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by Antje Schimke and Thomas Brenner

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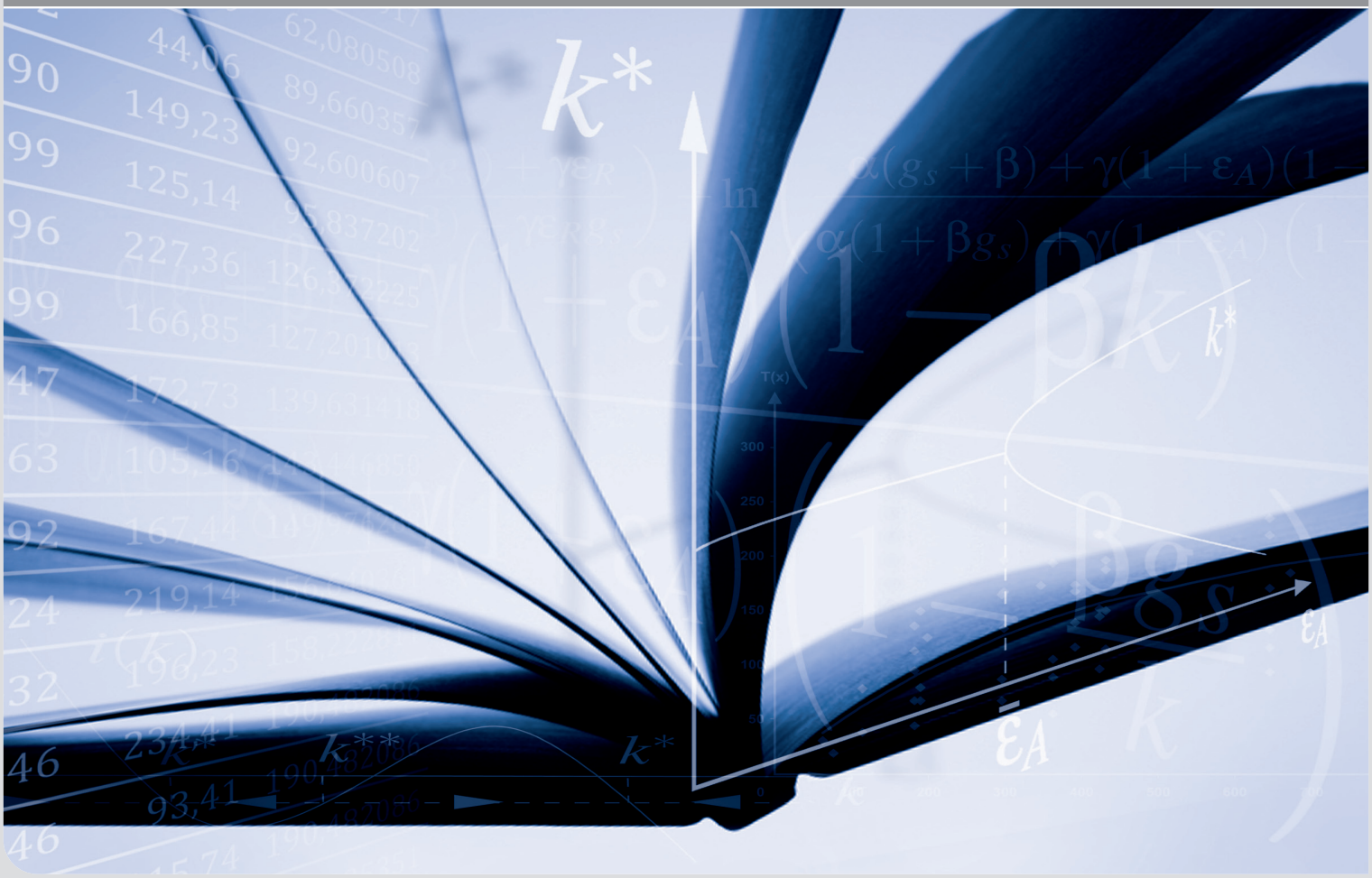

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Abstract

This paper examines the time structure of the effects of R&D activities on firm growth. The main questions are whether R&D activities come together with firms' growth in the subsequent periods and how this relationship depends on other characteristics of the firms, such as size and industry. In addition, we study the relationship between R&D effects and the autocorrelation dynamics of firm growth. We use firm level data of 1000 European companies with details on R&D investments in 2003 to 2006. A regression approach is applied with a linear model taking into account R&D activities at points in time and autocorrelation dynamics of firm growth. We find that R&D has, on average, a positive effect on firm growth, but the effect and its temporal structure strongly depends on firm size and industry.

Keywords: Firm growth, R&D activities, firm size, industry, autocorrelation, time gap, temporal structure

1 Introduction

The growth of firms has positive macro- and micro-economic effects. Therefore, firm growth, the related factors and its explanation is a well studied field of research in the economic literature. There exists a wide range of factors that are found to affect firm performance.

Usually the impacts of firm characteristics on firm growth are studied without explicitly considering time. Firm characteristics and firm growth are usually measured and examined at the same point in time. In contrast, our study will focus on the temporal structure of the influence of firm characteristics on firm growth, especially the impact of R&D activities.

R&D activities are repeatedly found to have a positive impact on growth (e.g. Banbury & Mitchell 1995, Schreyer 2000, Autio et.al 2007, Adamou & Sasidharan 2007, Yang & Lin 2007, Coad & Rao 2008). In the context of the time structure of firm growth, R&D activities have three characteristics that make them especially interesting. First, it takes time for R&D activities to become economically effective and influence growth. Investments in R&D can be expected to lead to innovations in the following years, and as a consequence, to higher sales. However, this takes some time. Therefore, we do not expect that R&D investments lead to firm growth in the same year. However, the size of the time lag is unclear. Second, most firms show quite stable R&D activities. This means that research-intensive firms usually remain research-intensive, whereas firms that do not invest in R&D usually remain R&D-inactive. Hence, it would be interesting to distinguish between direct effects of R&D activities that occur after a certain time period and a more long-term relationship between average research-intensity and firm growth. Third, the temporal structure of the impact of R&D activities might be influenced by the firms' characteristics – primarily firm size and industry.

Besides focusing on the time structure of the R&D impacts, we also examine the time structure of growth, because it is impossible to study the first kind of time structure without knowing the latter. The autocorrelation of firm growth has been repeatedly studied in the literature (e.g. Almus & Nerlinger 2000, Bottazzi & Secchi 2003, Coad 2006, Coad & Hölzl 2008). The findings vary. We repeat this analysis in order to benchmark our results.

The study is based on a sample of 1000 firms operating in Europe. The data are recorded in the European Innovation Scoreboard, in the period from 2003 to 2006. The collected data provide firm names as well as information on R&D activities, sector affiliation and size. However, the data are limited to firms with high R&D investments. We use regression analysis to identify firm growth related factors and the temporal structure. Especially, we study the impact of R&D expenditure and R&D capital expenditure on firm growth and its corresponding time lags.

The structure of this paper is as follows. Section 2 provides an overview of the literature on firm growth related factors and autocorrelation dynamics in regard to firm growth. Several empirical findings are used to deduce expectations for the analysis. Section 3 focuses on the methodology and data source. In Section 4, we present, discuss and interpret the results and answer our research questions. Section 5 concludes.

2 Background and hypotheses

A wide range of empirical studies exist dealing with firm growth and firm growth related factors. Research issues are the identification of firm growth stages and firms' development paths (e.g., Delmar, Davidsson, and Gartner, 2003), Gibrat's Law (meaning that firm growth follows a random walk) (e.g., Bottazzi and Secchi, 2006) as well as the

examination of firm- and industry related growth factors on different geographical scale (e.g., Harhoff, Stahl and Woywode, 1998). Previous studies have already dealt with the identification of (innovation) factors contributing to firm growth (e.g. Hölzl 2009). A few studies examine these factors and their role in time (e.g. Kafouros and Wang, 2008). Hence, some issues examined here, have already been addressed in previous research and can thus be used to feed up our expectations.

2.1 R&D activities and firm growth

A magnitude of studies maintains that firms with a strong commitment to *R&D* and technology-based innovations tend to have higher growth rates than firms with a weaker commitment. Banbury and Mitchell (1995) conclude, for instance, that incremental product innovation is an important competitive factor in growing companies. The German panel results by Schreyer (2000) show that the share of firms that are qualified as 'growers' increases with the intensity of R&D activities. Del Monte and Papagni (2003) prove growth rates to be positively correlated with research intensity. They show that sales growth of firms performing R&D is higher than sales growth of firms without R&D activities. In line with this, Adamou and Sasidharan (2007) study the impact of R&D by using panel data on Indian manufacturing firms. They argue that R&D is an essential determinant of firm growth and find that an increase in current R&D induces higher growth irrespective of the industry. Likewise, Yang and Lin (2007) examined the effects of innovation on firm growth in terms of employment growth in Taiwan. Their empirical results are that innovations, measured by R&D investments and patent counts, have a positive impact on firm growth. Analysing the impacts of R&D investments in time, a few studies find these impacts to be time lagged. For example, Ravenscraft and Scherer (1982) study the lag between R&D activities and their impact on profit. They find that R&D activities impact profits with a time gap of four years. Other studies explore that the impact of R&D is highest in the year of investment and that R&D-capital starts to depreciate immediately (e.g. Kafouros and Wang, 2008). Baum and Wally (2003) show that fast decision-making affects subsequent firm growth and profit.

Additionally, it has been recognized that the impact of R&D activities described above are influenced by *firm size* (e.g. Lichtenberg and Siegel, 1991; Cohen and Klepper, 1996) and vary across *sectors* and *industries*. For example, larger firms are better able to exploit the outcomes of R&D activities and firms in high-tech industries put much more emphasis on R&D activities than firms in low-tech industries do.

2.2 Autocorrelation dynamics in firm growth

The *autocorrelation* of growth rates provides crucial information about the firms' growth processes (see Coad and Hölzl, 2008). Autocorrelation patterns have been examined in various studies with different results. Positive autocorrelation is found by Bottazzi and Secchi (2003). They find that firms growing in any one year of observation are more likely to repeat this performance in the following year. Other studies find no significant autocorrelation in firms' growth rates (e.g., Almus and Nerlinger, 2000). Coad (2006) considers how serial correlation changes with two firm aspects, its size and its growth. He concludes that small firms typically are subject to negative correlation of growth rates, whereas larger firms display positive correlation.

A study by Kafouros and Wang (2008) investigates the impact of R&D activities by estimating different lagged measures. They conclude that R&D activities have direct impact on firm performance. In contrast, Bottazzi and Secchi (2003) also examine time lags in their

analysis of autocorrelation. They find that only one lag is significant whereas Geroski et.al (1997) find significant autocorrelation at the 3rd lag. Obviously, autocorrelation dynamics of firm growth is not only dependent on time patterns, but might also be influenced by firm characteristics such as their size. Furthermore, positive autocorrelation of growth rates might be caused by firm characteristics that stay constant in time and have an impact on growth rates.

2.3 Hypotheses for the impact of R&D activities on firm growth

The autocorrelation of firm growth has been repeatedly studied in the literature (e.g. Almus & Nerlinger 2000, Bottazzi & Secchi 2003, Coad 2006, and Coad & Hölzl 2008). The findings vary. We repeat this analysis for two reasons: First, we examine which results from the literature are confirmed for our data. Second, we use the results on autocorrelation for the interpretation of our results on other issues. Having in mind the research studies mentioned above, especially the study by Coad (2006), we assume:

H1: Autocorrelation dynamics of firm growth vary with the size of firms: larger firms show positive autocorrelation, while smaller firms show negative autocorrelation.

In a next step, we focus on the temporal structure of R&D impacts on firm growth. Investments in R&D can be expected to lead to firm growth in the following years, and as a consequence, to higher sales. The literature review concludes that R&D activities are an important growth factor. However, R&D activities do not necessarily have an impact immediately, i.e. in the same period. The findings in the literature differ. Nevertheless, we claim that the impact of R&D activities, measured by R&D expenditure and R&D-related capital expenditure is time-lagged. Thus, we formulate the following expectation:

H2: The impact of R&D activities on firm growth is positive and tends to be time-lagged.

Third, previous research claims that the impact of R&D activities is influenced by firms' characteristics – primarily its size (e.g. Shefer and Frenkel, 2005). Among others, Kafouros and Wang (2008) found that firm size is an important factor influencing the impact of R&D activities. To gain a more detailed insight into the R&D activity impacts we analyse the impact of R&D activities in relation to different firm size classes. We expect the following:

H3: The impact of R&D activities on firm growth and its temporal structure varies with firm size.

