GROWTH FACTORS OF FLEMISH ENTERPRISES:
AN EXPLORATORY STUDY OVER THE PERIOD 1993-1997*

EDDY LAVEREN**, ARTHUR LIMERE***, KATHLEEN CLEEREN***
AND ELLEN VANBILSEN***

ABSTRACT

In this empirical study we investigated which company characteristics and which characteristics of population demography and firm location discriminate strongly and weakly growing firms in the Flemish part of Belgium. At the same time we examined whether existing governmental growth incentives actually are positively related to firm growth. Further, differences in growth between provinces and between industries in Flanders were analysed. Stepwise logistic regression was applied to growth categories identifying the 25 % strongest and the 25 % weakest growing companies on the investment level (growth in value added and total assets) and on the employment level (growth in the number of employees).

The results show that a healthy financial situation is positively related to employment growth and especially investment growth. Governmental efforts to strengthen growth also seem to exhibit a positive relationship with either investment or employment growth. The height of the social security contributions - often indicated as the culprit for the weak international competitive position of Belgian firms -, on the other hand, seems to be negatively correlated with both growth measures. Further, we found evidence for significant correlations between demographic characteristics of the population as well as firm location and firm growth. Industry wise, the low growth performance of 'wholesale trade, retail trade, hotels, restaurants and pubs, repair' (NACE division 6) and 'other processing industries' (NACE division 4) became evident. Regionally, the figures show growth to be significantly weaker for firms situated around the central axis Antwerp-Brussels.

JEL CLASSIFICATION: M20, O12, R12.

KEYWORDS: Firm growth, regional firm growth, peripherality, employment growth, investment growth, growth characteristics.

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** Universiteit Antwerpen, Faculteit Toegepaste Economische Wetenschappen UFSIA-RUCA, Prinstraat 13, B-2000 Antwerpen, Tel. : 03/220.40.86, email : eddy.laveren@ua.ac.be

***Limburgs Universitair Centrum, Faculteit Toegepaste Economische Wetenschappen, Universitaire Campus, B-3590 Diepenbeek.
INTRODUCTION

The academic world, as well as the managerial world and policymakers show an increasing interest in the growth of firms. Studying growth, academics learn more about the processes that can induce growth. This can confirm existing growth theories or can lead to new insights and theories about the matter. For managers it is of major concern to know the factors that are related to growth since it assures the further and continuous development of their company. Policymakers on the other hand, can use the results of these studies in their governmental proposals directed towards the stimulation of economic growth.

The growth process has intrigued an enormous amount of researchers resulting in a vast wave of empirical studies. The contribution of this article to empirical growth literature consists in trying to define factors that are related to determinants of firm growth, which can be either directly or indirectly influenced by governmental action. The study is based on data from Flemish company accounts. This means that independent variables were conditioned by the availability of these accounts and that a profound study of qualitative factors was immediately ruled out. By means of macro-economic figures however, demographic factors like the age structure of the population and measures of firm location (firm density and population density) could be introduced into the study.

We ran a logistic regression of a large sample of strongly and weakly growing companies in order to find out which company characteristics and which characteristics of population demography and firm location (peripherality) are correlated with growth in the Flemish part of Belgium. At the same time we examined whether existing governmental growth incentives and firm growth itself exhibit a positive relationship. Further we investigated whether growth in Flanders between 1993 and 1997 differed between provinces and amongst industries. The results give important and interesting insights into a series of factors that are positively and/or negatively related to growth in companies.

The article is structured as follows. In section 1, literature on growth is reviewed and the hypotheses concerning growth-related factors are derived. Section 2 describes the methodology. In section 3, the empirical results are discussed and in section 4, the policy implications of the results are addressed. The conclusions of this article are summarised in section 5.

1. LITERATURE REVIEW

In what follows an overview is given of the empirical literature concerning company characteristics, demographic characteristics, peripherality (firm location) and governmental incentives that are considered to be growth-related. The hypotheses are grouped into seven categories namely hypotheses concerning financial factors, personnel related factors, size, research and development, governmental incentives, firm location and demography.
1.1. **Financial factors**

1.1.1. **Profitability**

The resource-based perspective of firm growth, which focuses on the internal strengths of the firm, stems from the seminal work of Penrose (1959). Penrose argues that the relationship between performance and growth has to do with management’s desire to maximise firm profits. The profits (remaining after payment of dividends to the owners and salaries to the managers) are reinvested into the firm, which allows the firm to obtain additional resources and grow. Growth, Penrose argues, thus originates from the expansion of assets controlled by the firm. The growth rate of the firm is then limited to the rate at which the firm can obtain enough managerial capacity to manage these new assets, often referred to as the ‘Penrose effect’ (Marris, 1964).

Our hypothesis 1 therefore is: *Firm profitability is positively related to firm growth.*

1.1.2. **Productivity**

In order to remain competitive in today’s market, monitoring the level of productivity has become one of the most important management functions. After all, one of the keys for achieving profitability and thus growth is productivity (Giannakas et al., 2000; Seurat, 1999). Instead of the traditional ratio approach to monitoring productivity, other approaches (the ‘American Productivity Center measurement procedure’ and the ‘Ethyl Corporation measurement procedure’) even link productivity measures directly to firm profitability. The procedures start from the same premise: a firm generates profits from productivity and/or price recovery improvement¹ (Miller and Rao, 1989). Productivity in these schemes is a measure of the real growth changes in physical input and output quantities.

Our hypothesis 2 therefore is: *Firm productivity is positively related to firm growth.*

1.1.3. **Cash flow/equity**

Ooghe and Verbaere (1982) showed a healthy cash flow position to be an important success indicator. The latter was in accordance to the results of Huyghebaert et al. (1998) who showed that a strong operational cash flow plays a key role in the survival of especially young firms. A strong operational cash flow creates a pool of internally generated funds that can lift the capital constraints and open up possibilities for external financing. Also Carpenter and Petersen (1998) found empirical evidence for the fact that the growth of firms, especially small ones, is determined by the amount of available internally generated capital (cash flow/total assets). The above can be explained by the fact that the possession of the necessary resources is considered as a prerequisite for a growing company.

¹ Price recovery improvement refers to the extent to which cost or price increases are passed on to the customers.
Our hypothesis 3 therefore is: *The ratio cash flow/equity is positively related to firm growth.*

### 1.1.4. Liquidity

Liquidity measures the adequacy of the firm’s current assets to meet its current liabilities. Liquidity is often given considerable weight by potential lenders. Banks and loan institutions indeed react more reserved in granting credit in a situation of inadequate liquidity. After all loan repayments may be compromised. Especially small firms experience difficulties in getting access to finance partly because of lower liquidity levels, often referred to as the ‘finance gap’. Growing firms in need of debt financing thus should have substantial liquid funds and should constantly monitor the firm’s liquidity. After all, research shows that liquidity is a very important indicator of the firm’s survival chances (Limère, 2000, Ooghe et al., 1993, Ooghe and Verbaere, 1982).

Our hypothesis 4 therefore is: *Liquidity is positively related to firm growth.*

### 1.1.5. Solvency

According to the Pecking Order Theory, firms finance their needs hierarchically. They first use internally generated funds, then debt financing and finally external equity financing. Direct empirical testing of the Pecking Order Theory is limited and inconclusive. Some results support the Pecking Order Theory (Watson and Wilson, 1998, Jordan et al., 1998); others reject it (Klein and Belt, 1994). Moreover their exists some evidence of a reluctance of small firms to move down the Pecking Order (Gowling et al., 1991). This phenomenon is attributed to the fear of losing control (Binks, 1991, Cosh and Hughes, 1994). The financing order of a lot of small firms thus resembles a truncated Pecking Order rather than the Order described by Myers (1984).

Since the attitude towards external equity financing in small firms is frequently a personal one, changes in conditions of supply will not affect the willingness to move down the Pecking Order (Howorth, 2001). This way the individual preferences or demand for finance may be a more powerful constraint on the growth of small firms than the supply of finance (Kotey, 1999). Howorth (2001) indeed found evidence of a truncation of the Pecking Order at the point of long-term debt for some firms and at the point of external equity financing for some other firms.

