

Entrepreneurship and Growth: Creative and Equilibrating Events

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ABSTRACT. This paper investigates the constraints on the growth of creative and equilibrating entrepreneurial events. The empirical material is drawn from the Greek economy. It was observed that the two different levels of entrepreneurial events involve constraints of different kinds. This paper analyses those constraints and their significance for entrepreneurial growth.

1. Introduction

This paper deals with the impact of growth constraints on creative and equilibrating entrepreneurial events.

The manifestation of entrepreneurial activity is usually interpreted as the resultant of exogenous socioeconomic factors, as as the exogenous stock of entrepreneurial talent in Lucas (1970), the endogenous capacity of the entrepreneur in Stepanek (1960) and Killoy (1969), the entrepreneurial strategy used by the business (Acs, 1969), and a series of other factors such as economies of scale (Bain, 1956 and Schmalensee, 1981), product diversification (Mann, 1966), market organisation, and so on.

Entrepreneurial activation can also be categorised in accordance with whether the empirical entrepreneurial events are innovative and how far they are a source of creative destruction (Schumpeter, 1934–35), in accordance with the degree to which they contribute to equilibrating the disturbance caused by creative disordering of the market, in accordance with the extent to which they improve the efficiency of the process of

production (Leibenstein, 1968), or, lastly, in accordance with how far they utilise resources released by other activities (the ‘omega event’ of Binks and Vale (1990)).

Along general lines, the growth of an economy needs entrepreneurial events of all kinds, given that the presence of one event supplements and generates the others. Innovative entrepreneurial activity is, of course, the main source of growth by means of technological progress. It seems reasonable to conclude, therefore, that the model for participation of the various types of entrepreneurial events is responsible for the varying rates and models for growth in an economy. Inherent in this hypothesis, however, is the hypothesis that innovativeness and efficiency are linked. The relationship between the two has been examined and analysed in some depth (cf. L. A. Lefebvre and E. Lefebvre, 1993). Indeed, there is a considerable body of evidence pointing to a powerful inverse relationship between them – that is, that when an enterprise is in a strong and competitive position, it tends to make greater efforts towards innovation.

If, however, innovative entrepreneurial events are also efficient, what is the situation where the other types of entrepreneurial event are concerned? If innovation is important and is accompanied by efficiency, is it not equally important that the settlement of the market should be carried out effectively? And is it not important that improvement of the process of production be conducted in an efficient manner?

Are there, however, a priori theoretical reasons for believing that the various types of entrepreneurial event face different growth conditions? That is a question of which, so far, there has been very little discussion. When Schumpeter discusses the process of creative destruction, he clearly implies that the innovative event will encounter

Final version accepted on October 20, 1995

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the resistance of the market to having its equilibrium disturbed, and so this is the kind of event which will find growth most difficult, while the market is quite capable of creating a whole series of equilibrating events. And, of course, we know that the mechanism of diminution in rates of entrepreneurial growth is that by which there is a progressive reduction in the marginal profit percentage as a result of incremental entrepreneurial activity. The course taken by the profit percentage is, however, the ultimate observable magnitude for depicting the growth procedure; the question we shall be dealing with here is how that procedure is reached.

The objective of this paper, then, is to cast some light on the mechanism through which the constraints on the growth of an enterprise are activated and how those constraints affect the various types of entrepreneurial event. The empirical data are from the Greek economy and refer to the year 1992–1993. As a typical Southern European economy, the Greek economy is notable for its very high density of small and medium-sized enterprises, and this lends extra significance to the analysis. Thus, if the process of growth in entrepreneurial initiatives can be sufficiently understood in terms of their individual characteristics, it may be possible to work out a policy framework for supporting those initiatives.

This paper is organised as follows. First, it analyses the relationship between entrepreneurial event and development. This analysis leads to identification of the factors which affect the growth of SMEs. The paper then presents and defines the explanatory variables before analysing the quantitative methodology used and its results and ending with discussion of the conclusions of the analysis.

2. The entrepreneurial event and economic development

Economic theory approaches the entrepreneur as an independent factor in production, just as it does land, labour and capital. The literature has emphasised many different aspects of the entrepreneurial character (the entrepreneur as innovator, as owner, as settler of the market, etc.).

Schumpeter (1934) incorporated the entrepreneur into a mechanism of economic change. The

foundation-stone of economic change is the entrepreneurial event. An entrepreneurial event is a new combination of economic resources which stands out for its uncertain prospect of temporary monopoly profits.

The idea of 'a new combination' provides a useful starting-point for an economic theory of entrepreneurship. It follows that we have to define what is meant by a 'new combination'. It should be borne in mind that the absence of uniformity in the economic categories of input is such that any combination of resources will be different, and thus new. On the other hand, not every new combination of resources constitutes an entrepreneurial event: the uncertain prospect of entrepreneurial profit also has to be present. It follows that the entrepreneurial event must have certain commercial characteristics.

In order to understand the relationship between economic development and entrepreneurship, we will have to set out from the point at which the economy is read as a cyclical flow of activities. In effect, what we are assuming here is the interrelation and interdependence of economic activity. Each sale depends on the extent to which the purchaser will find a market of his own in which to make the income necessary for the sale. Under this rationale, Schumpeter argued that the system does not change drastically, but that any shifts in it are of an evolutionary nature. This stresses the endogenous nature of the system – which, however, is not to preclude the appearance of certain events which cannot be classed within the regularity of the system. Connections with the remainder of the functions of the economy is continuous and this functioning constitutes economic development.

There are two different ways of changing the continuous cyclical nature of activities. The first involves a gradual change in preferences and population changes. The second involves sudden, discrete (or discontinuous) endogenously-created changes which cannot easily be attributed to specific causes. Although they are generated by and in the system, they have no clear links to existing combinations of input. Such changes are not created exogenously, by external events of a dramatic nature such as earthquakes, floods or war.

However, the development of entrepreneurship

– and, by extension, economic development itself – does not come about without resistance. First of all, the entrepreneur himself, as an individual, may be hesitant about undertaking the management of the entrepreneurial event for the very simple reason that its results are uncertain. Here, the opportunity cost of his employment by another person is a natural mechanism for dealing with the situation. Nor is society itself always receptive to the unknown, and its various institutions and agencies may adopt a conservative attitude towards the prospect of supporting the entrepreneur.

The factor which leads the entrepreneur to overcome the obstacles in his way is entrepreneurial profit, the crucial characteristic of which is its temporary nature. When a new combination of production factors is employed, there is a reward – entrepreneurial profit – for being the first person to implement it. For example, the innovation of implementing a more efficient production process will bring the entrepreneur separate profits caused by the reduction of the production cost per unit. However, when the information becomes known, other entrepreneurs will copy the new production method or procedure and so in the end the reduction in prices will eliminate the surplus profit.

According to Schumpeter, the determination of profits is a mechanism outside the traditional marginal theory. The entrepreneur is not in a position to predict what profits he will have from the implementation of a new combination of production factors. Demand for the new product cannot be projected with precision. Nor can entrepreneurs project the duration of this entrepreneurial profit. It follows that the entrepreneur cannot assess his future entrepreneurial activity on the basis of the criteria of the marginal theory, since he does not have access to the information he would have needed to do so. Schumpeter thus rejects the marginal theory in development and economic change, since it is not in a position to explain the procedure by which they come about. Instead, Schumpeter put forward an internal theory of economic development which relies exclusively on the contribution made by entrepreneurial activity.

All the foregoing make it possible for us to describe economic growth and development. The first entrepreneurial event which is successfully

implemented has certain effects: it disturbs the structure of the cyclical flow of resources, and it alters people's conception of the change. Entrepreneurial events which were once rejected because of the conservativeness of the social, institutional and political status quo can now become acceptable. This procedure sets up a dynamics of its own, and as the volume of entrepreneurial events grows, so the structure of production begins to adjust itself so as to retain equilibrium. This takes the form of a process in which fewer and fewer important entrepreneurial events occur – a process which will continue until the cost of financing those entrepreneurial events becomes so high as to serve as an effective brake on the appearance of new events. This will be the new point of equilibrium, which, however, will be at a higher level than the starting point. This is the description of economic development.

