Entry in Greek manufacturing industry: Athens vs the rest of Greece

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Summary. The paper reports an attempt to estimate the determinants of entry in Greek manufacturing industry in the 1984–87 period and to identify the differences between locational entry preferences. Entry in Athens is found to be hesitant with respect to factors such as profitability and increased competition. Conversely, entry in the rest of the country is strongly related to expected profits and safe markets, negatively affected by relative labour costs and indifferent to international competition threats. The 'healthier' approach of regional entry is enhancing regional development prospects and partly justifies the strict regional policies of the 1980s.

1. Introduction

Entry plays an important role in determining the structure of industry and consequently its conduct and performance. It also affects the growth prospects of the sector and of the specific markets, regional or national, where it occurs. Thus, it may be considered as highly important for regional development and prosperity.[1]

The scope of this paper is to examine the factors affecting entry in Greek manufacturing industry, and to search for any differences between locational entry preferences. Due to lack of available data, only differences between the main urban centre of Greece, namely Athens, and the rest of the country will be considered. Such differences, if any, would be stimulating to detect since they may provide an explanation for regional imbalances and hints for future prospects.

The annual entry rate for the whole of the country in the 1984–87 period is 20 per cent—i.e. each year, 20 new firms enter the manufacturing sector for every 100 existing ones. Of the 20 entries, 4 take place in Athens (20 per cent of new entrants) while the remaining 16 take place in the rest of the country (80 per cent of new entrants). The difference in the entry numbers between Athens and the rest of Greece implies that the determinants of entry may be different and hence interesting to examine.

In section 2 of the paper we explain the model to be used; in section 3 we present the empirical findings; and in section 4 the conclusions.

2. Model and Data

There has been a lot of research on entry models, the most popular remaining the model by Orr (1974) with different extensions (Duetsch, 1975, 1984; Khemani and

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Shapiro, 1986; McDonald, 1986; Highfield and Smiley, 1987; Baldwin and Gorecki, 1987; Lieberman, 1987; Schwalbach, 1987; Shapiro and Khemani, 1987; Storey and Jones, 1987; Smiley, 1988; Acs & Audretsch, 1989; Geroski, 1991a; Mayer and Chappel, 1992).

The model assumes that entry, E, like any investment decision depends on risk and return criteria. The return is determined by profit and growth expectations, while risk is influenced by the barriers that incumbent firms can raise to deter entry (Caves and Porter, 1977; Hilke, 1984; Smiley, 1988; Geroski *et al.*, 1990; Geroski, 1991b). The barriers depend, in their turn, on behavioural, structural, labour market, foreign trade and other characteristics of the specific sector where entry occurs. Thus, the entry equation can be specified as follows:

$$E = \alpha_0 + \alpha_1 \Pi + \alpha_2 H\Sigma + \alpha_3 TI + \alpha_4 \Lambda\Sigma$$
$$+ \alpha_5 B\Sigma + \alpha_6 \Gamma\Xi + \alpha_7 A\Delta + \alpha_8 \Psi T$$
$$+ \alpha_9 \Psi A + \alpha_{10} T\Lambda + \alpha_{11} IN + \alpha_{12} E\Omega + u$$

where P^* is expected profits; GR is the rate of growth; SI is the relative size of the market; KR is capital requirements; BR is business risk; CN is the degree of concentration; AD is advertising expenditures; WS is the wage share in value added; WA is the relative cost of labour; SK is skill requirements; IM is the import penetration; and EX is the ratio of exports to sales of each sector. All other unknown factors are included in u.

Entry data in Greece are rare and when locational entry preferences are required, they become even scantier. The National Statistical Service of Greece (NSSG) keeps a record of all new establishments in the country, disaggregated by location into two categories: Athens and rest of Greece. The new establishments included must invest in machinery of more than 15 HP which means that the firms taken into account are of medium and large size. Unfortunately, only their number is known. No information on invested assets or other size proxy is available. For the 1984–87 period, the data were collected with no major changes in the sample criteria and the information was further disaggregated in the 20 2-digit manufacturing sectors annually. Thus 76 observations were available.[2]

Entry was tried in different forms, such as absolute numbers or their logs, but the one adopted in the final estimation is the ratio of new establishments over the total number of medium and large firms in each sector. The Sargan's maximum likelihood test (Sargan, 1964) was used for the choice of the most relevant specification.

