THE IMPACT OF THE ENVIRONMENT ON EMPLOYMENT GROWTH IN SMEs*

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Abstract
A great deal of empirical research has been devoted to the study of the impact of a firm’s environmental characteristics on its growth. However, most of this work is centered on one or a few predictors. Furthermore, no research has provided an exhaustive list of all variables previously studied. We have tried to fill this gap and have tested on a sample of Belgian SMEs the potential influence of 15 variables on employment growth. On the basis of Mintzberg’s classification (1979), we have grouped our variables into three sub-categories of determinants relating to the generosity or hostility of the environment; determinants relating to its stability or dynamism and determinants relating to its simplicity or complexity. Our results show that employment growth within SMEs is only influenced by two variables linked to the generosity sub-group. The results also tend to show that environment, at least if it is studied independently of other variables relating to the manager, the firm or its strategy, only has an extremely limited influence on the growth of SMEs. This leads us to question the validity of purely external approaches to examining a firm’s growth, such as the theory of population ecology of organizations, for instance.

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1. Introduction
Since the publication of Birch’s work in 1979, an impressive number of studies have been
devoted to the role of small and medium-sized enterprises (SMEs) in job creation. In a book
published in 1987, Birch observed that most employment was created by a tiny proportion of
companies, i.e. fast-growing companies. Several other studies from both Europe and America
confirm this phenomenon (O’Farrell, 1984; Dunkelberg and Cooper, 1982; Storey and
Johnson, 1987; McMullan and Vesper, 1987; Gallagher and Miller, 1991; OECD, 1999;
Julien, 2000).

Growth has been measured on the basis of an impressive number of variables, but the two
indicators that are most widely used in the literature are employment and sales. We decided to
limit the scope of this paper to a study of employment growth. Quite apart from the fact that
this is a measure of economic growth (Kirchoff, 1991), it can serve as an indicator of the
entrepreneur’s success and, for society as a whole, it represents a measure of the firm’s
economic contribution to the common good (Dunkelberg and Cooper, 1982). That is why this
criterion has been used by many economists and sociologists, even though it would seem that
companies themselves prefer to measure their success in terms of sales growth (Hughes, 1998;
Donckels, 1990), and that the latter criterion has been favored by researchers in management
sciences (Weinzimmer, 1993). Furthermore, according to Child (1973), employment is an
appropriate criterion for measuring the size of an organization, as it is primarily human beings
that are “organized”. Finally, since managers generally wait for demand to stabilize before
recruiting personnel, employment is, in theory, a less volatile measure of growth than sales
(Delmar, 1997). In some European countries, such as Belgium, the stability of this criterion is
reinforced by rigid elements within the labor market that are linked to restrictive social
legislation.

Two concurrent theoretical approaches designed to explain the causes of performance and
growth have been developed in the field of management sciences (Weinzimmer, 1993). The
first approach, which we can call the “external” model, studies the influence of environment
on organizations. The source of this external perspective goes back to the industrial economy
movement, the so-called structualist movement, which maintains that industrial structures
determine the behavior of companies and hence their performance (Julien and Marchesnay,
1997). According to this movement, the performance of a company should tend towards that of
the industry as a whole under the effect of competition. Amongst other things, the structuralist
school was to influence the strategic thought movement referred to by Mintzberg et al. (1999)
as the environmental school, which came to the fore primarily thanks to the work of population
ecologists (Hannan and Freeman, 1977), who maintain that the conditions found in a
company’s external environment are the principal determining factors in its survival. The
second perspective, in other words the “internal” model, is chiefly concerned with studying the
internal characteristics of a company and the way in which an organization adapts to its
environment and attempts to shape it. The initial source of this internal approach is to be found
in the industrial organization movement, also known as the “behaviorist” approach and,
ultimately, leads on into strategic management. The industrial organization movement believes
that an industry is made up of companies that not only pursue their own personal strategies,
but also build up the basic structures of the industry, along with other companies, by means of
these strategic decisions on matters such as investment, technology, markets and products
(Julien and Marchesnay, 1997). The resource-based theory (Barney, 1986; Wernerfelt, 1984) is
consistent with the internal approach movement. According to Lohmann (1998), studies that are concerned with the impact of entrepreneurs’ own characteristics should come under this theoretical movement. By the same token, it is possible to say that economic models of human capital (Oi, 1983; Lucas, 1978) and entrepreneurial learning (Audretsch, 1994; Jovanovic, 1982) may be regarded as an “internal” type of approach.