Belgian research (Durinck et al., a1997) has shown the financing hierarchy of Belgian companies to be in line with the one proposed by the Pecking Order Theory. Based on Belgian company accounts of 370 SMEs generating growth levels exceeding sustainable growth, Durinck et al. (b1997) showed that the faster the growth, the less firms used retained earnings and the more firms used external financing. The amount of external equity financing however, did not show a significant increase. Certain truncation effects are thus at work certainly for small en medium sized firms. Also Voordeckers (1999) found faster growing small firms to substitute self-financing with supplier credits and subsequently long-term loans.
Our hypothesis 5 is: *Solvency is negatively related to firm growth.*

1.2. PERSONNEL RELATED FACTORS

1.2.1. MANAGEMENT AND PERSONNEL TRAINING

The mere existence of growth potential, in the form of qualitative resources, a good organizational and strategic make-up and favourable external factors (market position), does not in itself bring about growth. Managerial skills are a prerequisite for growth as well. As firms grow in size the structures become more and more complex and managers are confronted with a whole new set of problems. The skills to manage these problems can be fuelled by either education, management training or experience. Given the fact that company accounts form the basis of this research the impact of educational and experience factors cannot be accounted for in this study. The introduction of the social balance sheet however, did make it possible to study the relationship between firm growth and training.

Sexton et al. (1997) were aware of the fact that growth puts a strain on entrepreneurs and that they are in need of specialised information. They identified 10 learning needs of fast growth entrepreneurs amongst which 'knowledge of cash flow statements', 'financing growth', 'employee training and motivation'. Also former research had found the relationship between growth and management training to be positive (Birley and Westhead, 1990).

Birley and Westhead (1990) however, are convinced of the fact that, besides the skills of the entrepreneur or owner/manager, also the skills of the employees matter. These can be improved or sustained by training as well. After all 'the hiring of skilled workers' (Cooray & Wijewardena, 1995, Leiponen, 1998), the 'attraction and retention of quality people' and the 'attention to human resources' (Hills and Narayana, 1989) play an important growth inducing role. Gadenne (1998) found the relation between an 'employee relations factor' including, amongst others, staff training and firm performance to be industry-related. He found it only to be positive in the service industry. In the retail and manufacturing industry the relationship appeared to be non-significant.

Therefore our hypothesis 6 is: *Management and personnel training is positively related to firm growth.*

1.2.2. TEMPORARY AND PART-TIME EMPLOYMENT

Flexibility plays a very important role in the current economic environment, certainly for growing companies. New products and production techniques follow one another in a rapid

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2 Functional flexibility refers to employees being able to perform different tasks and functions within the same company. Finally financial flexibility refers to the alignment of wages and labour costs with the performance of the employees and the firm.
pace and have become important competitive weapons. The commercial life of products shortens and delivery is speeded up. In the meanwhile, the product assortment is elaborated. All of this translates into an increase in time pressure. Being able to quickly respond to changing market conditions therefore becomes a prerequisite for firm continuity. The market’s demand for an increase in product assortments and the shortening of delivery times requires a lot of flexibility from the part of firms.

In the line of this evolution two aspects are of major concern: a reduction in lead times and labour flexibility (Valverde et al., 2000). According to Gibb (1991) labour force flexibility is therefore one of the key factors forming the base potential of a business to grow. Temporary and part-time employment can create the possibility to react quickly and efficiently to the changing conditions that growing companies face (Anonymous, 1995).

Aparicio-Valverde et al. (1997, p.597) state that: “There seems to be little doubt that employers believe that the increased use of different forms of flexible working time and contractual arrangements is a major development in the drive to be more competitive... However, flexibility is not necessarily a panacea for management, it also comes with built-in costs and problems. The potential increase in competitiveness that a more flexible work arrangement may give may be undermined if these problems are not resolved.” Indeed, many economists believe that flexible working arrangements are cheaper and more cost effective, but research (Nollen, 1992) has shown that “the costs are often underestimated and benefits assumed rather than measured” (Valverde et al., 2000).

Temporary employment can be used for continuing to operate efficiently by filling employee vacancies due to holidays, sick leave, maternity leave, the leaving of a permanent employee... Further it can be used when the workload exceeds the capabilities of the company work force (Weiss, 1993). Similarly, part-time work can be used to concentrate labour capacity in high activity periods on weekly or monthly basis. Periods of rapid growth, frequently characterised by periods of heightened activity, thus justify the resort to temporary and part-time employment.

A reduction in direct labour costs, as well as the fact that less fringe benefits (pension contributions, sick benefits,...) have to be paid naturally speak in favour of these flexible work schemes (Heather et al, 1996). Also part-time employees are thought to be more productive as they suffer less from end-of-day fatigue (Brewster et al, 1994). Moreover, in the case of the perpetuation of growth, the best performing temps can easily be hired on a permanent basis. In the opposite case, they can also be discharged without much costs and paperwork (Bielenski et al, 1992). The probationary period does not offer this kind of flexibility.

There are however also downsides to these working practices. Nonpermanent work can result in difficult communications (Hunter and Mc Innes, 1992), low commitment, high staff turnover (Aparicio-Valverde et al, 1997), health and safety hazards (François, 1991), more and more complicated administrative burdens and difficulties to keep the labour force in line with one coherent growth strategy,... These downsides unmistakably challenge
the management skills and require “clearer performance targets and closer and more realistic performance monitoring” (Brewster et al, 1994).

Valverde et al. (2000) found a positive relationship between the levels of temporary workers and firm performance\(^1\), but no significant relationship between the amount of part-time contracts and firm performance. Notwithstanding the significant result concerning the first relationship, they question its direction, namely does firm performance require the firm to resort to temporary employment in order to meet the demands arising from their successful performance, or does the efficient and effective use of temporary employment in highly fluctual and changing conditions increase organizational performance?

The literature indicates that nonpermanent working practices have its pros and cons. The fact as to whether the cons override the pros is less clear and warrants further research on a case-to-case basis. This is not possible within the scope of this study. The spectacular boost of the temporary employment sector as well as the increase in the use of part-time labour in Belgium however, strengthens our belief that the positive effects of temporary labour and part-time employment still offset the downsides.

We formulate the following hypotheses:

Hypothesis 7: Temporary employment in the workplace is positively related to firm growth.
Hypothesis 8: Part-time employment is positively related to firm growth.

1.3. SIZE

The relationship between the size of the company and growth is one of the most examined hypotheses in literature. Assuming that there exist determinants of growth essentially means that one refutes the stochastic growth process of Gibrat’s Law. According to this hypothesis, the growth rate or the proportionate growth of firms is independent of the current size of the firm. Numerous studies have been able to refute this law by detecting a negative growth/size relationship (Evans, 1987, Wagner, 1992, Varyiam & Kraybill, 1992, Hart & Oulton, 1996).

Our hypothesis 9 therefore is: The size of the firm is negatively related to the growth of the firm.

1.4. RESEARCH AND DEVELOPMENT

A number of studies are discussing the impact of innovation and R&D on firm growth. Lybaert (1996) for example found that successful and unsuccessful companies differ in their usage of information concerning R&D. Successful firms were found to have a competitive advantage over their rivals because of being better at gathering and analysing

\(^1\) Firm performance was measured as gross revenue as a proportion of costs.
information on innovation and R&D developments. Dsouza (1990) identified a ‘technology drive’ as one of the six strategies held by ‘high growth’ firms. The latter demonstrate following characteristics: recent technological changes, investments in research and development, value added in the industry, sophisticated technology,...

McCann (1991) also found a significant positive relationship between the growth rate and a strategy that is based on internal efforts on the research and development domain. Further, Siegel, Siegel and MacMillan (1993) indicated the use of new and advanced technology as a growth-conducting factor and Murray and O’Gorman (1994) found a positive relationship between growth and an innovative and product oriented firm. Klette and Griliches (2000) even presented a fully specified theoretical model of endogenous growth with R&D and innovations being the engines of growth.