In describing the development procedure – that is, the procedure by which markets are unbalanced and then equilibrated and settled – Schumpeter was using an environment of 'laboratory conditions'. In reality, the entrepreneur is capable of predicting the potentiality of a high rate of profit, and this vision is what impels him forward to take action. Achievement of his objective, of course, may require a lengthy procedure and may lie far in the future – indeed, he may never achieve it at all, in which case there will be a difference between his realised rate of profit and his potential rate of profit. In fact, we could even hypothesise that the entire market had the same vision (that is, of a potential rate of profit) and that it operated on that basis. Yet it may happen that neither the entrepreneur nor his competitors ever have the experience of attaining their objective.

As a result, however, the realised rate of profit is the final product of two opposite procedures: a positive reaction market effect and a negative reaction market effect. The positive reaction market effect could also be called the welcoming placement effect for the new product, since it covers all the positive elements which will favour the establishment of the new product. Among those elements are the gratification of new human needs never before satisfied, the reduction of production costs by a new technological discover, and so on: in general, all the factors which favour the development of new ideas and the conditions

for them to grow. The negative reaction market effect consists of all the negative forces that greet new initiatives: questions concerning the attitudes and abilities of entrepreneurs and consumers and concerning the resources available (such as the availability of resources, access to the financial system, the availability of skilled labour, and questions of technology). The negative reaction market effect also involves issues connected with the structure of the markets, the existence of administrative constraints and the introduction of technical specifications. It also involves the question incentives, whether for entrepreneurial activity or in the form of taxation incentives. Needless to say, any of these factors may cease to be a positive factor and join the group of negative factors and vice versa, depending on the manner in which they are activated. For example, entrepreneurial incentives may function positively (operational grants incentives for new products) or be of a negative or constraining nature (when they are granted only if the enterprise establishes itself in specific and restricted geographical areas). Such examples could be given for all the factors which affect entrepreneurial growth.

The 'signal' for the attraction of new entrepreneurial initiatives – that is, the difference between the prevailing wage and realised entrepreneurial profit – is the outcome of interaction between the positive and negative factors that determine the process of entrepreneurial growth. The more this difference sends attractive messages out into the market, the greater will be the attraction for new entrepreneurial initiatives, to the point at which the difference ceases to exist because of the increase in supply of the product, when the market reaches equilibrium once more. Analysis shows, however, that even when the difference between the realised rate of profit and wages falls to zero, there is a possibility of the messages continuing to be broadcast through the difference between the potential rate of profit and the prevailing wage. This will lead to initiatives that cause loss-making entrepreneurial activities.

It will thus be very interesting to see the manner in which various growth factors affect the different types of entrepreneurial event.

On the basis, primarily, of the theoretical contributions of Schumpeter and Leibenstein, we can divide entrepreneurs into two main categories: the

first type of entrepreneur causes economic development by introducing new ideas which make an effective contribution to restructuring the distribution of production factors, while the second (here we rely on the contribution of Leibenstein) causes slight alterations in existing products and procedures. This type of entrepreneur responds to the messages of the market and equilibrates the process of settling the market; in other words, he is the leading actor in market equilibration.

The different types of entrepreneurship are associated with the appearance of two different types of entrepreneurial event (M. Binks and P. Vale, 1990):

- a) The *catalytic entrepreneurial event or activity*: Here we have the appearance of the first, or a unique, new combination of situations, procedures or products. Within this category, there is a further special case in which resources previously committed by other entrepreneurial events become available, often at a very low cost.
- b) The *distributive or redistributive entrepreneurial event or activity*: Here we have the wave of effects on economic activity released by the first catalytic event. The process of redistribution will have consequences, and will create competition for diminishing markets.

The crucial characteristic of economic development is that the two discrete types of entrepreneurship are complementary, and the effects of one specific entrepreneurial event spread out to embrace all the dimensions of economic activity.

3. Barriers to growth in SMEs

We shall follow J. Barber, S. Metcalfe and M. Porteous (1989, 1992) in their contribution to the study compiled by ACARD (the Advisory Council for Applied Research and Development of Great Britain) of the means by which SMEs develop and the barriers to that process and we shall isolate the factors which influence the process of SME growth in terms of opportunity for growth, needs in resources, and the provision of incentives to reinforce the development procedure.

Utilisation of the opportunities available for SMEs requires the appropriate entrepreneurial abilities and behaviour. The process of growth

requires access to financing, skilled labour and technology. The factors of public commodities and access to information should also be numbered among the resources required for growth.

The structure of the markets and the opportunities they extend to SMEs constitute the second significant area from which SMEs may draw dynamism or where they may encounter barriers. This sector includes the capacity for participation in large-scale public procurements, the field of amalgamations and competition policy, the structure of the market and the degree of centralisation. One should also add in the operating costs associated with the environment in which the enterprise is active (customs clearance procedures, issuing of permits, etc) and the technical stands applied extraneously to the products of SMEs.

In the field of the incentives made available to reinforce the development process, two significant categories of incentive can be isolated: those associated with the operation of the enterprise, and those of a tax nature. The first category consists of incentives related to investments, increased employment, export orientation, selective spatial planning and the selective promotion of certain branches of industry. The tax incentives, in turn, can be distinguished according to whether they affect the taxation of personal income, company income or capital.

It should be borne in mind that only a small percentage of existing small enterprises will grow to become medium-sized or large enterprises. There are a number of reasons for this:

1. The existence of a series of constraints on their growth, such as entrepreneurial ability, the opportunities provided by the market, requirements in resources and incentives, and counter-incentives. This paper will be analysing these factors.
2. There are technologies, products and markets in which only small enterprises can play a role.
3. Quite apart from the question of entrepreneurial ability, the entrepreneur may lack the desire for the enterprise to grow beyond a certain point, especially if this involves a loss of independence or of personal labour relations (Segal, Quince and partners, 1985). This paper will not be examining the second and third factors.

The process of growth in the small enterprise sector may take two forms: growth through new small enterprises, and growth through the expansion of existing small enterprises. We shall be examining the second of these forms. In the given conditions, a theoretical and empirical question arises as to how to measure the growth of a small enterprise, since the measurement will also have to take into account the general economic growth conditions prevailing in the period under examination. We will then be dealing with terms of relative growth and not absolute growth.

We shall now complete two procedures: first, we shall determine the target variable whose behaviour we shall attempt to explain, and then – on the basis of economic theory and the empirical research conducted – we shall define the factors which affect the growth of SMEs.

3.1. *The target variable*

The target variable has to express the rate of growth of SMEs. The variable which expresses the growth of SMEs is the rate of change of their sales: more specifically, a precise measurement of the rate of growth of an SME will be provided by the rate at which its sales grow at fixed prices (disinflated growth rate, using the consumer price index as the disinflation rate) – and still more precise measurement by the relative rate of growth at fixed prices. To produce the relative growth rate of an SME, we will take into consideration the general state of the market: more specifically, its rate of growth at fixed prices. Of course, it is difficult to calculate the growth rate of the market for each specific product or branch of industry, but it would be more precise to do so and subsequently assess the deviation of the growth rates for the specific product or branch from the corresponding magnitudes of the market, so as to produce the relative growth rate. However, as a proxy for the rate of market growth we can use the rate of change in overall demand in the economy at fixed prices. Thus the ultimate target variable is the difference between the growth rate of the specific SME (g_i) and the rate of change in overall demand in the economy (g_e):

$$\text{TarVar} = g_i - g_e$$

3.2. *The explanatory factors*

We shall isolate four areas which produce effects on the growth rate of SMEs: personal abilities, resources and technical capacity, market opportunities, and incentives.

The relevant theoretical references and grounding will be presented for each of these areas. Then, in section 4.1, we shall develop the logical connection between the theoretical references and the variables used in the empirical part of this paper.