Growth is a complex and multidimensional phenomenon (Weinzimmer, 1993) so it goes without saying that a purely external or internal type of approach will inevitably be over-simplistic. However, within the limited context of this paper, we have decided to concentrate on the external approach and specifically on the influence of environment-related factors on growth. We are aware that this decision ignores the predictive potential of internal variables linked to the manager, the company and its strategies, and also takes no account of interactions between different types of variables (Janssen, 2002).

The analysis of the relationship between environmental characteristics and company growth has already given rise to numerous empirical studies. However, the vast majority of research on growth has only studied the impact of a limited number of variables. Moreover, most of this work has a relatively weak theoretical basis. The concept of growth is only rarely justified in theoretical terms in former research. This area of research is highly fragmented, accentuated by the fact that too much attention is paid to the manufacturing sector, and that there is considerable variety in terms of the time period studied and of the way in which growth is measured (Janssen, 2002). It is also regrettable that, with the exception of Swedish and particularly British scientists, few European researchers have taken any interest in this issue.

Several authors (Grinyer et al., 1988; Miller and Friesen, 1984) are of the opinion that the impact of a large number of variables needs to be tested simultaneously in order to arrive at a fuller and more realistic picture of the growth phenomenon. To our knowledge, no research project to date has attempted to provide an exhaustive list of all the independent variables examined by previous studies.

Based on a state-of-the-art study of the research on environment-related growth determinants, we formulated 15 hypotheses. These hypotheses use all the determining factors that we have identified in the literature on growth, as well as a number of original hypotheses. Rather than making value judgments on the relative importance of particular variables, which would have left us with only a limited number of hypotheses, we chose to test all these variables, as several recent empirical studies have demonstrated the surprising importance of factors that may, at first sight, seem to be of minor interest (see, for example, Gartner and Bhat, 2000). These hypotheses were tested on a sample of Belgian SMEs.

2. Environmental impact hypotheses

From an economic viewpoint, the environment corresponds to a set of exogenous determinants, i.e. pre-determined or set (Pearce, 1997). Mintzberg (1979) classified the

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1 For an analysis of a complete causal growth model, see Janssen (2002).
environmental aspects identified by research on the basis of four major characteristics: generosity, dynamism, complexity and market integration.

The environment can be generous or hostile. Generosity represents the extent to which an environment is liable to stimulate sustained growth (Starbuck, 1976). A hostile environment, on the other hand, curbs growth. The environment may also be stable or dynamic. Dynamism is related to the degree of instability of a market. Dynamism is the result of unforeseen factors that it is not possible to plan for in advance, such as unpredictable changes in demand or competition, or rapidly changing technology. These factors give rise to uncertainty, which makes it more difficult for the managers to process all the information (Dess and Beard, 1984). Moreover, the environment may be simple or complex. Complexity arises from the company’s need to gather large quantities of information and facts about its products or customers. If this knowledge can be rationalized, in other words, broken down into sub-groups that are easy to grasp, the environment can be regarded as simple (Mintzberg et al., 1999). According to Child (1972), complexity is due to the variety and range of activities carried out by an organization. Finally, a company’s markets may be integrated or diversified. This can also be expressed as homogeneity or segmentability. According to Dess and Beard (1984), this aspect of the environment is contained within the notion of complexity. Environmental aspects can therefore be reduced to three categories: generosity, dynamism and complexity (Dess and Beard, 1984).

2.1. Generosity

Of all the environmental variables that influence growth and that have been considered by empirical studies, the generosity of the environment is by far the most widely examined. These studies have particularly looked at variables such as sectoral growth rate, level of concentration, entry barriers, public aid, economic policies, degree of unionization, the crime rate and the appearance of the area in which the company is located, the proximity of university institutions, whether or not the company is based in a science or industrial park and the regional economic environment.