For expected profits, four different formulations of expectations were tried: lagged, i.e. $P^* = P_{-1}$; adaptive, i.e. $P^* = \theta \sum (1-\theta)^j P_{-j}$; rational with perfect foresight, i.e. $P = P_{+j}, j \geq 1$; and static, i.e. $P^* = P$. The best results were given by lagged expectations and they are the ones reported in Table 1. P^* is the log of gross profits lagged by one year as published by the Statistical Service of the Confederation of Greek Industries (CGI).

GR is the annual growth rate of each sector's employment. The growth rate of sales and total assets were also tried. None was significant and the last two seemed to suffer from inflation problems. Therefore employment growth was finally used. SI measures the relative size of the sector in terms of value added with respect to value added by industry as a whole. The larger the size of the sector, the larger the replacement effect—i.e. the more firms enter and leave the sector. Both variables are published by the NSSG.

KR is capital requirements which should be a barrier to entry, since the higher the capital required for an establishment the less firms would be willing to enter. There are no data available on capital to fit our sample.[3] Therefore productivity was tried as a proxy thinking that the higher the capital used the higher productivity should be. Productivity data are collected by the CGI.

BR is measured by the standard deviation of profitability in the last 4 years, divided by the average profitability in the same period. CN is the share of the four largest firms of each sector in terms of employment. AD is

Table 1. Entry in Greek manufacturing industry: Athens and the rest of Greece, 1984–87

	Greece	Athens	Rest of Greece
C	− 0.86*	− 0.15*	− 0.71*
	(2.89)	(2.80)	(2.71)
WS	1.27*	0.29*	0.98*
	(4.24)	(5.49)	(3.71)
KR	0.03	− 0.39	0.42
	(0.01)	(0.75)	(0.16)
SK	− 0.01	− 0.03***	0.02
	(0.11)	(1.39)	(0.16)
BR	0.20	− 0.02	0.21
	(0.80)	(0.37)	(0.98)
Π	0.86*	0.08***	0.78*
	(2.67)	(1.45)	(2.74)
GR	0.16	0.00	0.16
	(0.53)	(0.07)	(0.62)
CN	0.92*	0.16*	0.76*
	(6.31)	(6.16)	(5.92)
SI	− 0.27	0.06	− 0.32
	(0.37)	(0.43)	(0.51)
WA	− 0.66*	− 0.06**	− 0.60*
	(3.82)	(1.90)	(3.95)
AD	1.39	0.32	1.07
	(0.56)	(0.71)	(0.50)
IM	0.27*	0.04*	0.23*
	(3.01)	(2.57)	(2.90)
EX	− 0.27	− 0.78*	0.50
	(0.13)	(2.12)	(0.28)
R^2	0.47	0.56	0.42
F	6.44	9.02	5.56
N	76	76	76

Notes: t-values are reported in parentheses; coefficients with *t*-values > 2.39 are significant at 1 per cent (*), $t > 1.67$ significant at 5 per cent (**) and $t > 1.30$ significant at 10 per cent (***). One-tail test.

the ratio of advertising expenditures over sales. The source for CN and AD is the NSSG.

The labour factor introduces three new variables in the entry equation. WS is the ratio of salaries and wages over value added. WA is the ratio of the average wage of each sector over the average wage of manufacturing industry. Finally, SK is the ratio of skilled personnel over total employment in the sector. The source is again the NSSG.

IM is the percentage of relevant domestic demand satisfied by imports, while EX is the percentage of sales which is exported. The first series of data is provided by the Bank of Greece and the second by the NSSG.

3. Empirical Findings

Table 1 reports the results of the entry equation estimated separately for Greece, Athens and the rest of the country. The explanatory ability of the model is quite high for such pooled sample of data and reaches 47 per cent, 56 per cent and 42 per cent of the observed variation of the entry share respectively.

The usual tests for heteroscedasticity and

multicollinearity were performed. Neither seemed to create serious problems. Correlation between the explanatory variables is not high. The Goldfeld and Quandt test (Judge *et al.*, 1988) was used to inspect for heteroscedastic errors. The resulting F ratios were 0.40 for Greece, 0.54 for Athens and 0.37 for the rest of Greece—all smaller than the critical value of F with 23 DOF at 5 per cent which is 2.01. Therefore, it can be accepted that the residuals are homoscedastic.

