

Start-up size and post-entry performance: the case of tourism services in Italy

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A large and comprehensive longitudinal database is used to identify the start-up of new firms in the Italian tourist industry and their subsequent post-entry performance. Analysed in particular is the link between the survival of hotels, restaurants, and catering firms in each Italian region and their start-up size. By using logit estimation, it is found that for eighteen out of twenty regions the relationship has the expected sign, although only for twelve regions and the country as a whole did it turn out to be statistically significant.

I. INTRODUCTION

Recent studies on the economic role of entry have shown that newborn, small firms account for a significant share of the total number of enterprises in an industry, although only modest effects of entry on market performance (profits) have been found (Geroski, 1991; Geroski and Schwalbach, 1991). This apparent paradox can be resolved by assuming that, since in each industry the survival of new firms depend on their ability to learn about the environment, it is very likely that in more turbulent market environments new, small firms have a higher probability of failing to cope (Audretsch, 1995b; Geroski, 1995).

In this respect, very little is known about the post-entry performance of new firms in Italy (cf. Giunta and Scalera, 1995; Solinas, 1995; Audretsch *et al.*, 1996), particularly in the service sector. The purpose of this paper is therefore to shed some light on industry dynamics in a branch of services which, in Italy, accounts for a significant share of total employment and value added: that of tourism services.

The paper is organized as follows. Section II surveys recent work on entry. Section III uses a set of longitudinal data provided by the National Institute for Social Security to analyse the relation between new firm survival and start-up size in the Italian tourist industry over the period 1989–94. Finally, in section IV some concluding remarks are drawn.

II. START-UP SIZE AND POST-ENTRY PERFORMANCE

According to Jovanovic's (1982) model of noisy selection, new firms have no expectations about their post-entry performance, so that the likelihood of survival should be assumed to be stochastically distributed across firms. In a recent theoretical paper dealing with the distribution of firm sizes, Sutton (1995) observes that each market consists of a large number of independent submarkets, corresponding to different size distributions. As a consequence, in studying the post-entry performance of firms the real problem is not the characterization of what happens on average in each market, but "the fact that a wide range of different patterns occur across different markets, so that it is difficult to make any generalisations" (Sutton, 1995, p. 4, footnote 8).

Different authors (including Dixit, 1989; and Hopenhayan, 1992), suggest instead that post-entry performance may not be random across firms, but is instead shaped by characteristics specific to either the industry or the firm. Their theories are supported by empirical evidence for the United States and other countries. Among industry-specific characteristics, the amount of sunk costs, the amount of scale economies and the degree of innovative activity have been shown to affect significantly both the likelihood of survival and the observed growth rates (cf. Audretsch, 1995a for the United States; Mata and Portugal, 1994 for

Portugal; Wagner, 1994 for Germany). Among firm-specific characteristics, start-up size, capital intensity, and the use of advanced process technologies have been shown to influence the post-entry performance of firms in most countries (cf. Doms *et al.*, 1995 for the United States; Baldwin, 1995 for Canada).

III. MEASURING SURVIVAL AMONG ITALIAN HOTELS, RESTAURANTS, AND CATERING FIRMS

For those wishing to test empirically the two contrasting groups of explanations introduced above, a serious limitation is the lack of data sets tracking the evolution of firms subsequent to their start-up. The longitudinal database used here to analyse the post-entry performance of new hotels, restaurants, and catering firms in Italian regions represents in this sense a reliable source of information. It is taken from the National Institute for Social Security (INPS), and identifies new firms (with at least one paid employee) born during each month in 1989 and tracks their post-entry performance at monthly intervals until December 1994.

All private Italian firms are compelled to transfer to INPS national security payments for their employees; when a new firm is registered as 'active' in INPS files an entry can be identified, while a firm cancellation denotes an 'exit' (this happens when a firm ultimately stops paying national security fees). In industries in which production activity is strongly affected by seasonal factors (fashion, food, tourism, etc.),

a significant number of firms suspend temporarily operations for a few or many months during each year: accordingly, they are 'suspended', but cannot be taken as 'exited', since they are not cancelling their position from the INPS files. Sometimes, for administrative reasons, cancellation is preceded by a period during which the firm is 'suspended'. In the present paper, suspended firms of this kind have been considered as 'exited' at the moment (month) of their transition from the status 'active' to 'suspended'.

