Determinants of rapidly growing firms in East Germany:

An empirical investigation

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Abstract

The present paper deals with the question what driving forces of rapidly growing businesses there are. It is focussed on quality and competitiveness in a post-socialistic region; East Germany. The former GDR lacks behind West German regions in terms of economic capability. It is shown that East German specifics related to the transition process affect firm growth. To detect whether fast growing start-ups are a challenge for incumbents the impact of quality and competitiveness is measured. Hereby ambivalent results emerge.

JEL Classifications: L26; M13; O1; O18; P25

Keywords: Entrepreneurship; Firm Growth; Fast-growing firms; Regional Development; East Germany

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1 Introduction

The aim of this paper is to shed light on the driving forces of rapidly growing start-ups within the context of East Germany after reunification in 1990. In general, new business formation is conducive for regional development (see e.g. Fritsch, 2008; Audretsch, 2007; Acs, 2008) whereby, newly founded businesses have direct employment effects as well as indirect supply-side effects. These indirect effects are, for instance, increased efficiency, amplified innovation, accelerated structural change, and creative destruction in the sense of Schumpeter (Fritsch, 2008).

Many studies suggest that most new jobs are generated by just a small group of start-ups (for an overview, see Storey, 1994; Schreyer, 2000). If one assumes that high growth in terms of employment is associated with outstanding performance and that there is a given market size, than these small group of rapidly growing start-ups are a challenge to incumbent firms by taking over market shares. Thus, high growth ventures seem to initiate direct employment *and* indirect supply-side effects. A further assumption is that a new venture has to reflect quality and competitiveness in its characteristics to be a challenge to incumbent firms.

Until now there is no theory with which to explain rapid firm growth (Acs and Mueller, 2008). However, in the literature, it is generally agreed that the determinants of firm growth can be divided into three types: external factors, internal factors, and strategy (Storey, 1994). The focus of the present paper is on internal and strategic factors, which can be associated with quality and competitiveness. The context of the analysis is East Germany, the former German Democratic Republic (GDR).

Even 15 years after reunification, the East of Germany lacks behind the West in terms of economic capability and convergence (Kronthaler, 2005; Hall and Ludwig, 2006). In fact the East is considered to be so underdeveloped that it has been compared to the *mezzogiorno* (see, e.g., Hall and Ludwig 1993; Hugh Hallet and Ma, 1993; Boltho et al. 1996), the peripheral underdeveloped economy in the southern region of Italy, which is a symbol for persisting regional divergence. The transition process from a

centrally planned to a market economy and the peculiarity of being integrated into an established market economy at the same time has lead to firm growth affecting “East German specifics”, as it is termed in the present paper.

This study is carried out using the IAB Establishment Panel and the Employment History Panel provided by the Institute for Employment Research (IAB) and the German Federal Employment Agency (BA), both of which support detailed analyses at firm level.

The structure of the paper is as follows: First, the implications of measuring fast growth are highlighted, followed by a description of the dataset and a discussion of the research design. The subsequent sections cover a brief overview of the theoretical background and the econometric approach used in the study. Finally the results are presented, followed by conclusions and policy implications.

2 Measuring fast growth

Fast firm growth is measured in the present study by the employment change within firms. The analysis is restricted to employees, which are liable to social insurance, and to *original* firm foundations. Growth rates are calculated by taking the amount of employees in the year of the start-up formation and five years on. Next to employment, market shares, physical output as well as profits and sales are commonly used (Delmar et al., 2003). Maybe such indicators are better suited to evaluate performance, but such are often hardly available on a large scale. Employment growth could be induced rather by wage subsidies schemes than economic performance. Maybe high shares of employees not reliable to social insurance or flexible systems of outside resource using cause the success of a venture. Delmar et al. (2003) mention that there are many different types of growth firms with different patterns of growth.