We formulate the following hypotheses:

Hypothesis 10: The fact as to whether the firm engages into R&D is positively related to firm growth.

Hypothesis 11: The amount of R&D is positively related to firm growth.

1.5. GOVERNMENTAL INCENTIVES

In his model for ‘creating and sustaining superior performance’ Porter (1985) identifies the possible external factors that may influence a company’s success. Surprisingly, governmental influences are not taken into account here. We can however not deny that governmental fiscal, social and economical directives can in fact have, either directly or indirectly, a positive or negative impact on the performance level or growth level of companies. Westhead and Birley (1994) for example, found business survival to be positively related to a location in a by government designated ‘assisted’ area. General economic conditions as well as fiscal and regulatory influences have also been acknowledged to determine small firm creation and success (Chilton, 1984, Boskin, 1984, Cooper, 1979).

1.5.1. INTEREST AND CAPITAL SUBSIDIES

In many countries, Belgium included, governments grant different capital and interest subsidies to the business community in order to promote growth. In Belgium capital subsidies are granted for material investments financed with equity and interest subsidies are granted for reducing the interest charges on loans financing material or immaterial investments. Economy subsidisation of investments is however not unproblematic and one can question whether subsidisation of investments is beneficial to long-term growth.

First of all, subsidisation gives rise to deadweight losses. After all, a lot of investments financed with subsidies would have been done even without receipt of subsidies. Secondly, subsidies might be suboptimally allocated because politicians and bureaucrats may be more interested in the maximisation of political objectives than in economical efficiency (Bergström, 2000). Suboptimal allocation might also stem from a difference between
firms in time and money to gather information about subsidies. Both possible sources of suboptimal allocation speak in favour of larger firms. Thirdly, unsubsidised firms might see their competitive position threatened. Finally, important pressure groups (f.e. unions) can force subsidisation of less productive or less competitive firms, preventing or delaying the structural transformation of the industry (Bergström, 2000).

The main question that remains is whether subsidies have a positive impact on the individual company growth level. After all, subsidisation can also produce effects that give rise to inefficiencies at the company level (Leibenstein, 1966). Allocative inefficiencies of subsidisation arise from a suboptimal mix of labour and capital. Technical inefficiencies arise from a situation in which “management has captured the subsidies in the form of slack or lack of effort” and/or “that management has become more interested in subsidy-seeking activities than productive activities” (Bergström, 2000).

In a study of Swedish manufacturing firms, Bergström (2000) found growth in value added to increase after the first year of granting the subsidies, after which it then decreased according to the amount of subsidies received. He concludes that subsidised resources might be inefficiently allocated.

The research question in this study is whether the positive effects of subsidisation (investments in new technologies which help the technological advancement of firms) offset the downsides.

Therefore our hypothesis 12 is: Receipt of interest and/or capital subsidies is positively related to firm growth.

1.5.2. Social security contributions and government employment incentives

No employer will deny that wages have a great impact on the cost structure of the firm. As a result of a high wage pressure, products and services can become more expensive, the competitive position of the firm can be undermined and the growth potential of the firm threatened. Especially the social security contributions of Belgian companies have always been considered to be the culprit for the weak international competitive position of Belgian firms and for the hesitation of foreign investors to come to Belgium.

The business community thus applauds employment incentives aimed at alleviating the costs involved in hiring personnel. Most of these incentives (amongst others Youth Job Plan, Job Plan, Company Plan, Maribel) consist in reductions in social security contributions and focus on the stimulation of employment of people having difficulties finding a job. By means of these incentives, the government aims at increasing the total employment level and at enlarging the economic basis.

These active employment incentives are however often criticized because they can produce negative side effects. The side effects being deadweight, substitution, displacement (Lyard et al., 1991) and the shift-effect (Koevoets, 2000). Deadweight refers to money
paid for recruiting people that would have been recruited anyway regardless of the subsidy. The money paid is deadweight because it has no effect at all. Substitution refers to money paid for recruiting employees that merely replace some other group of potential employees that the firm would have recruited instead. Money paid in this sense does not increase employment either, but only stimulates a preferential treatment upon some specific group of potential employees. Displacement refers to the jobs being lost in firms not being granted an employment subsidy because they have to stay competitive in comparison to firms being granted subsidies. Finally, the shift-effect refers to money paid for recruiting subsidised employees while terminating the contract of existing employees, in which case employment isn’t stimulated either. Of all of these effects, displacement is the most difficult to detect (Marx, 2001). Further criticism has been formulated about the complexity and lack of clarity of the employment stimuli. (Elias et al., 2000).

The question as to whether exemption from social security contributions results in stronger growth (on the investment level or employment level) however is questionable in the light of the above arguments. Former research on macro-economic data (Marx, 2001) has already shown the net employment impact of employment subsidies to be much lower than predicted by most models and simulations. This result is attributed to the fact that most of these models tend to underestimate the deadweight and substitution costs of employment subsidisation. Based on interviews with employers Van der Linden (1995) has found that the Youth Job Plan in Belgium has a deadweight effect of 53% and a substitution effect of 36%. Taking these effects into account, a net employment effect of only 10% is yielded. Given that a lot of employees would have been recruited even without the subsidisation, indicates that these funds are in fact utilised to subsidise the firm itself. This way subsidisation can indeed improve the competitive position of subsidised firms.

Based on the above it is clear that the social security contributions, and especially the exemption from these, play an important role in staying competitive. Therefore we formulate the following hypotheses:

Hypothesis 13: Social security contributions are negatively related to firm growth.

Hypothesis 14: The fact as to whether the firm uses governmental employment incentives is positively related to firm growth.

1.6. Firm location (peripherality)

Conventional core-periphery models generally consider peripheral disadvantage to be caused by two elements (Copus, 2001). The first disadvantage is distance costs (travel and transport costs) resulting from remoteness relative to population dense and industry concentrated areas. The second is the lack of agglomerative economies (Fujita et al, 1999). Therefore firms located in peripheral regions were thought to be disadvantaged as compared to firms in centre regions.

\footnote{Fujita et al. (1999) give the following examples: proximity to suppliers of intermediate inputs and to purchasers of intermediate outputs, benefits form ‘labour pooling’ and facility for rapid transfer of information.}
The economic environment however is changing. Transport and communications infrastructure have improved, the economy has undergone structural changes (expansion of service industry and light manufacturing and decline of heavy manufacturing and primary production) and E-commerce and information technology have grown in importance. As a result of these changes the economic potential of regions becomes less and less dependent on location, and more on ‘aspatial’ characteristics like ‘quality of local IT-infrastructure’, ‘human capital’, ‘quality of local business networks’, ‘local embeddedness and civic society’, ‘local institutional structures/networks’ and ‘quality of links to European/global markets and information networks’ (Copus, 2001). As a result of this economic evolution the disadvantage of peripheral regions can be dramatically reduced dependent upon the stage of evolution the economy is in. In this study we want to find out whether core-periphery disparities still exist for the economy in Flanders.

Our hypothesis 15 therefore is: The firm’s location in a peripheral region is negatively related to firm growth.

1.7. DEMOGRAPHY

The developed countries have experienced profound demographic changes over the postwar period. Population aging is one of these demographic evolutions that warrant attention. First of all, the aging of the population together with below-level-replacement fertility rates can lead to a stagnant or slow-growing labour supply (Venne, 2001). This can result in rising health care costs and pensions, but more importantly for growing companies, in labour supply shortages that may hinder their growth potential.

Secondly, young and dynamic people react quicker to and have fewer inhibitions to try out revolutionary new services and trendy new products. They also take more interest in luxuries and ‘extra’s’ (f.e. expensive cars, travel, ordering out). Further, in an area with a young population, the amount of people that are busy trying to establish a social position and to gather belongings is larger. This comprises buying, building or renovating a home and decorating it, starting a career, showing high mobility for working and social relationships, producing offspring and all related expenses,... The consumption pattern of young people therefore differs extremely from that of old people. Based on the above, one can assume that in young areas the consumption level lies higher and the labour supply is more elaborated, both of which can positively influence the growth potential of local firms.

