0) |
| emp_d* | Increase (decrease) in number of employees after receiving assistance | 5.69 (7.1) | 12.57 (15.0) | 5.08 (5.6) |
| Assist | Level of assistance (000' $) | 82.7 (61.6) | 89.4 (61.2) | 82.0 (61.6) |
| emp_d_w | Rate of increase (decrease) in employees after receiving assistance | 0.56 (1.6) | 1.06 (1.4) | 0.53 (1.6) |
| assist_w | Level of assistance per worker | 49.32 (63.5) | 21.58 (17.0) | 50.91 (46.7) |
| output_t-1 | Annual output before receiving assistance (000'$) | 252.8 (424.6) | 160.6 (296.3) | 262.1 (516.6) |
| output_t | Annual output after receiving assistance (000'$) | 733.3 (1042.6) | 695.3 (856.0) | 736.6 (1195.6) |
| output_d_w | Increase (decrease) in annual output after receiving assistance, per employ (000' $) | 74.1 (131.4) | 36.1 (31.8) | 76.5 (135.0) |
| No_months | Number of months between receiving assistance to monitoring visit | 26.9 (12.6) | 25.1 (14.3) | 27.1 (12.5) |

*Note:* Standard deviations are in parentheses.

*Means are significantly different at 5%.

time that elapsed between receipt of assistance and the post-assistance monitoring visit. A difference of means test was also performed to see if statistical differences exist across mean values for the tourism small firms vs. the rest. As can be seen, ex ante, there are no significant differences across the two sets of firms in terms of employment output and size of assistance. The only significant difference relates to the ex-poste employment size of the firm.

## Results

In the first instance, we estimate Equation (5) (above), empirically testing the adjustment of output per worker as a function of the marginal product of capital and labor. The estimated coefficients appear in Table 3. They show that while the marginal product of labor is lower in the tourism firms than in the rest (the coefficient of the dummy is negative and significant), the marginal product of capital is the same. Under the assumption of competitive labor market, i.e. all sectors face the same price of labor and decreasing marginal product, lower marginal product in the tourism sector means that it employs more workers than the other sectors. However, the marginal product of capital is the same. Thus, if we expect the capital assistance program to increase output, tourism small firms do not seem to have any advantage over other firms. Public assistance may increase output, but there is no a priori case for assuming this will be more pronounced in the tourism sector than in any other sector.

The role of the "number of months" variable is to normalize the time frame for the different firms. The time period between receiving the assistance and the follow up visit varies across firms and since we assume there is an adjustment or maturation process we expect that the longer the time period the greater the increase in output. As to be expected this is positive and significant. It can also be interpreted as the time period for absorbing

Table 3: Model estimates for change in output per worker.

| **Variable** | **Coefficient** |
|---|---|
| emp_d_w | 126.8* |
| emp_d_w_dummy[a] | −143.7* |
| assist_w | 2.06* |
| assist_w_dummy[b] | 0.9 |
| no_months | 5.3* |
| Constant | −896* |
| No. of observations | 165 |
| $R^2$ | 0.6 |

[a] emp_d_w multiplied by the sector dummy variable; this receives the value of 1if the firm is in the tourism sector and 0 otherwise.

[b] assist_w multiplied by the sector dummy variable; this receives the value of 1if the firm is in the tourism sector and 0 otherwise.

* Significant at 5%.

Table 4: Model estimates for change in employment level.

| **Variable** | **Coefficient** |
|---|---|
| emp_t-1 | 1.01* |
| Assist | 0.01* |
| Dummy[a] | 9.6* |
| no_months | 0.13* |
| Constant | −2.2 |
| No. of observations | 285 |
| $R^2$ | 0.42 |

[a] Sector dummy: 1 if firm is in the tourism sector and 0 otherwise.
* Significant at 5%.

public assistance. The coefficient seems to suggest that it is not simply the magnitude of assistance that is important for increasing SME output but also the way this resource is utilized.

The results of the effect of the capital assistance program on employment change (Equation (12)) are presented in Table 4. This estimates, ex poste, employment as a function of the pre-assistance employment level, additional capital (assumed to come solely from the assistance program) a sector dummy and the amount of time elapsed since receipt of assistance. As can be seen, all coefficients are positive and significant. This means the larger the firm (in employment terms) at the time of filing the request, the greater the level of assistance and the longer the time interval between request and follow up visit, the greater the employment effect. The positive and significant coefficient for the tourism dummy implies that *ceteris paribus*, capital assistance to tourism firms has a greater employment impact than to other firms. This result is in accordance with the smaller magnitude of marginal product of labor reported in Table 3. In both cases, but from different angles, we can see that in the short-run adjustment process, tourism firms will increase their labor input faster than other firms and thus register higher impacts on employment.

Similar to the output adjustment process, the change in employment level is found to be significantly related to the time-frame over which the capital assistance is absorbed by the firm. As above, while the main object of this variable is to standardize the time frame while estimating the capital and labor impacts, it does convey information on the adjustment process. Just as an increase in output does not adjust immediately to the stimulus of additional capital, a similar result is likely in employment which will increasing over time.

## Conclusions

This chapter has endeavored to address the question of whether tourism SME's respond any more vigorously to public assistance than other small firms over the short run. Our hypotheses relating to the employment and output effects of tourism enterprises would

seem to be upheld. Capital assistance seems to simulate a greater reaction in the tourism firms in employment than it does in output. Assuming no other sources of additional capital, a public sector subsidy will increase tourism small firm employment more than employment in other firms but will not simulate any significant differences in output. This could be due to two reasons. First, tourism is a labor-intensive industry and customers expect to be served by people rather than machines. Second, the seasonal nature of tourism forces small firms to choose a technology which enables them to costlessly adjust to fluctuations in customer demand. Adjustments to labor, especially non-skilled labor, seem to be best suited for this purpose and thus tourism SME's opt for labor-intensive technology.

These findings also have bearing on the wider issue of justification for special assistance programs for tourism SME's outside the framework of general small business support. Based on the loan guarantee program examined here, our results indicate that public support enables those small firms to increase capital, that otherwise would not have been able to do so. This additional capital induces a higher increase in the level of employment in the tourism sector than in the other sectors. The impact on level of output however is the same across sectors. Thus, in a situation where the employment is a major public policy concern, preference for a dedicated tourism small firm assistance program may be warranted. This assumes that firms are small enough and that there is demand for their expansion.

## Acknowledgment

The authors would like to thank the Michlol Consulting Company for access to the data.

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