Absolute growth favours bigger firms, while relative growth benefits smaller firms in terms of being classified as fast-growing (Almus, 2002). Bigger firms can more easily employ five workers, while the occupation of five more employees in a small firm has a higher effect on the relative growth

rate of the venture. Evans (1987a, b) used the following expression to measure relative firm growth:

$$(1) \quad Growth = \frac{\ln(B_n) - \ln(B_0)}{n}$$

Here, n stands for the time period analyzed. B_n is the level of employment in that period and B_0 the start-up employment. The logarithmized values reflect the common log-normal distribution of firm sizes (Schmalensee, 1989). An alternative calculation method is the Birch index (Birch, 1987):

$$(2) \quad Birch - Index = (B_n - B_0)\frac{B_n}{B_0}$$

This index weights the absolute component higher than in expression (1). Often firms are counted as fast growing if their growth rates reach the highest percentile of the distribution of the growth rates in a special sample (Henrekson and Johansson, 2008). Overall low growth rates lead to identification of rapidly growing ventures even if they created nearly no jobs. Brüderl and Preisendörfer (2000) classify start-ups as rapidly growing, when they double the amount of employment within five years and enhance it at least about five employees to avoid the mentioned problem of the usage of percentiles. An alternative would be to relate the growth rates to established firms in a respective industry or region. New businesses than should be stated as fast growing if they perform better than the industrial or regional average.

Further on, firm characteristics are maybe rather a consequence than a cause of high growth rates (Storey, 1994). One may suggest the investigation of characteristics immediately around the time of start-up. But changes at the very beginning of the venture could have been brought the business on its long-term growth path. So there would be a biasing effect as well.

3 Data and research design

The databases used in this study are the IAB Establishment Panel (IABE) and the Establishment History Panel (EHP). The IABE collects data about general firm characteristics, employment structures, productivity, investment, business policy, education and further education, wage policy, industrial relations, and public support. The IABE has been conducted since 1993 for West Germany and 1996 for East Germany, with the number of participating establishments increasing over time. The 2006 cross-section includes 9,856 West German and 5,593 East German establishments. The sample is stratified by 17 industries and 10 firm-size ranges and is extracted from the Establishment File of the German Social Insurance Statistics, which covers every German establishment having at least one employee subject to social insurance obligations (Fischer et al., 2008).

To identify start-up dates, data from the EHP are used. This data source contains all establishments that employ or employed at least one person subject to social insurance on June 30 of a given year. Data are available for every year since 1975 (Spengler, 2007).

The year of start-up is taken from answers to that question asked in the IABE interview. If the year given in response to the questions is the same as the one in which the venture appeared for the first time in the EHP, the amount of employment in the alleged start-up year is taken from the EHP plus one. When the answer given to the IABE question is a year before the first EHP appearance, the amount of employees subject to social insurance is set to one for the start-up year.[1] If the start-up employment exceeds 30 employees, the observations are excluded. Bigger start-ups are in general no original ones (Fritsch and Brixy, 2004). At the time this research was conducted, IABE data on the exogenous variables were available for the years 1996 to 2005. Thus, start-ups of the years 1991, being five years in the market in 1996, to 2000, being five years in the market in 2005, are investigated. The start-ups can be identified in the EHP and the IABE by the

[1] An amount of zero cannot be used with respect to the applied growth measures. Thus, one employee is added for every venture in the sample to avoid inconsistencies.

establishment number. [2] The identified observations from the cross-sections 1996 to 2005 are merged together. Growth is measured by the amount of employment five years after start-up.

Subsidiaries of large, already established firms have been removed from the sample because, obviously, they are not really start-ups. So, *only* original start-ups are included. Therefore this investigation was carried out on the firm and not on the establishment level. Further refinements regarding strategies, public involvement and industries were done.

Successful outsourcing strategies shrink employment levels. Because a smaller number of employees in this case is not actually indicative of firm performance, firms that engaged in organizational changes involving in- and outsourcing are removed from the sample. Public enterprises are excluded, because their motivation for being in business is usually far removed from the reasons served by private enterprise. The high ratio of self-employed persons in the farming and forestry sector implies a high probability of underestimating the level of start-up activity in this sector and for this reason it is also removed from the sample (Blanchflower, 2000). Due to the very low number of entities (in the database)[3] engaged in the energy, mining, and banking and insurance sectors, these industries are also removed from consideration. Another problem has to do with wage subsidies. There are schemes designed to directly support individuals. Individual wage subsidies are not related to the firm and disturb the estimations. Thus only firms that received wage subsidies at the firm level and firms that received no wage subsidies are considered.