Finally, our sample covers a huge number of sectors ranging from manufacturing to services. We also know that a majority of conglomerate firms exhibit growth across specific industry segments (e.g., Maksimovic and Phillips 2002). R&D processes in these sectors or segments work differently (e.g., manufacturing and real estate industries have very different structures and innovation processes). Hence, although there is no detailed literature on this issue, it seems adequate to expect strong differences in our findings if various sectors are analysed separately. We set up the following expectation:

H4: The temporal structure of the impact of R&D activities on firm growth varies across sectors and industries.

3 Methodology and Data

3.1 Data source and studied firms

We use the European Innovation Scoreboard 2007 as data source. This data source includes 1000 European companies (see Table 1) with information on employees, turnover, sector affiliation as well as details on R&D activities, e.g. R&D-related capital expenditure and R&D expenditure. These data are available for the time frame from 2003 to 2006. Hence, we are able to generate the growth rates for three time periods. It is important to mention that we exclude extreme values (outliers) in terms of turnover growth. Additionally, we cannot distinguish organic from acquired growth. Hence, we study total growth.

Finally, the sample consists of 978 firms. Table 1 shows the firm sample differentiated by country. The highest number of observation can be found in the UK with 310 observations which is about 31.8 percent of the firm sample. Table 2 displays our sample within firm size classes. These size classes were derived from Europeans SME definition (see European Commission (2003)). Table 3 presents the firms distribution at the sectoral level. The sectors with highest number of firms are manufacturing and real estate. Table 4 pictures the number of very-large sized firms and the type of industry within the sector of manufacturing.

Table 1: Firms distribution at the country and industry levels

Country	Code	Frequency	Percent [%]
Germany	1	162	16.6
UK	2	310	31.8
France	3	113	11.6
Finland	4	68	7.0
Sweden	5	74	7.6
The Netherlands	6	51	5.2
Italy	7	47	4.8
Denmark	8	37	3.8
Belgium	9	33	3.4
Spain	10	21	2.2
Ireland	11	11	1.1
Luxembourg	12	5	0.5
Austria	13	30	3.1
Hungary	14	3	0.3
Slovenia	15	2	0.2
Czech Republic	16	4	0.4
Greece	17	3	0.3
Portugal	18	1	0.1
Latvia	19	1	0.1
		978	**100.0**

Table 2: Firm size in terms of employment (SIZE)

SIZE*	Cut-off points	Frequency	Percentage
SME	$5 \leq x \leq 250$	144	14.8
large	$250 < x \leq 1000$	182	18.6
very large	>1000	652	66.6
Total		978	100

*SME definition of European Commission (2003)

Table 3: Type of industry (SECTOR)

Description*	Code	Frequency	Percent [%]
Agriculture, Forestry	1	8	0.8
Mining and Quarrying	2	24	2.5
Manufacturing	3	550	56.2
Electricity, gas, steam, hot water supply	4	31	3.2
Construction	5	8	0.8
Wholesale, retail trade	6	25	2.6
Transport, storage, communication	7	30	3.1
Financial intermediation	8	50	5.1
Real estate, renting, business activities	9	218	22.3
Public administration, defense	10	9	0.9
Other community, social/personal service activities	11	25	2.6
Total		**978**	**100.0**

* NACE Codes Description

Table 4: Type of industry within manufacturing

industry	NACE code	obs.
high- tech industries	24+29+30+31+32+33+34+35	267
low-tech industries	15+16+17+18+19+20+24+25+26+27+28+36+37	128
Food products, beverages, tobacco	15 + 16	36
Chemicals and chemical products	24	105
Basic metals and metal products	27+28+29	79
Electrical and optical equipment	30+31+32+32	172
Transport equipment	34+35	66

3.2 Operationalisation of firm growth

Before starting with our analysis, an operationalisation of the term firm growth is necessary. In the empirical literature, there exists a wide range of definitions of firm growth. Some definitions are based on the number of employees (e.g. Kirchhoff & Greene, 1998; Schreyer, 2000; Garnsey, Stam, & Heffernan 2006; Hoelzl & Friesenbichler, 2008) whereas others are based on turnover (Daunfeldt, Elert, & Johansson, 2010). For example, Garnsey, Stam, and Heffernan (2006) claim that a firm's growth can be measured in terms of inputs (e.g. employees), in terms of value (e.g. asset) or outputs (e.g. turnover, profit). In our analysis, we use turnover data which is one of the most commonly used measures for growth. In the regression model we apply the relative turnover growth indicator.

The characteristics of this indicator are important for the choice of an adequate regression approach. From the literature it is well-known that the logarithm of the growth of firms (e.g., profit rates) is Subbotin (exponential power distribution) distributed. However, regressions with a Subbotin distributed error term are no standard tool. The use of standard regression approaches can be justified by the fact that our residuals as well as the independent variable are approximately normally distributed. There is no evidence for a deviation from a normal distribution in our data. We also do not find other problems, such as heteroscedasticity, for our regressions with the logarithm of relative growth as dependent variable. In addition, we use the variance inflation factor (VIF) to test for multicollinearity. If we use all independent R&D variables in one regression model the tolerance (1/VIF) is in fact less than 0.05. To avoid multicollinearity we set up different regressions, each time one of the

independent R&D variables is included in the model. This procedure removes all problems with multicollinearity. Hence, we use a standard regression approach, although we are aware of the fact that the real distribution of growth differs slightly from the assumptions on which this approach is based.

We define our dependent variable by measuring turnover growth *(GROWTH)* as the change in the logarithms of the turnover to year t-1 (respectively 2005) to turnover from year t (respectively 2006).

3.4 Independent variables

In regard to the hypotheses, we employ six independent variables. These variables are the relative turnover growth in the periods 2003 to 2004 and 2004 to 2005, firm size and the R&D activities measured by R&D expenditure and R&D-related capital expenditure. In addition we use industry affiliation and profit as control variables because some empirical studies claim that firms' growth is related to industry and sector affiliation as well as profit. However, it is beyond the scope of this study to explore profit efficiencies. The independent variables are defined as follows:

Relative turnover growth (growth03/04; growth04/05)
We use the relative growth indicator in terms of turnover to measure the firm growth from 2003 to 2004 and from 2004 to 2005. These independent variables testify whether firms that experience growth in any one year repeat this performance in the following year or two years later.

Size of firms (size)
First, we classify the firms into three size classes: small- and medium-sized (SME) enterprises (less than 250 employees), large-sized enterprises (251 to 1000 employees) and very large-sized enterprises (more than 1000 employees). We conduct most regressions for these size classes separately. Second, in the other cases to control for firm size and to avoid endogeneity we use the log form of the employment number reported in year 2003. The frequency of the different size classes is presented in Table 2.

R&D expenditure (R&Dexp)
In the European Scoreboard, firms report the R&D expenditure for each year. We measure the ratio between their R&D expenditure and their total turnover. First, we use the average of this R&D expenditure ratio for the observed years (2003-2006). Second, we use this R&D expenditure ratio for each year separately *(R&Dexp03, R&Dexp04 and R&Dexp05).*

R&D-related capital expenditure (R&Dcapex)
Furthermore, the European Scoreboard database presents R&D-related capital expenditure for each firm. R&D-related capital expenditures are investments used by a company to acquire or upgrade physical assets in terms of R&D equipment. Again, we measure the average R&D-related capital expenditure as the ratio of R&D-related capital expenditure to total turnover (2003-2006). Additionally, we use the R&D-related capital expenditure ratio for each year separately *(R&Dcapex03, R&Dcapex04 and R&Dcapex05).*

Profit (profit)
From a macro-economic perspective, we control for profit efficiency. To avoid endogeneity, we use the profit value for the year 2003.

Industry classes (IndDummy)
As mentioned above we use industry affiliation as a control variable. For this purpose we aggregated the NACE-2-digit industries classification. We use 11 different types of industry which are presented in Table 3. For each sector, except one, a dummy is included in the regression analyses.

3.5 Regression approach

We set up a regression approach with a linear model (see Equation (1)). As independent variables all the above described variables are used. In the course of the regression analysis we find that the variables R&Dexp and R&Dcapex are highly correlated. Furthermore, the variables R&Dexp03, R&Dexp04 and R&Dexp05 are highly correlated with each other. The same holds for the variables R&Dcapex03, R&Dcapex04 and R&Dcapex05. To avoid multicollinearity between these explanatory variables, we set up different regression models. In each model only one of these eight variables is included. Hence, we conduct for each kind of analysis in total eight regressions. The comparison of the results provides information about whether R&Dexp or R&Dcapex is the more important variable and about the time structure of the impact of R&D on firm growth.

(1) $$GROWTH_j = a_0 + a_1 \cdot R\&D..._j + a_2 \cdot profit_j + \varepsilon$$

R&D stands for the various measures of R&D or R&D-related activity as discussed above. In regressions that are done for all firms of any size together, the log value of the size of the firms is included in the regression as independent variable. Similarly, in regressions that consider firms from all sectors dummies are included as independent variables, which reflect each of the industries as described in Table 3. Hence, if all firms are analysed together, the following model is used:

(2) $$GROWTH_j = a_0 + a_1 \cdot R\&D..._j + a_2 \cdot profit_j + a_3 \cdot \log(size_j) + a_{4-13} \cdot IndDummy_{1-10,j} + \varepsilon$$

The time structure of the impact of R&D on growth might interfere with the time structure of the growth process itself. If growth in one year depends on growth in previous years and growth in previous years depends on R&D activities in previous years or R&D activities further in the past, a relationship between current growth and previous R&D activities might be a direct effect or an indirect effect. To disentangle this structure we conduct each regression one time including a measure of R&D activity as independent variable but without considering growth in the past (see Equations (1) and (2)), one time without any R&D activity considered but including growth in the past (Equation (3)), and one time with past growth rates and R&D activities as independent variables at the same time (Equation (4)).

(3) $$GROWTH_j = a_0 + a_1 \cdot growth03/04_j + a_2 \cdot growth04/05_j + a_3 \cdot profit_j + a_4 \cdot \log(size_j) + a_{5-14} \cdot IndDummy_{1-10,j} + \varepsilon$$

(4) $$GROWTH_j = a_0 + a_1 \cdot growth03/04_j + a_2 \cdot growth04/05_j + a_3 \cdot R\&D..._j + a_4 \cdot profit_j + a_5 \cdot \log(size_j) + a_{6-15} \cdot IndDummy_{1-10,j} + \varepsilon$$

Furthermore, we conduct one regression set for all firms together and then three regression sets for each firm size separately. Through this, we are able to analyse whether our findings depend on the size of the firms. In addition, we conduct each regression again for only the manufacturing firms and for only the firms in Real Estate. As a last point, we conduct regressions for various manufacturing industries separately (see Table 4).

4 Results and Interpretation

The complete regression results are reported in Tables A.1 – A.18 (in the appendix). In the next subsections, we discuss the results according to our hypotheses that have been set up in Section 2 and present within each discussion only the relevant parts of the results.

4.1 Autocorrelation dynamics (Hypothesis 1)

The autocorrelation of firm's growth has been repeatedly studied in the literature, but the results vary. The autocorrelation dynamics of firm growth are found to depend on firm characteristics such as their size. We repeat this analysis.

Hypothesis 1, stating positive autocorrelation for larger firms and negative autocorrelation for smaller firms, is partly confirmed by our empirical examination. If autocorrelation is used as independent variable in the regression analyses, we find different results within the several firm size classes. The results do not change if we exclude or include the variables related to R&D activities. Hence, we do only present the results for the model with no R&D variable included and do only present the findings for the independent variables Turngrowth_03-04 and Turngrowth_04-05 (the complete results can be found in the appendix).

Table 6: Estimates for the coefficients of the independent variables Turngrowth_03-04 and Turngrowth_04-05 from the regressions with no R&D variable included (standard errors in parentheses).

Variable	All firms	SME	Large firms	Very large firms
growth04/05	**0.0673*** (0.0140)**	0.0050 (0.027)	**0.1270*** (0.0538)**	**0.2340*** (0.0247)**
growth03/04	**0.0586*** (0.0128)**	0.0172 (0.0296)	-0.0021 (0.0388)	**0.0637*** (0.0171)**

Looking at the results of all firms, we find positive autocorrelation dynamics. The results go in line with the results by Bottazzi and Secchi (2003) who examine serial correlation for US manufacturing companies. They explore positive autocorrelation dynamics in their sample. Bottazzi et.al. (2001) found positive autocorrelation for every year up to and including the seventh lag, although only the first lag is statistically significant. We find significant positive autocorrelation for both lags that we are able to consider.