Our hypothesis 16 therefore is: The age structure of the population is negatively related to the growth of the firm.

2. METHODOLOGY

First a concise overview of the theory of logistic regression analysis and the reasons for using this method is given. Further, we discuss the data set and the definition of the dependent and independent variables.
2.1. Logistic regression

In this study we use logistic regression (Hair et al., 1998) for classifying companies out of predetermined growth categories (see below) as strongly or weakly growing based on the differences between the characteristics of these companies. The results of the logistic regression will not be utilized for predictive purposes, but for the identification of variables that are significantly different between strongly and weakly growing firms.

Logistic regression was chosen over discriminant analysis because this method is less sensitive to the violation of the basic assumptions, namely a multivariate normal distribution of the independent variables and an identical variance-covariance matrix of the various groups. Because of this robustness the chance of making a type I or type II error\(^1\) becomes smaller and the classification result improves.

2.2. Data set

In this study we used the CD-ROMs of the National Bank of Belgium of 1993 until 1997, comprising all reporting firms that are required to submit their company accounts. From these CD-ROMs we selected a very large constant sample of companies (45,375) based on several conditions, namely the availability of accounts from 1993 until 1997, the conformity of the accounts to the structural checks of the National Bank of Belgium during the whole of this period and the reporting of their ‘social balance sheet’\(^6\) from 1996 on. The analysis however only concerned the Flemish subpopulation (30,270 companies) of this selection.

2.3. Dependent variables

There are several possibilities to measure growth. We have opted for four regularly used measures namely turnover, total assets, value added and the number of employees.

First the growth figure per company for each measure over the period 1993-1997 was calculated as the arithmetic average of the annual percentages of growth. We only took into account real growth figures. For converting the nominal annual figures to real growth figures, we used the index of consumption prices. To eliminate extreme cases we reduced the data set using the filter described in the footnote below\(^7\).

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\(^1\) In terms of this study a type I error means classifying a weakly growing company as strongly growing and a type II error classifying a strongly growing company as weakly growing.

\(^6\) A social balance sheet gives an overview of all the information concerning permanent staff, interim employees, employee turnover, use of employment incentives and training. Since 1996 some firms are required to report this ‘social balance sheet’ in their company accounts.

\(^7\) Filter:  
-100 \% <growth in turnover in '94,'95,'96 and '97 < 300 \%  
-100 \% <growth in total assets in '94, '95, '96 and '97 < 150 \%  
-300 \% <growth in value added in '94, '95, '96 and '97 < 300 \%  
-100 \% <growth in number of employees in '94, '95, '96 and '97 < 150 \%
The remaining companies in the data set\(^4\) were then classified in increasing order of their arithmetic averages in turnover growth, total assets growth, growth in value added and growth in the number of employees. After classification the x percent strongest growing companies and the x percent weakest growing companies were determined. The percentage x ranged from 10, 20, 25, 33 to 50 %. The same procedure was followed for each of the growth measures described above.

This way simple growth categories and combined growth categories were formed. Simple growth categories concern companies only growing in one growth measure at the same time: companies belonging to the group of strongest growing companies (according to x) are coded 1, companies belonging to the group of weakest growing ones are coded 0. Combined growth categories concern companies growing in two or more growth measures at the same time, namely ‘total assets and turnover’, ‘total assets and value added’ and ‘total assets, turnover and value added’\(^5\). Companies are coded 1 if they belong to the x percent strongest and coded 0 if they belong to the x percent weakest growing companies in every of the above measures.

Of all of these categories the researchers however preferred the ones with extension 25 (x = 25 %) for use in the analysis. After all using a category with a higher percentage (33 % or 50 %) would decrease the differentiation between groups. Using a category with a lower percentage (10 % or 20 %) on the other hand, would lead to a great loss of research data.

In the empirical part presented here we will make a distinction between an investment growth model and employment growth model.

Investment growth is defined as the growth in total assets and value added. For this purpose the combined growth category CAVATA25 (growth in Value Added and Total Assets with x = 25 %) was used as the dependent variable in logistic regression. We chose this multidimensional growth category because it comprises both short-term growth, captured in value added, and long-term growth, captured in total assets. Indirectly it also captures turnover growth, which is closely linked to growth in value added. Using a multidimensional growth category that incorporates turnover growth itself could lead to a great loss of research data since small firms in Belgium are not required to report turnover.

Employment growth is defined as the growth in the number of employees. For this we introduced the simple category CATNE25 (growth in the Number of Employees with x = 25 %) in the logistic regression.

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\(^4\) If a particular growth measure was not reported (some smaller firms are not required to report their turnover for example) or had missing values, growth percentages could not be calculated. These companies then could thus not be classified in order of growth percentages.

\(^5\) The authors are convinced that employee growth could be related to a whole set of other variables than the other growth measures. For this reason, categories concerning employee growth will not be combined with categories concerning other growth measures.
Logistic regressions on the rest of the above-mentioned single and combined categories were used as a means of validation of the results (see 3.7).

The output of logistic regression consists of a classification matrix of research data classified according to the predetermined growth categories (CAVATA25 and CATNE25) on the one hand and assignment to the group of strongly or weakly growing companies by the logistic method on the other hand. This matrix gives insight into how many companies (on a percentage basis) were correctly classified by the logistic regression method. Further, logistic regression produces for each of the independent variables a Wald-test that indicates whether the variable is significantly different between groups and a partial correlation coefficient that indicates the discriminating power in the model of each variable.

2.4. INDEPENDENT VARIABLES

The independent variables introduced into the models are described in Table 1.

### Table 1. Description Independent Variables.

| Financial factors: | Profitability | Average of NROI (+70/67 or +67/70 +650+653-9126-9134/ +20/58)* over the period 1993-1997. |
| Tax pressure | Average of the ratio (taxes (+67/77)/ value added (9600)) over the period 1993-1997 |
| Productivity | Average of the ratio 'value added (9600) / employee (9086)' over the period 1993-1997. |
| Cash flow/equity | Average of the ratio cash flow / equity over the period 1993-1997 |
| Liquidity | Average of the acid ratio ((+40/41+50/53+54/58)/(+42/48)) over the period 1993-1997. |
| Solvency | Average of solvency ratio 'equity/total assets' (+10+11+12+13+140 or +141+15)/(+10/49) over the period 1993-1997. |

| Personnel related factors: | Training dummy | = 1 if in 1996 or 1997 training costs were reported (+5803 or +5813 >0). |
| Temporary help dummy | = 1 if in 1996 or 1997 temps were employed (+1511 >0). |
| Temporary help | = 0 otherwise |
| Part-time employment dummy | Average of the division of the number of hours performed by temps (+1511) by the total number hours performed by the regular staff and temps (+1013+1511). |
| Part-time employment | = 1 if in 1996 or 1997 part-time employees were employed (+1002 > 0). |
| = 0 otherwise |

| Size: | size | Average of total assets (+20/58) over the period 1993-1997. |

| Research and development: | R&D dummy | = 1 If in the period 1994-1997 R&D costs were activated (+8051 > 0). |
| R&D | = 0 otherwise |

| Governmental incentives: | Interest and/or capital subsidies dummy | = 1 If the firm received interest and/or capital subsidies in the period 1994-1997 (+9125 > 0 or 9126 > 0). |
| = 0 otherwise |

* The numbers refer to the reference numbers in the company accounts on the CD-ROM of the National Bank of Belgium.
TABLE 1. CONTINUED