A problem arising with this and similar databases when used to test theoretical approaches concerned with the survival of firms is that the researcher can only consider a given interval, referred to as *follow-up time* and comprised between $t = 1$ and $t = T$, during which N firms are observed. If a firm exits the market at any given time t where $1 \leq t \leq T$ its death (*failure time*) is correctly reported, otherwise the only possible finding is that its duration exceeds a given threshold corresponding to T . This *right-censoring* problem renders conventional statistical methods (such as OLS) ill-suited for duration analysis, since they would produce biased and inconsistent estimates (Cox, 1972; Kiefer, 1988; Mata and Portugal, 1994).

Tables 1 and 2 plot the new-firm survival and hazard rates for 11 660 new tourism service firms identified in the INPS database in 1989. The survival rate is defined as the share of new firms starting at any time (month) in 1989 and still in existence at the end of each subsequent year. Accordingly, the survival function can be written as

$$S(t) = 1 - F(t) \quad (1)$$

Table 1. *Survival rates of new firms in the tourist industry: Italian regions, 1989–94*

Regions	New firms in 1989	1989	1990	1991	1992	1993	1994
Valle d'Aosta	113	88	69	57	56	50	48
Piemonte	890	84	61	50	42	37	33
Liguria	674	83	61	51	42	40	38
Lombardia	1698	90	70	60	53	48	45
Trentino A.A.	622	91	73	65	60	56	52
Friuli V.G.	421	81	65	51	42	38	45
Veneto	1152	87	67	60	54	48	45
Emilia-Romagna	1517	85	65	56	50	44	41
Toscana	1147	86	67	58	53	47	43
Lazio	784	91	74	66	63	60	57
Marche	346	85	68	62	55	52	49
Umbria	183	88	69	56	54	45	43
Abruzzo	271	90	69	59	56	49	44
Molise	46	89	54	52	52	43	43
Campania	365	93	78	69	66	63	62
Basilicata	55	93	69	53	49	44	44
Puglia	372	90	73	65	60	56	53
Calabria	194	93	68	63	59	57	57
Sicilia	493	88	69	60	59	55	53
Sardegna	316	93	74	65	61	57	54
Italy	11 660	87	68	59	53	48	45

Table 2. Hazard rates of new firms in the tourist industry: Italian regions, 1989–94

Regions	1989	1990	1991	1992	1993	1994	Firms surviving to 1994
Valle d'Aosta	12	21	18	2	10	5	54
Piemonte	16	28	18	16	12	10	295
Liguria	17	27	17	16	5	6	255
Lombardia	10	23	14	10	10	6	769
Trentino A.A.	9	20	10	8	7	7	322
Friuli V.G.	19	21	21	18	9	11	144
Veneto	13	22	11	9	12	7	515
Emilia-Romagna	15	23	14	12	11	6	627
Toscana	14	22	13	10	11	9	493
Lazio	9	19	11	5	3	5	450
Marche	15	20	9	10	7	5	170
Umbria	12	22	19	4	16	4	79
Abruzzo	10	23	13	5	13	10	120
Molise	11	39	4	0	17	0	20
Campania	7	15	12	5	5	2	227
Basilicata	7	25	24	7	11	0	25
Puglia	10	19	11	7	8	5	197
Calabria	7	27	8	7	3	0	114
Sicilia	12	22	13	2	7	4	262
Sardegna	7	20	13	5	7	5	171
Italy	12	22	13	9	9	6	5309

where S is the survival rate for a firm, and $F(t)$ is the distribution function. One year after start-up¹ 68% of the new firms did so. In the sixth year only 45% of the new firms still existed. This is significantly lower than the 59% survival rate identified for Italian manufacturing firms between 1987 and 1992 by Audretsch *et al.* (1996) and implies that the mechanism of displacement affects young, new firms in the tourist industry more severely than those in other sectors. Conversely, this survival rate is analogous to that identified for American manufacturing firms by Audretsch (1995a, 1995b) and higher than the 35% survival rate identified for Portuguese manufacturing by Mata *et al.* (1995).