However, this finding only holds for the analysis of all firms and the analysis of the very large firms. For the other firm subgroups the time lag of two years does not lead to significant results. Hence, the positive autocorrelation for several (two) lags is confirmed here only for the very large firms, which dominate our sample.

Hence, we obtain the result that autocorrelation of firm growth varies with firm size. We confirm the finding in the literature that especially large firms show autocorrelation in their growth (e.g., Coad 2006 concludes that larger firms experience positive feedback in year-to-year growth rates). For small and medium-sized enterprises we do not find any autocorrelation. This result contradicts the findings in the literature that smaller firms experience significant negative autocorrelation (Coad, 2006).

4.3 R&D activities (Hypothesis 2)

The literature review concludes that the growth of firms is driven by innovation activities such as R&D activities (e.g. R&D expenditure). Furthermore, it has been recognized that the impact of R&D may be time lagged. Hypothesis 2 states that *the impact of R&D activities on firm growth is positive and tends to be time-lagged.* To gain a deeper insight into this issue, we set up several regressions, each time using one of the R&D-related variables as independent variable. Each regression is conducted for all firms and is run twice, one time including growth in the past and one time without considering growth rates in the past. The results for the independent R&D-related variables are presented in Table 7.

Table 7: Estimates for the coefficients of the independent R&D-related variables, which are used in separate regressions together with the same other independent variables (complete results in Tables A.2 and A.3; standard errors in parentheses).

Variable	Past growth included	Past growth not included
R&Dexp	-0.000004 (0.000003)	**-0.000005* (0.000004)**
R&Dexp05	0.0000007 (0.000003)	0.000004 (0.000003)
R&Dexp04	-0.000004 (0.000002)	0.0000006 (0.000002)
R&Dexp03	-0.000005 (0.000003)	-0.0000009 (0.000000)
R&Dcapex	**-0.000000001** (0.0000000007)**	**-0.000000001** (0.0000000008)**
R&Dcapex05	**0.0014*** (0.0002)**	**0.0013*** (0.0003)**
R&Dcapex04	-0.000009 (0.0004)	0.0003 (0.0003)
R&Dcapex03	-0.000007 (0.0002)	-0.000002 (0.0002)

While the variables R&Dexp and R&Dcapex represent the average investments over four years, the other variables in Table 7 represent the investments in one year. Hence, we might assume that the variables R&Dexp and R&Dcapex represent the overall attitude of a firm, while the other variables represent singular events. Therefore, if the growth rate of firms depends on their long-run average investment in R&D we should see this effect in the variables R&Dexp and R&Dcapex. However, such a long-run relationship might also show up in a strong autocorrelation of the growth development, meaning that a firm with an R&D attitude that leads to growth will continuously grow. Therefore, we have to compare the findings for the regressions considering temporal autocorrelation and for the regressions that do not consider temporal autocorrelation.

For the variables R&Dexp and R&Dcapex we find varying results. We find a permanent negative significant relationship between R&Dexp and firm growth. However, this negative relationship turns into a non-significant relationship between R&Dexp and growth if past growth is included in the model. Below we find significant results for the year-specific R&D expenditures for specific sectors and industries, but here no evidence is found on an aggregated level.

The results for R&D-related capital expenditures are slightly different. We find a significant negative relationship of R&Dcapex with growth independent whether we include past growth or not. This might lead to the assumption that permanent high R&D-related

capital expenditures seem to decrease growth. In contrast, if we look at the year just before growth is measured a significant positive relationship between R&Dcapex and growth is found. This result also holds if past growth is included in the model. We do not find any significant results for earlier R&D capital expenditures. These results do not depend on the inclusion of past growth. Hence, R&D capital expenditures are positively related to firm growth in the time step from the year of the expenditure to the following year. Earlier years do not matter. This means that firm growth is positively related to R&D capital expenditure that is spend in the year just before growth is measured.

In line with this, Adamou and Sasidharan (2007) study the impact of R&D by using panel data on Indian manufacturing firms. They argue that R&D is an essential determinant of firm growth performance and find that an increase in current R&D induces higher growth irrespective of the industry. Furthermore, the analysis shows that the impact of R&D tends to be time lagged. That means it takes time for R&D activities to influence firm growth. Likewise, Ravenscraft and Scherer (1982) have studied the lag between R&D activities and their impact on profit. They have found that that there is a time gap of about 4 years. We do not find any evidence for such a time gap in our study.

To sum up, our expectation (hypothesis 2) is partially confirmed by our results. However, the details of the results show interesting aspects. Permanent R&D expenditures and R&D-related capital expenditures are rather negatively correlated to growth, although this finding is not stable in the case of R&D expenditures if autocorrelation dynamics are considered. A significant positive relationship is found for the one-time R&D-related capital expenditures in the year just before growth is measured, independent of the consideration of autocorrelation dynamics.

4.4 Firm size (Hypothesis 3)

We also have claimed based on the findings in the literature, that the importance of R&D activities is influenced by a firm's characteristics – primarily its size (e.g. Shefer and Frenkel, 2005). We formulated the hypothesis that *the impact of R&D activities on firm growth and its temporal structure varies with firm size* (Hypothesis 3).

For the several firm size classes we find significant relations. These relations do not differ between the regressions including past growth and the regressions not including past growth, except for one less important case. Hence, we discuss here mainly the results for the regressions including past growth (all results are presented in Tables A.4 to A.9). The relevant part of the results is presented in Table 8.

Table 8: Estimates for the coefficients of the independent R&D-related variables, which are used in separate regressions together with the same other independent variables for the different firm size groups (complete results in Tables A4 to A.9; standard errors in parentheses).

Variable	SME	Large-sized firms	Very large-sized firms
R&Dexp	-0.0001 (0.0001)	0.0022 (0.0016)	-0.0020 (0.0013)
R&Dexp05	-0.000005 (0.000007)	**0.0046*** (0.0013)**	-0.0014 (0.0013)
R&Dexp04	-0.000001 (0.000006)	**0.0036** (0.0014)**	-0.0016 (0.0013)
R&Dexp03	-0.000006 (0.000009)	**0.0024*** (0.0005)**	-0.0010 (0.0010)

R&Dcapex	**-0.000000002* (0.000000001)**	0.0001 (0.0001)	0.00000008 (0.0000007)
R&Dcapex05	0.0002 (0.0008)	0.0010 (0.0010)	**0.0029** (0.0013)**
R&Dcapex04	-0.0006 (0.0009)	0.0014 (0.0017)	0.0013 (0.0013)
R&Dcapex03	-0.0002 (0.0003)	**0.0066** (0.0027**)	0.0009 (0.0009)

Table 8 clearly confirms Hypothesis 3: the relationship between R&D activities and firm growth strongly varies with the size of firms. Coad (2006) finds that small firms and large firms appear to operate on different 'frequencies'. The R&D activities of smaller firms are characterized by an unstable, 'stop and go' dynamics, whilst larger firms operate more constantly and sustainable. We find similar dependency, but also some different details.

First, let us consider the R&D expenditures. For this variable we find only significant relations to firm growth for the large-sized firms. For all other sizes of firms, even for the very large ones, no relationship is found. Hence, R&D expenditures are especially relevant for large firms. This result is insignificant for the average R&D expenditures but significant for one-time R&D expenditures for all time-gaps. Hence, large firms with high R&D expenditures show a higher growth rate in the successive years.

In this context, we want to highlight the fact that this result is quite different from the findings for all firms. There we found only evidence for a negative relationship of growth with the average R&D expenditures. This is caused by the fact that the other firm size groups, which show no significant relation themselves, seem to blur the relationship for the large firms. This might very well also be the reason for the sensitivity of the results in the regressions that contained all firms together.

Let us now look at the results for the R&D-related capital expenditures. For this variable we find significant results for all firm size classes. For SME, we find a negative significant coefficient for permanent R&D-related capital expenditures. This means, permanent investments in R&D-related capital decrease the growth of smaller firms. Maybe smaller firms that grow well do not focus on R&D but expand their production capacities first.

For large firms we find a positive significant coefficient for R&D-related capital expenditure with a time lag of three years. Hence, the one-time R&D-related capital expenditure of firms is positively related to firm growth. However, in contrast to R&D expenditure, R&D-related capital expenditure seems to take quite some time to become effective.

In the case of very large-sized enterprises growth occurs immediately. For these firms, we find a positive coefficient in the year just before growth is measured. All other relationships are insignificant.

To sum up, Hypothesis 3 is clearly confirmed by our results: the relation between R&D activities and firm growth varies with firm size. Whilst large firms show high growth if they invest in R&D before (independent of the time-gap) and if they invest in R&D-related capital three years before, the investments in R&D-related capital of SMEs seem to have a permanent negative relation to firm growth. For very-large sized firms we find a positive relationship between growth and R&D activity in the year just before growth is measured.

4.5 Sector and industry dynamics (Hypothesis 4)

As a last point, we analyse the temporal structure of the impact of R&D-related activities across sectors. Our sample covers a number of sectors ranging from manufacturing to services, which are characterised by very different R&D processes. In Hypothesis 4 we set

up the natural expectation: *The temporal structure of the impact of R&D activities on firm growth varies across sectors and industries.*

First, we compare the temporal structure of the impact of R&D activities in manufacturing and real estate. These two sectors are represented by many firms in our sample (see Table 3) and can be expected to differ strongly in the relevance of R&D activities.

Table 9: Estimates for the coefficients of the independent previous growth and R&D-related variables, which are used in separate regressions together with the same other independent variables for R&D activities in real estate and manufacturing (complete results in Tables A10. and A.11; standard errors in parentheses).

variable	Real estate	Manufacturing
growth04/05	-0.0030 (0.0223)	**0.321***(0.0263)**
growth03/04	**0.140***(0.0362)**	-0.0118 (0.0129)
R&Dexp	**-0.00029** (0.0001)**	**0.00013** (0.000005)**
R&Dexp05	-0.000006 (0.000006)	**0.00024*** (0.000006)**
R&Dexp04	**-0.00023** (0.00011)**	**0.00013*** (0.000003)**
R&Dexp03	**-0.00034*** (0.0001)**	-0.000001 (0.000004)
R&Dcapex	-0.000000001 (0.000000001)	0.000000002 (0.00000008)
R&Dcapex05	-0.0014 (0.0009)	**0.00115*** (0.0003)**
R&Dcapex04	-0.0018 (0.0012)	**0.0010** (0.0004)**
R&Dcapex03	-0.0002 (0.0003)	0.0002 (0.0002)

For firms in the real estate sector we only find significant negative coefficients for R&D expenditures. This holds for the overall magnitude (R&Dexp) as well as for the single-values in 2004 and 2003. On the one hand, this might be explained by the fact that real estate shows weak investments and efforts in R&D activities in general. On the other hand, the results imply that these real estate firms that invest in R&D show lower growth, in general as well as around two to three years after the R&D investment. We see two possible interpretations: Either it is, indeed, a disadvantage in the real estate industry to invest in R&D or it takes longer in this industry to see the positive effects of R&D activities.

The results for manufacturing rather confirm the findings in the literature: there is a clear positive relationship between R&D activities and growth. The relationship between R&Dexp (overall attitude) with firm growth is significantly positive. Hence, long-run R&D expenditures are connected to higher growth rates in the manufacturing sector. If we look at the one-time values, we find highly significant coefficients for R&D expenditures in 2005 and 2004. From this we might conclude that R&D expenditures effect growth immediately or with a time lag of one year. Hence, our results confirm a rather short time-lag between R&D activities and growth.

A similar result is obtained for R&D-related capital expenditures. Again, we find positive relationships between the one-time R&D-related capital expenditures in the years 2004 and 2005 and growth. R&D-related capital expenditures seem to be especially important in the years just before growth is measured. In contrast to the findings for R&D expenditures, we find no evidence for higher permanent R&D activities relating to higher growth rates in manufacturing sector.

To gain a clearer picture of the temporal structure and dynamics within the industries of the manufacturing sector, we repeat our analyses for several kinds of manufacturing industries (see NACE codes: Table 4). For each of these industries regressions are conducted, except of those industries in which the number of cases is too small. Again, we only discuss the findings for the regressions considering temporal autocorrelation.