<table>
<thead>
<tr>
<th>Interest and/or capital subsidies</th>
<th>Average of the sum of the interest (+9126) and capital subsidies (+9125) received in the period 1994-1997.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Security Premiums Pressure</td>
<td>Average of the ratio ‘social security contributions ((I+621)/(I+70))/60-61-740)/value added (9800)’ over the period 1993-1997.</td>
</tr>
<tr>
<td>Employment agreement, Job plan, Company plan, Maribel, Youth job plan, Low wages plan, Returner jobs, Conventional part-time transitional pension, Complete career break, Reduction of working hours, First-employment contracts, 'ingrow jobs', Youth traineeship, Work-education agreement, Learning agreement, Successive fixed-term contracts</td>
<td>= 1 if in 1996 or 1997 following employment incentives were used: Employment agreement, Job plan, Company plan, Maribel, Youth job plan, Low wages plan, Returner jobs, Conventional part-time transitional pension, Complete career break, Reduction of working hours, First-employment contracts, 'ingrow jobs', Youth traineeship, Work-education agreement, Learning agreement, Successive fixed-term contracts.</td>
</tr>
<tr>
<td>= 0 otherwise.</td>
<td></td>
</tr>
<tr>
<td>Peripherality: Population density</td>
<td>Density of the population in the district (arrondissement) in which the firm is registered. Number of firms in the district (arrondissement) per number of residents in the district in which the firm is registered.</td>
</tr>
<tr>
<td>Peripherality: Firm density</td>
<td>Peripherality: Firm density</td>
</tr>
<tr>
<td>Demographic factors: Population age structure</td>
<td>Per municipality the population figures of 1994 were grouped in age categories. We distinguish 8 categories, namely 0-9,10-19,20-29,30-39,40-49,50-59,60-69 and 70 years and older. The population figure in each category was then multiplied with the median of each category (5,15,25,35,45,55,65 and 80). The results were summed and, in order to eliminate the influence of extreme high figures, again divided by the population figure of each category. This way a low figure appears for a young population and a high figure in the opposite case.</td>
</tr>
</tbody>
</table>

As far as the financial factors are concerned, all of the independent variables are defined as the arithmetic average of the respective ratios over the period 1993-1997. Profitability is not only measured by profitability as such, but also by means of a tax pressure variable, defined as the ratio of paid taxes over value added.

Regarding the hypothesis about training, only the fact as to whether the firm resorts to training can be considered. The actual amount of the expenses for training cannot be determined because of reporting errors in the ‘social balance sheet’.

The flexible working schemes ‘temporary employment’ and ‘part-time employment’ on the other hand, could be both expressed in terms of a dummy variable, indicating whether the firm uses these flexible working schemes, and a continuous variable, indicating the incidence of these working practices. The same applies to R&D and interest and capital subsidies. One should take into account that the influence of R&D on growth is examined using capitalized R&D costs. These costs are the only indicators of R&D available in Belgian company accounts. This means that only firms that capitalize their R&D could be identified. Firms that put their R&D-expenses into production costs could not be singled out.
The ‘social security premiums pressure’ variable measured the average of the social security contributions over the period 1993-1997. The impact of governmental employment incentives, exempting firms from a part of these contributions, is accounted for by various dummy variables indicating whether employment incentives were used in 1996 and/or 1997\textsuperscript{10}.

Copus (2001) uses the term ‘peripheral areas’ synonymous with ‘sparsely populated areas’. Therefore we use population density and firm density of the district\textsuperscript{11} as a proxy for periphery.

Finally, the age structure of the population of the community is calculated as indicated in table 1. A low value for age structure means that the population in the community is young.

3. EMPIRICAL RESULTS

Based on the different factors and using the various growth categories as dependent variables, a lot of logistic regression models were tested. The two models presented here were both produced using stepwise logistic regression analysis. This means that of all of the variables presented in Table 1 only those that significantly differentiate weakly and strongly growing companies on a significance level 0.05 are selected. In the first model the focus is on investment growth, in the other on employment growth. As mentioned earlier, we introduced growth categories CAVATA25 and CATNE25 as dependent variables.

The choice of the base models was founded on the results of cross-tabulations\textsuperscript{12}, the number of remaining cases, the classification result and the consistency of the signs and the significance of the variables in the various models. In order to be able to make a regional and industry analysis, two sorts of dummy-variables were added: NACE dummies (see 0 and 0) and province dummies (see 0 and 0).

The main objective of this study is to determine variables that discriminate strongly and weakly growing firms. In this way, we find variables that are related to growth. However, because of the fact that both dependent and independent variables were measured in the same period (1993-1997), causal directions are not determined. The causality of the relationships remains an issue to be investigated further.

\textsuperscript{10} It should be noted that the conditions for obtaining the different governmental employment incentives might exclude some firms from the possibility to use these incentives (f.e. Maribel). A selection bias could thus influence the results.

\textsuperscript{11} The districts considered here are the 22 juridical arrondissements in Flanders.

\textsuperscript{12} Cross-tabulations were used for determining whether a particular variable could play a role in the logistic regression models. These cross-tabulations however are not reported here, but can be acquired from the authors.
3.1. Investment Growth Model

The empirical results for logistic regression are given in Table 2. In the second column the estimated coefficients are shown. The sign of the coefficients indicates whether the variable in question is positively or negatively correlated with investment growth.

**Table 2. Logistic regression cavaata25: results**

<table>
<thead>
<tr>
<th>Legend</th>
<th>Estim. Coeff.</th>
<th>S.E.</th>
<th>Wald</th>
<th>P</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity (acid ratio)</td>
<td>0.3012</td>
<td>0.0712</td>
<td>17.8853</td>
<td>0.0000</td>
<td>0.0648</td>
</tr>
<tr>
<td>Tax Pressure</td>
<td>0.0537</td>
<td>0.0143</td>
<td>14.0960</td>
<td>0.0002</td>
<td>0.0565</td>
</tr>
<tr>
<td>Population age structure</td>
<td>-0.1142</td>
<td>0.0315</td>
<td>13.1478</td>
<td>0.0003</td>
<td>-0.0543</td>
</tr>
<tr>
<td>Social Security Premiums Pressure</td>
<td>-0.1168</td>
<td>0.0081</td>
<td>206.4059</td>
<td>0.0000</td>
<td>-0.2323</td>
</tr>
<tr>
<td>Solvency</td>
<td>-0.0340</td>
<td>0.0039</td>
<td>74.5095</td>
<td>0.0000</td>
<td>-0.1384</td>
</tr>
<tr>
<td>Profitability</td>
<td>0.0847</td>
<td>0.0104</td>
<td>66.4267</td>
<td>0.0000</td>
<td>0.1304</td>
</tr>
<tr>
<td>Training dummy (1=yes, 0=no)</td>
<td>0.4843</td>
<td>0.1981</td>
<td>5.9771</td>
<td>0.0145</td>
<td>0.0324</td>
</tr>
<tr>
<td>Part-time employment</td>
<td>-0.0180</td>
<td>0.0026</td>
<td>48.4700</td>
<td>0.0000</td>
<td>-0.1108</td>
</tr>
<tr>
<td>Employment Agreement (1=yes, 0=no)</td>
<td>1.9439</td>
<td>0.1288</td>
<td>227.6745</td>
<td>0.0000</td>
<td>0.2441</td>
</tr>
<tr>
<td>Maribel (1=yes, 0=no)</td>
<td>0.2525</td>
<td>0.1314</td>
<td>3.6936</td>
<td>0.0546</td>
<td>0.0211</td>
</tr>
<tr>
<td>Job Plan (1=yes, 0=no)</td>
<td>0.9115</td>
<td>0.1543</td>
<td>34.8896</td>
<td>0.0000</td>
<td>0.0932</td>
</tr>
<tr>
<td>Company Plan (1=yes, 0=no)</td>
<td>3.5068</td>
<td>1.0094</td>
<td>12.0692</td>
<td>0.0005</td>
<td>0.0516</td>
</tr>
<tr>
<td>Youth Job Plan (1=yes, 0=no)</td>
<td>0.4439</td>
<td>0.1740</td>
<td>6.5117</td>
<td>0.0107</td>
<td>0.0345</td>
</tr>
<tr>
<td>Interest and/or capital subsidies dummy (1=yes, 0=no)</td>
<td>0.3023</td>
<td>0.1471</td>
<td>4.2249</td>
<td>0.0398</td>
<td>0.0242</td>
</tr>
<tr>
<td>Constant</td>
<td>5.6895</td>
<td>1.2668</td>
<td>20.1720</td>
<td>0.0000</td>
<td></td>
</tr>
</tbody>
</table>

Number of remaining observations: 2732

\[ \chi^2 = 1645.997; \quad p=0.0000 \]

Overall classification result: 81.95%

The significance of the variables is indicated by the Wald statistic (Hair, Anderson, Titman, Black, 1998). The p-value of the Wald statistic is reported in column 5. Since we used the stepwise procedure, all of the variables differ significantly between strongly and weakly growing firms (at significance level 0.05).

