

Wyrwich, Michael; Krause, Ina

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Coping with the market: Are there cohort effects for organisations in transition?*

*Michael Wyrwich, Ina Krause***

This paper investigates the employment growth of small and medium-sized firms that survived the transformation process of the German Democratic Republic (GDR). We find that firms founded in the later period of the GDR's existence have especially low growth prospects, even 10 years after German reunification. The later phase of the GDR was marked by tightening measures intended to enhance political influence on the planned economy, accompanied by a sharp economic decline. Thus, organizations were more deeply embedded in planning structures that were more rigorous than those present in the first years of the GDR's existence. We argue that these organizations therefore developed less appropriate practices for coping with a market economy than organizations founded in other periods.

Im vorliegenden Aufsatz untersuchen wir die langfristigen Auswirkungen des Transformationsprozesses auf die betriebliche Beschäftigungsentwicklung in klein- und mittelständischen Betrieben in Ostdeutschland. Dabei ist festzustellen, dass einige DDR-Altbetriebe auch über zehn Jahre nach der Wiedervereinigung relativ ungünstige Wachstumsaussichten haben. Die Spätphase der DDR zeichnete sich insbesondere durch die zentrale Lenkung aller wirtschaftlichen Aktivitäten im Sinne einer sozialistischen Planwirtschaft aus. Entsprechend haben DDR-Altbetriebe, die in der Spätphase der DDR gegründet wurden und somit strukturell eher an die Kontextbedingungen der planwirtschaftlich organisierten DDR-Ökonomie angepasst waren, besondere Schwierigkeiten betrieblichen Handlungsrouninen zu entwickeln, die unter marktwirtschaftlichen Bedingungen ein effizientes und wachstumsförderndes Wirtschaften ermöglichen.

Keywords: Transition; East Germany; organizational learning; employment growth

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** Ina Krause, Dipl. Soz., Collaborative Research Center, German Data Service Center for Business and Organizational Data, University of Bielefeld, Germany. Main research interests: Organization studies, labour market and transition. Corresponding address: ina.krause@uni-bielefeld.de.

Michael Wyrwich, Research Fellow, Collaborative Research Center, University of Jena, Germany. Main research interests: Entrepreneurship and transition. Corresponding address: Michael.wyrwich@uni-jena.de.

Introduction

The German Democratic Republic (GDR), founded in 1949, along with its centrally planned economy (CPE), was dissolved in 1989-1990 in the course of German reunification. This event led to a huge “top-down transformation” of the stock of former state-owned enterprises (SOE) (Brezinski/Fritsch 1995).

This paper contributes to the discussion about organizational change in a transitional, and especially in the East German, context. Our main hypothesis is that economic organizations established at different points in time adjust their routines and organizational practices in different ways. This is explained by the existence of distinct periods during the time between 1949 and 1989, when the planned economy system in the GDR was enforced. Earlier in this time span, there had been trends of moderate liberalization, whereas the regulation of economic organizations became stricter in later periods. In particular, economic organizations—SOEs and private firms—established from the 1970s onward were more embedded in the system of central planning right from their beginnings. Thus, they developed routines and organizational practices in accordance with the enforced central planning and regulation. We argue that within an “institutional upheaval” (Newman 2000), the degree of an organization’s embeddedness in the institutional structures of a CPE negatively affects the adaptation of organizational structures to the requirements of a market economy.

The present study is structured as follows. First, we describe the historical situation of East German economic organizations in the former GDR by shedding light on organizational forms and modes of production in the GDR and on the implications of German reunification and transition for organizations. Then, we introduce arguments from different theoretical perspectives that deal with organizational change and derive hypotheses from these arguments. Thereafter, we describe the study’s empirical base and discuss measurement issues. Finally, we present our results, and draw conclusions.

The situation of economic organizations in the GDR

The GDR existed between 1949 and 1990 and developed towards a CPE. Officially, all productive assets belonged to the people, but the state was the main actor in making decisions about production and investment and attempted to direct innovation processes within the economy.

Blum and Dudley (2000) divide the GDR’s period of existence into different phases. The first period, the 1950s and 1960s, was marked by forced development toward a planned economy, autocratic rule, and settlement of reparation claims. However, historical analysis shows that there were periods of reflection about problems within the economic system, which implied temporarily more liberal decision-making processes (Keren 1973).

The 1970s and 1980s were especially characterized by forced centralization of the economic management system and a social policy focus, accompanied by an economic decline that could be postponed only by an unsustainable increase in foreign debt.