In 1985 an austerity programme was introduced which strongly affected the business environment. The cost of capital was increased; a strict incomes policy was introduced affecting the cost of labour; demand and profit expectations changed; imports and exports were heavily affected either by direct measures such as quotas or extra duties or by the devaluation of currency. In order to test for changes in the entry decisions and the consequent instability of the estimated coefficients, a Chow test was performed. The F values were 1.01 for Athens, 2.35 for the rest of the country and 1.93 for Greece. They were smaller than the critical values of F with 13 and 50 DOF at 5 per cent and 1 per cent which were 1.95 and 2.50 respectively. Therefore stability is assumed to have prevailed throughout the period examined. Apparently entry decisions followed the changes in the independent variables but without structural breakage. The austerity 'shock' was not strong enough to cause discontinuities in the entry decisions.

Most coefficients are significant in the aggregate equation. Expected profits are found to affect the entry decision in a positive way, as expected. Unexpected is the significantly positive effect of concentration on entry which remained positive in all three cases. Concentration is thought to be a deterrent for entry, since it makes collusion easier and predatory behaviour more feasible (Schwalbach, 1991). The explanation may be that entry occurs in highly concentrated sectors because the large and possibly colluding firms set the (high) prices which new and small firms adopt. Newcomers are, at least initially, followers of the 'price setters' and belong to the market fringe.[4]

The positive sign of the wage share in value added is not unreasonable, since it is well known that new establishments occur in labour-intensive sectors—which remains a structural problem for Greek industry. It is the light and labour-intensive sectors, such as food and beverages, textiles, apparel and footwear, leather and fur, that attract more entries and grow faster than capital-intensive and high-tech ones; the result being the continuation of an unfavourable structure for Greek industry in view of the integrated European market of the late 1990s which calls for a more balanced manufacturing production. It should be stressed that the effect is the same in Athens and the rest of the country; which means that despite the application of an industrial policy with a regional dimension in the 1980s, no differences in the sectoral entry preferences were observed.

The relative wage is found to affect entry in a significantly negative way. It is not unusual for entry to avoid sectors with relatively high labour cost. However, it is the light sectors that employ cheaper labour and the negative sign stresses once again the structural bias of entry towards the light side of industry.

Import penetration is found to have a positively significant effect which is rather the opposite of what was expected. Sectors with high import penetration attract more entries, maybe because imports are a sign of strong demand and relatively high prices of the sector's products. Imports may be considered as a sign of a healthy market demand-wise and may therefore be preferred for a less risky entry. The sign remains positive for the threes cases, but the Athens effect is much smaller.[5]

It is questionable why growth and size did not have any significant impact anywhere. One explanation may be that all the influence of future prospects on entry is represented only by profit expectations. Skill requirements, export share and business risk did not seem to affect the entry decision significantly

either. Capital requirements were not significant but the lack of good data may be responsible for that. In any case, it is not unreasonable since entrants seem to be attracted by labour-intensive and not capital-intensive sectors. The former require much less investment; hence the 'sunk cost' effect on entry, represented by capital requirements, is negligible—adding to the argument that entry is biased towards light sectors with low capital needs.

The main differences between entry in Athens and the rest of Greece lie with the expected profits and the export share effects. Profit expectations do not seem to affect much the entry decision in Athens (small coefficient and significant only at 10 per cent) which means that firms established in Athens may do so for other reasons, such as proximity to the market or other infrastructure facilities, availability of labour or in general the existence of urbanisation economies (Louri, 1988). It should be stressed that the negative relative wage effect in Athens is very small, probably because availability of labour is easier and cheaper there. Conversely, firms established in the rest of Greece seem to take into account very seriously both profit expectations and the relative cost of labour, as should be expected.

The negative effect of export share for Athens may mean that entrants are negatively affected by the existence of high exports—probably because they consider them as a sign of exceedingly competitive markets. New firms may find it difficult to try to survive in such an internationally competitive environment. Entrant firms in the rest of Greece perceive export share as non-significant either because they are not interested in exports or because they do not consider internationally competitive sectors as a threat for their success.

The general idea coming out of the results presented in Table 1 is that, as far as regional entry preferences are concerned, firms established in Athens show a relative disrespect for profitability and a strong aversion towards internationally competitive markets. The relative wage effect is rather small and skill requirements have a negative influence on entry.