Table 10: Estimates for the coefficients of the independent past growth and R&D-related variables, which are used in separate regressions together with the same other independent variables for R&D activities in high-tech and low-tech industries (complete results are shown in Tables A12. and A.13; standard errors in parentheses).

variable	High-tech	Low-tech
growth04/05	**0.333***(0.0290)**	**0.231***(0.0645)**
growth03/04	-0.0179(0.0139)	**0.196***(0.0405)**
R&Dexp	**0.00012* (0.000005)**	-0.0016 (0.0046)
R&Dexp05	**0.00018** (0.000007)**	-0.0016 (0.0058)
R&Dexp04	**0.00014*** (0.000003)**	-0.00061 (0.0028)
R&Dexp03	-0.000003 (0.000005)	-0.00045 (0.0018)
R&Dcapex	-0.000000003 (0.000000009)	0.0000005 (0.000004)
R&Dcapex05	**0.0010* (0.0004)**	-0.0067 (0.0043)
R&Dcapex04	**0.00084* (0.0004)**	-0.0078 (0.0046)
R&Dcapex03	0.0001 (0.0002)	-0.0051 (0.0053)

For firms in the high-tech manufacturing industry we find a duplication of the results for the whole manufacturing sector. Again growth is related to the average R&D expenditures, the R&D expenditures one and two years before and the R&D-related capital expenditures one and two years before.

For the low-tech manufacturing firms we do not find any significant coefficient for R&D expenditures and R&D-related capital expenditures. Hence, it becomes clear that the relationship between R&D activities and growth in the manufacturing sector reflects the processes in high-tech industries, but does not represent the low-tech industries.

Table 11: Estimates for the coefficients of the independent previous growth and R&D-related variables, which are used in separate regressions together with the same other independent variables for R&D activities within the industries of manufacturing sector (complete results are shown in Tables A.14 to A.18; standard errors in parentheses).

variable	Food and beverages	Chemicals	Metal	Optical and electrical equip.	Transport
growth04/05	**0.381***(0.0720)**	**0.331***(0.0670)**	**0.304*** (0.104)**	**0.373***(0.0468)**	**0.1970*** (0.0609)**
growth03/04	**-0.199** (0.0928)**	0.0121 (0.0779)	**0.204**(0.0843)**	-0.0248(0.0180)	-0.0065 (0.0222)
R&Dexp	-0.0187 (0.0114)	**0.00015* (0.000008)**	0.0006 (0.0071)	0.00024 (0.00018)	**-0.0013** (0.00058)**
R&Dexp05	-0.0145 (0.0106)	**0.00021** (0.0001)**	0.0037 (0.0074)	**0.0004** (0.0002)**	**-0.0021***(0.0007)**
R&Dexp04	**-0.0216*(0.0124)**	**0.00017***(0.000004)**	-0.00033 (0.0077)	**0.00022**(0.0001)**	**-0.00049*(0.0029)**
R&Dexp03	**-0.0292** (0.0121)**	-0.000002(0.000008)	-0.00061 (0.0050)	**0.00028* (0.0001)**	**-0.00023**(0.0001)**
R&Dcapex	0.0061 (0.0098)	-3.75e-08 (8.14e-07)	-0.0017 (0.0032)	1.63e-06(2.51e-06)	**1.32e-05*** (4.44e-06)**
R&Dcapex05	0.0083 (0.0055)	**0.0021* (0.0010)**	-0.00013 (0.0072)	0.0005 (0.0005)	**0.0175***(0.0023)**
R&Dcapex04	0.0043 (0.0058)	**0.0019* (0.0011)**	-0.00057 (0.0067)	0.0006 (0.0005)	0.0057 (0.0043)
R&Dcapex03	0.0004 (0.0063)	0.00017 (0.00079)	0.0065 (0.0082)	0.0002 (0.0003)	0.0015 (0.0021)

Let us now considered those industries separately for which we have sufficient firm numbers in our data base. The results in Table 11 as well as the results before clearly confirm our Hypothesis 4 stating that the relevance of R&D activities depends on the industry.

First, we consider the chemical industry because this industry shows the same results as we found and discussed for the whole manufacturing sector and the high-tech industries. Hence, we can refer to the discussion above and repeat here only that growth is positively related to R&D activities one and two years before and in the case of R&D expenditures also to the average R&D activity.

At least similar results are found for the other high-tech industry that is studied separately: the industry of electrical and optical equipment. Interestingly we do not find any significant results for the R&D-related capital expenditures. This kind of R&D activity seems not to play a role for firms producing electrical and optical equipment. R&D expenditures, in contrast, play a role. We find the same relationships as for high-tech industries, in general: Average R&D expenditures and the R&D expenditures one and two years before are positively related to growth.

For the metal industry we do not find any positive or negative coefficient for the independent variables. This means, R&D efforts do not play a key role for growth in the metal industry. This is in line with the findings on the aggregated level for low-tech industries (see Table 10).

In contrast, for the food, beverages and tobacco industry we find strong negative coefficient for R&D expenditures two and three years before growth is measured. Again there are two possible explanations. First, it might be a disadvantage to invest in R&D activities in the food, beverages and tobacco industry. Second, it might also be the case that in this industry R&D activities take long to pay off.

Similar results are found for the transport equipment industry. Again, R&D expenditures show a significantly negative relationship with growth. However, this negative relationship is obtained independent of how we include R&D expenditures, using the average R&D expenditures (overall attitude) or the one-time values. This implies that there is a connection on the firm level: firms with high R&D expenditures show, on average, lower growth rates. This might be caused by differences within the industry, e.g. between suppliers and car manufacturers. For the R&D-related capital expenditures we find significantly positive relationships between growth and the average expenditures as well as the expenditures in the previous year. This might also be caused by differences within the industry but might also signal a positive, mainly immediate, effect of R&D-related capital expenditures on growth.

To sum up, Hypothesis 4 is entirely confirmed by our results: the relationship between R&D activities and firm growth and its temporal structure varies across sectors and industries. Whilst firms in low-tech industries show less R&D efforts and no activities or partly even a negative relationship between R&D activities and growth, the investments in R&D are high and permanent in high-tech industries and in most cases we find a positive relationship between R&D activities and growth.

5 Conclusions

In this paper we analyse the time structure of the relationship between R&D activity and firm growth. The literature usually states that R&D activities are related to firm growth. We deviate from the usual approach by focusing on the time structure of the relationship between R&D efforts and firm growth, including the autocorrelation in the growth dynamics. In addition, we differentiate between different firm sizes and industries. This leads to a more detailed picture.

We find that the autocorrelation of growth rates varies with firm size. Considering all firms in the sample, the firms show strong autocorrelation in their year-to-year growth rates. We find confirmation for the finding from the literature that this autocorrelation is stronger for larger firms. For small- and medium sized enterprises we do not find any autocorrelation of growth rates.

For the relationship between R&D activities and firm growth we find a strong dependency on firm size and industry. While we obtain nearly no significant results for small

and medium sized enterprises, we find a strong positive relationship for large firms and, at least, some positive relationship between R&D-related capital expenditures and growth for very large firms.

However, even more relevant for the results is the kind of industry that is analysed. No relationships are found for the real estate industry. Within the manufacturing industry strong differences are detected between high-tech and low-tech industries. While we find many significant positive relationships between R&D activities and growth for high-tech industries, we find no significant relationships or even negative relationships between these characteristics in low-tech industries. Furthermore, the industries also differ in the time structure of the relationship between R&D and growth.

Hence, our analysis, first of all, suggests that the characteristics that are connected to high growth should be examined for each industry separately. Studies that aggregate over all industries provide information about the average behavior of firms, but ignore a lot of details and the result depends crucially on the mixture of firms in the data set. Besides this, our study also shows that still more research about the time structure of growth processes is needed. Especially the time structure of the effects of R&D activities on growth needs to be further examined on an industry-specific level, using longer time series than available for our study.

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Appendix

VARIABLES	(all firms) log2006_2005	(SME) log2006_2005	(large) log2006_2005	(very large) log2006_2005
growth04/05	0.0673***	0.00501	0.217***	0.234***
	(0.0140)	(0.0278)	(0.0538)	(0.0247)
growth03/04	0.0586***	0.0171	-0.00216	0.0637***
	(0.0128)	(0.0296)	(0.0388)	(0.0171)
size	-0.0155***	-0.151***	-0.135***	-0.00117
	(0.00418)	(0.0496)	(0.0405)	(0.00529)
profit	2.61e-06	-2.69e-05	-0.000204	-1.27e-06
	(7.09e-06)	(0.000157)	(0.000439)	(5.19e-06)
IndDummy1	-0.0210	dropped	0.118	0.00977
	(0.0963)		(0.258)	(0.0769)
IndDummy2	0.0687	-0.0537	-0.104	0.0311
	(0.0700)	(0.451)	(0.261)	(0.0597)
IndDummy3	-0.0607	-0.286	-0.000286	-0.0385
	(0.0486)	(0.207)	(0.102)	(0.0463)
IndDummy4	-0.0226	0.477	0.171	-0.0912
	(0.0643)	(0.454)	(0.168)	(0.0560)
IndDummy5	0.0187	dropped	dropped	0.00413
	(0.0969)			(0.0741)
IndDummy6	-0.115*	dropped	-0.206	-0.0932
	(0.0677)		(0.170)	(0.0578)
IndDummy7	-0.0498	-1.107**	0.0214	-0.0438
	(0.0651)	(0.502)	(0.195)	(0.0562)
IndDummy8	-0.00379	-0.0788	0.00253	-0.00758
	(0.0586)	(0.350)	(0.135)	(0.0525)
IndDummy9	-0.0475	-0.210	0.0454	-0.0563
	(0.0501)	(0.207)	(0.104)	(0.0491)
IndDummy10	-0.0878	dropped	dropped	-0.0787
	(0.0923)			(0.0712)
Constant	0.144**	1.085***	0.690**	-0.181**
	(0.0628)	(0.312)	(0.316)	(0.0716)
Observations	978	144	182	652
R-squared	0.096	0.122	0.267	0.214

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.1: Regression results for different firm size (excluding R&D activity variables)

VARIABLES	(I) log2006_2005	(II) log2006_2005	(III) log2006_2005	(IV) log2006_2005	(V) log2006_2005	(VI) log2006_2005	(VII) log2006_2005	(VIII) log2006_2005
R&Dexp	-6.86e-05*							
	(4.01e-05)							
R&Dexp05		4.50e-05						
		(3.43e-05)						
R&Dexp04			6.33e-06					
			(2.59e-05)					
R&Dexp03				-9.31e-06				
				(3.67e-05)				
R&Dcapex					-1.91e-08**			
					(8.30e-09)			
R&Dcapex05						0.00133***		
						(0.000307)		
R&Dcapex04							0.000364	
							(0.000380)	
R&Dcapex03								-2.41e-05
								(0.000210)
size	-0.0290***	-0.0240***	-0.0211***	-0.0222***	-0.0293***	-0.0212***	-0.0209***	-0.0227***
	(0.00469)	(0.00467)	(0.00435)	(0.00444)	(0.00448)	(0.00461)	(0.00443)	(0.00431)
profit	7.22e-06	5.21e-06	3.66e-06	4.22e-06	6.49e-06	4.26e-06	3.41e-06	4.26e-06
	(7.78e-06)	(7.78e-06)	(7.31e-06)	(7.31e-06)	(7.77e-06)	(7.71e-06)	(7.32e-06)	(7.30e-06)
IndDummy1	-0.0374	-0.0418	-0.0445	-0.0435	-0.0372	-0.0450	-0.0447	-0.0431
	(0.106)	(0.106)	(0.0992)	(0.0990)	(0.105)	(0.105)	(0.0992)	(0.0991)
IndDummy2	0.0963	0.0923	0.0905	0.0910	0.109	0.0817	0.0887	0.0920
	(0.0766)	(0.0766)	(0.0720)	(0.0719)	(0.0775)	(0.0761)	(0.0721)	(0.0719)
IndDummy3	-0.0572	-0.0643	-0.0689	-0.0688	-0.0569	-0.0696	-0.0696	-0.0679
	(0.0532)	(0.0533)	(0.0501)	(0.0500)	(0.0531)	(0.0529)	(0.0501)	(0.0500)
IndDummy4	-0.0136	-0.0222	-0.0268	-0.0251	-0.0114	-0.0761	-0.0335	-0.0239
	(0.0705)	(0.0705)	(0.0663)	(0.0662)	(0.0709)	(0.0712)	(0.0669)	(0.0663)
IndDummy5	0.0404	0.0264	0.0178	0.0208	0.0415	0.0160	0.0172	0.0223
	(0.106)	(0.106)	(0.0999)	(0.0998)	(0.106)	(0.106)	(0.1000)	(0.0998)
IndDummy6	-0.0971	-0.109	-0.116*	-0.113	-0.0931	-0.115	-0.116*	-0.112
	(0.0743)	(0.0743)	(0.0698)	(0.0697)	(0.0749)	(0.0737)	(0.0699)	(0.0697)
IndDummy7	-0.0302	-0.0601	-0.0613	-0.0563	-0.0270	-0.0600	-0.0534	-0.0460
	(0.0721)	(0.0720)	(0.0675)	(0.0676)	(0.0721)	(0.0719)	(0.0682)	(0.0679)
IndDummy8	-0.000519	-0.00639	-0.00979	-0.00864	0.00616	-0.00993	-0.00968	-0.00712
	(0.0642)	(0.0643)	(0.0604)	(0.0603)	(0.0646)	(0.0640)	(0.0606)	(0.0605)
IndDummy9	-0.0658	-0.0715	-0.0658	-0.0604	-0.0667	-0.0715	-0.0675	-0.0612
	(0.0549)	(0.0550)	(0.0516)	(0.0515)	(0.0548)	(0.0545)	(0.0516)	(0.0516)
IndDummy10	-0.0768	-0.0859	-0.0909	-0.0889	-0.0767	-0.0891	-0.0908	-0.0882
	(0.101)	(0.101)	(0.0952)	(0.0950)	(0.101)	(0.100)	(0.0952)	(0.0951)
Constant	0.399***	0.363***	0.343***	0.350***	0.400***	0.337***	0.340***	0.354***
	(0.0617)	(0.0616)	(0.0577)	(0.0580)	(0.0608)	(0.0612)	(0.0583)	(0.0577)
Observations	978	978	978	978	978	978	978	978
R-squared	0.055	0.054	0.046	0.048	0.062	0.071	0.048	0.049