The size of the R-statistic in column 6 gives insight into the strength of the contribution (in positive or negative sense) to the model of each of the variables, while controlling for the effect of the other independent variables. The sign corresponds to the sign of the estimated coefficient in column 2.

The significance of the model as a whole is tested using a non-parametric \( \chi^2 \)-test. A low p-level (p < 0.01) for the \( \chi^2 \)-test indicates that the model as a whole is significant. The classification result (see last row of table 2) is used as an extra indicator concerning the 'goodness of fit' of the model. The classification result indicates the amount of companies that were correctly classified by the method of logistic regression. The model
shows a correct classification of no less than 81.95%. 2239 out of the 2732 companies, 1140 weakly growing companies and 1099 strongly growing companies, were correctly classified by the regression method 11.

One of the most important conclusions is the negative correlation between firm growth and the height of the share of the social security premiums in the value added (see hypothesis 13). The rather high absolute value of the R-value (column 6) indicates that the relationship is strong. The social security premiums pressure in our opinion should therefore certainly be acknowledged as an important characteristic of ‘hostile business environments’ as described by Hall (1980) and Covin and Slevin (1989).

Further, the figures show that there is a positive correlation between firm growth and profitability, tax pressure and acid ratio. Solvency however, is negatively correlated with growth. As far as profitability and liquidity are concerned, the results are conform to hypotheses 1 and 4. Tax pressure is indirectly linked with the profitability of the company. Certain multicollinearity could be present.

The negative relationship with solvency can be explained by the Pecking Order Theory of Myers (1984) (see hypothesis 5). In general, companies prefer equity financing. So initially a high solvency is necessary to be able to grow. Indeed, when substituting the average solvency during the period 1993-1997 by the solvency in 1993, we find a positive relationship. After a while, firms are no longer capable to meet their increased financing needs with equity. They are forced to attract debt capital, so gradually - in the growth stage - solvency becomes affected by the growing financing needs.

It should be noted that the research period coincides with a period of decreasing interest rates. The lowering of the solvency ratio across firms could thus also be a result of this phenomenon. However former research (Limère, 1998) has shown solvency of the total population not to have decreased to such extend. The decrease in solvency can thus indeed be attributed to the growth of the firms. The results are in accordance to former Belgian research concerning the relationship between growth and debt financing (Voordeckers, 1999, Durinck et al., 1997).

In analogy to previous qualitative research we find that strongly growing firms seem to give more attention to the skills of employees and/or management as indicated by the positive sign of ‘training’ (see hypothesis 6).

Further, evidence is found for the relationship between firm growth and local demographic characteristics of the (labour)market. Strongly growing companies appear to be more situated in municipalities with a young age structure than weakly growing ones. This confirms our hypothesis 16.

11 The classification table can be obtained from the authors.
The amount of part-time labour within strongly growing firms is lower than within weakly growing firms. This can be an indication of the negative side effects that originate from the loss of coherence in highly scattered working environments. The results do thus not support hypothesis 8.

With regard to governmental incentives, interest and/or capital subsidies and several employment incentives appear to be positively correlated with investment growth. Capital and interest subsidies are especially aimed at lowering the costs associated with investments, thus the relationship between the use of interest and/or capital subsidies and investment growth is straightforward. Hypothesis 12 is thus supported.

More remarkable is that strongly growing firms (in investment) also seem to use significantly more employment incentives. Especially Employment Agreements seem to have a great discriminating power (R=0.2441). The cost advantage, and the resulting profit gain, which arises from using employment incentives, must therefore lie at the origin of this relationship. Hypothesis 14 thus holds for a select group of employment incentives (see table 2).

3.2. INDUSTRY ANALYSIS CONCERNING INVESTMENT GROWTH

For this purpose, companies were divided according to the NACE division to which they belong. This led to the following dummy variables: F_NACE0 (firms belonging to NACE-code 0: agriculture, hunting, forestry and fishing), F_NACE1 (firms belonging to NACE-code 1: energy and water works), F_NACE2 (winning and processing of non-energetic minerals and their derivatives, chemical industry), F_NACE3 (metallurgical industry, fine mechanic and optical industry), F_NACE4 (other processing industries), F_NACE5 (construction), F_NACE6 (wholesale trade, retail trade, hotels, restaurants and pubs, repair), F_NACE7 (transport and communications), F_NACE8 (financial services14, services for the benefit of firms, rental) and F_NACE9 (Other services). All dummy variables were introduced into the logistic regression except for F_NACE6, which is considered as the control group. F_NACE6 was used for this purpose because of the vast amount of firms in this group and the great economic impact of this NACE division. This way the growth performance of firms belonging to NACE division 0, 1, 2, 3, 4, 5, 7, 8 and 9 could be compared to the performance of firms belonging to NACE-division 6.

Together with the variables from Table 1 we introduced these variables into the logistic regression analysis15. Industry wise we found that firms belonging to NACE-code 6 grew significantly weaker than firms from successively NACE division 5, NACE

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14 The data files used in this study contain no banks and insurance companies. Therefore NACE division 8 is here indicated as ‘financial services, services for the benefit of firms, rental’ instead of ‘banks and insurance companies, services for the benefit of firms, rental’.

15 The output of this model can be obtained from the authors.
division 8, NACE division 7 and NACE division 3. Firms belonging to NACE division 4 (other processing industries) on the other hand, grew even weaker than firms from NACE division 6. All other independent variables remained significant at the 5 % level.

3.3. REGIONAL ANALYSIS CONCERNING INVESTMENT GROWTH

The same method was applied to produce a regional analysis based on political boundaries (provinces). Now firms were categorized according to the province in which they are registered. It should be noted that the firm’s location here is defined as the location of the corporate headquarters because of lack of information about the location of the production facilities. This approach however could give rise to some bias in the regional analysis.

To be able to analyse the regional differences by a logistic regression, one control group was left out of the analysis, namely Limburg. This allowed for a comparison between growth figures in Limburg with the other four provinces of Flanders (Antwerp, Western Flanders, Eastern Flanders and the Flemish part of Brabant).

The results however were not conclusive. None of the four other Flemish provinces in the period 1993-1997 seemed to have had a significantly stronger or lower growth rate than Limburg. This in contrast with the significant stronger growth in Limburg during the period 1985-1993 that was found in former research (Limère et al., 1999). So provincial growth figures seemed to converge gradually in the nineties. Nevertheless following the assumption of disadvantageous peripherality (see hypothesis 15), the researchers were convinced of the existence of geographical differences in the strength of growth.

FIGURE 1. AVERAGE TOTAL ASSETS GROWTH PER DISTRICT
Further research efforts showed the following: first of all, the cartographic representation of total assets growth (see Figure 1) and firm density (see Figure 2) showed some directly visual contrasts. It appears that growth in the centre regions (the axis Antwerp-Brussels) during 1993-1997 was not as strong as in the periphery. The Pearson correlation coefficient between total assets growth and firm density indeed showed a weak, but nevertheless significant, negative correlation of −0.0359. Moreover using the stepwise logistic regression procedure, firm density (the number of firms in the district/residents of the district) is also selected as being significantly negatively correlated with firm investment growth\textsuperscript{16}. This same relationship for Belgium was encountered in earlier economic-demographic research based on the ‘centre-periphery-theory’ (Verhetsel et al., 1995).