Finally, 813 firms are left over. Altogether 81 firms are labelled as fast-growing using (1) or (2). The suggested method by Brüderl and Preisendörfer (2000), which makes some kind of value judgement regarding the amount of created jobs, is not useful in terms of econometric sufficiency in this study. Regardless, this method would classify 123 firms as fast-growing. This shows

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[2] Unfortunately, the appearance of a new establishment number does not necessarily indicate a new business formation (for details, see Fritsch and Brixy, 2004). Some adjustments are made in the present analysis to deal with the problem.

[3] Fischer et al. (2008) suggest that every unit of analysis in cross-sections should contain at least 20 entities. The excluded sectors do not fulfil that criterion.

that doubling the employment and create at least five new jobs seems to be not in all cases enough to be classified as fast-growing. Further it suggests that there are probably no “trundlers” (Storey, 1994: 117) in the fast growth groups formed by (1) and (2) (see also Table 1).

There are several studies on employment growth in general using micro data for Germany (for an overview, see Bellmann et al., 2003). Brüderl and Preisendörfer (2000), as well as Almus (2002), investigated fast growth especially. Almus analyzed East and West German start-ups jointly; Brüderl and Preisendörfer restricted their analysis to the metropolitan area of Munich. Studies on general employment growth using data from the IABE have been conducted by Brixy and Kohaut (1999), Bellmann et al. (2003), and Heckmann and Schnabel (2006).

4 Theoretical framework

Theories regarding the growth of newly founded firms and firm growth in general are surveyed by several authors (see, e.g., You, 1995; Coad, 2007). The different approaches are summarized by Hart (2000). He points out the neoclassical approach, models dealing with the role of scale economies and the minimum efficient size, models of imperfect competition, evolutionary approaches and life-cycle models. However, a detailed description is beyond the scope of this paper. Rather, the following pages are dedicated to the theoretical and empirical considerations of alleged growth determinants. The focus is as already mentioned on characteristics reflecting quality and competitiveness in the specific context of East Germany.

4.1 Quality and Competitiveness

The qualification of the workforce serves as an indicator for the quality of the start-up as a whole. Thus the percentage of skilled workers (*Facharbeiter*) is taken as a measure for quality. Bellmann et al. (2003) notice positive effects of this variable on growth rates. It is expected, that the level of qualification coincides with a higher productivity of the employees and affects the probability to grow fast positively.

Hypothesis 1: *The higher the ratio of skilled workers, the larger is the probability of being a rapidly growing firm.*

The quality and competitiveness of a venture is reflected by its "technological status" and the level of investments. If the technology standard matches the state-of-the-art it seems to be more likely that a venture is a challenge to incumbents. The same should hold for doing investment, if one assumes that this is carried out to reach the technological frontier. But investment and a high technological status can involve a more capital intensive production. However, high technology and investment normally reflect a successful strategy and expansion. This is confirmed by studies with IABE data. Start-ups using high technology attain higher growth rates (Bellmann et al., 2003; Brixy and Kohaut, 1999). One major obstacle in interpreting the technological status is that the information of the state of technology relies on a self-assessment, which could be biased. Bellmann et al. (2003) show, that investments in transportation systems and production goods favour a positive effect on employment.

It is hypothesized in the present paper that high tech and investment as indicators of expansion and a successful strategy dominate possible negative effects.

Hypothesis 2: *Firms that use state-of-the-art technology are more likely rapidly growing.*

Hypothesis 3: *Firms doing investment are more likely rapidly growing.*

It is commonly believed that export-oriented firms have higher level of growth aspirations (Kolvereid and Bullvag, 1996; Wiklund and Shepherd, 2003). Such firms generally have a higher productivity and are more innovative and more efficient than non-exporting firms (Clerides et al., 1998; Kneller and Pisu, 2007). Moreover, exporting firms get access to new knowledge and technology (Yeoh, 2004). But outward orientation can also be coupled with the outsourcing of employment (Lessat and Woywode, 2001). Industrial differences according to the degree products can be traded should be kept in mind. But altogether, export oriented firms are expected to have better prospects for growth.