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2: Regression results for all firms (excluding past growth)

VARIABLES	(I) log2006_2005	(II) log2006_2005	(III) log2006_2005	(IV) log2006_2005	(V) log2006_2005	(VI) log2006_2005	(VII) log2006_2005	(VIII) log2006_2005
growth04/05	0.0684***	0.0673***	0.0807***	0.0703***	0.0688***	0.0693***	0.0683***	0.0669***
	(0.0140)	(0.0140)	(0.0160)	(0.0141)	(0.0140)	(0.0138)	(0.0156)	(0.0140)
growth03/04	0.0575***	0.0588***	0.0544***	0.0597***	0.0567***	0.0611***	0.0577***	0.0583***
	(0.0129)	(0.0129)	(0.0131)	(0.0129)	(0.0129)	(0.0127)	(0.0131)	(0.0129)
R&Dexp	-4.28e-05							
	(3.93e-05)							
R&Dexp05		7.04e-06						
		(3.29e-05)						
R&Dexp04			-4.95e-05*					
			(2.90e-05)					
R&Dexp03				-5.02e-05				
				(3.62e-05)				
R&Dcapex					-1.79e-08**			
					(7.99e-09)			
R&Dcapex05						0.00140***		
						(0.000292)		
R&Dcapex04							-9.38e-05	
							(0.000417)	
R&Dcapex03								-7.79e-05
								(0.000204)
size2003	-0.0171***	-0.0152***	-0.0174***	-0.0173***	-0.0173***	-0.0104**	-0.0164***	-0.0164***
	(0.00444)	(0.00442)	(0.00433)	(0.00438)	(0.00429)	(0.00437)	(0.00441)	(0.00432)
profit	3.24e-06	2.50e-06	3.47e-06	3.37e-06	2.63e-06	9.16e-07	2.84e-06	2.85e-06
	(7.11e-06)	(7.11e-06)	(7.10e-06)	(7.10e-06)	(7.12e-06)	(7.02e-06)	(7.12e-06)	(7.11e-06)
IndDummy1	-0.0196	-0.0212	-0.0175	-0.0185	-0.0195	-0.0251	-0.0202	-0.0204
	(0.0963)	(0.0964)	(0.0962)	(0.0963)	(0.0964)	(0.0953)	(0.0965)	(0.0965)
IndDummy2	0.0699	0.0684	0.0676	0.0695	0.0822	0.0551	0.0702	0.0703
	(0.0700)	(0.0700)	(0.0699)	(0.0699)	(0.0710)	(0.0693)	(0.0701)	(0.0701)
IndDummy3	-0.0583	-0.0610	-0.0568	-0.0573	-0.0586	-0.0681	-0.0589	-0.0591
	(0.0486)	(0.0486)	(0.0486)	(0.0486)	(0.0486)	(0.0481)	(0.0487)	(0.0487)
IndDummy4	-0.0200	-0.0230	-0.0203	-0.0192	-0.0194	-0.0825	-0.0194	-0.0201
	(0.0643)	(0.0644)	(0.0643)	(0.0643)	(0.0649)	(0.0649)	(0.0650)	(0.0645)
IndDummy5	0.0230	0.0179	0.0241	0.0242	0.0238	0.00259	0.0212	0.0211
	(0.0970)	(0.0970)	(0.0969)	(0.0970)	(0.0971)	(0.0960)	(0.0971)	(0.0971)
IndDummy6	-0.112*	-0.116*	-0.111	-0.111	-0.110	-0.127*	-0.113*	-0.113*
	(0.0678)	(0.0678)	(0.0677)	(0.0678)	(0.0686)	(0.0671)	(0.0679)	(0.0678)
IndDummy7	-0.0393	-0.0516	-0.0365	-0.0368	-0.0367	-0.0656	-0.0390	-0.0392
	(0.0658)	(0.0657)	(0.0655)	(0.0658)	(0.0660)	(0.0654)	(0.0663)	(0.0660)
IndDummy8	-0.00205	-0.00410	-0.00192	-0.00135	0.00404	-0.00889	-0.00121	-0.00122
	(0.0586)	(0.0587)	(0.0586)	(0.0586)	(0.0591)	(0.0582)	(0.0589)	(0.0589)
IndDummy9	-0.0462	-0.0479	-0.0447	-0.0451	-0.0460	-0.0499	-0.0476	-0.0477
	(0.0502)	(0.0502)	(0.0501)	(0.0501)	(0.0502)	(0.0496)	(0.0502)	(0.0502)
IndDummy10	-0.0848	-0.0884	-0.0830	-0.0836	-0.0846	-0.0944	-0.0863	-0.0865
	(0.0924)	(0.0924)	(0.0923)	(0.0923)	(0.0925)	(0.0914)	(0.0925)	(0.0925)
Constant	0.156**	0.142**	0.147**	0.152**	0.158**	0.0963	0.151**	0.152**
	(0.0637)	(0.0640)	(0.0628)	(0.0630)	(0.0633)	(0.0635)	(0.0634)	(0.0635)
Observations	978	978	978	978	978	978	978	978
R-squared	0.098	0.096	0.099	0.098	0.103	0.118	0.097	0.097

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.3: Regression results for all firms (including past growth)

VARIABLES	(I) log2006_2005	(II) log2006_2005	(III) log2006_2005	(IV) log2006_2005	(V) log2006_2005	(VI) log2006_2005	(VII) log2006_2005	(VIII) log2006_2005
R&Dexp	-0.000316*** (0.000106)							
R&Dexp05		-4.34e-05 (8.41e-05)						
R&Dexp04			-3.05e-07 (5.15e-05)					
R&Dexp03				-5.35e-05 (8.72e-05)				
R&Dcapex					-3.58e-08** (1.47e-08)			
R&Dcapex05						-0.000312 (0.000842)		
R&Dcapex04							-0.000433 (0.000773)	
R&Dcapex03								-0.000285 (0.000364)
size	-0.283*** (0.0514)	-0.222*** (0.0529)	-0.118** (0.0483)	-0.169*** (0.0513)	-0.235*** (0.0470)	-0.219*** (0.0535)	-0.131** (0.0516)	-0.167*** (0.0499)
profit	-4.85e-05 (0.000170)	-3.46e-05 (0.000176)	-1.31e-05 (0.000159)	-2.73e-05 (0.000157)	-4.34e-05 (0.000172)	-3.21e-05 (0.000176)	-1.84e-05 (0.000159)	-3.15e-05 (0.000157)
IndDummy1	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
IndDummy2	0.0576 (0.491)	0.00148 (0.507)	-0.0978 (0.460)	-0.0499 (0.452)	0.0151 (0.494)	-0.00208 (0.507)	-0.0869 (0.459)	-0.0524 (0.451)
IndDummy3	-0.220 (0.226)	-0.270 (0.233)	-0.283 (0.211)	-0.285 (0.208)	-0.268 (0.227)	-0.269 (0.233)	-0.273 (0.212)	-0.288 (0.207)
IndDummy4	0.331 (0.492)	0.392 (0.508)	0.511 (0.461)	0.453 (0.453)	0.369 (0.495)	0.543 (0.637)	0.510 (0.460)	0.454 (0.453)
IndDummy5	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
IndDummy6	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
IndDummy7	-0.236 (0.652)	-1.233** (0.612)	-0.971* (0.534)	-0.948 (0.602)	dropped	dropped	dropped	dropped
IndDummy8	-0.0331 (0.380)	-0.0613 (0.392)	-0.116 (0.355)	-0.0895 (0.349)	-0.0530 (0.382)	-0.0623 (0.392)	-0.106 (0.355)	-0.0909 (0.349)
IndDummy9	-0.164 (0.226)	-0.218 (0.234)	-0.242 (0.211)	-0.202 (0.208)	-0.204 (0.227)	-0.225 (0.233)	-0.232 (0.211)	-0.206 (0.207)
IndDummy10	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
Constant	1.714*** (0.318)	1.436*** (0.327)	0.972*** (0.297)	1.198*** (0.305)	1.495*** (0.304)	1.422*** (0.330)	1.030*** (0.309)	1.193*** (0.300)
Observations	144	144	144	144	144	144	144	144
R-squared	0.214	0.163	0.093	0.125	0.195	0.161	0.094	0.125

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.4: Regression results for SME (excluding past growth)

VARIABLES	(I) log2006_2005	(II) log2006_2005	(III) log2006_2005	(IV) log2006_2005	(V) log2006_2005	(VI) log2006_2005	(VII) log2006_2005	(VIII) log2006_2005
growth04/05	0.00903	0.00303	0.0113	0.0106	0.00654	0.00536	0.0184	0.00504
	(0.0278)	(0.0279)	(0.0367)	(0.0288)	(0.0275)	(0.0279)	(0.0336)	(0.0278)
growth0304	0.00948	0.0137	0.0152	0.0201	0.0143	0.0188	0.0108	0.0164
	(0.0299)	(0.0300)	(0.0306)	(0.0299)	(0.0293)	(0.0302)	(0.0309)	(0.0296)
R&Dexp	-0.000159							
	(0.000110)							
R&Dexp05		-5.97e-05						
		(7.78e-05)						
R&Dexp04			-1.82e-05					
			(6.87e-05)					
R&Dexp03				-6.71e-05				
				(9.11e-05)				
R&Dcapex					-2.56e-08*			
					(1.37e-08)			
R&Dcapex05						0.000236		
						(0.000814)		
R&Dcapex04							-0.000672	
							(0.000953)	
R&Dcapex03								-0.000290
								(0.000364)
size	-0.186***	-0.167***	-0.155***	-0.161***	-0.170***	-0.143**	-0.170***	-0.159***
	(0.0550)	(0.0540)	(0.0526)	(0.0516)	(0.0501)	(0.0567)	(0.0564)	(0.0508)
profit	-3.51e-05	-3.48e-05	-2.80e-05	-2.43e-05	-3.57e-05	-2.42e-05	-3.33e-05	-3.01e-05
	(0.000156)	(0.000157)	(0.000157)	(0.000157)	(0.000155)	(0.000157)	(0.000157)	(0.000157)
IndDummy1	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
IndDummy2	-0.0255	-0.0419	-0.0488	-0.0409	-0.0370	-0.0593	-0.0372	-0.0479
	(0.450)	(0.452)	(0.453)	(0.452)	(0.447)	(0.453)	(0.453)	(0.452)
IndDummy3	-0.259	-0.278	-0.282	-0.272	-0.286	-0.291	-0.271	-0.278
	(0.207)	(0.208)	(0.208)	(0.208)	(0.205)	(0.209)	(0.209)	(0.208)
IndDummy4	0.449	0.466	0.479	0.475	0.456	0.370	0.490	0.470
	(0.453)	(0.455)	(0.456)	(0.455)	(0.450)	(0.586)	(0.455)	(0.455)
IndDummy5	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
IndDummy6	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
IndDummy7	-0.525	-0.904	-1.042*	-0.838	dropped	dropped	dropped	dropped
	(0.643)	(0.568)	(0.562)	(0.622)				
IndDummy8	-0.0702	-0.0753	-0.0775	-0.0704	-0.0714	-0.0811	-0.0683	-0.0768
	(0.348)	(0.350)	(0.351)	(0.350)	(0.346)	(0.351)	(0.351)	(0.350)
IndDummy9	-0.182	-0.193	-0.206	-0.196	-0.193	-0.214	-0.198	-0.202
	(0.207)	(0.209)	(0.208)	(0.208)	(0.205)	(0.208)	(0.208)	(0.207)
IndDummy10	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
Constant	1.250***	1.166***	1.100***	1.120***	1.171***	1.046***	1.165***	1.125***
	(0.331)	(0.330)	(0.318)	(0.316)	(0.312)	(0.341)	(0.332)	(0.316)
Observations	144	144	144	144	144	144	144	144
R-squared	0.136	0.126	0.123	0.126	0.144	0.121	0.124	0.125