The hazard rate is defined as the risk of failure at each point in time, conditional on the fact that the firm had survived up to the previous time period. It is formally expressed as

$$h(t) = \lim_{\Delta t \rightarrow 0^+} \frac{P(t \leq T \leq t + \Delta t | T \geq t)}{\Delta t} \quad (2)$$

where T is the firm's life duration and h the hazard rate for the firm, and can be estimated as

$$h(t; x) = f(t)/S(t) \quad (3)$$

where x is a vector of covariates (or explanatory variables), $f(t)$ is the probability density function and $S(t)$ the survival function presented in Equation 1.

In the case of the Italian tourist industry between 1989 and 1994, the one-year hazard rate is about 13%, and then rises to about 22% for the two-year hazard rate, before falling to 6% for the six-year hazard rate. These hazard rates follow a pattern similar to that identified by Audretsch *et al.* (1996) for Italian manufacturing, although in that case the second year hazard rate was much lower (12%). It should also be noted that in studies carried out for other countries hazard rates tend to increase during the first years and to decrease non-monotonically afterwards (Audretsch, 1995a; Wagner, 1994). This implies that the conditional probability of exit by a new firm decreases along with the length of time that it has already survived.

Inspection of survival rates for each disaggregated Italian region (Table 1) shows that these vary considerably across regions, ranging from 33% for the six-year survival rate in Piemonte (Northern Italy) to 62% in Campania (Southern Italy). In general, the survival rates are higher in the less developed Southern regions and lower in the advanced Northern regions.² If one accepts the proposition that the

¹ Since firms may have entered the market in any given month during 1989, I conventionally assume that those still in existence at the end of 1990 survived for *one year* after start-up, although some of them (those born in January 1989) will actually be approaching their second year of life at that time, while others (those born in December 1989) will have completed their first year of life just at the end of 1990. Of course, analogous considerations apply to subsequent years.

² The emergence of a tourist industry in Italy can be traced back to the mid-1950s, when it became a leading economic activity in most Northern regions and in some Central ones (in particular Emilia-Romagna and Toscana). Conversely, the South began to catch-up only during the 1970s (cf. Politi and Preger, 1991)

Table 3. *Entry rates in the tourist industry: Italian regions, 1989*

Regions*	Entry rates**
Valle d'Aosta	9.82609
Piemonte	2.06881
Liguria	4.02148
Lombardia	1.91734
Trentino A.A.	6.98876
Friuli V.G.	3.51713
Veneto	2.63014
Emilia-Romagna	3.88079
Toscana	3.25021
Lazio	1.52529
Marche	2.42127
Umbria	2.25647
Abruzzo	2.16974
Molise	1.39394
Campania	0.64831
Basilicata	0.90164
Puglia	0.92285
Calabria	0.93720
Sicilia	0.99275
Sardegna	1.91748
Italy	2.05397

*The first seven regions are those in the North, the following five in the Centre, the remaining five in the South.

**New firms divided by resident population (all ratios multiplied by 10 000)

barriers to entry (measured in terms of advertising and capital-raising requirements, shortage of bank credit, presence of modern infrastructures in the surrounding area, etc.) facing new entrants differ as one moves from one region to another, then the existence of different 'barriers to survival' in each region may also be suggested. These latter appear to be higher in the most advanced regions, where entry³ is conversely easier due to more favourable environmental conditions.⁴ In effect, from comparison of entry rates in the initial year (1989) of the relevant period (Table 3) it emerges that these are much higher in Northern regions than elsewhere, with all but one (Abruzzo) Southern regions displaying entry rates which are far below the national average. Given a limited capacity of the market to absorb new firms, in the case of Northern regions more entry will, other things being equal, mean more exit.