Organizational forms and modes of production

Production in the GDR normally took place in combines (Kombinate) set up in accordance with the goals of central planners. Combines consisted of a collection of production facilities having a high degree of vertical integration (Bannasch 1990). These combines were assigned to specific industry branches. Independent ties between organizations were forbidden or highly regulated. The centralization of organizational rights (Tragsdorf 2002) precluded the spontaneous evolution of organizational systems (Lange/Prugh 1998).

Planning the entire production process, from R&D to marketing, implied a lack of autonomy and entrepreneurial spirit. The high degree of vertical integration resulted in substantial dependency of single plants on each other within the combines. The combines were closed systems that primarily produced standard products and operated in quasi-monopolistic markets. They were neither diversified nor exposed to competition (Mehta 1989). Their technological progress lagged behind that of the Western world due to the GDR's isolation from international knowledge flows (Fritsch 2004). The plants within the combines had low productivity rates because they faced no budget constraints.

Since 1972 private economic activities had been allowed only in handicrafts, retailing, and gastronomy. The percentage of self-employed persons was approximately 2% of the entire workforce. Moreover, insecurity about the ruling party's future policy toward private enterprise had a negative impact on willingness to invest and innovate (Thomas 1996).

In short, most organizations were characterized by low productivity and lacked entrepreneurial spirit. The SOEs had been poorly diversified and were not exposed to competition or budget constraints. These firms focused not on demand, but on meeting the targets of central planners. Private firms had no incentive to invest in themselves and were heavily constrained by the government. These characteristics need to be kept in mind when thinking about the organizational changes SOEs and private GDR firms needed to make when transitioning toward a market economy. The following discussion of organizational change encompasses SOEs and private firms founded in the GDR.

Implications of reunification and transition for organizations

The GDR economy had to cope with several shocks in the course of reunification. Specifically, enterprises faced a shock in terms of competition, supply, wages, regulations, and brainpower (Brezinski/Fritsch 1995). Many of

the combines simply collapsed and released a large proportion of their workforces that could not be absorbed by new business formations (Fritsch 2004).

The GDR, former owner of the SOEs, no longer existed. Reallocation of ownership was coordinated by the Treuhandanstalt. This basically implied the reorientation of an enterprise toward new markets (Carlin/Mayer 1992). Often, the restructuring led to selling (parts of) the combines to West German companies that had the necessary managerial and technological capabilities, marketing expertise, and access to finance (Lange/Prugh 1998). However, Martens (2008) mentions that a great many small and medium-sized firms were sold to persons socialized in the former GDR.

The shock of transition experienced in the former GDR was different from that experienced by other Eastern European countries because no sectors were shielded from market forces. Firms had to immediately begin competing with their West German counterparts (Brezinski/Fritsch 1995).

According to the IAB Firm Panel, by 2000, employment within formerly state-owned GDR enterprises (founded between 1949 and 1989) had decreased by about 35.4% compared to 1990 levels, whereas private firms founded prior to 1989 experienced a loss in employment of about 12.9% (Bellmann et al. 2003).

Organizational change and performance

Organizational change in a transitional context

The characteristics and structure of an organization at the time of its founding have a formative influence on its further development. This is referred to as “organizational imprinting” (Stinchcombe 1965). Any organizational change that challenges or violates a well-established identity will have a profound impact on the organization (Hannan 2004). However, organizations must change their structures during an “institutional upheaval,” which can occur due to rapid changes in the norms and values that underlie economic activity. In such a new environment, organizations must adapt to survive (Newman 2000), but adaptation is complicated by the fact that past experience is no longer an appropriate guide for future action (Weick 1979).

Incumbent enterprises in post-socialist economies find it especially difficult to link new external information to prior experience, as their previous experience is now nearly useless in their new environment. The situation is made more difficult by low absorptive capacity; that is, there are no frameworks to help enterprise managers organize, interpret, and react to new information (Newman 2000). The internal structures and the developed routines of these enterprises were designed to fulfill the requirements of central planners, not for the purposes of competing in a market economy.

Rottenburg (1991), for instance, shows that the experience of a former GDR combine became irrelevant in the course of transition. However, Nilsson (1996) points out that it is not only market economic experience that is important; there are different stages of learning, throughout which it becomes clear that it is not “myths,” but one’s own practice that becomes the main impetus for change.