As a general principle, industry growth means that existing companies are not necessarily disheartened by newcomers taking a share of the market and this reduces the likelihood of retaliation by these existing companies (Porter, 1980). In theory, a growth market offers companies more opportunities, especially for newcomers since, by definition, demand within the market is growing (Eisenhardt and Schoonhoven, 1990). Weinzierer (1993) notes the existence of a positive relationship between the generosity of the environment and a growth in sales, assets and employment. According to this author, this would tend to demonstrate that the growth of a company could quite simply be due to the fact that it is part of a “generous” sector. Such an environment would allow companies to grow without having to acquire resources or market shares at the expense of their competitors. On the other hand, several authors make the point that sectoral growth rate does not influence companies’ growth, at least not that of SMEs (Wijewardena and Tibbits, 1999; Kalleberg and Leicht, 1991; Acs and Audretsch, 1990). Other studies highlight considerable sectoral differences in terms of firm growth rates (Brush and Changati, 1998; Storey, 1994b; Siegel et al., 1993; Eisenhardt and Schoonhoven, 1990;
Dunkelberg and Cooper, 1982). Medium or high-tech sectors would appear to have a higher percentage of fast-growing SMEs than other sectors (Philips and Kirchoff, 1989). Dunkelberg and Cooper (1982) observe the same phenomenon in the transport, construction and wholesale sectors. In contrast, Dahlqvist et al. (1999) note that the fact that a company belongs to the retail or private service sector has a negative effect on growth. However, studies conducted in Sweden and Scotland conclude that there is no link between belonging to a specific sector and growth (Delmar, 1999; Wiklund, 1999; Gallagher and Miller, 1991). Similarly, Julien et al. (1998) state that there is no link between the proportion of companies reporting growth and the proportion of companies reporting high growth within a specific sector. This being so, they therefore feel that there is no obvious ratchet effect between companies within the same sector. The empirical results thus tend to be contradictory. On the basis of theoretical arguments, we would like to put forward the hypothesis of a positive link:

**Hypothesis 1: the sectoral growth rate has a positive influence on company growth**

A high rate of concentration and high entry barriers do, in principle, protect existing firms from the arrival of newcomers and should therefore stimulate their growth (Hamilton and Shergill, 1992). The intensity of competition restricts access to resources for a recently established business or a newcomer (Romanelli, 1989). A considerable degree of competition also implies lower prices and profit margins than in a more concentrated structure, which could have a negative effect on growth. However, less concentration should, in theory, permit more companies to grow (Eisenhardt and Schoonhoven, 1990). An American study observes a positive link between the level of concentration in a sector and growth in sales and employment (Weinzimmer, 1993). Along the same lines, a Swedish research notes that there is a negative link between competition and growth (Delmar, 1997). Some studies also show that the size of competitors seems to be positively linked to growth (Julien et al., 1997; Westhead and Birley, 1995). However, other research concludes that there is no significant link between these variables (Wijewardena and Tibbits, 1999; Storey, 1994; Kalleberg and Leicht, 1991; Eisenhardt and Schoonhoven, 1990). Just one study notes the existence of a positive link between the level of competition perceived by managers and growth (Grinyer et al., 1988). The results relating to this variable are thus very mixed. On the basis of theoretical arguments, we presuppose a positive influence:

**Hypothesis 2: the level of concentration in the market has a positive influence on growth**

Some researchers studied a specific aspect of concentration, i.e. the impact of entry barriers on company growth. Entry barriers are said to exist when, in a given market, companies are capable of maintaining monopolistic prices and profits without attracting newcomers. These entry barriers may be linked to the capital intensity of a sector or to the promotion or R&D expenditures of existing companies. The promotion expenditures of existing firms create expenditure thresholds below which promotion no longer has any impact (Comanor et al., 1981) and increases the loyalty of consumers to the existing firms (Scherer, 1980). In order to build up a reputation, a newcomer would have to consider a disproportionately high outlay in order to attract consumers. Considerable R&D expenditure can also be an entry barrier

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2The latter are defined by the authors as being the top 5% of companies who experienced the highest rates of growth across all sectors.
(Comanor, 1967). This actually increases the initial outlay that newcomers have to make and increases the complexity of the knowledge base they have to acquire. In certain industries, R&D is used as a defensive weapon allowing companies to file patents that are not necessarily used. Companies that already have a footing in the market in question should benefit from these entry barriers and grow more rapidly than they would if these barriers did not exist. These barriers actually reduce the numbers of newcomers or prevent their entry to the market and allow these companies to make monopolistic profits. One study notes that there is a positive link between the scale of the entry barriers resulting from R&D and promotion, on the one hand, and sales growth, on the other hand, but does not observe any significant link between these barriers and the growth in employment or assets (Weinzimmer, 1993). On the basis of the many theoretical arguments outlined above, we put forward the following hypothesis:

**Hypothesis 3: the existence of entry barriers linked to capital intensity and R&D or promotion expenditure has a positive influence on growth**

Birley and Westhead (1990) have studied the influence of various government aid mechanisms on growth and do not observe any link between these two variables. A Swedish study concludes that there is a negative link between obtaining start-up aid and growth (Dahlqvist et al., 1999). A study conducted in Quebec does, however, report that government subsidies, particularly in the R&D and export fields, have a positive effect on growth (Julien, 2000). Theoretically, financial assistance, whatever its source, ought to help stimulate growth. We have thus formulated the following hypothesis:

**Hypothesis 4: obtaining public aid has a positive influence on growth**

Still on the subject of economic policies, it has not been proven, at least not in the United Kingdom, that fiscal pressure, restrictive social legislation or difficult industrial relations, which are generally perceived as curbing growth, actually have a negative effect on growth (Gibb and Davies, 1990; Westrip, 1986). However, these variables do, as a general rule, correspond to hostile policies as far as businesses are concerned. We thus put forward the hypothesis of a negative link:

**Hypothesis 5: restrictive fiscal and social policies have a negative influence on growth**

The degree of unionization of the company or the sector to which the company belongs is also liable to affect growth. Wooden and Hawke (2000) note that a majority of Anglo-Saxon authors with an interest in the impact of unions on employment and growth in employment feel that the degree of unionization generally has a negative effect for three main reasons. In the first place, salaries in highly unionized companies tend to be much higher than in those that are not. As a result, these companies would employ fewer workers than a similar company with less unionization. Secondly, the effect of unionization on productivity would tend to be negative or fairly low. Finally, unions tend to favor the salaries of their members to the detriment of the employment situation. A fourth reason provides a possible explanation for this potentially negative link: unions seek to minimize opportunities for reducing the workforce, which is in turn liable to discourage recruitment. Several studies conducted in the United States, Canada, the United Kingdom and Australia observe that the employment growth rate in
unionized companies is 2 to 4% lower than in non-unionized companies (Wooden and Hawke, 2000; Blanchflower and Burgess, 1996; Long, 1993; Leonard, 1992). Other authors also note that the degree of unionization in a sector has a negative influence on the growth of SMEs (Acs and Audretsch, 1990). Along the same lines, Grinyer et al. (1988) report a negative relationship between the manager’s perception of pressure from the unions and growth. However, this negative perception must be treated with caution. It may equally well result from the manager’s need to justify low growth by putting it down to exogenous factors over which he has no control, as from real growth inhibitors such as excessive pay demands, repeated production stoppages or a rigid and aggressive union policy (Grinyer et al., 1988). On the basis of theoretical arguments and corroborative conclusions from empirical studies, we put forward the hypothesis of a negative link:

**Hypothesis 6: a high rate of unionization has a negative influence on growth**

The location of a company is also liable to influence growth, be this with regard to the area itself, the immediate vicinity or the region in which it is situated.

As far as the immediate geographical environment of the company is concerned, a recent study (Gartner and Bhat, 2000) reports that the crime rate in a particular area, as well as its appearance in terms of upkeep and cleanliness of streets, pavements and buildings, have a significant correlation (negative and positive respectively) with the growth forecasts of the company manager. These results confirm the results from other studies (Bull and Winter, 1991).

**Hypothesis 7: the crime rate in the area where the company is located has a negative influence on growth**

**Hypothesis 8: the appearance of the area where the company is located has a positive influence on growth**

In addition, the proximity of university institutions is also liable to have a positive effect on growth (Snuif and Zwart, 1994). This proximity allows companies easier access to scientific expertise and the results of certain research programs, thus making it easier to market the latter (Colombo and Delmastro, 2002). Similarly, the fact that the company is based in a science or industrial park may also have a copycat effect of stimulating growth. These parks may be defined as public and/or private property initiatives that aim to promote the start-up and development of businesses by providing logistical, technical, administrative and/or managerial services, technology transfer and network development between the firms based in the park, as well as between these firms and universities or public bodies. These parks allow businesses to benefit from agglomeration economies associated with interactions between companies that are concentrated within a restricted space (Marshall, 1922). Unlike science parks, industrial parks focus less on high-tech activities or activities that are associated with the use of scientific results and are characterized by weaker or non-existent links with academic institutions or research centers (Colombo and Delmastro, 2002). A British study (Westhead and Storey, 1994) shows that location in a science park has a positive effect on growth. These results are confirmed by an Italian study that examines both science and industrial parks (Colombo and Delmastro, 2002). We have formulated identical hypotheses:
Hypothesis 9: the proximity of university institutions has a positive influence on growth
Hypothesis 10: the fact that the company is based in a science or industrial park has a positive influence on growth