Hypothesis 4: *Export oriented start-ups are more likely rapidly growing.*

4.2 East German Specifics

The transformation process in the early 1990s after the reunification is important. A start-up around this time can be regarded as an early entrant. New ventures were confronted with a *window of opportunity*. In East Germany high level of unsatisfied demand potentials and low competition existed, especially in service oriented sectors. So, early founders had a first mover advantage (Almus, 2002). Further on, later start-ups suffered from a density delay and the worsening of macroeconomic conditions (Fritsch, 2004). The detection of a *window of opportunity* was possible by the investigation of employment dynamics of entry cohorts (Brixy and Grotz, 2004; Fritsch, 2004). Almus (2002) finds that newly founded businesses in the early 1990s had a higher probability to be fast-growing. Brixy and Kohaut (1999) detect a positive relationship between firm growth and starting up a business immediately after reunification. It is expected that the study at hand can show that foundations in the first year under investigation have a higher probability to grow fast.

Hypothesis 5: *Start-ups founded in 1991 have better prospects for fast growth than later start-ups.*

Immediately after German Reunification, the overall rate of self-employment in the former GDR was fairly low due to the modes of production and exchange inherent in a planned economy (Lechner and Pfeiffer, 1993). East Germans had no experiences with or skills in running a firm in a market economy (Fritsch, 2004). For example, the role model of parental success in self-employment simply did not exist for East Germans, nor could they fall back on any family tradition of entrepreneurship (Utsch et al., 1999). Complicating and worsening this lack of familiarity with entrepreneurship, was a certain rather negative mental attitude towards entrepreneurship due to anti-capitalist indoctrination and socialist idealism in the GDR (Lechner and Pfeiffer, 1993; Utsch et al., 1999).

Therefore, it is expected that West Germans are better equipped than East Germans to manage and handle growth processes. This means that those East German firms that have some involvement by Westerners will have the best chance of to achieving high growth rates.

Hypothesis 6: *East German young and small firms in which West Germans are involved to a considerable degree have better prospects for fast growth.*

An interesting specific regional feature is whether a business was set up in a district (*Kreis*), which has at least one borderline with a West German region. East German businesses in such areas are maybe able to serve parts of the neighbouring West German local markets and skim demand potentials because of lower costs in production (Brixy and Kohaut, 1999). It is expected that ventures near West Germany gain from their location.

Hypothesis 7: *Start-ups in districts next to West German states are more likely rapidly growing.*

The incentive to reduce employment plays an important role in the discussion on the *labor-saving trap* (Snower and Merkl, 2006). According to the main argument of the debate of the massive subsidizing of labour saving production modes, it was profitable to reduce employment. Translated into prospects for fast growth, firms receiving investment and capital subsidies should be less likely to grow fast in terms of employment.

Hypothesis 8: *Investment and capital subsidies do not affect fast growth in terms of employment.*

It is also shed light on the role of negotiated wages. Especially small firms try to overcome scale disadvantages by paying less money (Audretsch, 2001). Brixy et al. (2007) show that newly founded businesses in fact pay lower wages. Therefore wage agreements can be a problem for small firms. The lower level of productivity in East Germany (Bellmann and Brussig, 1998) together with wage shocks in the early 1990s depicted a problem for East German firms (Sinn, 2002). However, the impact of negotiated wages decreases permanently (Kohaut and Schnabel, 2003). So the influence should not be overstated. This seems plausible, because 75% of the firms analyzes are not constrained by wage agreements.

Hypothesis 9: *Wage agreements do not constrain fast growth.*

5 Regression model

For the regression analysis a Probit model is applied, whereas 1 indicates that a firm is fast growing and 0 represents all other firms. The LOWESS method by Cleveland (1979) is used to test if the Probit model is a good approximation of the underlying relationship between the endogenous variable and the exogenous ones. For both estimation methods (1) and (2) acceptable courses of the functional form between the probabilities of fast-growth and the exogenous variables occur (see figure 1). Robust estimators, which do not require the normal distribution of the standard errors, are used (Huber 1967; White, 1980).

Analyzing newly founded businesses by using data from the IABE implies a sample selection bias. This is caused by the general high failure rates of start-ups ("survivor bias") and the under representation of very small firms due to the fact that only firms with at least one employee reliable to social insurance are in the Panel (Bellmann et al., 2003). The survivor bias can be handled with the IABE data using a two step approach, which accords to the Heckman correction (Heckman, 1979), and is described by Pfeiffer and Reize (2000).