Organizational learning in the context of East German firms is described by Geppert and Merkens (1999) through structuralist, empirical, and constructivist phases. The structuralist phase fits the notion of institutional isomorphism (DiMaggio/Powell 1991); organizations were forced by West German regulation, the policy of the privatization agency, and the changed ownership structures to adapt their organizational structures to the established institutional characteristics of the West German market economy. In the empirical (second) phase, the players learned from their experiences. Learning in this phase was characterized by a mixture of imitation and experimentation. The final phase was marked by the creation of new social practices. However, Geppert and Merkens (1999) find that these “new” practices are actually a further development of already existing routines.¹

Geppert (2002) understands organizational learning to be “pervasive learning” whereby distinct institutional settings are continuously linked with previous dispositions. This process implies the emergence of new manifestations. Actors in the firms examined in the East German case studies socially constructed the opportunities and constraints they experienced in a process of organizational learning (Geppert 2003). Other studies find that East German firms were able to reactivate resources and capabilities learned or acquired under the socialist regime (Lohr 2003; Buss/Wittke 2006). In a sense, it may be that an important aspect of effective constructivist learning is that past skills be reactivated and elaborated.

The different phases of the GDR and implications for organizational change

We have several reasons for being convinced that the problems of adaptation are more pronounced for organizations (firms) founded in the later phase of the GDR. In its later years, the ruling socialist party made a profound policy shift toward stricter central planning structures and intensified the combine system (Collier 1990). Private firms existed from 1972 onwards after a massive wave of expropriation only in handicrafts, retailing, and gastronomy. Although the start up of firms in these sectors was allowed and indeed occurred, emphasis

¹ Dittrich/Schrader/Stojanov (2008, 143pp) also claim - based on empirical evidence for newly founded small firms in Bulgaria, the Czech Republic, and the Russian Federation - that post-socialist transformation can be considered as an interplay between an adaptation to inherited ways of action and new ‘rules of the game.’

was put on integrating them into the planning structure through strict regulations (Brezinski 1987). Around the same time, the policy of the New Economic System — designed in 1963 to provide more room for private initiative within socialist firms — was abolished (Keren 1973).

The increasing totalitarian nature of economic activity may have resulted in even lower identification of employees with the state-owned companies they worked in and may resulted in turning a “deaf ear to the unrealistic demands of the planning bureaucracy or the Party and the Trade Union apparatus” (Rottenburg 1994:78).

We expect that the ongoing loss of entrepreneurial spirit and the restrictive regulations provided little room for newly established, state-owned organizations and private firms to develop favourable routines, in terms of being able to adapt to the competitive environment of a market economy, and imprinted inappropriate internal structures on the new organizations. SOEs and private firms founded during the later phases of the GDR could not have internalized positive experiences from the economically more liberal periods of the GDR. Thus, they were unable to call upon these experiences in the organizational learning process after 1989. On the contrary, these new organizations were likely to have been more embedded than their earlier-formed counterparts in the system of socialist production modes.

This proposition relates to the work of Greenwood and Hinings (1996), who argue that the more deeply an organization is normatively embedded, the greater the likelihood that during radical change, change in the organization’s structure will be revolutionary, rather than evolutionary. This idea relates to that put forth by Powell and DiMaggio (1991), who posit that organizations that are tightly coupled to prevailing archetypal templates within a highly structured field will face a greater degree of instability in the face of external shocks.

Moreover, we argue that the organizations (firms) established during the later phases of the GDR—regardless of whether private or state-owned—were more embedded in the institutional framework of socialism and central planning from their beginnings and so had more difficulty adapting their routines and practices to the requirements of a market economy.

Thus, the constructivist learning phase may be disturbed because the activation and expansion of qualifications acquired in the later phase of the GDR are not an appropriate guide to the future, translating into lower growth performance of these firms after transition, whereas the qualifications of organizations founded in the early stage of the GDR are more helpful during the process of adaptation.

(H1) SOEs and private firms founded in the later phase of the GDR demonstrate lower economic performance than East German firms founded in other periods.

It could be argued that these problems would be much more severe for former SOEs, but as empirical evidence shows that more than half the GDR private firms left the markets in the early 1990s because they were not sufficiently competitive (Thomas 1996), the problems seem to be of a rather general nature.

Furthermore, the negative effect on firms founded in that later period may be more pronounced compared to businesses founded after 1989 because these newer firms could develop routines and practices appropriate to a market economy from their beginnings.

(H2) Firms founded in the later phase of the GDR demonstrate lower economic performance compared to East German firms founded after 1989.