3.2.1. *Abilities and attitudes*

The literature on the role of abilities and attitudes as constraints on the growth of SMEs goes back to the old dichotomy on the role of internal and external barriers to growth. Stepanek (1960) saw entrepreneurial and managerial ability as the greatest bottleneck. The literature dealing with the question of industrialisation has focused on the question of entrepreneurship as the major question. Thus one of the entrepreneur's most significant advantages is his ability to exploit market conditions. The questions to be answered here concern: a) his incentives, personal dynamism and adaptability, b) his organisational aptitude, and c) his technical skills.

It is interesting that entrepreneurs themselves are often aware of their administrative shortcomings, especially in the realm of financial planning (Scase and Goffee, 1980; Boswell, 1973).

A conjunction of all the effects of entrepreneurial behaviour (Wildsmith, 1973; Koutsoyiannis, 1975 and Williamson, 1967, as presented by D. Bosworth and G. Jacobs, 1992) leads to the conclusion that a small enterprise managed by an owner maximising his own income has less strength for growth than a – usually larger – enterprise run by a management team whose members have additional incentives such as their personal careers, prestige, etc. In practice, however, small entrepreneurs very often emphasise the connection between gratification and creativity (Gill, 1985; Clutterbuck and Devine, 1985). The distinction between the creativity incentive and that of the search for entrepreneurial profit can conceal the possibility that a different approach to entrepreneurship may favour or militate against the growth of the enterprise.

The ability of the entrepreneur to adjust his behaviour to developments in the market for his product, the labour market and technological change is the next place from which obstacles to the growth of an enterprise may stem. The problem here is how to quantify the entrepreneur's attitude towards these issues. One cannot, of course, ask directly, "Do you display adaptability towards developments in the market for your product?" Our picture of entrepreneurial behaviour will have to be shaped indirectly, through the information collected in areas of entrepreneurial action. Since our interest is focused on how far the entrepreneur makes a dynamic approach to developments in the market, we will find evidence in answers to the following questions: a) how far entrepreneurs themselves feel a need for further training in matters of business planning and management (Boswell, 1973), and b) how far they undertake investments in order to deal with competition.

3.2.2. *Resource needs*

Implementation of a growth procedure in SMEs requires the availability of resources, the lack of which may create significant constraints. Five sectors are involved here: financing, specialised labour, technology, public commodities, and information.

A) Lack of financing. Along general lines, small enterprises could be said to have to face heterogeneous, fragmented and imperfect capital markets. There are two reasons for the imperfection: a) the financial and normative constraints on entry into the traditional entrepreneurial markets, and b) questions of the growth and economic characteristics of the enterprises themselves.

The papers of Evans and Jovanovic (1989) and Fazzari, Hubbard and Peterson (1987) give a very concise account of the problems facing small enterprises. Evans and Jovanovic place more emphasis on the restricted liquidity facing small enterprises, while Fazzari, Hubbard and Peterson concentrate on the problems of the incomplete capital markets in which most small enterprises are forced to move. In such circumstances, the enterprises have to rely on their own capital and savings.

It is very common for small enterprises to lack

access to long-term credit, and the role of equity capital is often played for them by the savings of the entrepreneur's friends and relatives.

By way of contrast, large enterprises find it easy to substitute debt or equity capital items, depending on which is more profitable for the entrepreneur.

Stigler and Weiss (1981) analysed the role of incomplete information and imperfect access to the functioning of the capital market in contrast to traditional markets. The crucial difference lies in the fact that an increase in the price of the product (that is, in the interest rate) not only causes a rise in the price to be paid for borrowing but also alters the nature of the demand curve: the investors who are attracted will be those prepared to pay a higher price for capital and whose investment plans thus contain a greater element of risk. This, however, increases the risk for the supplier of the capital, and so a state of credit allocation occurs at whose point of equilibrium the borrowers are prepared to pay higher prices but cannot have the credits because the banking system does not provide them. This is the source of what has been called the 'finance gap' in entrepreneurship.

B) *Labour market constraints.* The ability to adopt and exploit technical and organisational innovation depends on the quality of both the entrepreneur and the workforce (Bosworth, 1992). It follows that the capacity of small enterprises for growth will depend to a significant extent on both these factors.

Of course, we are aware of the direct relation between the level of investments in technology and the level of skill specialisation: if a small enterprise is to grow, it has to develop the quality of its staff.

Small enterprises usually start out from a low level of technology; not only that, but they are usually reluctant to introduce in-service training programmes to improve their technological base. As a result, their level of willingness to adopt such methods of improving the quality of their workforce will also characterise their growth dynamics.

In general, it has been observed that as the size of the enterprise grows, so does the proportion of its turnover spent on in-service training (Bosworth, 1992).

There are a number of reasons for which small

enterprises tend to spend less on in-service training, per employee, than large firms: a) since small firms are usually labour-intensive and the overall cost of in-service training is broken down into a greater number of parts; b) since it is difficult to apply in-service training programmes where the level of skill specialisation is low; c) because small enterprises are higher-risk employers and the staff are more mobile, as a result of which entrepreneurs are less willing to spend capital on in-service training.

C) *Technological constraints.* The basic question to be answered here is, "Is inability to gain access to technology produced outside the enterprise, to know-how and to special skills a constraint on the growth of SMEs?" (R. Rothwell and M. Beeslay, 1992). This question is meaningful, obviously enough, once we assume that technology is a crucial factor in the growth of enterprises. The more specific problem touched upon is connected with the extent to which the difficulty of access to technology is the result of internal factors (internal inability to keep pace with technological developments) or of external factors, in the sense that the locations where technology is developed avoid contact with SMEs.

The technological level of the enterprise can be ascertained from the percentage of investments already carried out which can be described as "investments in production automation, information technology, communications technology, office automation, technological upgrading of the product, new environmental protection innovations".

D) *Constraints on access to public commodities and information.* Very many SMEs operate on the borders of the informal section of the economy, thus causing problems for their access to public commodities and services (public transport, telecommunications and basic services such as electricity, water and gas supply, etc.). The question here has two facets: how far does the SME create the conditions necessary for it to be able to demand access to public commodities, and how far the public sector welcomes SMEs. When the entire public sector is organised in such a way as to be orientated towards the reception of medium-sized and large firms, it is likely that there

will be no provision for the reception of smaller enterprises. One characteristic example is that of industrial zones in Greece, which until ten years ago made no provisions whatever for the establishment of small enterprises, offering infrastructure of a type which only a medium-sized or large firm would need or could afford.

When there are no specifications for the reception of smaller enterprises, the cost of access to these services is much higher, and thus we have the activation of a constraint on growth.

3.2.3. *Market opportunities and structures*

The more specific issues which arise here are the role of large markets (especially that of the state), the role of subcontracting, the role of private sales, specialisation of the product, and, lastly, the source and type of effect of competition.

A) *Mass markets for SME products.* Mass markets for SME products may be either public sector organisations or private sector enterprises. There are branches of the economy whose products are distributed in a largely similar manner (hospital goods, the arms industry, telecommunications, etc.). Clearly, large purchasers are in a position to influence the type of competitive relationships to be found among SMEs, their prices, their technical specifications and, ultimately, their degree of profitability (K. Hartley and J. Hutton, 1992). Indeed, there is evidence to suggest that the more input an enterprise purchases from a maximum number of suppliers and the less centralised its sales are, the more profitable it will be (Martin, 1983) and the more scope it will have for growth.

A second area of relevance here which affects the conditions for SME growth is that of inter-company commercial relations and the role played by end sales. Given the position explained above concerning the negative role of large purchasers, the more sales can be directed towards end consumers and retail outlets, the better prospects for growth the small enterprise will have.

It is self-evident, however, that a small enterprise cannot by itself support an extensive sales network, given that economies of scale do not develop in its sales. That is why the producer SME will experience severe obstacles to further growth even when the percentage of its sales directed to consumers and retail outlets is very high.