As far as the regional geographical environment is concerned, it is possible to make a distinction between rural and urban areas. In a rural area, the resources required for growth, such as specialized production factors, may be harder to find than in an urban area. For example, this type of region is more likely to have shortages of specialized or managerial staff (O’Farrell and Hitchens, 1988). By the same token, it will be easier for a company to find potential subcontractors in an urban area (Dahlqvist et al., 1999). The population density in an urban area also provides a larger potential demand than would be the case in a rural area. However, competition should, as a general rule, be more intense in an urban area. Nevertheless, Dahlqvist et al. (1999) do note that the growth of Swedish companies is not influenced to any significant extent by their location in a rural or urban area. On the basis of the theoretical arguments outlined above, we shall nevertheless put forward our hypothesis that location in an urban area has a positive effect:

Hypothesis 11: the fact that the company is located in an urban area has a positive influence on growth

The extent of development of the means of communication within a region can also have an impact on growth. In principle, the more developed the road infrastructure, means of transport and communication networks, the greater the effect on growth. To our knowledge, the influence of this variable on growth has never been tested:

Hypothesis 12: a sufficiently developed road infrastructure, means of transport and communication networks have a positive influence on growth

Being located in a region that is considered more dynamic than another region could also influence growth. Macro-economic conditions can vary from one region to another and some regions may experience lower economic growth rates and/or lower income levels that might inhibit company growth. Some regions attract more economic activities than others. In addition, regions compete with one another to attract national or foreign investment. However, in Quebec, Julien et al. (1997) do not observe any systematic influence on company growth associated with being located in a particular region. On the basis of theoretical arguments, we put forward the hypothesis of a positive link:

Hypothesis 13: the dynamism of the region in which the company is located has a positive influence on growth.
2.2. Dynamism and complexity

Very few studies have examined the impact of the dynamism and complexity of environment on growth.

According to Weinzimmer (1993), dynamism, at least if it is the result of innovation, could be a source of growth opportunities for companies that already have a hold in the marketplace. In addition, it is claimed, growth makes it possible to reduce the uncertainties associated with dynamism within the market. However, you could equally well respond by saying that this level of instability could also lead to opportunities for newcomers who might develop their interests to the detriment of existing firms. Two studies conclude that environmental dynamism has no significant influence on growth (Wiklund, 1999; Weinzimmer, 1993). Therefore, neither empirical studies nor theoretical arguments allow us to make any assumptions regarding the nature of the relationship between environmental dynamism and growth. However, we presuppose that the many market opportunities available in a dynamic environment are also liable to stimulate growth of existing firms and, hence, that a positive effect should prevail:

Hypothesis 14: the dynamism of the environment has a positive influence on growth, where such dynamism is defined as a market that is experiencing rapidly changing technology

Some researchers have observed that a complex or unstable economic environment and, in more specific terms, the perceived difficulty of predicting economic conditions, has a negative impact on growth (Grinyer et al., 1988). We can assume that this complexity slows down the decision-making process. Based on this empirical result, we put forward the hypothesis of a negative link:

Hypothesis 15: a complex environment has a negative influence on growth, where such an environment is defined as being the degree of complexity associated with collecting data and/or facts regarding a firm’s products or customers, or the difficulty of predicting economic conditions that affect the market

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3 See Grinyer et al. (1988).
3. Methodology
3.1. Population, sample and representativeness

In order to determine the population of SMEs to be analyzed, using a database compiled by the ING (Internationale Nederlandse Groep) and including all the Belgium-based companies that have filed their annual accounts with the Centrale des Bilans de la Banque Nationale, we considered all companies that were active over the period studied (from 1994 to 2000), for which we had employment data for 1994 and 2000 and which, in 1994, corresponded to the definition of SME as given by the European Commission\(^4\). In so far as many companies in Belgium are set up purely for tax reasons\(^5\) and do not actually conduct any business as such, we did not consider companies that were already active in 1994, but that still employed fewer than 5 people in 2000.