Moreover, there may be an even more pronounced advantage for firms created during the early 1990s. The early 1990s were a “window of opportunity” in regard to new niches due to the nearly complete absence of a service sector in the GDR. Start-ups in the initial period of transition between 1990 and 1991 enjoyed a first-mover advantage (Almus 2002). Many market niches were available to be filled, and competition was low or even nonexistent. Newly founded businesses after 1991 faced a “density delay” compared to those established immediately around the time of reunification. Density delay is the term used to describe the disadvantages faced by later entrants due to increased competition in organizational niches (Carroll/Hannan 1989).

(H3) Firms founded in the later phase of the GDR demonstrate lower economic performance compared to East German firms founded immediately after 1989, whereby the effect is stronger than when comparing the late-GDR cohort to all post-unification start-ups.

Additionally, firms that were not as embedded in the old institutions of central planning may have less inappropriate organizational knowledge to unlearn and might have capabilities that better suit the new competitive conditions. This improves their absorptive capacity and their prospects for effective change during radical institutional change (Newman 2000). Such organizations may have internalized the norms and values of competition, at least to some extent (Kozminski 1993). Thus, we propose:

(H4) Firms founded in the later phase of the GDR demonstrate lower economic performance compared to East German firms founded in the early phase of the GDR.

Note that the phases we discuss are not completely distinct. For example, there are some times in the early phase of the GDR during which the policy toward private initiative was rather negative because, already in the 1950s, mechanisms of central planning had been introduced (Steiner 2004). However, we account for this by varying the time spans of the different phases of the GDR in the robustness checks of our empirical analysis.

Empirical strategy

Data

This paper is based on data from the second wave of the SFB 580-B2 Establishment Panel conducted in 2004. The focus of the panel dataset is on the employment structure of small and medium-sized establishments and consists of data collected in three waves (2002, 2004, and 2006) (Köhler et al. 2006). The dataset covers ten industries and five regions, comprising seven states (Länder). The sampling procedure was conducted with a quota sampling by the Institute for Employment Research on the basis of the Establishment File of the German Social Insurance, which contains all establishments that employ at least one employee who is obliged to make social insurance contributions. An establishment can be either a single plant within a larger company or a single independent firm (Brixy/Fritsch 2004).

This research is restricted to East German sample regions. The regions under consideration are Thuringia, Saxony, Saxony-Anhalt, and Mecklenburg-Western Pomerania. These regions were chosen due to their relative economic capabilities in East and West Germany. Thuringia and Saxony have relatively high economic capabilities compared to Saxony-Anhalt and Mecklenburg-Western Pomerania (Barjak 2001). The industries under consideration are publishing, chemicals, mechanical engineering, construction, retailing, banking and insurance, software, consulting, education, and health care.²

Many empirical studies suffer from a selectivity bias caused by not using random samples. A nonrandom sample may be created due to self-selection of observations and decisions by the investigator (Heckman 1979). There are two sources for such a bias with respect to the SFB 580-B2 Establishment Panel. First, there is a systematically inadequate coverage of very small establishments in the Establishment File of the German Social Insurance, which is used for the quota sampling because only establishments with at least one employee obligated to pay social insurance are included. Second, there is variation in participant willingness to provide information (Bellmann et al. 2003). This problem is treated within the framework of the SFB 580 B2 Establishment Panel by checking for adequate completion of the cells in the quota matrix by sample refreshments.

Measurement

Hereafter, the terms “firm” and/or “organization” are used instead of “establishment” and include independent and non-independent establishments. Our analysis includes information as to when a firm entered the market or was founded with its current production structure. We consider a change of industry

² The 10 industries are defined by the WZ93-classification.

affiliation as a new organizational imprint. We exclude firms with more than 1,000 employees from the dataset because we want to concentrate on smaller firms.

There are no firms in the dataset that were less than five years old in 2002. Very young ventures face specific difficulties to survival and this primary problem-laden phase normally lasts four to six years (Acs/Mueller 2008). This exclusion of very young firms mitigates the problem of “survivor bias” because exit should not be a severe problem when considering older firms. The period of investigation (2002–2004) was chosen to measure whether there is a long-term effect on the problem of adapting. We expect that firms have gone through various processes of organizational learning since 1989, as described, for instance, by Geppert (2002). Firms in our period of investigation had more than 10 years to learn to cope with their new environment. In other words, we think that organizations that did not learn to cope adequately within the first decade after reunification are rather obviously having great difficulty adjusting to a market economy. In total, 211 firms were used to test the hypotheses stated in the previous sections.