B) *The role of subcontracting.* For a large firm, the choice of developing production lines inside or outside the enterprise is connected with the costs and benefits of one option or the other. Large firms have the advantage of being able to manage different business plans simultaneously, thus distributing the risk as they distribute the products. Smaller firms have the clear advantage of development and speed of response. In general, large firms prefer to protect their own employees, especially in periods of uncertainty and recession, and avoid commissioning work from outside the enterprise (K. Hartley and J. Hutton, 1992). However, there is evidence to suggest that the externalisation of internal production processes can generate cost economies of up to 25% (Hartley and Hubby, 1985), since competition is produced between the internal production lines and the external supplier. In addition, the small or medium-sized supplier is able to develop his competitive capacity by reducing production costs.

C) *Market structure.* The challenge facing a growing SME is of being able to move from the small markets in which it has usually been active to larger ones. It would seem that the fact that SMEs usually operate, to begin with, in limited markets is a significant factor in their survival and can serve as a springboard for their entry into the growth procedure (McGee *et al.*, 1986).

However, if the firm is export-orientated it may be easier for it to find similar specialised markets abroad into which to expand its activities.

There are two further issues which have to be touched on as supplements to the presentation of the role of market structure in SME growth. The first concerns the question of growth of the enterprise, and the second involves the degree of concentration of the specific branch of the economy in which the SME is active.

In general, we know that the existence of economies of scale is an advantage to larger firms unless there are major changes in the market or in technological conditions (P. M. McGee, 1992). Economies of scale thus help large enterprises become still larger. In other words, the larger the enterprise is, the easier it will find it to grow still larger.

In order to prevent the target variable and the explanatory variable from influencing each other,

we took the number of staff employed by the firm as a proxy for its growth level.

The debate over the question of the concentration of market forces caused by a high degree of oligopoly structure and the barriers facing SMEs in entering such branches and growing there is an old one. As far as SMEs are concerned, the issue has two facets: one is determined by the view that a high degree of oligopoly concentration is usually connected with a high concentration of small enterprises in the same branch. This is the result of the adoption of a policy of toleration towards smaller firms by the larger units in the branch (Edwards, 1964), which prefer to avoid localised commercial warfare when their real concern is the formation of strategy on a general level. At the same time, however, the activation in the same branch of a number of giant firms and their affiliates will clearly be capable of preventing SMEs from entering that branch and growing there (Utton, 1984).

3.2.4. *The role of incentives*

Incentives may play a particularly wide role in promoting the scope of the enterprise for growth, and counter-incentives may play an equally large role in inhibiting it. Here we shall examine only one aspect of the question, though perhaps the most common one: that which concerns the role of incentives in supporting investment activity.

Capital subsidies are an established way of attracting the interest of investors.

Let us assume a system (Krmeuec A. J., 1990) with a smooth production possibilities curve and with given prices for the production factors. If the enterprise is among those which minimise cost and keep production stable, then the result of a capital grant will be to shift the equal cost curve to the point of adjacency to the production of equal product curve.

Use of capital grows, while the use of labour falls. This is the common phenomenon known as substitution of the production factors. If the enterprise maximises production at a given production cost, then the capital grant will provide an additional production result. The capital grant reduces average cost, thus allowing the enterprise to produce a greater product level at fixed cost. This production result is similar to the effect of income in consumer theory. There can be no doubt as to

the effects of the grant on demand for labour by means of the effect of production. Common sense tells us to expect an increase in demand for labour subsequent to the capital grant only if the result of substitution offsets the effect on production.

It should be noted that interest rate subsidies operate by deduction, in the sense that the banks collect the subsidy directly from the state and not from the enterprises involved.

4. Empirical data, specification of variables

The theoretical infrastructure explained above creates the conditions for defining the variables which we will be using to describe the factors that affect the growth of entrepreneurial events. However, since – as the reader will have been able to predict – this process will lead to a considerable number (38) of explanatory variables of composite characteristics, it seems expedient at this point to insert some information about the nature and type of the empirical data which will be used to quantify the explanatory variables.

4.1. *Empirical data*

The objective was to construct a sample of enterprises representing in the best possible manner the true distribution of small and medium-sized manufacturing enterprises (with up to 100 employees) in Greece. This sample was constructed on the basis of the branch of industry and geographical location of activity of the enterprises.

Using the records of EOMMEX (the Hellenic Organisation for Small and Medium-Sized Manufacturing Enterprises) and after studying a sample of 6,000 enterprises which made use of EOMMEX's services over the previous five years, we were able, by a two-stage process, to construct a sample of 250 enterprises.

To begin with, we used the projection method to determine the number of enterprises which ought to be taken from each region and branch. More specifically: analysis of the percentage geographical and branch distribution of the population of Greek enterprises helped us to construct a random sample with the same geographical and branch distribution.

Data were collected from the enterprises by means of a lengthy questionnaire backed up by

personal interviews. The questionnaire referred to the general characteristics of the enterprise (financial magnitudes, investments carried out, entrepreneurship and training, technology, sales, competition and export activities) and produced data for the process of quantifying the variables defined below.

Certain problems affecting the researchers ultimately confined the sample to 163 enterprises. These problems were of two kinds: the first was that some entrepreneurs refused to co-operate with the researchers, while the second – and more important – was the difficulty in locating a large number of enterprises caused by changes of address or even the suspension of the enterprise's operations.

When interviewed, the entrepreneurs were asked to class their entrepreneurial efforts in one of two categories of entrepreneurial event as described in the second part of the question. The interviewer had instructions to persevere on this point and to be sure that the respondent had understood the nature of the question.

The question asked was as follows:

Class your entrepreneurial initiative in one of the two categories that follow:

- a. This is a completely new idea and initiative which may improve the efficiency of an existing enterprise or may utilise a previous entrepreneurial event which came to nothing.
- b. This idea and initiative will help the market to equilibrate.

The first group of respondents consisted of those enterprises classed by the entrepreneurs in the first category (new idea, new initiative, etc.). The second group consisted of the other enterprises. The 'creative entrepreneurial events' group contained 26.5% of the enterprises, and the second group 73.5%. It is clear, therefore, that the majority of investment decisions concern equilibrating entrepreneurial events.

4.2. Specification of variables

The theoretical infrastructure above concerning the factors which influence the growth conditions of entrepreneurial events has identified the main areas in which we should search for the explanatory variables of our model. Each variable draws on the corresponding areas, which have already

been described. Identification of the variables will take place within a group arrangement, as follows:

- A. Abilities and attitudes
- B. Resource needs
- C. Market opportunities and structures
- D. Incentives

Note that these areas should not be confused with the principal components which will be identified later in the analysis.

4.2.1. *The representation of abilities and attitudes*

This area will be represented by eight variables. The first (V1) concerns the degree to which the entrepreneur is aware of his own personal shortcomings in the management and development of his enterprise. When he lacks this awareness, it will not be easy for the entrepreneur to recognise that he ought to take initiatives to remedy the shortcomings and remove this constraint. The stimulus for including V1 comes from the contribution made by Scase and Goffee (1980).

The second and third variables (V2 and V3) help to check the hypothesis that the 'artisan' entrepreneur may not be a helpful factor in achieving high growth rates, by way of contrast to the entrepreneur who is in search of entrepreneurial profit. The first variable thus represents the extent to which the entrepreneur identifies profit as a motive for entrepreneurship, and the second represents the gratification of his creative urge. Inclusion of these variables is connected with Gill (1985) and Clutterbuck and Devine (1985).

The next five variables represent the manner in which the entrepreneur behaves in response to the demands of the market and a changing environment. The greater his adaptability, the more easy he will find it in overcoming the barriers to the development of his enterprise. We chose five variables by which the quantify this potential on the part of the entrepreneur and his enterprise. The first (V4) is taken from the answers the entrepreneurs gave when asked how far their abilities could be improved. It is characteristic that field research demonstrated that 68% of the entrepreneurs believed their economic and financial knowledge needed improvement, 40% believed there was room for improvement in their knowledge of management, 50% saw scope for improvement in technological matters and 62% believed

they lacked knowledge of sales promotion. The second factor in this group (V5) is concerned with the degree to which the entrepreneur undertakes investments in order to deal with competition.