Thereby, only two time periods are taken into consideration. Some observations are represented in both periods; others appear only in one period. First, the probability that an observation is included in both periods is measured by using the data for the first period. The resulting *mills ratio* then must be regressed in the model for the growth estimation using data for the second period. When the mills ratio is insignificant, there are no differences regarding the probability of fast growth between firms for which information on growth is available and firms for which such information is not available. However, implementing this procedure in the present study is difficult because not only the start-up employment and the five-year-later employment is needed, but also the employment from a reference point and, unfortunately, only a small fraction of the observations in the sample have such data available. Indeed, the fraction is too small to allow any useful regression analysis and thus, when interpreting the empirical results, one has

to keep in mind the survivor bias. The results are highlighted in the next section.

6 Results

6.1 Descriptives

This section contains some descriptive statistics regarding the variables that measure quality and competitiveness as well as the factors reflecting East German specifics. The results are summarized in Table 3 and 4.

20.9% of the firms in the West German sample regard their state of technology as “very new”. The percentage of firms that made investments is about 54.8%. Only 7.1% of the East German firms export more than 5% of their turnovers to foreign countries. On average, 56.1% of the employees within the firms of the sample are skilled workers.

The relative majority (23.6%) of the start-ups entered the market in 1991. This reflects the *window of opportunity*. Most of the firms in the sample are majority owned by East Germans. Only 10.6% of East German firms are majority owned by West Germans and only 0.7% are majority owned by foreigners. Firms in which neither East nor West Germans nor foreigners hold a majority comprise 3.8% of the sample. Only 24.7% of the firms have to consider wage agreements. 15.5% of the firms are located in a district next to a West German region. Altogether, 33.1% of the East German firms received investment and capital subsidies.

Table 5 provides the descriptive statistics for general external and internal control variables. The multivariate results are reported in the following section (see also, Table 1, where marginal effects are reported).

6.2 Multivariate Results

General external and internal factors

Start-up size is significant at the 5% level in (1) and (2). The smaller the firm, the higher the probability it will be a fast growing business. However, small firms are generally subject to greater pressure to reach a minimum efficient size to stay in the market (Audretsch and Santarelli, 2007) and thus, the

relationship between start-up size and growth should be negative, a relationship confirmed by several studies (Santarelli et al., 2006).

To capture general regional effects, the impact of population density in the region where the firm is located was controlled for.[4] Population density did prove to have neither in (1) nor (2) any effect.

Industry dummies were also included. Differences are expected with respect to different minimum efficient sizes across industries. Dummies were constructed for (a) raw material providers, (b) investment goods, (c) consumption goods, (d) construction, (e) transportation, (f) business services, (g) consumer services, and (h) retailing (the reference group). In the sample hardly any industry-specific effects appear for (1) and (2). Additionally, the role of expected turnovers was investigated because these can reflect a special market situation or the situation of an industry as a whole. The expectation of growing turnovers significantly increases the probability of fast growth for (1) and (2).

Legal form of the firm was also controlled for, with a focus on limited liability firms. Firms with limited liability are more likely to take high risks, which results in high growth rates (Stiglitz and Weiss, 1981). Limited liability firms have higher growth prospects in both estimations.

Finally, the effect of multiple proprietors was investigated. It is possible that the pooling of different kinds of human capital could have a positive impact on growth. However, no team effect could be discovered in (1) and (2). Wage subsidies have a strong positive effect on the probability of rapid growth in both estimations.

East German specifics

For the East German specifics, the results are mixed. As it was expected a business foundation between 1992 and 2000 has lower prospects on fast growth compared to a start-up in 1991. This effect is only significant for the cohorts 1996 and 1997 for (1) and (2). For a foundation in 1995 the effect is also significant using (2). These results confirm that the *window of*

[4] It is measured according to the German Federal Office for Building and Regional Planning (BBR), which divides regions into agglomerations, urbanized areas, and rural areas.

opportunity matters. So, the conditions to grow fast worsened in the mid 1990s.

Firms, which are by the majority owned by West German or foreign owners have also a higher probability to grow fast according to (1) and (2). West German and foreign owners seem to possess more managerial and entrepreneurial skills to handle expansion.