Performance is measured by the change in the number of employees obliged to pay social insurance contributions in the period from 2002 to 2004. We interpret employment growth as a performance indicator for the small and medium-size firms we focus on here. Strategic decision making in small firms, especially in human resource management (Barrett/Mayson 2008), is very different compared to that of their larger counterparts (Busenitz/Barney 1997).

We are aware of the shortcomings of using employment growth as an indicator of performance (for a discussion of indicators of firm performance, see Delmar 2003). For example, one successful business strategy can be to downsize the number of employees in an attempt to increase efficiency. Nevertheless, we believe that, on average, increased employment does indicate performance growth, especially for smaller firms.

We ran OLS regressions to measure employment growth rates, but the resulting models performed poorly compared to a probit analysis, where we employed dummy variables that take the value 1 when employment decreased between 2002 and 2004. We argue that not only positive employment growth, but also stagnating employment can be considered as a type of success, as the period investigated was marked by a pronounced economic downturn; indeed, the majority of the firms in our sample actually decreased employment rates during the period of investigation (see Table 2). Thus, non-shrinking can be seen as success, whereas positive growth can be seen as extraordinary success. Nevertheless, using the proposed employment decrease specification is not a trouble-free approach because small firms have fewer possibilities to reduce their employment rates if they wish to stay above the minimum efficient size to survive in the market. Thus, if there are systematic differences between firm

sizes of different cohorts, this could bias the results. However, the following analysis demonstrates that these concerns are not severe.

The independent variables we employed in our regression models to investigate the timing of founding on performance are dummy variables that indicate cohorts of different phases of the GDR. Although we think that organizations founded in later stages will have more problems adapting, we do not claim that there is a completely time-linear relationship over the entire GDR era. Instead, we employed different cohort markers in our empirical analysis. Our main distinction is the division between firms started between 1950 and 1969 and firms started between 1970 and 1989. We chose 1970 as the initial dividing line because we believe that there is no singular event marking a trend toward worsening economic conditions. Rather, several different events and processes jointly mark a changing “milieu,” such as the wave of expropriation of the last major private companies in 1972, the end of the “new economic policy” in 1971, and the 1979 decision to continue to concentrate on the production complexes. However, we did not always adhere strictly to this distinction, but varied the line of division in our analysis.

In the regression models, we also introduced variables for different age cohorts of organizations for the pre-GDR and the post-GDR periods. The pre-GDR cohort includes firms founded prior to 1950, and the post-unification cohort comprises firms created after 1989. In some of our models, we narrowed the post-unification period to investigate whether effects of the “window of opportunity” can be detected even more than 10 years after reunification. This early-transition cohort consists of start-ups founded in 1990 and 1991.

We used several control variables in our models. These include the logarithm of the amount of employment within the firm in 2002, a dummy variable indicating whether the firm is independent, and industry dummies for construction and services. We included region dummies, which indicate whether a firm is located in Saxony-Anhalt or Mecklenburg-Western Pomerania (SA/MW) to capture spatial effects. To check whether firms have distinct employment strategies, we looked at differences in the utilization of “atypical” labour, such as the use of subcontracted labour, freelance workers, or part-time employment (*geringfügige Beschäftigung*). To avoid level effects, we took into account only whether firms employ atypical labour, which is indicated by a dummy variable that takes the value 1 when a firm uses at least one form of atypical labour (subcontracted labour, freelance workers, or marginal part-time employment).

To test whether change of employment works as an indicator of economic performance, we included in our models two variables that reveal whether there had been an increasing or decreasing volume of labour during the period under consideration. The work volume variables, in combination, control for four different situations: having had only a decreasing (increasing) (1 and 2), neither

increasing nor decreasing (3), or decreasing and increasing volume of work (4) between 2002 and 2004. Nevertheless, the variation of work volume may imply a simultaneity bias. The inability of the GDR incumbents to compete due to inappropriate organizational structures might explain a decreasing volume of work, which in turn explains the low growth prospects in terms of employment. However, as will be discussed in the results section, simultaneity bias turns out not to be a concern 3.

Results

The main analysis

The first specification (see Table 2 (1)) of our regression model does not include cohort markers. The results reveal that firm size has a significant positive effect on the likelihood a firm will decrease its employment. This means larger firms are more likely to lay off employees. The variation of work volume also significantly affects employment growth. As expected, increasing volume has a highly significant positive effect, while decreasing volume has a highly significant negative effect (see Table 1). In this way, we can explain the growth pattern by the current economic development of the firm. As we argue that a growing volume of work indicates good performance, at least in the short run, we conclude that, on average, the firms in our sample react to their current situation by adjusting their employment. The other control variables have no effects that are significantly different from zero on the likelihood of decreasing employment size.