The degree to which the entrepreneur deals progressively with developments in the labour market can be ascertained from the extent to which he uses highly-skilled staff (V6), since entrepreneur/owners tend to avoid using highly-skilled personnel (Scase and Goffee, 1980).

This information can also be deduced from the extent to which the entrepreneur is prepared to spend a high proportion of his equity capital on the in-service training of staff (V7).

Clearly, the use of more highly-trained staff will favour the development of productivity, with the objective of releasing the potential for growth (Fleming, 1970).

The entrepreneur's attitude towards technological change can be deduced from how far he feels the need for the modernisation, by investment, of his enterprise. Variable V8 is used for this purpose.

4.2.2. *The representation of resource needs*

Two variables (V8 and V9) are used to represent the finance gap in the enterprise, six variables represent the constraints imposed by the labour market (V11 to V16), five variables represent the constraints from the realm of technology (V17 to V21), and five more represent the scope for access to public commodities and information (V22 to V26).

Financing conditions are represented by the role of the cost of borrowing (V9) and by the availability of capital for SMEs (V10). These variables were produced from the answers to questions as to how far the entrepreneurs believed these two factors were the source of constraints on the growth of their enterprises. The stimulus for inclusion of these variables was the paper by Stigler and Weiss (1981).

The first variable to represent constraints from the labour market concerns the degree of specialisation of the workforce of the enterprise (V11). The five variables which follow concern the quality level of the workforce and the conditions under which it can be improved. The first two variables (V12 and V13) concern the need for in-service training to improve the level of the

workforce in specific areas of knowledge. The next variable (V14) concerns the proportion of the cost of in-service training for the workforce which the enterprise is prepared to bear itself, thus revealing how far the enterprise is actually willing to improve the quality of its workforce. The next two variables (V15 and V16) are intended to reveal how strong is the enterprise's desire to remove the constraints on its growth by training its workforce. Thus, the higher the entrepreneur scored the training given within the enterprise itself, the less likely he is to turn to external, properly-organised and consequently more effective forms of training.

The contribution made by Bosworth (1992) prepared the way for introducing the variables which refer to the quality of the workforce as a factor which defines the conditions in which SMEs can grow.

The five variables which follow concern the manner in which the SME manages technological change. The first (V17) expresses the availability of internal potential for research and product design, the second (V18) the level of investments made in technological equipment, and the third (V19) the existence or otherwise of technological agreements. These three variables attempt to approach the question of the internal development of technological infrastructure, as opposed to the introduction of technology by technological agreements, as a factor in the growth of SMEs. Identification of whether internal technological potential plays a positive or a negative role in the growth of SMEs may provide a considerable amount of information about the growth relationship between SMEs and technology.

The question of the impact of technological change on SMEs is rounded off with a presentation of the technological level of the enterprises. This can be approached using two different variables: the first (V20) reveals the level of investment in the automation of production, and the second (V21) covers the role ascribed by the entrepreneur to technological change as a risk factor for the growth of his enterprise or for a decline in demand for his product.

We classed the factors associated with access to public commodities and information in the field of needs in resources and, more generally, of external growth conditions.

Four variables (V23 to V26) are connected with this area: the free-riding situation (V23), the entrepreneur's assessment of the risk which bureaucracy can pose for the functioning of the enterprise (V24), the significance of the existence of infrastructure as a factor favouring investment decisions (V25), and ease of access to public and other external services.

The next significant set of factors which influence entrepreneurial growth are those which originate in the markets and their structure. Here there are ten representational factors (V27 to V36). Three of them (V27–V29) represent one of the most widely-discussed weaknesses of SMEs: their dependence on the monopsonies that buy their products. As we have already noted, the more concentrated its sales are, the greater is the risk facing the SME of having imposed upon it terms which will drain it of any capacity for further growth. The three variables differ from each other in terms of the recipient of the sales and his significance in the sales magnitude of the enterprise (V27 large state agencies, V28 large private-sector organisations, V29 wholesalers). The stimulus for the inclusion of this variable is to be found in Hartley and Hutton (1992) and Martin (1988).

If, on the other hand, there is wide diffusion of sales (V30), then it is very likely that the SME will go to the other extreme and be unable to develop

the necessary economies of scale in its sales network and, consequently, in the planning of its production.

Variables V31 and V32 represent the positive role of subcontracting and market specialisation as factors to reinforce growth.

Variable V33 expresses the positive impact of geographical proximity to the markets for the product, and V34 the significance of an export orientation: these are both factors which reinforce growth. The inclusion of these variables was stimulated by the paper of McGell *et al.* (1986).

The two variables which bring this group to an end represent significant factors which determine the conditions for SME growth. The first (V35) represents the presence of economies of scale in the enterprise (P. M. Gee, 1992), with the number of employees in the enterprise being used as a proxy. The second (V36) concerns the degree of concentration which the enterprise has to face in the area of the economy in which it is active (Utton, 1984).

The role of entrepreneurial incentives is represented by two variables. V37 expresses capital grants as a percentage of the ultimate investment plan when the enterprise is undertaking investments. The last variable (V38) sums up the level of operational grants which the SME may be entitled to receive.

Variable	Concept of variable
A. Abilities and Attitudes	
V1	Recognition and assessment of the risk to the enterprise caused by the presence of organisational and personal problems (positive contribution to growth).
V2	The profit motive as a factor propelling growth (positive contribution to growth).
V3	Gratification of the creative urge as an inhibiting factor on growth (negative contribution to growth).
V4	Adaptability of the entrepreneur's behaviour in the market for the product: recognition of the need for entrepreneurial training in the fields of economics, management, etc. is used as a proxy (positive contribution to growth).
V5	Adaptability of the entrepreneur's behaviour in the market for the product: the importance attached by the entrepreneur to the undertaking of investment initiatives to prevent competitive initiatives is used as a proxy (positive contribution to growth).
V6	Adaptability of the entrepreneur's behaviour in the labour market: the percentage of tertiary education graduates among the staff of the enterprise is used as a proxy, given that highly-trained personnel find it easier to adapt to developments in the market (positive contribution to growth).
V7	Adaptability of the entrepreneur's behaviour in the labour market: the percentage of the cost of in-service training of his staff which he is prepared to bear is used as a proxy (positive contribution to growth).
V8	Adaptability of the entrepreneur's behaviour to technological change: the extent to which the investments he undertakes are intended to modernise production is used as a proxy (positive contribution to growth).