However, the location in areas near West Germany turns out to be significant for (2). So the skimming of West German demand potentials seems to be at least partially playing a role. No effect can be obtained by investment and capital subsidies. But these programmes are also not negatively related to employment growth. Wage agreements have no impact on growth in (1) and (2).

Quality and Strategy

The qualification of the workforce has a positive effect when estimating (1). No effect could be found by using (2). Thus, fast growth does not necessarily depend on qualification. Instead the level of investment has a strong significant positive effect on growing rapidly. Because the level of technology is insignificant, it appears that the enhancement of production capacities favours employment growth, while a high state of technology does not systematically. For (1) there is evidence that export orientation is positively related to fast growth. The engaging in markets abroad at least partially induces employment growth.

7 Concluding Remarks

This paper investigates fast growth of young firms in East Germany, with a particular focus on quality and competitiveness, the former socialist GDR. The analysis is carried out for East German start-ups between 1991 and 2000.

Regarding East German specifics, there can be perceived a *window of opportunity*. Firms started up in the early 1990s are more likely to grow fast due to favouring macroeconomic conditions. Wage agreements seem to be no obstacle, due to the diminishing role they play. The massive subsidizing of

investment and capital has no impact on employment growth. An interesting effect is the detection that businesses located near the border to West German *Länder* have better growth prospects.

However, the *window of opportunity* is closed and transfer businesses next to West German *Länder* as policy advice makes no sense. The probability to be a fast growing firm is higher if the majority owners are not from that region. If we ascribe this to lower levels of managerial and entrepreneurial skills because of the socialisation of business owners in a region deep marked by its socialist past, then training in the required skills could raise the ability to expand and handle fast growth. So, enabling policies may be useful.

The promotion of fast growth should not be pursued under all circumstances. The link between rapid growth and quality as well as competitiveness has to be considered. A high qualification of the workforce reflects quality and a challenge to incumbents. Education and further education could improve that. Indeed, as the results suggest, it is not entirely clear whether a high qualification is a feature of fast growing firms or not. As indicated by the empirical results export orientation might be a strategy to generate high growth rates. Consulting in expand abroad local markets and a well functioning market for venture capital to finance the expansion are recommended. The latter is also important because investments turn out to be an important characteristic of a rapidly growing firm. However, policy should set up programs that guarantee an efficient market selection. This applies particularly for investment and capital subsidies.

Altogether, the results regarding export orientation, technological status, qualification of workforce and investments are mixed. One may conclude that fast growing start-ups do not contribute to indirect supply-side effects to a considerable degree as one may hope. However, this conclusion is highly speculative and not that bleak as it seems, because more detailed data are necessary and other factors than employment growth should be evaluated as well. A lot of research has to be done to assess the contribution of fast growing firms to regional development.

Appendix

Table 1: Regression results reporting marginal effects

Number of obs = 813

Wald chi2(31) = 145.70	Wald chi2(32) = 138.25
Prob > chi2 = 0.0000	Prob > chi2 = 0.0000
Pseudo R2 = 0.2725	Pseudo R2 = 0.2862

Log pseudolikelihood (1) = -191.8035
Log pseudolikelihood (2) = -186.60681

	(1)		(2)	
	dF/dx	z	dF/dx	z
General external and internal factors				
Start-up-size^2	-.0158886	**-5.09****	-.0051929	**-1.99***
Urbanisation (agglomeration)				
urbanized area	.016956	**1.10**	.001977	**0.14**
rural area	-.010538	**-0.58**	-.0071091	**-0.43**
Industry Dummies (Retailing)				
Manufacturing				
Raw material	.1208966	**2.65****	.0916975	**2.43***
Investment	.0019885	**0.08**	-.0087749	**-0.44**
Consumption	.0283817	**0.65**	.0111781	**0.30**
Construction	.0174428	**0.66**	-.0062167	**-0.29**
Transport	.0163796	**0.42**	-.0009057	**-0.02**
Service				
Business	.0087991	**0.32**	-.00388	**-0.16**
Consumer	-.02006	**-0.87**	-.0094396	**-0.42**
Expected Turnover	.0477254	**2.90****	.0504378	**3.23****
Limited liability	.0507479	**3.24****	.0805183	**4.61****
Multi. Proprietors	.0065278	**0.44**	.0043164	**0.31**
Wage Subsidy	.062531	**3.85****	.0566779	**3.72****
East German Specifics				
Year of foundation (1991)				
1992	-.0121266	**-0.58**	.001741	**0.08**
1993	-.0168725	**-0.83**	-.0076879	**-0.39**
1994	-.0159061	**-0.76**	-.0237556	**-1.27**
1995	-.0270621	**-1.40**	-.0354541	**-2.13***
1996	-.0508677	**-3.35****	-.0426883	**-3.04****
1997	-.0396625	**-2.10***	-.0365352	**-2.45***
1998	-.0081647	**-0.31**	.0036701	**0.14**
1999	-.0138583	**-0.51**	-.0215602	**-1.04**
2000	-.0373772	**-1.93**	-.0312723	**-1.69**
Majority Ownership (East)				
West/Foreign	.047929	**2.14***	.0401688	**2.09***
No majority	.0737334	**1.71**	.0424541	**1.11**
Border district	.0446854	**1.93**	.0567391	**2.52***