In our second specification (see Table 1 (2)), we introduce a cohort marker for the late-GDR cohort (1970–1989), whereby the reference group is comprised of firms established during all other time periods. The result of this model specification reveals that the likelihood of shrinking is significantly higher for firms founded between 1970 and 1989, which is in line with hypothesis 1.

In the third specification (see Table 1 (3)), cohort markers for firms started prior to 1950, firms started between 1950 and 1969, and firms started after the fall of the Berlin Wall (1990–1997) are included, whereby firms founded between 1970 and 1989 are the reference group. The results show different effects across cohorts. The effect for the early-GDR cohort is significant at the 5% level, whereas the difference for the pre-1950 and for the post-unification cohort is only weakly significant. These results indicate that cohort effects matter and are in line with hypotheses 2 and 4.

Table 1. Regression results (1)

Dependent Variable: Employment Decrease (2002–04) (Yes = 1)	(1)	(2)	(3)	(4)
	Probit Regressions with Robust SE (Marginal Effects)			
Cohort Markers				
Founded in later phase of GDR (1970–89) (Yes = 1)	/	0.337** (0.141)	Ref	Ref
Founded in early phase of GDR (1950–69) (Yes = 1)	/	Ref	-0.395*** (0.0992)	-0.395*** (0.0992)
Founded < 1950 (Yes = 1)	/	Ref	-0.292* (0.152)	-0.292* (0.152)
Founded > 1989 (Yes = 1)	/	Ref	-0.337** (0.164)	/
Founded in early stage of transition (1990–91) (Yes = 1)	/	/	/	-0.339** (0.161)
Founded in later stage of transition (1992–97) (Yes = 1)	/	/	/	-0.299** (0.151)
Control Variables				
<i>Log(establishment size)</i>	0.0660** (0.0302)	0.0683** (0.0306)	0.0674** (0.0307)	0.0666** (0.0309)
<i>Decreasing volume of work (Yes = 1)</i>	0.331*** (0.0679)	0.347*** (0.0677)	0.349*** (0.0683)	0.348*** (0.0682)
<i>Increasing volume of work (Yes = 1)</i>	-0.293*** (0.0710)	-0.282*** (0.0722)	-0.278*** (0.0728)	-0.278*** (0.0729)
<i>Independent firm (Yes = 1)</i>	-0.122 (0.0946)	-0.115 (0.0960)	-0.106 (0.0963)	-0.105 (0.0962)
<i>Manufacturing (Yes = 1)</i>	Ref	Ref	Ref	Ref
<i>Construction (Yes = 1)</i>	0.0113 (0.123)	-0.00298 (0.125)	0.0122 (0.127)	0.0128 (0.127)
<i>Service (Yes = 1)</i>	0.0853 (0.0930)	0.109 (0.0926)	0.103 (0.0939)	0.106 (0.0938)
<i>Location in SA/MW (Yes = 1)</i>	0.0885 (0.0737)	0.0764 (0.0747)	0.0818 (0.0749)	0.0803 (0.0749)
<i>Use of atypical Labour (Yes = 1)</i>	0.0326 (0.0769)	0.0344 (0.0781)	0.0327 (0.0785)	0.0308 (0.0787)
Pseudo R ²	0.1674	0.1811	0.1864	0.1867
Observations	211	211	211	211
Notes: Robust standard errors in parentheses/ *** p < 0.01, ** p < 0.05, * p < 0.1/ Reporting of marginal effects				

The fourth specification (see Table 1 (4)) takes into account the “window of opportunity” for starting a firm immediately after the fall of the Berlin Wall. This reveals that the significant effect is driven by this early post-unification

cohort (1990 and 1991), whereas the effect for the later post-unification cohort (1992–1997) is only weakly significant. This confirms hypothesis 3. In particular, firms that were created immediately after reunification perform better than firms started in the later phase of the GDR.

The marginal effects indicated by the cohort markers are economically relevant. For the early-GDR cohort, it is about 39.5% in the third and fourth specification. This means that belonging to the early-GDR cohort lowers the likelihood of decreasing employment by this amount. Moreover, the marginal effect of not belonging to the late-GDR cohort is stronger for the early-GDR cohort than for the post-unification cohorts (~34%).³

In all models, the effect of size and variation of work volume are unaffected by introducing cohort markers. This indicates that the cohort effect holds, even after controlling for work volume and size. Moreover, the use of atypical employment has no effect on employment growth in any specifications.