Variable	Concept of variable
B. Resource needs	
B1. The finance gap of the enterprise	
V9	Cost of borrowing as a determinant of satisfactory bank financing (negative contribution to growth).
V10	Availability of capital through the banking system as a constraint on satisfactory bank financing (negative contribution to growth).
B2. Constraints imposed by the labour market	
V11	Low level of specialisation of the workforce as a constraint on growth: the percentage of staff who are primary and secondary school graduates and have received neither tertiary education nor specialised training is used as a proxy variable (negative contribution to growth).
V12	Entrepreneurial efforts to upgrade the quality of the workforce: the entrepreneurial need for in-service training of the staff in financial matters and sales promotion technique is used as a proxy variable (positive contribution to growth).
V13	Entrepreneurial efforts to upgrade the quality of the workforce: the entrepreneurial need for in-service training of the staff in technological and technical matters is taken as a proxy (positive contribution to growth).
V14	Entrepreneurial efforts to upgrade the quality of the workforce: the percentage of the cost of in-service training which the enterprise is prepared to bear if the employee is to stay with the firm for more than a year is taken as a proxy variable (positive contribution to growth).
V15	Entrepreneurial efforts to upgrade the quality of the workforce: evaluation of training when carried out within the enterprise is taken as a proxy variable (negative contribution to growth).
V16	Entrepreneurial efforts to upgrade the quality of the workforce: evaluation of training when carried out outside the enterprise is taken as a proxy variable (positive contribution to growth).
B3. Constraints imposed by technology	
V17	Management of technological change: the availability of laboratory and research equipment for research and product design and the presence of constant quality control is taken as a proxy (positive contribution to growth).
V18	Management of technological change: the carrying out of investments aimed at technological modernisation is taken as a proxy variable (positive contribution to growth).
V19	Management of technological change: the existence of technological agreements is taken as a proxy variable (positive contribution to growth).
V20	Management of technological change: the carrying out of investments to automate production is taken as a proxy variable (positive contribution to growth).
V21	Management of technological change: the assessment of the risk for the enterprise or its products from technological change or a decline in demand for the products is taken as a proxy variable (positive contribution to growth).
B4. Access to public commodities and information	
V22	Public finance charges as a percentage of production cost (negative contribution to growth).
V23	The use of public commodities and services without the payment of user charges (positive contribution to growth).
V24	The importance of bureaucracy as a risk to entrepreneurial operation (negative contribution to growth).
V25	The significance of the existence of infrastructure as a factor favouring the taking of investment decisions (positive contribution to growth).
V26	Ease of access to public and other external services as a factor favouring the taking of investment decisions (positive contribution to growth).
C. Market potential and structure	
V27	Concentration of sales as a risk to growth: the percentage of total sales consisting of sales to state organisations and enterprises is taken as a proxy variable, and scored only if the figure is greater than 50% (negative contribution to growth).
V28	Concentration of sales as a risk to growth: the percentage of total sales consisting of sales to large private-sector organisations and enterprises is taken as a proxy variable, and scored only if the figure is greater than 50% (negative contribution to growth).

Variable	Concept of variable
V29	Concentration of sales as a risk to growth: the percentage of total sales consisting of sales to wholesalers is taken as a proxy variable, and scored only if the figure is greater than 50% (negative contribution to growth).
V30	High diffusion of sales as a barrier to the development of economies of scale: the percentage of sales channelled directly to consumers and retailers is taken as a proxy variable, and scored only if the figure is greater than 50% (negative contribution to growth).
V31	The role of subcontracting as a supportive factor to growth: the percentage of the enterprise's turnover originating in subcontracting is taken as a proxy variable (positive contribution to growth).
V32	Specialisation of the market as a supportive factor to growth: the importance attached to specialisation of the market for distribution of the product as a factor favouring investment initiatives is taken as a proxy variable (positive contribution to growth).
V33	Geographical proximity to markets for the product as a supportive factor to investment initiatives (positive contribution to growth).
V34	Intensity of export orientation (taken as the ratio of exports to sales) as a supportive factor to growth (positive contribution to growth).
V35	The presence of economies of scale as a supportive factor to growth: the number of employees in the enterprise is taken as a proxy variable (positive contribution to growth).
V36	The degree of concentration of the branch as a constraint on growth (negative contribution to growth).
D. The role of incentives	
V37	Capital grants as contributory factors to the ultimate investment plan (positive contribution to growth).V38The level of operating grants (positive contribution to growth).

5. Methodology

The barriers to the growth of SMEs cannot always be expressed unambiguously and are difficult to quantify. Indeed, there are areas whose constraints or favourable factors are difficult even to estimate (behaviour, ability, etc.). Thus, while a researcher may possess a wealth of material about entrepreneurial characteristics and behaviour he may find it hard to organise empirical controls of it. For that reason, this paper employs the Principal Component Analysis method. PCA effectively transforms the original set of variables into a set of linear combinations which account for most of the variance in the original set (Dillon and Goldstein, 1984). In this way, PCA defines the basic dimensions of the data and makes no assumptions about common factors. In other words, it takes the data as given and attempts to determine the dimensions which define their total variance.

Under the PCA method, artificial variables (P_i) are formed out of a total of variables ($X_j = 1, 2, 3, \dots, k$). These new variables are related to the initial variables (X):

$$\begin{aligned} P_1 &= a_{11}X_1 + a_{12}X_2 + \dots + a_{1k}X_k, \\ P_2 &= a_{21}X_1 + a_{22}X_2 + \dots + a_{2k}X_k, \\ &\vdots \\ &\vdots \\ &\vdots \\ P_k &= a_{k1}X_1 + a_{k2}X_2 + \dots + a_{kk}X_k \end{aligned}$$

The a 's are called loadings, and they are formed in such a way that the Principal Components (PCs) satisfy two conditions:

- i) the PCs are uncorrelated
- ii) the first PC absorbs the largest possible part of the total variation of X s. Then the second PC derived absorbs the largest possible part of the remaining variation of X s, and so on.

Once the loadings are estimated and their statistical significance is controlled, it is possible to estimate the values of the PCs with the assistance of X_j (Koutsoyannis, 1977).

Precisely because of the procedure used in PCA for identifying uncorrelated principal components, it is suitable for the identification and grouping of most of the explanatory variables of the target variable (Harman, 1967). This, if the target

variable displays one or more of the PCs at a statistically significant level, and if within the PC itself a series of uncorrelated variables score in a statistically significant manner, then, on the one hand, those are the variables which determine the character of the specific PC and, on the other, we can see the significant mesh of relationships with the independent variable. This mesh will take its character from the character of the PC concerned. However, it is easier to explain this mesh (consisting as it does of 3–4 variables and one dependent variable) than it is to explain the original set of variables (which in this case, since it consists of 38 variables, has more than 750 correlations). Our purpose in using PCA is thus to identify the PCs on which the dependent variable scores in a statistically significant manner. We shall then examine the relationships which emerge within the PC using the independent variables which have also scored in a statistically significant manner.

Another way of using PCA is to extract a small number of components and then connect them with the target variable. (For an successful example of the use of this method, see P. E. Petrakis and P. Alexakis, 1991.) However, this way of using PCA presupposes the existence of a series of technical characteristics not present in this case. An experimental application of it to this material did not produce satisfactory results.

6. Quantitative results

Use of Principal Components Analysis was achieved with the TSP (Version 4.2B). A total of 38 independent variables was used. The creative events sample (creative sample) contained 43 observations, and the equilibrating events sample (equilibrating sample) 120 observations. Changes in the sales of the firms at fixed prices disinflated by the consumer price index for the branch of industry to which the enterprise belongs was used as a dependent variable. If no special index was available, the general consumer price index was used.

The critical significance rate for a 5% level of significance in the Pearson correlation coefficients was 0.29 for the creative sample, while for the equilibrating sample, on the 1% significance level, it was 0.18. The lower level of significance for the creative sample (as a result primarily of the lower

degree of freedom caused by the smaller number of observations) was seen as essential because no statistically significant observations emerged at the 1% level of significance.

Two Principal Components Analyses were carried out: one for each sample. We accepted as statistically significant principal components those which had a TarVar loading above the critical level. Within each component, we accepted as statistically significant all the independent variables which had loadings above the critical level. Ultimately, three PCs proved to be significant for the creative sample (see Table IX) and five PCs for the equilibrating events (see Table X).

The key problem with use of the PC method is that of identifying the PCs, that is, of describing their economic importance. This is done with the assistance of the variables which are significantly present within each PC. More specifically, we accepted that each PC takes its predominant character from the two highest loadings within it. Of course, we could have decided to deduce the character from the three highest loadings, or even from all the statistically significant loadings. However, we confined ourselves to the two largest loadings for reasons of simplicity and so as to expand the abstractive potential of the method. It should also be noted that this gave us higher levels of confidence. Interested readers may go ahead with a more detailed analysis of the character of each component.

The PCs are arranged in order of the strength of their relationship to the TarVar (see the last lines of Tables I and II).

The specific origin of the two most significant variables in each PC determines the character of that PC (see column 2 of Tables III and IV).

The direction of the relationship between each PC and the TarVar is shown in column 3 of Tables III and IV. Columns 5 and 6 of those tables show the variables which play a significant part in each PC.

7. The findings of quantitative analysis

Presentation of the findings of quantitative analysis will take place in two parts: first we will present those connected with creative events, and then those connected with equilibrating events.