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.5: Regression results for SME (including past growth)

VARIABLES	(I) log2006_2005	(II) log2006_2005	(III) log2006_2005	(IV) log2006_2005	(V) log2006_2005	(VI) log2006_2005	(VII) log2006_2005	(VIII) log2006_2005
R&Dexp	0.00146							
	(0.00168)							
R&Dexp05		0.00336**						
		(0.00137)						
R&Dexp04			0.00306**					
			(0.00146)					
R&Dexp03				0.00240***				
				(0.000572)				
R&Dcapex					8.63e-05			
					(0.000139)			
R&Dcapex05						0.000805		
						(0.00108)		
R&Dcapex04							0.00113	
							(0.00181)	
R&Dcapex03								0.00566**
								(0.00253)
size	-0.201***	-0.185***	-0.194***	-0.181***	-0.216***	-0.210***	-0.211***	-0.203***
	(0.0365)	(0.0364)	(0.0359)	(0.0347)	(0.0361)	(0.0360)	(0.0362)	(0.0355)
profit	-0.000300	-0.000275	-0.000251	-0.000129	-0.000337	-0.000328	-0.000336	-0.000119
	(0.000456)	(0.000447)	(0.000450)	(0.000435)	(0.000450)	(0.000455)	(0.000455)	(0.000460)
IndDummy1	0.0360	0.0340	0.0391	0.0477	0.0361	0.0354	0.0346	0.0804
	(0.268)	(0.264)	(0.265)	(0.256)	(0.267)	(0.269)	(0.269)	(0.267)
IndDummy2	-0.181	-0.171	-0.181	-0.151	-0.238	-0.184	-0.187	-0.153
	(0.271)	(0.267)	(0.268)	(0.259)	(0.279)	(0.272)	(0.272)	(0.269)
IndDummy3	-0.0749	-0.0930	-0.0856	-0.0725	-0.0635	-0.0642	-0.0661	-0.0296
	(0.104)	(0.103)	(0.103)	(0.0992)	(0.103)	(0.104)	(0.104)	(0.104)
IndDummy4	0.115	0.107	0.115	0.130	0.114	0.000343	0.0222	0.119
	(0.175)	(0.172)	(0.173)	(0.167)	(0.174)	(0.231)	(0.228)	(0.173)
IndDummy5	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
IndDummy6	-0.127	-0.137	-0.129	-0.125	-0.120	-0.123	-0.123	-0.0764
	(0.176)	(0.174)	(0.175)	(0.168)	(0.176)	(0.177)	(0.177)	(0.176)
IndDummy7	-0.0205	-0.0260	-0.0194	-0.00986	-0.0169	-0.0187	-0.0216	-0.00110
	(0.203)	(0.200)	(0.201)	(0.194)	(0.202)	(0.204)	(0.204)	(0.201)
IndDummy8	-0.0522	-0.0559	-0.0506	-0.0381	0.0258	-0.0501	-0.0521	-0.0297
	(0.139)	(0.137)	(0.138)	(0.133)	(0.146)	(0.140)	(0.140)	(0.139)
IndDummy9	-0.0678	-0.101	-0.0907	-0.0806	-0.0542	-0.0498	-0.0512	-0.00698
	(0.106)	(0.105)	(0.105)	(0.0996)	(0.104)	(0.105)	(0.105)	(0.105)
IndDummy10	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
Constant	1.413***	1.311***	1.364***	1.273***	1.508***	1.467***	1.473***	1.361***
	(0.240)	(0.239)	(0.236)	(0.228)	(0.236)	(0.235)	(0.236)	(0.237)
Observations	182	182	182	182	182	182	182	182
R-squared	0.196	0.220	0.212	0.268	0.207	0.194	0.193	0.215

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.6: Regression results for large-sized firms (excluding past growth)

VARIABLES	(I) log2006_2005	(II) log2006_2005	(III) log2006_2005	(IV) log2006_2005	(V) log2006_2005	(VI) log2006_2005	(VII) log2006_2005	(VIII) log2006_2005
growth04/05	0.225***	0.253***	0.220***	0.215***	0.215***	0.220***	0.219***	0.229***
	(0.0540)	(0.0530)	(0.0532)	(0.0513)	(0.0538)	(0.0541)	(0.0541)	(0.0534)
growth03/04	-0.00353	-0.000952	-0.00520	-0.0533	-0.00864	-0.00376	-0.00178	-0.0505
	(0.0387)	(0.0375)	(0.0384)	(0.0389)	(0.0389)	(0.0390)	(0.0390)	(0.0431)
R&Dexp	0.00223							
	(0.00161)							
R&Dexp05		0.00467***						
		(0.00132)						
R&Dexp04			0.00316**					
			(0.00140)					
R&Dexp03				0.00244***				
				(0.000579)				
R&Dcapex					0.000106			
					(0.000134)			
R&Dcapex05						0.00105		
						(0.00103)		
R&Dcapex04							0.00149	
							(0.00174)	
R&Dcapex03								0.00669**
								(0.00271)
size	-0.123***	-0.0905**	-0.121***	-0.132***	-0.145***	-0.137***	-0.138***	-0.147***
	(0.0414)	(0.0412)	(0.0405)	(0.0387)	(0.0413)	(0.0408)	(0.0409)	(0.0404)
profit	-0.000127	-7.49e-05	-0.000107	-7.97e-05	-0.000206	-0.000178	-0.000185	-1.70e-05
	(0.000442)	(0.000426)	(0.000436)	(0.000420)	(0.000438)	(0.000441)	(0.000441)	(0.000441)
IndDummy1	0.127	0.136	0.125	0.104	0.117	0.123	0.123	0.153
	(0.257)	(0.250)	(0.255)	(0.246)	(0.257)	(0.259)	(0.259)	(0.255)
IndDummy2	-0.0983	-0.0729	-0.103	-0.0983	-0.172	-0.105	-0.108	-0.0894
	(0.260)	(0.252)	(0.257)	(0.249)	(0.269)	(0.261)	(0.262)	(0.258)
IndDummy3	-0.0126	-0.0269	-0.0215	-0.0303	-0.00252	0.00172	-0.000258	0.0246
	(0.102)	(0.0985)	(0.101)	(0.0971)	(0.101)	(0.102)	(0.102)	(0.101)
IndDummy4	0.176	0.174	0.173	0.167	0.169	0.0247	0.0518	0.161
	(0.168)	(0.163)	(0.166)	(0.160)	(0.168)	(0.222)	(0.219)	(0.166)
IndDummy5	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
IndDummy6	-0.209	-0.232	-0.209	-0.210	-0.200	-0.202	-0.201	-0.157
	(0.170)	(0.165)	(0.168)	(0.162)	(0.170)	(0.171)	(0.171)	(0.169)
IndDummy7	0.0246	0.0237	0.0231	0.00892	0.0221	0.0255	0.0224	0.0255
	(0.195)	(0.189)	(0.193)	(0.186)	(0.195)	(0.196)	(0.196)	(0.193)
IndDummy8	0.00463	0.00788	0.00390	-0.00640	0.0655	0.00593	0.00392	0.0109
	(0.135)	(0.130)	(0.133)	(0.129)	(0.141)	(0.135)	(0.135)	(0.133)
IndDummy9	0.0228	-0.00719	0.00402	-0.0153	0.0364	0.0476	0.0463	0.0748
	(0.105)	(0.101)	(0.104)	(0.0999)	(0.104)	(0.104)	(0.104)	(0.103)
IndDummy10	dropped	dropped	dropped	dropped	dropped	dropped	dropped	dropped
Constant	0.593*	0.346	0.594*	0.735**	0.762**	0.693**	0.696**	0.746**
	(0.323)	(0.321)	(0.315)	(0.302)	(0.321)	(0.318)	(0.318)	(0.314)
Observations	182	182	182	182	182	182	182	182
R-squared	0.276	0.318	0.289	0.337	0.279	0.271	0.270	0.293

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.

Table A.7: Regression results for large-sized firms (including past growth)

VARIABLES	(I) log2006_2005	(II) log2006_2005	(III) log2006_2005	(IV) log2006_2005	(V) log2006_2005	(VI) log2006_2005	(VII) log2006_2005	(VIII) log2006_2005
R&Dexp	-0.00129							
	(0.00152)							
R&Dexp05		-0.00103						
		(0.00146)						
R&Dexp04			-0.000893					
			(0.00149)					
R&Dexp03				0.000160				
				(0.00113)				
R&Dcapex					4.60e-06			
					(8.53e-06)			
R&Dcapex05						0.00244*		
						(0.00147)		
R&Dcapex04							0.00191	
							(0.00153)	
R&Dcapex03								0.000672
								(0.00107)
size	-0.00983*	-0.00963	-0.00958	-0.00882	-0.00967	-0.00860	-0.00872	-0.00877
	(0.00589)	(0.00588)	(0.00589)	(0.00586)	(0.00587)	(0.00579)	(0.00579)	(0.00580)
profit	-1.20e-06	-1.28e-06	-1.29e-06	-1.60e-06	-1.84e-06	-1.92e-06	-1.73e-06	-1.61e-06
	(5.74e-06)	(5.74e-06)	(5.75e-06)	(5.74e-06)	(5.77e-06)	(5.72e-06)	(5.72e-06)	(5.73e-06)
IndDummy1	0.00687	0.00599	0.00597	0.00403	0.00396	0.00386	0.00444	0.00397
	(0.0849)	(0.0849)	(0.0849)	(0.0849)	(0.0852)	(0.0846)	(0.0847)	(0.0848)
IndDummy2	0.147**	0.147**	0.147**	0.148**	0.160**	0.135**	0.137**	0.144**
	(0.0650)	(0.0650)	(0.0650)	(0.0650)	(0.0660)	(0.0653)	(0.0655)	(0.0654)
IndDummy3	-0.0122	-0.0130	-0.0131	-0.0159	-0.0145	-0.0142	-0.0158	-0.0150
	(0.0512)	(0.0511)	(0.0512)	(0.0512)	(0.0512)	(0.0509)	(0.0510)	(0.0510)
IndDummy4	-0.0331	-0.0331	-0.0327	-0.0323	-0.0329	-0.0506	-0.0515	-0.0409
	(0.0614)	(0.0615)	(0.0615)	(0.0615)	(0.0621)	(0.0623)	(0.0632)	(0.0629)
IndDummy5	0.0470	0.0469	0.0472	0.0475	0.0484	0.0454	0.0475	0.0478
	(0.0817)	(0.0817)	(0.0817)	(0.0817)	(0.0820)	(0.0815)	(0.0816)	(0.0816)
IndDummy6	-0.0646	-0.0648	-0.0647	-0.0652	-0.0613	-0.0631	-0.0652	-0.0676
	(0.0637)	(0.0637)	(0.0637)	(0.0638)	(0.0646)	(0.0636)	(0.0636)	(0.0638)
IndDummy7	-0.0192	-0.0193	-0.0193	-0.0199	-0.0181	-0.0366	-0.0329	-0.0250
	(0.0619)	(0.0619)	(0.0620)	(0.0620)	(0.0622)	(0.0626)	(0.0627)	(0.0624)
IndDummy8	0.0343	0.0342	0.0344	0.0347	0.0364	0.0356	0.0333	0.0338
	(0.0578)	(0.0578)	(0.0578)	(0.0578)	(0.0582)	(0.0578)	(0.0579)	(0.0580)
IndDummy9	-0.0268	-0.0280	-0.0286	-0.0334	-0.0348	-0.0281	-0.0309	-0.0319
	(0.0546)	(0.0545)	(0.0546)	(0.0544)	(0.0544)	(0.0541)	(0.0541)	(0.0541)
IndDummy10	-0.0377	-0.0416	-0.0402	-0.0494	-0.0468	-0.0422	-0.0441	-0.0468
	(0.0792)	(0.0789)	(0.0793)	(0.0804)	(0.0788)	(0.0783)	(0.0784)	(0.0784)
Constant	0.201***	0.199***	0.198***	0.190***	0.198***	0.176**	0.181**	0.187***
	(0.0719)	(0.0718)	(0.0719)	(0.0716)	(0.0716)	(0.0714)	(0.0713)	(0.0712)
Observations	652	652	652	652	652	652	652	652
R-squared	0.041	0.041	0.041	0.040	0.043	0.044	0.043	0.041