Other descriptive analyses—namely, mean comparison tests—indicate that there is nearly no systematic difference between firms of different cohorts with regard to size, variation of work volume, or use of atypical employment (see Table 2).

What we discover from these additional descriptive analyses is that in the matter of size, there are no significant differences between the late-GDR cohort and the other groups. The same holds true for variation in work volume. The latter result implies, for instance, that firms started in the late-GDR era are not systematically more likely to show decreasing work volume in the time period analyzed. Thus, conditioning on the variation of work volume in the regression analysis displays a cohort effect but, at the same time, decreasing work volume is not linked to the late-GDR cohort in particular, when comparing different cohorts. Therefore, simultaneity bias does not appear to be a problem.

However, there is a significant positive effect for the use of subcontracted labour in firms founded during the late-GDR cohort compared to the early post-unification cohort, but not to other groups or in general. Reliance on an external labour force may indicate a negative economic situation for the firm, but it could also be a sector effect. We find no significant differences for the use of marginal part-time employment or freelancers.

The results for subcontracted labour may be driven by different sector compositions of the firms of the respective cohorts in our sample. To overcome such biasing effects, we compared group differences with regard to using at

³ This difference should be interpreted cautiously: it does not mean that the early-GDR cohort performs significantly better than the post-unification cohorts. Using the early-GDR cohort as a reference group, no significant difference with the post-unification cohorts can be found.

least one of the atypical external forms of employment. We found no significant difference. We cannot, of course, rule out the possibility that firms from the late-GDR cohort are successful because they do not increase or shrink their core employment but instead use atypical forms of employment. However, the regressions and descriptive results do not convincingly indicate that using atypical forms of employment are a systematic strategy of the late-GDR cohort.

Table 2. Mean comparison tests

Founded Between 1970–89 Compared to ...	Founded > 1990	Founded 1990/91	Founded 1950-69	
Increasing volume of work (Yes = 1)	0	0	0	
Decreasing volume of work (Yes = 1)	0	0	0	
Subcontracted employment (Yes = 1)	0	(-)**	(-)*	
Freelance workers in 2004 (Yes = 1)	0	0	0	
Part-time employment in 2004 (Yes = 1)	0	0	0	
At least 1 out of 3 of the above groups (Yes = 1)	0	0	0	
Log (firm size 2002)	3.28	3.26	3.10	3.68
Log (firm growth 2002–04) (Growth > 0 for $N = 74$)	-0.092	-0.025	-0.03	-0.042
Observations	10	143	94	13
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ significance level for t -tests				
<i>Notes:</i> Relation symbol in brackets indicates whether the average value for the groups is larger or smaller compared to the reference 1970–89 group. The first asterisks show the significance levels for mean comparison t -tests.				

Robustness checks

It could be argued that our cut-off points for defining the two GDR cohorts are theoretically weak. Therefore, we conducted robustness checks (see Table 3). First, we relaxed the cut-off point for the early-GDR cohort by extending it to the period from 1945 to 1969, instead of from 1950 to 1969 (see Table 3 (1)). Firms founded immediately after World War II began experiencing the true “socialist treatment” a few years after their founding, but they were located in the Soviet-occupied zone from their beginnings. The regression analysis reveals that firms established in the late-GDR phase remain significantly more likely to decrease employment in the period under analysis.

Another robustness check was undertaken to address the problem that even though the central planning principles before 1970 were generally less strict

than those implemented in later years, there were sub-periods of increased pressure on economic freedom prior to 1970. To account for this, we used the introduction of a concrete policy initiative to define the periods (see Tables 3 (2) and (3)): the previously described “new economic system.” This “system” was in place between 1963 and 1971 and is associated with comparatively high economic freedom and a positive attitude toward private initiative.

Thus, the GDR is now divided into the periods of 1945/50 to 1962, 1963 to 1971, and 1972 to 1989 (reference group). The results of this regression also indicate that cohort effects matter. More precisely, firms founded during the period of the “new economic system” have a lower probability of decreasing their employment compared to firms founded between 1972 and 1989. Firms from the early-GDR cohort founded between 1945/50 and 1962 have a weakly significant negative likelihood of decreased employment. This indicates that development over time is not necessarily linear. The results demonstrate that policies promoting private initiative may matter.