3.4. EMPLOYMENT GROWTH MODEL

The same procedure as described in 3.1, 3.2 and 3.3 was used to analyse employment growth. The results are presented in Table 3. Stepwise logistic regression was applied on 7200 observations. 4747 of these, 2728 weakly growing ones and 2019 strongly growing ones were correctly classified. The overall classification result (65.93 %) lies far beneath the previous 81.95 % concerning investment growth. Nevertheless the model as a whole is significant according to the $\chi^2$-test.

\textsuperscript{16} The output of the logistic regression analysis incorporating firm density can be obtained from the authors.
We can conclude the following: firms with strong employment growth have a higher tax pressure than firms that only show a weak growth in their number of employees. Indirectly this means that firms with a high employment growth show a higher profitability than weakly growing firms (see hypothesis 1). They also show a better cash flow position (see hypothesis 3).

Also higher levels of productivity discriminate highly growing firms from weakly growing firms in terms of number of employees, as put forward by hypothesis 2. Highly growing firms are thus permanently utilising all available capacities of the human resources capital in the most efficient way and hereby increase their profitability. They can recruit personnel without endangering productivity.

As was the case for investment growth, employment growth exhibits the same negative relationship with the height of the share of social security premiums in the value added (see hypothesis 13.)

The age structure of the population is found to discriminate between weakly and strongly growing companies in the same way as it did for investment growth. One can assume that abundant labour supply plays a role in the relationship found. Further the model shows that firms in low population dense areas, the 'periphery', grow stronger employee wise than firms in highly population dense regions. Hypothesis 16 is thus confirmed, although we have to reject hypothesis 15.
Contrary to our hypothesis 6, strongly growing firms in terms of number of employees provide less training than weakly growing firms. The reason for this could be that training could be considered as an alternative for recruitment. Training current personnel then avoids the extra cost of recruitment. This way necessary know-how is generated internally instead of recruiting it externally.

As far as temporary employment is concerned, we found a double relationship. Namely the presence of temporary employment (temporary help dummy) seems to be negatively correlated with employment growth, but the amount of temporary employment seems to be positively correlated with it (see hypothesis 7). This could be an indication of temporary employment in Flanders being more and more considered as a cheap and easy alternative for the probationary period.

With regard to employment incentives (see hypothesis 14), we indeed find a positive relationship with employment growth, especially for Employment Agreements and Company Plans. Also the use of the ‘Job Plan’ and the ‘Youth Job Plan’ is positively related to employment growth. The Maribel compensation system however, seems to have a negative correlation with employment growth\(^*\).

3.5. Industry analysis concerning employment growth

The results show, as before, that firms belonging to NACE division 4 (other processing industries) generate a significantly lower employment growth than firms belonging to NACE division 6 (wholesale trade, retail trade, hotels, restaurants and pubs, repair). Significantly better growth percentages than those of NACE division 6 were found within successively: NACE division 5 (construction), NACE division 8 (financial services, services for the benefit of firms, rental) and NACE division 7 (transport and communications).

3.6. Regional analysis concerning employment growth

Again no significant differences in the growth in the number of employees could be determined between the five Flemish provinces.

3.7. Validation

The method of cross-validation consists in dividing the data set into different samples namely ‘the analysis sample’ and the ‘hold-out sample’. This procedure enables the researchers to find out whether the models also hold using a complete independent data set. In this way, it can be determined whether or not ‘overfitting’ of data took place.

In this study cross-validation was executed on two different independent data sets. First on a data set of Walloon companies (9,615 firms) with ‘social security sheet’ reporting

\(^*\) The Maribel system has been abolished since 04.01.99.
and second on a complete Belgian set of companies (86,470 firms out of Flanders, the Walloon provinces and Brussels), but releasing the condition of ‘social security sheet’ reporting. The consistency of the variables as well as their signs and significance levels, led us to believe that the here described models indeed capture some very important growth-related factors.

A second form of validation became possible by comparing the results of the tested models created using different growth categories as dependent variables and different independent variables approximating the various factors (about 200 using the stepwise and/or direct method). Again the great consistency of remaining variables, their significance levels and signs over the various models increased the relevancy of the models presented here.

4. POLICY IMPLICATIONS

Hypotheses testing resulted in the models described in the previous section. In order to stimulate the growth potential of companies, the government should take into account the correlations between the dependent and independent variables in the models whilst formulating new policy measures. It is clear that the appropriate government policy should stimulate the positive signed variables and prevent the negative signed ones. In this section some policy implications of the results are discussed.

4.1. POLICY IMPLICATIONS CONCERNING FINANCIAL FACTORS

Results showed profitability still to be one of the strongest positively (investment) growth-related factors. The government could stimulate profitability by shaping the conditions for a healthy economic climate characterised by, among others, decreased fiscal pressure.

The results in this article show that strongly growing firms in terms of number of employees are more productive than weakly growing firms. Firms thus succeed in being vital and energetic on the employment growth level without endangering productivity. This implies that all capabilities of the personnel are used in the most efficient way, which in its turn increases profitability.

Only well educated, permanently trained and devoted personnel can bring this about. One can however not deny that the permanent pressure and stress on employees is a disadvantage of the growth aspirations of the firm. Control of workload and working conditions are thus important. Still, in order to stimulate the creation of value added, entrepreneurs should be convinced of the importance of maintaining a high standard in knowledge and abilities of the personnel.

The models also show that strongly growing (as well on the investment level as on the employment level) firms have a stronger cash flow/equity. The higher this ratio, the better the firm can recuperate its outgoing cash flows from its incoming ones. This allows more
auto-financing and the financing gap can be avoided. This result emphasizes the importance of monitoring the firm’s cash flows. In the light of firm continuity the knowledge of the cash flow statement and its use is thus indispensable. Educating managers on this topic therefore is crucial.

Further, the models show that strongly growing firms generate higher acid ratios than weakly growing firms. The reason for this could be that growing firms resort heavily to long-term debt, which increases the acid ratio. Cross-tabulations of the percentage amount of long-term debt in total assets and growth, affirm this assumption. The results are in line with the results of Voordeckers (1999) and Chittenden (1996), who found a positive correlation between growth and long-term financing. This means that firms should have the opportunity to finance their growth with long-term debt. The access to the capital market and more particularly the market of long-term financing should thus be facilitated, especially for small firms. This way, firms could get round the financing gap, i.e. the difficulty of finding funds to finance investment projects with a positive net present value.

The research shows solvency at the beginning of a period of growth to be positively correlated with growth in forthcoming years. Solvency during the growth period itself however is negatively correlated with growth. Initially a sound solvency is necessary to enable investment growth, but as growth sets in, firms need to rely more and more on external capital. The danger of financial leverage is that a sudden increase in interest rates could become pernicious for firms that, as a result of the increased rates, could find themselves in payment difficulties. The government should therefore stress the importance of constant monitoring of a firms financial structure.

4.2. Policy implications concerning personnel related factors

The former government as well as the current one (were) are conscious of the importance of education and permanent training and have developed some sort of educational and training programme (f.e. stimuli for life long learning).

The models show that the fact of providing training possibilities is positively correlated with investment growth. It seems logic that firms in which the personnel works more efficiently, because they are more up to date, can achieve higher returns. Firms should thus view educational programmes as investments in future returns. A message that should be spread more amongst managers.

Contrary to what had been expected, employment growth did not seem to be positively correlated to the fact as to whether the firm provides educational programmes. It could mean that firms providing training possibilities consider training an alternative for employment.

This does however not mean that training should be discouraged. It is clear that permanent training always improves the quality of the economic structure. Initially these firms
will try to avoid additional employment because every extra cost is to be avoided at the beginning of a growth period. Eventually however, the well-trained personnel will achieve growth that indirectly will bring about new job opportunities.