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.8: Regression results for very large-sized firms (excluding past growth)

VARIABLES	(I) log2006_2005	(II) log2006_2005	(III) log2006_2005	(IV) log2006_2005	(V) log2006_2005	(VI) log2006_2005	(VII) log2006_2005	(VIII) log2006_2005
growth04/05	0.235***	0.234***	0.235***	0.234***	0.238***	0.235***	0.233***	0.235***
	(0.0247)	(0.0247)	(0.0247)	(0.0247)	(0.0249)	(0.0246)	(0.0247)	(0.0247)
growth03/04	0.0639***	0.0636***	0.0637***	0.0657***	0.0612***	0.0640***	0.0638***	0.0631***
	(0.0171)	(0.0171)	(0.0171)	(0.0173)	(0.0172)	(0.0171)	(0.0171)	(0.0171)
R&Dexp	-0.00201							
	(0.00138)							
R&Dexp05		-0.00140						
		(0.00132)						
R&Dexp04			-0.00163					
			(0.00135)					
R&Dexp03				-0.00100				
				(0.00104)				
R&Dcapex					8.55e-07			
					(7.72e-06)			
R&Dcapex05						0.00293**		
						(0.00133)		
R&Dcapex04							0.00139	
							(0.00138)	
R&Dcapex03								0.000972
								(0.000973)
size	-0.00250	-0.00209	-0.00229	-0.00188	-0.00173	-0.000727	-0.00101	-0.000924
	(0.00537)	(0.00536)	(0.00537)	(0.00534)	(0.00535)	(0.00528)	(0.00529)	(0.00529)
profit	-7.23e-07	-8.91e-07	-7.79e-07	-1.01e-06	-1.70e-06	-1.70e-06	-1.43e-06	-1.32e-06
	(5.20e-06)	(5.20e-06)	(5.21e-06)	(5.20e-06)	(5.22e-06)	(5.17e-06)	(5.19e-06)	(5.19e-06)
IndDummy1	0.0138	0.0121	0.0128	0.0116	0.00958	0.00927	0.00986	0.00930
	(0.0769)	(0.0769)	(0.0769)	(0.0769)	(0.0771)	(0.0766)	(0.0768)	(0.0768)
IndDummy2	0.0282	0.0290	0.0290	0.0296	0.0459	0.0151	0.0236	0.0242
	(0.0597)	(0.0598)	(0.0597)	(0.0598)	(0.0604)	(0.0599)	(0.0601)	(0.0601)
IndDummy3	-0.0337	-0.0352	-0.0344	-0.0357	-0.0377	-0.0375	-0.0386	-0.0385
	(0.0464)	(0.0464)	(0.0464)	(0.0464)	(0.0464)	(0.0461)	(0.0462)	(0.0462)
IndDummy4	-0.0927*	-0.0924*	-0.0923*	-0.0914	-0.0961*	-0.114**	-0.105*	-0.104*
	(0.0560)	(0.0560)	(0.0560)	(0.0560)	(0.0566)	(0.0567)	(0.0576)	(0.0574)
IndDummy5	0.00310	0.00330	0.00352	0.00382	0.00450	0.00138	0.00427	0.00447
	(0.0741)	(0.0741)	(0.0741)	(0.0741)	(0.0743)	(0.0738)	(0.0740)	(0.0740)
IndDummy6	-0.0926	-0.0929	-0.0926	-0.0926	-0.0917	-0.0910	-0.0933	-0.0968*
	(0.0577)	(0.0578)	(0.0578)	(0.0578)	(0.0585)	(0.0575)	(0.0577)	(0.0578)
IndDummy7	-0.0429	-0.0432	-0.0429	-0.0431	-0.0425	-0.0641	-0.0532	-0.0513
	(0.0561)	(0.0562)	(0.0561)	(0.0562)	(0.0563)	(0.0567)	(0.0569)	(0.0566)
IndDummy8	-0.00846	-0.00843	-0.00846	-0.00791	-0.00649	-0.00564	-0.00707	-0.00807
	(0.0525)	(0.0525)	(0.0525)	(0.0525)	(0.0528)	(0.0524)	(0.0526)	(0.0526)
IndDummy9	-0.0473	-0.0500	-0.0490	-0.0517	-0.0579	-0.0510	-0.0550	-0.0554
	(0.0494)	(0.0494)	(0.0494)	(0.0493)	(0.0493)	(0.0489)	(0.0490)	(0.0490)
IndDummy10	-0.0644	-0.0714	-0.0664	-0.0638	-0.0786	-0.0731	-0.0766	-0.0785
	(0.0718)	(0.0715)	(0.0719)	(0.0728)	(0.0713)	(0.0709)	(0.0711)	(0.0711)
Constant	-0.168**	-0.172**	-0.171**	-0.176**	-0.179**	-0.202***	-0.188***	-0.188***
	(0.0721)	(0.0722)	(0.0721)	(0.0718)	(0.0721)	(0.0718)	(0.0718)	(0.0718)
Observations	652	652	652	652	643	649	649	649
R-squared	0.217	0.215	0.216	0.215	0.220	0.221	0.216	0.216

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.9: Regression results for very large-sized firms (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.0114	-0.00375	0.0886*	0.0260	-0.00105	-0.00496	0.0368	-0.00241	-0.00309
	(0.0230)	(0.0223)	(0.0488)	(0.0243)	(0.0223)	(0.0223)	(0.0347)	(0.0223)	(0.0223)
growth03/04	0.140***	0.138***	0.127***	0.194***	0.138***	0.142***	0.130***	0.140***	0.140***
	(0.0359)	(0.0362)	(0.0364)	(0.0407)	(0.0362)	(0.0362)	(0.0367)	(0.0362)	(0.0362)
R&Dexp	-0.000298**								
	(0.000130)								
R&Dexp05		-6.41e-05							
		(6.38e-05)							
R&Dexp04			-0.000237**						
			(0.000113)						
R&Dexp03				-0.000341***					
				(0.000123)					
R&Dcapex					-1.73e-08				
					(1.07e-08)				
R&Dcapex05						-0.00114			
						(0.000996)			
R&Dcapex04							-0.00187		
							(0.00125)		
R&Dcapex03								-0.000279	
								(0.000347)	
size	-0.0459***	-0.0395***	-0.0428***	-0.0456***	-0.0385***	-0.0400***	-0.0414***	-0.0369***	-0.0356***
	(0.0126)	(0.0125)	(0.0122)	(0.0122)	(0.0120)	(0.0124)	(0.0124)	(0.0120)	(0.0118)
profit	8.36e-05	7.69e-05	8.33e-05	9.52e-05	7.68e-05	7.65e-05	7.72e-05	7.65e-05	7.63e-05
	(7.60e-05)	(7.67e-05)	(7.61e-05)	(7.58e-05)	(7.65e-05)	(7.66e-05)	(7.64e-05)	(7.67e-05)	(7.67e-05)
Constant	0.282***	0.249**	0.187*	0.205**	0.236**	0.253**	0.234**	0.225**	0.215**
	(0.104)	(0.107)	(0.101)	(0.0997)	(0.102)	(0.106)	(0.102)	(0.102)	(0.101)
Observations	218	218	218	218	218	218	218	218	218
R-squared	0.137	0.120	0.134	0.147	0.127	0.121	0.125	0.118	0.115

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.10: Regression results for all firms in Real estate sector (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.322***	0.320***	0.314***	0.323***	0.322***	0.307***	0.311***	0.321***	0.321***
	(0.0262)	(0.0260)	(0.0260)	(0.0267)	(0.0264)	(0.0266)	(0.0265)	(0.0263)	(0.0263)
growth03/04	-0.00859	-0.00591	-0.00438	-0.0120	-0.0116	-0.00492	-0.00632	-0.0118	-0.0118
	(0.0129)	(0.0128)	(0.0128)	(0.0129)	(0.0129)	(0.0130)	(0.0130)	(0.0129)	(0.0129)
R&Dexp	0.000130**								
	(5.48e-05)								
R&Dexp05		0.000241***							
		(6.22e-05)							
R&Dexp04			0.000138***						
			(3.25e-05)						
R&Dexp03				-1.78e-05					
				(4.75e-05)					
R&Dcapex					2.55e-08				
					(8.27e-08)				
R&Dcapex05						0.00115***			
						(0.000384)			
R&Dcapex04							0.00106**		
							(0.000414)		
R&Dcapex03								0.000248	
								(0.000264)	
size	0.00262	0.00557	0.00460	-0.00222	-0.00144	0.00239	0.00265	-0.000248	-0.00167
	(0.00513)	(0.00511)	(0.00497)	(0.00504)	(0.00494)	(0.00496)	(0.00506)	(0.00499)	(0.00482)
profit	7.35e-06	4.68e-06	5.45e-06	1.17e-05	1.08e-05	6.97e-06	7.02e-06	9.72e-06	1.12e-05
	(1.16e-05)	(1.16e-05)	(1.15e-05)	(1.17e-05)	(1.17e-05)	(1.16e-05)	(1.16e-05)	(1.16e-05)	(1.16e-05)
Constant	-0.278***	-0.305***	-0.291***	-0.234***	-0.239***	-0.268***	-0.273***	-0.249***	-0.237***
	(0.0573)	(0.0570)	(0.0555)	(0.0555)	(0.0560)	(0.0554)	(0.0563)	(0.0562)	(0.0549)
Observations	550	550	550	550	550	550	550	550	550
R-squared	0.257	0.270	0.274	0.250	0.251	0.263	0.259	0.252	0.250

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.11: Regression results for all firms in manufacturing sector (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.332***	0.330***	0.323***	0.337***	0.332***	0.318***	0.324***	0.333***	0.333***
	(0.0289)	(0.0288)	(0.0285)	(0.0297)	(0.0291)	(0.0295)	(0.0293)	(0.0290)	(0.0290)
growth03/04	-0.0168	-0.0154	-0.0117	-0.0201	-0.0198	-0.0133	-0.0152	-0.0197	-0.0197
	(0.0140)	(0.0139)	(0.0138)	(0.0139)	(0.0140)	(0.0141)	(0.0141)	(0.0139)	(0.0139)
R&Dexp	0.000121*								
	(6.61e-05)								
R&Dexp05		0.000185**							
		(7.57e-05)							
R&Dexp04			0.000146***						
			(3.65e-05)						
R&Dexp03				-3.32e-05					
				(5.46e-05)					
R&Dcapex					-3.25e-08				
					(9.57e-08)				
R&Dcapex05						0.00100**			
						(0.000420)			
R&Dcapex04							0.000841*		
							(0.000454)		
R&Dcapex03								0.000161	
								(0.000281)	
size	0.00519	0.00646	0.00788	0.000679	0.00139	0.00521	0.00521	0.00274	0.00160
	(0.00598)	(0.00597)	(0.00578)	(0.00587)	(0.00576)	(0.00580)	(0.00592)	(0.00584)	(0.00567)
profit	-2.90e-06	-3.95e-06	-5.15e-06	8.14e-07	5.52e-10	-3.44e-06	-3.20e-06	-1.14e-06	9.15e-08
	(1.38e-05)	(1.38e-05)	(1.36e-05)	(1.39e-05)	(1.39e-05)	(1.38e-05)	(1.38e-05)	(1.39e-05)	(1.38e-05)
Constant	-0.301***	-0.312***	-0.320***	-0.264***	-0.265***	-0.293***	-0.296***	-0.277***	-0.268***
	(0.0648)	(0.0646)	(0.0626)	(0.0629)	(0.0633)	(0.0628)	(0.0638)	(0.0638)	(0.0624)
Observations	267	267	267	267	267	267	267	267	267
R-squared	0.280	0.285	0.303	0.275	0.275	0.286	0.282	0.276	0.274