TABLE I
Quantitative results for the creative sample

	Var	PC 6	PC 19	PC 20
A	1			
	2			
	3			
	4			
	5			
	6			
	7	0.31		
	8			
B1	9			
	10	0.39		
B2	11			
	12			
	13			
	14			
	15			
	16			
B3	17			
	18			
	19			
	20			
	21			
B4	22			
	23			
	24			
	25			
	26			
	27			
C	28		0.31	
	29			
	30			-0.31
	31			
	32			
	33			
	34			
	35			
	36			
	37		-0.41	
D	38		-0.33	
	TarVar	0.29	-0.32	0.32

TABLE II
Quantitative results for the equilibrating sample

	Var	PC 6	PC 7	PC 9	PC 28	PC 29
A	1					
	2					
	3	0.23				
	4					
	5					
	6					
	7			0.23		
	8		-0.26			
B1	9					
	10					
B2	11					
	12		-0.32			
	13					0.25
	14					
	15	-0.25				
	16	0.33				
B3	17		-0.20		-0.30	
	18					0.30
	19			0.44		
	20					-0.36
	21					
B4	22	-0.32	-0.32		0.29	0.32
	23					
	24					-0.28
	25	-0.27				
	26				-0.24	
	27		0.25			
C	28			0.28		
	29					
	30			0.23		
	31				0.31	
	32	-0.26		0.23		
	33	-0.26				
	34					
	35					
	36					
	37					
D	38		-0.28			-0.23
	TarVar	-0.24	-0.24	-0.42	-0.44	-0.24

7.1. Creative events

Three PCs are correlated with the TarVar, one negatively and two positively. The degree of strength of the relationship between the PCs and the TarVar as indicated by the TarVar loading for each PC is the same in each case.

The first PC consists primarily of incentives, and above all of the two variables which quantify them. By way of contrast to what one would have expected, however, incentives are negatively correlated with the rate of growth of the enterprise. In other words, the incentive system does not seem to facilitate the generation or operation of creative

TABLE III
Analysis of the quantitative results of creative events

Characteristic PC (1)	Special area of influence (2)	Direction of PC/TarVar relationship (3)	Strength of relationship (4)	Decisive characteristic (5)	Description of variable (6)
1. PC 19	A. Provision of incentives	–	Significant	V3	Capital grant Operational grants
2. PC 20	B4. Access to public commodities	+	Significant	V23	Use of public commodities without cost
	C. Structure of markets			V30	High diffusion of sales
3. PC 6	D. Abilities and attitudes	–	Significant	V7	In-service training cost percentage
	B1. Financing conditions			V10	Availability of capital from banking system

TABLE IV
Analysis of the quantitative results of equilibrium events

Characteristic PC (1)	Special area of influence (2)	Direction of PC/TarVar relationship (3)	Strength of relationship (4)	Decisive characteristic (5)	Description of variable (6)
1. PC 28	B3. Technological restrictions	–	Very significant	V17	Availability of research labs
	C. Structure of markets			V31	Role of sub-contracting
2. PC 9	B3. Technological restrictions	–	Very significant	V19	Existence of technological agreements
	C. Structure of markets		Very significant	V28	Concentration of sales
3. PC 7	B4. Access to public commodities	–	Significant	V22	Public finance changes
	D. Provision of incentives			V38	Operational grants
4. PC 6	B2. Labour market restrictions	–	Slightly significant	V16	Assessment of training
	B4. Access to public commodities			V22	Public finance charges
5. PC 29	B3. Technological restrictions	–	Slightly significant	V20	Investment in automation
	B4. Access to public commodities			V22	Public finance charges

events, and those who believe that incentives are not associated with the most dynamic enterprises will find themselves vindicated here.

The second PC expresses the positive effects of two factors: the use of public commodities without charge and the structure of markets.

The characteristic of the third PC is that it contains the action of factors correlated with abilities and attitudes, given that entrepreneurs appear to be very willing to take on significant expenditure for the in-service training of their staff. It also contains the effects of financing conditions, where

it would seem that the availability of capital is not a barrier to the growth of the enterprise.

7.2. *Equilibrating events*

Equilibrating entrepreneurial events have to deal with five PCs which have a negative impact on the TarVar. The most important constraints come from two quarters: technology, and market structure. The strength of the relationship between these two PCs and the TarVar is very significant, and it consists of four main factors: the availability of internal research capacity, the existence of technological agreements, the role of subcontracting and concentration of sales. In effect, this amounts to saying that there is evidence to suggest that the effort to develop technological capacity and the organisational form taken by the markets (with all that involves for the organisation of SME sales) have a detrimental influence on the scope for growth of those enterprises.

The characteristic of the third PC is that public finance charges and the incentives provided are negatively correlated with the growth of enterprises. In the case of public finance charges, this was to be expected, but in the case of incentives the matter is a little more complex. The fact of the matter is that in section 5 we formed a positive image of the relationship between incentives and equilibrating events, but this does not seem to be confirmed by the quantitative analysis. Here what we have is probably confirmation of the view that the enterprises which seek financial incentives are not necessarily those with the highest growth rates. However, when enterprises are called upon to complete a questionnaire which may, for all they know, have the aim of influencing the incentives system, then they will have every reason to maximise the positive significance of those incentives, regardless of what their actual role was in the entrepreneurial effort.

The fourth PC covers influences from the labour market and public finance charges. Here there was reluctance on the part of entrepreneurs to make the most of interesting in-service training opportunities, and this is a negative feature for growth.

The fifth and last PC includes certain influences from the realm of technology in the form of expenditure on investment to automate production.

Although the need to make such investments is an urgent one in view of the competitive conditions, they do not appear to be accompanied always by positive effects for the growth of sales.

This PC, too, contains the negative impact of public finance charges.

8. **Conclusions: Growth constraints on creative and equilibrating events**

In the second part of this article we have proposed a dynamic supplement to Schumpeter's view of the process of market equilibration when its balance is disturbed during the process of development by the appearance of catalytic entrepreneurial events. Thus it was proposed that special attention be paid to positive reaction market effects and negative reaction market effects. These opposing market forces succeed in equating the realised rate of profit with the potential rate of profit and, ultimately, with the equation of the profit rate at a higher point of equilibrium though a series of sectors and branches of the economy.

As a result, we expected in our empirical work to be able to read the existence of positive and negative reaction effects and analyse the manner in which they function.

The results of our comparative study of the effects of restrictive (supportive) growth factors on the two different groups of entrepreneurial event are shown on Table V. These empirical findings are of the greatest interest.

To begin with, there is a very significant difference as far as the grouping of the effects is concerned. The creative events can rely on certain supporting influences from the various categories of effect, while equilibrating events face only negative influence. The first two groups of effects (abilities and attitudes and financing conditions) make their appearance only for the creative events. Two other groups of effect (labour market restrictions and technological conditions) appear only for equilibrating events.

These findings lead us to the formulation of certain propositions concerning the conditions facing the two groups of entrepreneurial event in the market, and in the Greek economy in particular. Thus it would appear that abilities and entrepreneurial behaviour, together with finance facilities, are the factors which shape the space for

TABLE V
Growth constraints on creative and equilibrating events

	Creative events		Equilibrium events	
	Direction of relationship	Strenght of relationship	Direction of relationship	Strength of relationship
A. Abilities and attitudes	+	Significant		
B. Financing conditions	+	Significant		
B2. Labour market restrictions			–	Slightly significant
B3. Technological restrictions			–	Slightly-very significant
B4. Access to public commodities	+	Significant	–	Significant slightly significant
C. Structure of markets	+	Significant	–	Very significant
D. Provision of incentives	–	Significant	–	Significant

the application of meaningful positive effects on the development of entrepreneurship, by facilitating the reception and operation of creative events. *Our findings are tantamount to evidence of the existence of both positive reaction market events and negative reaction market events.* Perhaps here we have an explanation for the phenomenon of very widespread small-scale business activity in the Greek economy (the Greek economy is known to have the highest density of enterprises per 1,000 inhabitants of the European Union). However, these businesses subsequently find difficulty in transforming themselves into larger and more advanced units. *In other words, there would seem to be a high density of entrepreneurial talent, which is not inhibited in appearing (indeed, it may even be facilitated) but which later fails to find fertile ground in which to grow and create the conditions for a strong entrepreneurial sector.* If steps are taken to apply policy measures which support entrepreneurship in the fields of financing and entrepreneurial abilities, then – logically – we can expect to see more numerous and more vigorous entrepreneurial events, with positive consequences for the process of development.