On the basis of these criteria, the population consisted of 11,481 companies. We selected 788 of these at random, whilst ensuring that the proportions of micro (fewer than 10 people), small (between 10 and 49 people) and medium-sized (between 50 and 249 people) companies were identical to the proportions found in the total population. This size criterion was checked at the beginning of the period studied, i.e. in 1994, so as to ensure a dynamic analysis. We also kept the proportions of companies from the three Belgian regions (Flanders, Wallonia, Brussels) identical to those in the overall population.

Of the 788 companies, 331 refused to take part in the survey and 186 were not available during the interview period. In the case of 121 other companies, the telephone number in the database was incorrect or was a fax number. Our study therefore focused on a sample of 150 companies. According to Harris (1985), the size of the sample must exceed the number of predictors by at least 50. Our sample of 150 observations complies with this rule\(^6\).

\(^4\) According to the European Commission’s Recommendation of 3 April 1996 (OJEC, L 107/4, 1996), the following companies must be regarded as SMEs:
- those employing fewer than 250 people; the number of employees corresponds to the number of annual work units;
- those with either an annual turnover not exceeding EUR 40 million or an annual balance sheet total not exceeding EUR 27 million;
- those that comply with the independence criterion. Independent companies are regarded as those in which not more than 25% of the capital or voting rights is controlled by one or more large companies. We did not use this criterion, given that one of our hypotheses presupposed that the fact that a company was dependent on another company would have a positive influence on growth of the former.

The Commission also makes a distinction between medium-sized, small and micro-companies. A small company is one that employs fewer than 50 people, complies with the independence criterion defined above and has either an annual turnover not exceeding EUR 7 million or an annual balance sheet total not exceeding EUR 5 million. A micro-company is regarded as one that has fewer than 10 employees.

\(^5\) The tax system for companies is in fact more favorable than the tax system for private individuals.

\(^6\) According to other authors (Bernard, 1999), a minimum of 10 observations per predictor is required. Harris (1985) stresses that this principle is not based on any empirical proof. Others suggest more liberal rules than Harris and are of the opinion that the number of observations must only exceed the number of variables by 40 (see Howell, 1998).
In order to determine the representativeness of our sample in relation to the original population, we compared the average growth of the sample companies with the growth of the companies in the overall population using a two-sided t-test. One of the application conditions underlying this test on two independent samples is the homogeneity of variances (Howell, 1998). We first used Levene’s test to check that there was no significant difference in the variances (F = 1.476 and sign. = 0.224) and then tested the difference between the average values for employment growth in the two groups. The results of the two-sided t-test (t = -0.823; d.f. = 11,479; sign. = 0.411) indicate that the average employment growth of the companies in our sample is not significantly different from that of the companies in the overall population.

Since our sample was made up on the basis of size and regional location constraints characteristic of the population, it is no longer necessary to examine the representativeness of the sample in relation to the population with regard to these two criteria. Finally, we also examined the percentages of independent companies within the population and the sample. These were also identical (66.7%). These elements of comparison were selected because they are included in the database.

3.2. Data collection method and measurement of the dependent variable

It is not possible to test most of the hypotheses we have formulated on the basis of data published by companies. Hence, we opted for a telephone survey. We first compiled a questionnaire consisting of closed questions that we had pre-tested on several company managers. The managers of 150 SMEs were interviewed over the telephone in November 2001.

The value of the dependent variable was calculated using the database. The selection of an appropriate growth index has prompted several theoretical discussions (Wooden and Hawke, 2000; OECD, 1998; Birch, 1986). Since no index is neutral (Julien et al., 1998), we opted for a simple measurement procedure, namely relative variation \( \frac{(E_t - E_{t-1})}{E_{t-1}} \), as this is the index that is most frequently used in studies on growth determinants (Delmar, 1997).

In order to carry out a logistic regression (see below), these dependent variables were split into “high growth” (code 1) and “low growth, stagnation or regression” (code 0). We defined “high growth” as growth greater than or equal to 50% over the period studied; 34.3 % of the companies in our sample can be regarded as having undergone high growth.