Entrants in the rest of the country consider expected profits as highly significant and are not influenced by international competition, while they prefer secure sectors with high concentration, high import penetration and high labour share (Fritsch, 1992). In a sense it seems that entrants in the rest of the country have a more sound rationale for their decision, while entrants in Athens are difficult to interpret with the usual entry determinants. Similar conclusions are reached by other researchers (Kottis, 1980; Katochianou, 1984) using much earlier data and different methods of analysis.

It may be the case that urbanisation economies or even personal preferences play a more significant role than the usual factors given by entry theory (Norton, 1992). It may also be the case that regional entrants have a healthier attitude towards investment decisions which may be due to an encouraging but strict regional-industrial policy applied in the 1980s in Greece. If the 'healthier' approach is related to the four times higher rate of entry in the rest of Greece as compared to Athens, then regional industrial development seems to have good prospects.

An additional point is based on the negative effect of the relative wage as combined with the insignificance of capital requirements. Such an association could give policy-makers a warning that labour subsidies may be more relevant than capital ones for a successful regional policy in the future (Tatsos, 1990). This suggestion should not hold if an industrial policy with emphasis on capital-intensive or high-tech sectors is adopted.

4. Conclusions

Entry in manufacturing industry is a determinant of its structure and performance. It also affects regional development in the sense that new, healthy firms promote industrial growth, employment and income-making regions independent of the centre's 'protection'

and capable of sustaining a decent standard of living.

By examining the different factors which are thought to affect the entry decision, it was found that entrant firms in Athens had a more hesitant approach to factors related to profitability and increased competition. On the other hand, entrant firms in the rest of the country showed strong interest in expected profitability, preference to safe markets and indifference to threats posed by international competition. Both are negatively affected by the relative cost of labour, with the periphery showing a much stronger response. At the same time, both are not affected by capital requirements. The two results could suggest that labour subsidies instead of capital ones may be more relevant for regional development.

No prospects of changes in the Greek industrial structure are evident in either location, which is a negative sign for its evolution. Even so, it seems to be the case that entry in the periphery not only is larger but it also responds to healthier criteria showing an increasing dynamism. It remains to be seen in the near future if regional development will be enhanced by such preferences. The signs given by the present analysis are rather positive.

Notes

1. New firm creation will enhance regional development only if it creates links with the specific region where it locates—e.g. employs local labour force, uses local products, consumers or invests its profits in the region. Otherwise entry may be neutral or even negative, as one referee suggested, for regional development and prosperity. A quick look at Greek industrial employment data shows that in the 1978–88 period industrial employment increased by 17.9 per cent in the rest of Greece, while it decreased by 12.4 per cent in Athens (NSSG). This may be a sign of positive entry effects on regional employment and income.

2. The period covered is 4 years and the information on new establishments is disaggregated in 20 2-digit sectors. Thus 80 observations should be available. Sector 22, tobacco, had no entries in any of the years and it is considered as a special case of a heavily oligopolistic market facing decreasing demand. Therefore we decided not to include it in our sample; 76 observations remained.

3. The only data on capital disaggregated at 2-digit manufacturing sector level are collected by the CGI. The source is the balance sheets of corporations where capital appears at historic, i.e. acquisition, cost. Since no information is available on the specific year of each acquisition, capital cannot be deflated and therefore it cannot be transferred into any comparable units and used in econometric estimations.

4. It should be noticed that when the same regression was run with aggregate data referring only to large size entries nationally, the concentration effect was negative. Apparently large firms are taking into account the possibility of collusion and predatory behaviour by incumbents, while medium-sized firms included in our sample are satisfied to belong to the fringe and follow the large price-setters' policies which may guarantee enough profits for them. The annual entry ratio of large firms is 8 per cent, while the entry ratio in our sample is 20 per cent. Unfortunately, the large entry data are not disaggregated regionally.

5. It should be stressed again that when the same regression is run with aggregate data from large-size entries, the import penetration effect is negative while the export share one is positive. One explanation may be that large firms avoid sectors that are heavily penetrated by imports and therefore probably saturated and not able to absorb their large production potential. For the opposite reasons, they prefer sectors with increased export potential. For the medium firms included in our sample, import penetration means apparently that the market is safer demand-wise, while they do not try their luck in exports being afraid of or incapable of facing international competition.

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