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.12: Regression results very large-sized high-tech firms (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.235***	0.233***	0.234***	0.234***	0.233***	0.240***	0.238***	0.229***	0.231***
	(0.0657)	(0.0651)	(0.0660)	(0.0658)	(0.0661)	(0.0644)	(0.0641)	(0.0645)	(0.0645)
growth03/04	0.195***	0.195***	0.196***	0.196***	0.196***	0.197***	0.198***	0.198***	0.196***
	(0.0406)	(0.0406)	(0.0406)	(0.0406)	(0.0408)	(0.0402)	(0.0402)	(0.0405)	(0.0405)
R&Dexp	-0.00164								
	(0.00468)								
R&Dexp05		-0.00161							
		(0.00587)							
R&Dexp04			-0.000615						
			(0.00285)						
R&Dexp03				-0.000458					
				(0.00187)					
R&Dcapex					-5.73e-06				
					(4.40e-05)				
R&Dcapex05						-0.00672			
						(0.00436)			
R&Dcapex04							-0.00784		
							(0.00468)		
R&Dcapex03								-0.00515	
								(0.00531)	
size	-0.0134	-0.0133	-0.0132	-0.0132	-0.0137	-0.0121	-0.0118	-0.0107	-0.0128
	(0.0134)	(0.0134)	(0.0134)	(0.0134)	(0.0135)	(0.0132)	(0.0132)	(0.0134)	(0.0132)
profit	2.37e-05	2.36e-05	2.36e-05	2.36e-05	2.43e-05	2.14e-05	2.05e-05	2.05e-05	2.35e-05
	(2.00e-05)	(2.00e-05)	(2.00e-05)	(2.00e-05)	(2.01e-05)	(1.98e-05)	(1.98e-05)	(2.01e-05)	(1.99e-05)
Constant	-0.259*	-0.259*	-0.262*	-0.263*	-0.257*	-0.246*	-0.243*	-0.258*	-0.264*
	(0.145)	(0.146)	(0.145)	(0.145)	(0.146)	(0.144)	(0.144)	(0.144)	(0.144)
Observations	128	128	128	128	128	128	128	128	128
R-squared	0.364	0.364	0.364	0.364	0.364	0.376	0.378	0.368	0.363

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.13: Regression results very large-sized low-tech firms (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.393***	0.396***	0.395***	0.375***	0.378***	0.365***	0.371***	0.382***	0.381***
	(0.0704)	(0.0718)	(0.0702)	(0.0669)	(0.0729)	(0.0714)	(0.0739)	(0.0736)	(0.0720)
growth03/04	-0.230**	-0.228**	-0.242**	-0.232**	-0.206**	-0.224**	-0.208**	-0.201**	-0.199**
	(0.0922)	(0.0939)	(0.0932)	(0.0873)	(0.0945)	(0.0924)	(0.0942)	(0.0972)	(0.0928)
R&Dexp	-0.0187								
	(0.0114)								
R&Dexp05		-0.0145							
		(0.0106)							
R&Dexp04			-0.0216*						
			(0.0124)						
R&Dexp03				-0.0292**					
				(0.0121)					
R&Dcapex					0.00611				
					(0.00984)				
R&Dcapex05						0.00837			
						(0.00558)			
R&Dcapex04							0.00435		
							(0.00587)		
R&Dcapex03								0.000481	
								(0.00635)	
size	-0.0281**	-0.0274**	-0.0270**	-0.0282**	-0.0179	-0.0188	-0.0250*	-0.0235*	-0.0234*
	(0.0127)	(0.0129)	(0.0125)	(0.0120)	(0.0156)	(0.0128)	(0.0130)	(0.0131)	(0.0127)
profit	3.09e-05**	3.00e-05**	3.05e-05**	3.20e-05**	2.41e-05*	2.60e-05*	2.85e-05**	2.67e-05*	2.65e-05*
	(1.30e-05)	(1.32e-05)	(1.29e-05)	(1.24e-05)	(1.38e-05)	(1.29e-05)	(1.35e-05)	(1.35e-05)	(1.31e-05)
Constant	0.146	0.132	0.148	0.174	0.0258	0.0236	0.0819	0.0691	0.0686
	(0.160)	(0.162)	(0.159)	(0.152)	(0.173)	(0.157)	(0.159)	(0.160)	(0.157)
Observations	36	36	36	36	36	36	36	36	36
R-squared	0.552	0.540	0.556	0.591	0.518	0.546	0.520	0.512	0.511

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.14: Regression results very large-sized firms in Food, beverages and tobacco (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.338***	0.341***	0.329***	0.333***	0.329***	0.305***	0.325***	0.331***	0.331***
	(0.0664)	(0.0661)	(0.0628)	(0.0678)	(0.0681)	(0.0670)	(0.0664)	(0.0674)	(0.0670)
growth03/04	0.0291	0.0324	0.0685	0.00961	0.0123	0.0603	0.0433	0.0128	0.0121
	(0.0778)	(0.0773)	(0.0746)	(0.0789)	(0.0786)	(0.0801)	(0.0791)	(0.0784)	(0.0779)
R&Dexp	0.000156*								
	(8.97e-05)								
R&Dexp05		0.000213**							
		(0.000104)							
R&Dexp04			0.000177***						
			(4.67e-05)						
R&Dexp03				-2.32e-05					
				(8.75e-05)					
R&Dcapex					-3.75e-08				
					(1.14e-07)				
R&Dcapex05						0.00216**			
						(0.00104)			
R&Dcapex04							0.00195*		
							(0.00110)		
R&Dcapex03								0.000179	
								(0.000799)	
size	0.0109	0.0136	0.0191	-0.00241	-0.00130	0.0129	0.0133	0.000306	-0.000890
	(0.0140)	(0.0141)	(0.0128)	(0.0137)	(0.0131)	(0.0139)	(0.0147)	(0.0135)	(0.0124)
profit	-7.34e-06	-8.89e-06	-1.22e-05	1.40e-08	-8.86e-07	-8.38e-06	-8.18e-06	-1.35e-06	-7.74e-07
	(2.02e-05)	(2.01e-05)	(1.90e-05)	(2.04e-05)	(2.04e-05)	(2.01e-05)	(2.03e-05)	(2.03e-05)	(2.01e-05)
Constant	-0.406***	-0.437***	-0.506***	-0.266*	-0.272**	-0.429***	-0.437***	-0.292**	-0.279**
	(0.147)	(0.148)	(0.135)	(0.139)	(0.135)	(0.146)	(0.156)	(0.141)	(0.129)
Observations	102	102	102	102	101	102	102	102	102
R-squared	0.362	0.369	0.427	0.342	0.342	0.370	0.363	0.342	0.342

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.15: Regression results very large-sized firms in Chemicals (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.306***	0.319***	0.303***	0.302***	0.299***	0.299***	0.298***	0.305***	0.304***
	(0.107)	(0.108)	(0.106)	(0.106)	(0.105)	(0.105)	(0.106)	(0.105)	(0.104)
growth03/04	0.203**	0.201**	0.204**	0.205**	0.209**	0.212**	0.213**	0.213**	0.204**
	(0.0850)	(0.0849)	(0.0849)	(0.0852)	(0.0853)	(0.0856)	(0.0857)	(0.0852)	(0.0843)
R&Dexp	0.000630								
	(0.00715)								
R&Dexp05		0.00377							
		(0.00746)							
R&Dexp04			-0.000334						
			(0.00776)						
R&Dexp03				-0.000618					
				(0.00508)					
R&Dcapex					-0.00170				
					(0.00324)				
R&Dcapex05						-0.000136			
						(0.00725)			
R&Dcapex04							0.000579		
							(0.00674)		
R&Dcapex03								0.00659	
								(0.00821)	
size	-0.0118	-0.00793	-0.0128	-0.0132	-0.0172	-0.0134	-0.0136	-0.0157	-0.0125
	(0.0180)	(0.0184)	(0.0179)	(0.0173)	(0.0184)	(0.0165)	(0.0162)	(0.0163)	(0.0160)
profit	1.26e-05	1.09e-05	1.30e-05	1.29e-05	1.50e-05	8.33e-06	7.74e-06	6.35e-06	1.28e-05
	(7.64e-05)	(7.63e-05)	(7.65e-05)	(7.64e-05)	(7.63e-05)	(7.68e-05)	(7.69e-05)	(7.64e-05)	(7.59e-05)
Constant	-0.355	-0.407	-0.341	-0.335	-0.301	-0.338	-0.338	-0.347	-0.345
	(0.259)	(0.265)	(0.259)	(0.248)	(0.249)	(0.236)	(0.235)	(0.235)	(0.233)
Observations	79	79	79	79	79	79	79	79	79
R-squared	0.313	0.315	0.313	0.313	0.315	0.318	0.318	0.324	0.313

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.16: Regression results very large-sized firms in Metal (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.362***	0.340***	0.336***	0.364***	0.364***	0.358***	0.357***	0.374***	0.373***
	(0.0475)	(0.0488)	(0.0500)	(0.0468)	(0.0488)	(0.0492)	(0.0487)	(0.0469)	(0.0468)
growth03/04	-0.0210	-0.0166	-0.0150	-0.0256	-0.0229	-0.0206	-0.0199	-0.0249	-0.0248
	(0.0182)	(0.0182)	(0.0185)	(0.0179)	(0.0183)	(0.0185)	(0.0185)	(0.0180)	(0.0180)
R&Dexp	0.000246								
	(0.000189)								
R&Dexp05		0.000444**							
		(0.000209)							
R&Dexp04			0.000220**						
			(0.000110)						
R&Dexp03				0.000283*					
				(0.000163)					
R&Dcapex					1.63e-06				
					(2.51e-06)				
R&Dcapex05						0.000503			
						(0.000521)			
R&Dcapex04							0.000672		
							(0.000569)		
R&Dcapex03								0.000261	
								(0.000325)	
size	0.0191*	0.0209**	0.0191**	0.0204**	0.0160*	0.0166*	0.0178*	0.0171*	0.0154
	(0.00996)	(0.00980)	(0.00964)	(0.00991)	(0.00959)	(0.00963)	(0.00975)	(0.00980)	(0.00955)
profit	3.13e-07	-1.34e-06	8.26e-07	-1.36e-06	3.72e-06	3.78e-06	2.52e-06	2.71e-06	4.72e-06
	(3.49e-05)	(3.46e-05)	(3.46e-05)	(3.48e-05)	(3.48e-05)	(3.48e-05)	(3.48e-05)	(3.50e-05)	(3.48e-05)
Constant	-0.436***	-0.434***	-0.414***	-0.444***	-0.408***	-0.414***	-0.423***	-0.429***	-0.413***
	(0.101)	(0.0993)	(0.0989)	(0.101)	(0.1000)	(0.0998)	(0.100)	(0.102)	(0.0998)
Observations	172	172	172	172	172	172	172	172	172
R-squared	0.294	0.306	0.304	0.300	0.290	0.291	0.293	0.290	0.287

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.17: Regression results very large-sized firms in Electrical and optical equipment (including past growth)

VARIABLES	(I) Log2006_2005	(II) Log2006_2005	(III) Log2006_2005	(IV) Log2006_2005	(V) Log2006_2005	(VI) Log2006_2005	(VII) Log2006_2005	(VIII) Log2006_2005	(IX) Log2006_2005
growth04/05	0.295***	0.305***	0.274***	0.298***	0.312***	0.111**	0.145**	0.160**	0.197***
	(0.0722)	(0.0697)	(0.0757)	(0.0727)	(0.0696)	(0.0448)	(0.0700)	(0.0757)	(0.0609)
growth03/04	-0.00748	-0.00804	-0.00729	-0.00672	-0.00749	-0.00518	-0.00879	-0.00660	-0.00651
	(0.0214)	(0.0210)	(0.0218)	(0.0214)	(0.0210)	(0.0158)	(0.0216)	(0.0218)	(0.0222)
R&Dexp	-0.00138**								
	(0.000589)								
R&Dexp05		-0.00219***							
		(0.000793)							
R&Dexp04			-0.000495*						
			(0.000296)						
R&Dexp03				-0.000237**					
				(0.000100)					
R&Dcapex					-1.32e-05***				
					(4.44e-06)				
R&Dcapex05						0.0175***			
						(0.00238)			
R&Dcapex04							0.00572		
							(0.00434)		
R&Dcapex03								0.00156	
								(0.00210)	
size	-0.0543***	-0.0539***	-0.0537***	-0.0544***	-0.0548***	-0.0115	-0.0420***	-0.0418**	-0.0470***
	(0.0155)	(0.0151)	(0.0160)	(0.0155)	(0.0152)	(0.0121)	(0.0156)	(0.0163)	(0.0157)
profit	5.76e-05*	5.77e-05*	5.60e-05*	5.76e-05*	5.84e-05*	-4.11e-05	2.72e-05	3.14e-05	4.50e-05
	(3.26e-05)	(3.20e-05)	(3.35e-05)	(3.26e-05)	(3.20e-05)	(2.62e-05)	(3.39e-05)	(3.49e-05)	(3.33e-05)
Constant	0.256	0.246	0.270	0.248	0.235	0.00546	0.293*	0.292*	0.295*
	(0.166)	(0.163)	(0.169)	(0.166)	(0.163)	(0.128)	(0.167)	(0.169)	(0.171)
Observations	66	66	66	66	66	66	66	66	66
R-squared	0.403	0.423	0.378	0.405	0.434	0.667	0.377	0.365	0.349

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.18: Regression results very large-sized firms in Transport equipment (including past growth)

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