Thus, in those regions in which barriers to entry are lower the entry process is less selective and a larger share of entry attempts are doomed to failure or, in any case, have a short life expectancy: as a consequence, since previous studies conducted for different industries show that higher rates of entry are usually associated with lower penetration rates⁵

Table 4. *Mean start-up size of new firms in the tourist industry: Italian regions, 1989-94*

Regions	All firms born in 1989 Start-up size*	Firms surviving to 1994 Start-up size*
Valle d'Aosta	2.57 (7.39)	1.43 (0.77)
Piemonte	1.61 (1.82)	1.84 (2.51)
Liguria	1.74 (2.00)	2.15 (2.91)
Lombardia	2.02 (6.47)	2.21 (4.53)
Trentino A.A.	2.51 (3.52)	2.61 (3.52)
Friuli V.G.	1.91 (2.67)	2.30 (3.93)
Veneto	2.22 (4.74)	2.40 (5.33)
Emilia-Romagna	2.39 (8.36)	3.14 (12.75)
Toscana	2.01 (3.21)	2.35 (4.23)
Lazio	1.89 (2.44)	2.12 (2.90)
Marche	1.78 (1.97)	1.96 (2.21)
Umbria	2.11 (5.45)	1.73 (1.66)
Abruzzo	1.79 (1.54)	2.14 (1.88)
Molise	2.09 (3.42)	3.25 (4.98)
Campania	1.84 (2.12)	1.99 (2.38)
Basilicata	1.76 (1.20)	2.16 (1.40)
Puglia	2.10 (2.36)	2.23 (2.58)
Calabria	2.24 (2.22)	2.35 (2.39)
Sicilia	2.14 (2.36)	2.37 (2.81)
Sardegna	2.20 (2.94)	2.46 (3.65)
Italy	2.06 (4.72)	2.35 (5.61)

*Standard deviation in brackets

(Geroski, 1995), it is highly likely that the same will be true of most industries (including tourism) even at the regional level. Moreover, the duration of a firm's life is likely to be affected by the dynamics of industry evolution. In those

³ For the purpose of analysis carried out at the regional level, this can be defined as the number of new firms divided by resident population.

⁴ In a county-level analysis carried out for the UK, Love (1996) obtained results consistent with this hypothesis by showing that exit is influenced by entry.

⁵ Gross sales by entrants divided by total industry sales.

Table 5. *Logit model estimates: Survival on start-up size for new firms in the tourist industry: Italian regions, 1989–94*

Regions	α	β	log-likelihood	<i>N</i>
Valle d'Aosta	0.489504 (1.426505)	– 0.33264 (– 1.81774)	– 74.7074	113
Piemonte	– 0.86664 (– 8.66385)	0.100945 (2.347961)	– 562.14	890
Liguria	– 0.88237 (– 6.8348)	0.225248 (3.696208)	– 437.334	674
Lombardia	– 0.20812 (– 3.97654)	0.009562 (0.980898)	– 1168.79	1698
Trentino A.A.	– 0.23461 (– 2.08323)	0.130414 (3.628347)	– 421.675	622
Friuli V.G.	– 0.84778 (– 5.82812)	0.101365 (1.85643)	– 268.007	421
Veneto	– 0.24601 (– 3.70046)	0.015116 (1.096438)	– 791.363	1152
Emilia-Romagna	– 0.65116 (– 8.72497)	0.137715 (5.499227)	– 1009.42	1517
Toscana	– 0.46505 (– 5.61255)	0.093309 (3.096913)	– 777.365	1147
Lazio	0.054622 (0.513823)	0.135524 (2.901986)	– 529.599	784
Marche	– 0.21271 (– 1.39462)	0.10159 (1.610389)	– 238.286	346
Umbria	– 0.20916 (– 1.2089)	– 0.03355 (– 0.69723)	– 124.728	183
Abruzzo	– 0.75633 (– 3.67269)	0.297699 (3.100071)	– 180.26	271
Molise	– 0.99565 (– 1.58746)	0.462439 (1.080803)	– 28.7066	46
Campania	0.310154 (1.950235)	0.102981 (1.503076)	– 240.13	365
Basilicata	– 1.18262 (– 2.1988)	0.576254 (2.101322)	– 35.2241	55
Puglia	0.011044 (0.077845)	0.05136 (1.097795)	– 256.564	372
Calabria	0.221136 (1.038276)	0.060427 (0.841957)	– 131.095	194
Sicilia	– 0.08389 (– 0.65513)	0.100356 (2.241578)	– 337.856	493
Sardegna	– 0.00874 (– 0.05703)	0.082096 (1.605493)	– 216.317	316
Italy	– 0.30368 (– 12.3764)	0.062695 (7.585671)	– 7997.05	11 660