Investment Subsidy	.0113859	**0.75**	.0203057	**1.50**
Wage agreement	.0055374	**0.56**	-.0002052	**-0.02**
Quality and Competitiveness				
Qualified Workers	.0711707	**2.77****	.0407806	**1.66**
High tech. status	.0052569	**0.35**	-.0019754	**-0.16**
Investment (yes=1)	.0373043	**2.43***	.0434736	**2.88****
Export Orientation	.0707587	**2.29***	.0374506	**1.53**
_cons		**-5.39****		**-5.97****

dF/dx: is for discrete change of dummy variable from 0 to 1
*: significant at 95% level
**: significant at 99% level
(): reference group

Table 2: Cross Table for fast growth classifications

fast-growing businesses by classification			
	(1)	(2)	(3)
(1)	81	67	61
(2)	67	81	74
(3)	61	74	123
59			

Table 3: Descriptive statistics for the "East German Specifics"

Year of Foundation		**Investment Subsidies**	
1991	23,86%	yes	33,10%
1992	10,46%	**Border District**	
1993	8,61%	yes	15,50%
1994	9,35%	**Ownership Structure**	
1995	12,05%	East German	84,87%
1996	11,56%	West German	10,58%
1997	8,12%	Foreign	0,74%
1998	4,06%	No Majoriy	3,81%
1999	5,78%	**Wage Agreement**	
2000	6,27%	yes	24,72%

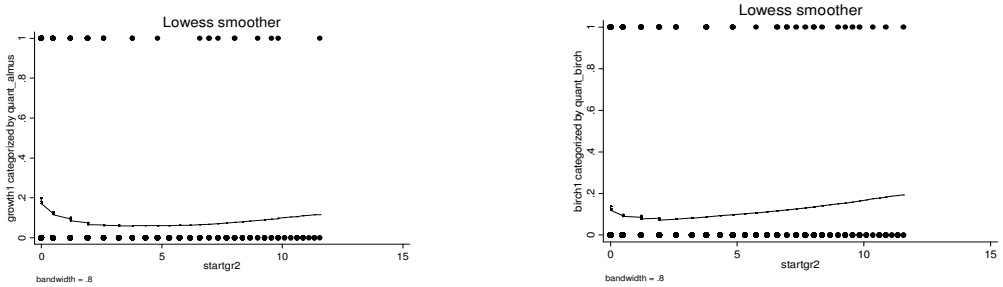
Table 4: Descriptive Statistics for quality and competitiveness

State of Technology	
very new	20,91%
Investment	
No	45,20%
Qualified Workers	
Average	56,20%
Export Orientation	
Turnover abroad >5%	7,13%

Table 5: Descriptive statistics for control variables

Industry		**Number of Proprietors**	
Manufacturing	27,55%	>1	22,02%
Raw material	5,78%	**Limited Liability**	
Investment good	17,47%	yes	41,57%
consumption good	4,31%	**Wage Subsidies**	
Construction	20,79%	yes	42,20%
Reatiling	14,39%	**Expected Turnover**	
Transportation	3,32%	increasing	24,48%
Business Services	12,92%	**Urbanisation**	
Consumer Services	21,03%	Agglomeration	21,65%
		urbanized area	31,86%
		rural area	46,86%

Figure 1: LOWESS for (1) (left) and for (2) (right)



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