The labour market and technological factors seem to have a marked and decisive effect on the development of effectiveness in the operation of SMEs and particularly on the operations of equilibrating events. This is a source of severe constraints on the growth potential of SMEs.

Access to public commodities, especially when this involves the obtaining of zero-cost or low-cost resources for SMEs, is, naturally enough a very

favourable factor in the undertaking of creative entrepreneurial efforts. This is not the case, however, for equilibrating events. Here it would seem that the economic system (and the public finance system in particular) manages to cost its inflow to SMEs (at price/cost ratios which we do not know) in such a way as to affect their scope for growth.

The structure of the markets also has a positive influence on creative events while operating negatively for equilibrating events. Here we may be dealing with the phenomenon of oligopoly structuring of the market, which facilitates the growth of creative events – as Schumpeter argues. The same structure then exerts negative pressure on equilibrating events. *Here, in fact, we may have evidence of the process per se by which entrepreneurial events are generated and die away.*

Lastly, the presence of incentives is negatively correlated with both creative events and equilibrating events. Thus, the granting of incentives of a financial type (capital grants, operating grants) does not seem to have a positive effect either on the generation of entrepreneurial functions connected with development or on those whose purpose is to equilibrate the markets.

References

- Acs, Z. J. and D. B. Audretsch, 1989, 'Entrepreneurial Strategy and the Presence of Small Firms', *Small Business Economics* 1(3), 193–214.
- Acs, Z. J. and D. B. Audretsch, 1988, 'Innovation in Large and Small Firms: An Empirical Analysis', *American Economic Review* 78, 678–690.
- Acs, Z. J. and D. B. Audretsch, 1987, 'Innovation, Market

- Structure and Firm Size', *Review of Economics and Statistics* **69**, 567–575.
- Audretsch, D. B. and Z. J. Acs, 1990, 'Innovation as a Means of Entry: An Overview', in P. Geroski and J. Schwalbach (eds.), *Entry and Market Contestability: An International Comparison*, London: Basil Blackwell.
- Barbar J, J. S. Metcalfe and M. Parfeous, 1992, *Barriers to Growth in Small Firms*, London: Routledge.
- Barreto, H. (1989), *The Entrepreneur in Microeconomic Theory*, Routledge.
- Binks, M. and P. Vale, 1990, *Entrepreneurship and Economic Change*, New York: McGraw-Hill.
- Boswell, J., 1972, *The Rise and Decline of Small Firms*, London: Allen and Unwin.
- McGree, J. and H. Thomas, 1986, 'Strategic Groups: Theory, Research and Taxonomy', *Strategic Management Journal* **7**, 141–160.
- Bosworth, D. L. and C. Jacobs, 1987, 'Barriers to Growth in Small Businesses: Management Attitudes, Behaviour and Abilities', Discussion Paper no. 36, Coventry: Institute for Employment Research, University of Warwick.
- Bosworth, D. L. and C. Jacobs, 1992, 'Management Attitudes, Behaviour and Abilities as Barriers to Growth', in J. Barber, J. S. Metcalfe and M. Porteous (eds.), *Barriers to Growth in Small Firms*, Routledge.
- Baumol, W.J. 1968, 'Entrepreneurship in Economic Theory', *American Economic Review* (Papers and Proceedings) **58**, 64–71.
- Cantillon, R. (1755), *Essai sur la nature du commerce en general*, ed. H. Higgs, London: MacMillan.
- Clutterbuck, D. and M. Devine, 1985, 'The Rise of the Entrepreneuse', *Managament Today* **63** (January).
- Clutterbuck, D. and M. Devine, 1985, 'Why Start-ups Start', *Management Today*, July–Dec.
- Dillon, W. R. and M. Goldstein, 1984, *Multivariable Analysis*, J. Willey & Sons.
- Edwards, C. D. 1964, 'Hearings before the Sub-committee on Anti-trust and Monopolies of the Committee of the Judiciary of the United States Senate, Part I: Overall and Conglomerate Aspects', Washington.
- Evans, D. and B. Jovanovic, 1989, 'Estimates of a Model of Entrepreneurial Choice Under Liquidity Constraints', *Journal of Political Economy* **97**(4), 808–827.
- Fazzari, S., R. Hubbard and B. Peterson, 1987, 'Financing Constraints and Corporate Investments', NBER Working Paper no. 2387, Cambridge, Ma.: National Bureau of Economic Research.
- Fleming, M. C., 1970, 'Inter-firm Differences in Productivity and Their Relation to Occupational Structure and Size of Firm', *Manchester School*, Sept.: 223–245.
- Gill, J., 1985, *Factors Affecting the Survival and Growth of the Smaller Company*, Aldershot: Gower.
- Harmann, H. H., 1967, *Modern Factor Analysis*, Chicago, Il.: University of Chicago Press.
- Hartley, K. and M. Huby, 1985, 'Contracting-out in Health and Local Authorities', *Public Money*, September, 23–26.
- Koutsoyiannis, A., 1977, *Theory of Econometrics*, McMillan (2nd edn.).
- Koutoyannis, A., 1975, *Modern Microeconomics*, London: MacMillan.
- Krmenec, A. J., 1990, 'The Employment Impacts of an Investment Incentive: Differential Efficiency of the Industrial Revenue Bond', *Regional Studies* **24**, 95–107.
- Leibenstein, H., 1966 'Allocative Efficiency vs. "X-efficiency"', *American Economic Review* **56**, 392–415.
- Leibenstein, H., 1968 'Entrepreneurship and Development', *American Economic Review* **58**, 72–83.
- Lucas, R. E. Jr., 1978, 'On the Size Distribution of Business Firms', *The Bell Journal of Economics* **9**, 508–523.
- Mann, H. M., 1966, 'Seller Concentration, Barriers to Entry and Rates of Return in Thirty Industries', *Review of Economics and Statistics* **48**, 296–307.
- Petrakis, P. E. and P. Alexakis, 1991, 'Analysing Stock-market Behaviour in a Small Market', *Journal of Banking and Finance*, Amsterdam, North Holland.
- Say, J. B., quoted in A. H. Cole, 'The Entrepreneur: Introductory Remarks', in H. J. G. Aitken (ed.), *Explorations in Enterprise: An Approach to the Study of Entrepreneurship*, Cambridge, Ma.: Harvard Univeristy Press, 1965, pp. 32–33.
- Scase, R. and R. Goffee, 1980, *The Real World of the Small Business Owner*, London: Croom Helm.
- Schmalensee, R., 1981, 'Economies of Scale and Barriers to Entry', *Journal of Political Economy* **89**, 1228–1238.
- Schumpeter, J. A., 1934, *The Theory of Economic Development*, Cambridge, Ma.: Harvard University Press.
- Schumpeter, J. A., 1939, *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, Maidenhead: McGraw-Hill (1st edn, 2nd impression)
- Segal, Quine and Partners 1985, *The Cambridge Phenomenon: The Growth of High Technology in a University Town*, Cambridge: Segal, Quince and Partners.
- Stiglitz, J. E. and A. Weiss, 1981, 'Credit Rationing in Markets with Imperfect Information', *American Economic Review* **71**(3), 393–410.
- Williamson, O. E., 1967, 'Hierarchical Control and Optimal Firm Size', *Journal of Political Economy* **75**.
- Wildsmith, J. R., 1973, *Managerial Theories of the Firm*, London: Martin Robinson.

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