t-statistics in brackets

regions in which the tourist industry is growing at higher rates (albeit as the result of a catching-up process) it may therefore be easier for new firms to survive: in effect, since they may participate in the industry without inflicting market share losses on their rivals, the likelihood of retaliation by incumbents will be lower.

The cross-region variations in hazard rates (Table 2) follow a pattern which is similar to that which emerged for survival rates, with the two-year hazard rates far above 20% in most regions (17 out of 20) and the six-year hazard rate equal to or around 10% in only four cases (Piemonte,

Friuli Venezia Giulia, Toscana, and Abruzzo), with the remaining regions ranging between 0 (Basilicata and Molise) and 7% (Veneto). Six-year hazard rates below 5% in all Southern regions confirm that the risk of early failure is lower in those areas in which the conditions of the tourist industry are more unsettled. In summary, analysis of hazard rates shows that the likelihood of a firm exiting is related to region-specific factors, with new firms in advanced regions facing a higher probability of early exit than do their counterparts in less developed regions.

The size of the firm has been shown in the literature to affect significantly the likelihood of survival. In this respect, it emerges from Table 4 that the mean start-up size (employment) of firms found to be still alive at the end of the relevant period is higher than that of all firms entering the market in 1989 for the large majority (eighteen) of regions and the country as a whole.

At this point, the hypothesis of a positive and significant association between start-up size and likelihood of survival may be empirically tested. Accordingly, here I extend to the regional level the analysis by Dunne *et al.* (1988, 1989), who estimated a model for new-firm survival for each industry separately. Based on logit estimation, where, for all firms entering the tourist industry in each region during 1989, survival until the end of 1994 is defined as 1 and exit is defined as 0, the results are shown in Table 5.

For eighteen out of twenty regions the relationships have the expected sign, and twelve relationships (including regions as large as Piemonte, Emilia-Romagna, Lazio) besides that for Italy as a whole are significant,⁶ thereby supporting the hypothesis that firm size is conducive to new-firm survival. This finding is coherent with the high variability of start-up size identified for most regions (in particular Northern ones; cf. standard deviations reported in Table 4) and can be explained by the fact that larger firms survive longer because they are in general more efficient, employ more capital intensive methods, achieve more easily economies of scale, have a larger availability of internal finance besides benefiting from easier access to external finance. Moreover, when the opportunity cost of staying in the market increases, larger firms may decrease in size before they exit whereas under the same circumstance their smaller counterparts will be the first to leave the market.

IV. CONCLUDING REMARKS

In this paper I have analysed the start-up size/survival relationship in the Italian tourist industry. The main findings of the paper are: (a) survival patterns differ significantly across different Italian regions; (b) the hazard function has a bell shape with a peak at the second year of activity; (c) start-up size is statistically related to the likelihood of new-firm survival for the majority of regions and for the country as a whole.

In view of recent theories and the results of other studies, the empirical evidence presented in this paper concerning the probability of survival for new firms in the Italian tourist industry substantially confirms the importance of firm-specific factors as determinants of post-entry performance.

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