Previous studies differ greatly in terms of the time period studied. In order to identify irregular short-term trends and to allow a reliable estimate of organizational performance (Weinzimmer

7 See Section 3.2 for how to measure this variable.
8 Having first removed those companies that formed part of the surveyed sample.
9 The main advantage of this method over personal surveys and postal surveys is that telephone surveys can be conducted very quickly. Compared with a personal interview, they also have a lower risk of bias associated with the interviewer himself (Lambin, 1990). Furthermore, they allow responses to be encoded immediately, thus reducing the risk of errors.
et al., 1998), the time period studied should be at least 5 years. On the basis of the constraints of our database, we measured growth over a 7-year period from 1994 to 2000.

So as to avoid static measurement, when growth is essentially a dynamic phenomenon, we did not consider companies that were set up during the period studied.

3.3. Data processing

In order to test our hypotheses, we performed a binomial logistic regression analysis using SPSS software. This method has a number of advantages over standard multiple regression, which is subject to more restrictive application conditions (Garson, 2001; Howell, 1998)\(^{10}\). These advantages include the fact that, unlike in standard regression, logistic regression does not presuppose a linear relationship between the dependent variable and the independent variables and does not require a normal distribution of the variables. We have already noted that our dependent variable did not display a normal distribution. Logistic regression also makes it possible to integrate dichotomous or polytomous and metrical predictors into one single model. Each source variable modality gave rise to a dummy variable coded 1 if the characteristic applied, and 0 if it did not. For each source variable, one of the binary variables created was excluded from the model in order to avoid a linear relationship between the independent variables. In the event of “filtering”, in other words when a question does not concern part of the sample, we created a dummy variable consisting of the companies not concerned.

4. Results and discussion

Before performing the regression analysis, we compared the growth averages of the companies that took part in our survey with those of the companies that refused to take part, using a two-sided \(t\)-test. The average values for the growth in employment and turnover of the companies that took part in the survey were not significantly different from those of the companies that refused to take part. We then compared the size, independence and location of the companies in the two groups using Pearson’s \(\chi^2\) tests. The question of whether or not the company took part in the survey does not depend on its size at the start of the period, its independence or dependence or its regional location.

The statistically significant results at the 5% threshold (\(p < 0.05\)) of the logistic regression analysis of employment growth against environment-related variables are given below:

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\(^{10}\) This method also has a number of advantages over discriminant analysis, which can also be used when the dependent variable is split. Apart from the fact that discriminant analysis involves a normal distribution of the variables, it can lead to “impossible” probabilities of success since they are outside the 0-1 range (Howell, 1998).
Table 1. Statistically significant predictors resulting from binomial logistic regression analysis of employment growth against company environment-related variables

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Coeff.</th>
<th>SE</th>
<th>Wald</th>
<th>DF</th>
<th>Sig.</th>
<th>Exp. (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 10: location in a science or industrial park</td>
<td>0.799</td>
<td>0.451</td>
<td>3.143</td>
<td>1</td>
<td>0.076</td>
<td>2.224</td>
</tr>
<tr>
<td>Hypothesis 13: economically dynamic region</td>
<td>-1.022</td>
<td>0.503</td>
<td>4.126</td>
<td>1</td>
<td>0.042</td>
<td>0.360</td>
</tr>
</tbody>
</table>

$\chi^2$ of the model: 21.316   Sign.: 0.379
Degree of concordance between the predicted values and the observed values: 69.9%

Only two out of fifteen variables have a significant effect on employment growth.

In accordance with our tenth hypothesis, the fact that the company is located in a science or industrial park increases the chances of employment growth. This result confirms the conclusions of other European studies (Colombo and Delmastro, 2002; Westhead and Storey, 1994). Given a copycat effect, development of networks, easier access to a wide range of resources and/or scientific research, or agglomeration economies, these companies grow more rapidly. However, this result does have a potential double selection bias linked to the auto-selection processes and/or the selection process implemented by the body responsible for managing the park (Storey, 1998). Indeed, it is entirely possible that only companies with reasonable growth prospects might opt to set up business in such a park. Furthermore, it may be that the organization managing the park might only select companies with a certain growth potential. Be that as it may, this type of initiative is the only environmental variable that has a positive influence on growth.