The mere use of temporary employment is higher amongst weakly growing companies in terms of employees. The amount of usage however, is higher amongst strongly growing companies. Weakly growing firms are thought to resort to temporary employment only in times of heightened activity. Strongly growing firms, anticipating a long-term elaboration of their staff, are thought to resort to temporary help as a means of probationary period. This way candidates can easily be tested on knowledge and (social) skills. If they are found competent, they can be hired on a permanent basis. If they are found incompetent they can be ‘discarded’ without much administrative burdens. In order to grow optimally, it is absolutely necessary to choose those employees that perform the best and that fit well into the organisation. Temporary employment offices therefore could play an important role in the supply of personnel.

The research shows that the percentage amount of part-time employment is negatively related to investment growth. Further research could reveal whether this conclusion is industry-related. Some industries lend themselves for anything but part-time employment. This while in other industries part-time employment is almost the rule. Certain industries employ more women – the greater part of part-time jobs is still taken up by women – than men. It is known that in NACE division 6 (wholesale trade, retail trade, hotels, restaurants and pubs, repair) a lot of part-time employees are employed. The specificity of the industry can thus condition the use of part-time employment.

Still the fact that there are also snags attached to part-time employment probably plays a role in the aversion of fast growing companies to resort to part-time employment. More difficult communication, lack of continuity, extra planning activities, reduced commitment and larger fixed costs are only a few of the disadvantages that come up. A large number of part-time employees could lead to an exponential increase of these problems. The increased costs, the administrative bothers and the difficulty of aligning all of the staff towards one coherent growth strategy can hinder the growth aspirations of the firm. Part-time employment might thus be bound to some critical boundary, which warrants further research. If this critical boundary exists, it should not be neglected whilst preparing new employment redistributive incentives.

Notwithstanding this assumption and bearing in mind the industry effects, it is clear that strongly growing firms are in need of additional employees and that they can contribute more to the solution of the unemployment problem than weakly growing firms. Looking at the macro-level, we thus cannot deny that the extension of part-time employment in growing firms, up to the eventual critical boundary of course, is very positive. Growing firms should therefore be convinced of employing part-time. After all, surveys have shown that the aversion for part-time employment has far less to do with organisational impediments than with social and psychological negative views concerning part-time work regimes (Lenaerts, 1985).
4.3. Policy Implications Concerning Governmental Incentives

The fact as to whether the company receives interest and/or capital subsidies is positively related with investment growth. This seems logic since an investment in material or immaterial goods is a prerequisite for receiving such subsidies.

The question that remains is whether deadweight losses are incurred. Namely, would these firms also have been able to generate investment growth without the subsidies received? Further research should definitely go deeper into this issue. Our research shows firm profitability to be positively related to growth. This might suggest that firms receiving subsidies could have had enough means to grow independently i.e. without subsidies. A cross-tabulation of receipt of interest and/or capital subsidies and profitability indeed shows that firms receiving subsidies belong to the most profitable of firms.

Another thought worthy of further research is whether some firms, usually the bigger firms, receive the greater part of all subsidies. It is known that a lot of SMEs do not apply for subsidies because of lack of time or because of the lack of clarity of the regulations (Vranken, 1994). Cross-tabulations of receipt of interest and/or capital subsidies and the size of the firms were clear on this issue. The percentage amount of firms receiving subsidies increases from 3.1% in the smallest firms to 34.9% in the largest firms.

The authors believe that it would be more efficient and effective if firms would be forced to pursue endogenic growth as much as possible. Based on good management practices and a sound economic climate firms should try to generate the means to achieve investment growth themselves. Firms that can only improve their profitability and thus growth potential by means of expansion of the production facilities, but are financially not able to do so, should be supported by subsidies. Subsidies should thus be used to boost profitability within average profitable firms.

The improvement of the effectiveness of expansion laws should therefore include a better screening of firms requesting subsidies. There should however always be kept an eye on the balance between the promotion of endogenic growth and the attractiveness of Flanders for foreign investors eager for subsidisation. Further, the authors advice a simplification of the regulations and terms. All these measures taken together could achieve a stronger firm growth with the same subsidy budget.

There is a general recognition of the fact that wages and social security contributions hypothesize the competitive position of Belgian companies. The research indeed shows that the social security premiums pressure is negatively correlated with investment and employment growth. Yet another piece of evidence that points into the direction of a necessary reduction in social security contributions.

We further find that firms that create additional jobs within the scope of certain employment incentives do not only achieve stronger employment growth, but are also growing stronger on the investment level. Especially firms that commit themselves to job
creation within the boundaries of an Employment Agreement, a Job Plan, a Company Plan or a Youth Job Plan exhibit stronger growth figures.

4.4. POLICY IMPLICATIONS CONCERNING DEMOGRAPHIC FACTORS

In accordance to our hypothesis, we find that firms situated in areas with a young population achieve higher investment and employment growth figures than firms situated in areas in which the age structure is fairly old. An explanation for this finding can be found at the supply as well as the demand side. A young population usually has more purchasing power and a higher consumption level than does an aged population, creating hereby a higher demand.

On the supply side, a young population is desirable as well. Older people often leave the labour market prematurely, an evolution surely evident in Flanders. This hypothesizes the economic basis. Labour supply is depleted and firms fail to find the adequate or the appropriate personnel. Growth of local firms is thus hypothesized by the fact that the increased employment needs cannot be fulfilled. A young population does guarantee a sufficient labour supply. Moreover young people are dynamic and creative which is beneficial to new developments in R&D and innovation. The age structure of the population thus requires careful monitoring in the near future.

4.5. POLICY IMPLICATIONS CONCERNING FIRM LOCATION

Contrary to our hypothesis, firms located in densely populated areas as well as firm dense areas do not seem to be growing as strongly on the employment level as firms in rural areas. This result is in accordance to economic-geographic research based on the ‘centre-periphery-theory’. Jorissen et al. (1999) and Verhetsel et al. (1995) indeed concluded that firms in the periphery performed better than firms from urban areas. The persistence in the centralization of economic activity could therefore be questioned.

5. CONCLUSION

The focus of this study was to determine factors that are related to investment and employment growth. In order to do so, stepwise logistic regression was executed on growth categories, which identify the 25 % strongest and the 25 % weakest growing companies on the investment level (growth in value added and total assets) and on the employment level (growth in the number of employees). The hypotheses underlying the study were specifically aimed at identifying factors that could be either directly or indirectly influenced by government action. They were also conditioned by the data set, which consisted of 30,270 accounts from Flemish firms submitted in the years 1993 till 1997. This in contrast to the survey-approach often taken in literature, which is often also more qualitative in nature. The only non-accounting data used here were population density, firm density and the age structure of the population in order to cater for the relationship between firm growth and regional demographic factors and firm location.
Based on the results some possible policy implications were discussed. It seems that in order to stimulate the growth potential of firms, government policy in the future should be more directed to:

- **Firm profitability**
- **Sensitisation and stimulation of the responsiveness and accountability of management**
- **Demography.**

First of all the government should stimulate **firm profitability** in order to create the necessary financial capacity to grow. Government should however also **sensitise management and stimulate the sense of responsiveness and accountability of management**. The former refers to sensitising (potential) managers concerning entrepreneurship, knowledge of subsidies, employment incentives, financing techniques and cash flow management, the recognition of the importance of permanent training of personnel and management, R&D and creation of value added. The latter refers to a stimulation of the responsiveness of managers concerning their contribution to society’s prosperity and job creation. All of which can fit into the denominator ‘entrepreneurship stimuli’.

Finally, attention should be given to the **demographic evolution** of the population. Because one should be aware of the fact that efforts made on the two points above can be nullified by an adverse evolution of demography. The negative correlation found between growth and the age structure of the population indicates the importance of a family friendly policy. Not only will the aging of the population hypothesize the social security system, but the lack of youngsters could also stagnate demand and could weaken the extent and quality of the labour market.
REFERENCES


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