We have put forward the hypothesis that being located in a region that is regarded as more dynamic than another region could have a positive influence on growth. We measured the impact of regional location by means of objective and subjective criteria. The actual region in which companies are located (Wallonia, Flanders, Brussels) does not have any significant influence on their growth prospects, which is in line with the results of other studies (Julien et al., 1997). The macro-economic conditions that prevail in a region in the wider sense and the measures taken by a region’s decision-makers in order to attract capital or businesses do not therefore have a significant impact on growth, in contrast to more local initiatives such as the creation of science or industrial parks. Moreover, looking at Table 1, we are forced to recognize that if a manager perceives that his company is part of an economically dynamic region, this has a negative effect on employment growth. It is possible that these companies might tend to “rest on their laurels” on the basis of this perceived regional dynamism at the expense of the real growth of their company.

Both of these variables are linked to the generosity of the environment. Other variables associated with generosity, i.e. sectoral growth rate, level of concentration in the market, the existence of entry barriers, obtaining public aid, the perception of fiscal and social pressures, the crime rate and the appearance of the area in which the company is located, the proximity of university institutions, location in an urban area and the extent of development of the road infrastructure, means of transport and communication networks do not have any significant
effect. Finally, neither dynamism nor environmental complexity would appear to be statistically significant predictors.

Over and above this observation, this tends to show that environment, at least if it is studied independently of other variables, only has an extremely limited influence on the growth of SMEs. Other research that simultaneously examines the impact of internal and external variables and the coherence between variables indicates that environment does have a significant influence when studied in interaction with internal variables (Janssen, 2002). These results therefore lead us to doubt the ability of purely external approaches to explain company growth. They also argue in favor of adopting a integrative model and an integrative approach in order to study growth.

5. Conclusions

The impact of a company’s environment on its growth has prompted considerable empirical research. However, most of this work centered on the analysis of one or a few predictors. Furthermore, no research has provided an exhaustive list of all variables previously analyzed. We have tried to fill this gap and have tested the potential influence of 15 variables on employment growth.

Our results show that only two factors linked to the generosity of the environment have a significant effect on employment growth, namely the fact that the company is located in a science or industrial park (positive) and the way in which the company manager perceives the economic dynamism of the region in which the company is located (negative). Other variables associated with generosity and variables that are concerned with the dynamism and complexity of the environment do not represent statistically significant predictors of employment growth. This observation leads us to question the validity of purely external approaches to examining growth and to argue in favor of a method that includes both external and internal determinants and considers the degree of coherence between them.

The results of our research are subject to certain limitations. First of all, this study is solely concerned with individual companies. However, some organizations are liable to grow thanks to their manager creating other firms or franchises. We did not use groups as our analysis unit, so this type of growth was inevitably ignored within the context of our results. Furthermore, we measure growth on the basis of data relating to the start and end of the period. However, growth does not necessarily follow a regular pattern. The development process may in fact be full of ups and downs. Nevertheless, our study does not take this phenomenon into consideration, because it does not take account of intermediate data. Moreover, the type of survey conducted and the questions asked prevented us from obtaining longitudinal data for a number of variables. Finally, the methodology that we chose to follow, i.e. to test most of the variables simultaneously and not to exclude factors that might seem to be of minor importance at first sight, does theoretically dilute the potential contribution of the various predictors. Another research option that might help overcome this problem would entail adopting a more selective approach based on the results of this research.

As far as future research paths are concerned, subsequent studies on the link between environment and employment growth could explore two different avenues, possibly even at
the same time. Firstly, since our research showed that only one more local environmental variable, i.e. location in an industrial or science park, has a significant positive impact on growth, while more macro-economic variables, at least if these are analyzed in isolation, do not produce significant results, it would seem appropriate to analyze the impact of more “piecemeal” variables on growth. Secondly, our results show that a purely external approach leads to results that are not particularly convincing. Other relatively isolated studies (Janssen, 2002; Weinzimmer, 1993; Eisenhardt and Schoonhoven, 1990) observe that environment does have an influence on growth when its interaction with certain internal variables is studied. These interactions may, for example, be concerned with the coherence between entrepreneurial variables and variables associated with the dynamism of the environment, between the latter and the organizational structure or between the aggressiveness of the company strategy and the generosity of the environment. We therefore feel that it is of paramount importance to adopt a method incorporating these interactions and extending beyond the external model.
Bibliography


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