As another robustness check, we investigated the effect on economic performance of major organizational changes after the institutional upheaval (see Table 4). This analysis indirectly aims at judging the appropriateness of routines in the course of transition by taking into account the timing of major changes. We consider changes in the ownership structure and legal form of these firms, and when the changes took place. The idea behind this identification strategy is that an early change reflects a high degree of “adaptiveness” because the change was instituted nearly immediately and—thus—was apparently not an act of last resort, seeing as the organization is still in existence, more than 10 years after the fall of the Berlin Wall. We only consider changes in the early phase of transition between 1990 and 1994 because changes in later years may be less likely to be related to transition.

These results reveal that GDR-founded firms that underwent major organizational changes very early after the transition have lower probabilities of decreasing employment compared to other firms founded in the GDR. This marginal effect becomes smaller the longer after reunification the change took place (see Tables 4 (1) and (2)), and eventually becomes insignificant (see Table 4 (3)). We acknowledge that this investigation of major changes is a less than ideal measure of the appropriateness of routines; however, the findings add another shred of evidence in support of the idea that the institutional upheaval of 1989 had a long-lasting, indeed, still ongoing, impact on organizations.

Table 3. Regression results (2)

Dependent Variable: Employment Decrease (2002–04) (Yes = 1)	(1)	(2)	(3)
	Probit Regressions with Robust SE (Marginal Effects)		
Cohort Markers			
Founded in later phase of the GDR (1970–89) (Yes = 1)	Ref	/	/
Founded in later phase of the GDR (1972–89) (Yes = 1)	/	Ref	Ref
Founded in early phase of GDR (1945–69) (Yes = 1)	-0.368*** (0.117)	/	/
Founded in first phase of GDR (1945–62) (Yes = 1)	/	-0.352*** (0.130)	/
Founded in first phase of GDR (1950–62) (Yes = 1)	/	/	-0.341** (0.133)
Founded during NEP period (1963–71) (Yes = 1)	/	-0.449*** (0.0463)	-0.449*** (0.0462)
Founded < 1950 (Yes = 1)	/	/	-0.355** (0.155)
Founded < 1945 (Yes = 1)	-0.278* (0.153)	-0.339** (0.153)	/
Founded in early stage of transition (1990–91) (Yes = 1)	-0.341** (0.160)	-0.409** (0.176)	-0.409** (0.176)
Founded in later stage of transition (1992–97) (Yes = 1)	-0.298** (0.150)	-0.360** (0.156)	-0.361** (0.156)
Control Variables			
<i>Log(establishment size)</i>	0.0642** (0.0310)	0.0708** (0.0316)	0.0718** (0.0315)
<i>Decreasing volume of work</i> (Yes = 1)	0.343*** (0.0686)	0.348*** (0.0690)	0.349*** (0.0689)
<i>Increasing volume of work</i> (Yes = 1)	-0.283*** (0.0728)	-0.303*** (0.0727)	-0.302*** (0.0727)
<i>Independent firm</i> (Yes = 1)	-0.103 (0.0957)	-0.119 (0.0965)	-0.121 (0.0967)
<i>Construction</i> (Yes = 1)	0.00396 (0.126)	0.0374 (0.127)	0.0373 (0.127)
<i>Service</i> (Yes = 1)	0.107 (0.0939)	0.102 (0.0933)	0.102 (0.0932)
<i>Location in SA/MW</i> (Yes = 1)	0.0793 (0.0746)	0.0669 (0.0748)	0.0663 (0.0749)
<i>Use of atypical form of labor</i> (Yes = 1)	0.0312 (0.0782)	0.0239 (0.0788)	0.0241 (0.0789)
Pseudo R ²	0.1848	0.1956	0.1955
Observations	211	211	211
<i>Notes:</i> Robust standard errors in parentheses/ *** p < 0.01, ** p < 0.05, * p < 0.1/ Reporting of marginal effects			

Table 4. Regression results (3)

Dependent Variable: Employment Decrease (2002–04) (Yes = 1)	(1)	(2)	(3)
	Probit Regressions with Robust SE (Marginal Effects)		
Organizational change of GDR firm in 1990 (Yes = 1)	-0.412*** (0.0755)		
Organizational change of GDR firm between 1990–92 (Yes = 1)		-0.371*** (0.107)	
Organizational change of GDR firm between 1990–94 (Yes = 1)			-0.310 (0.153)
<i>Founded < 1950</i> (Yes = 1)	-0.143 (0.133)	-0.282* (0.147)	-0.262 (0.177)
<i>Founded in early stage of transition (1990–91)</i> (Yes = 1)	-0.184 (0.125)	-0.327** (0.155)	-0.302 (0.184)
<i>Founded in later stage of transition (1992–97)</i> (Yes = 1)	-0.154 (0.130)	-0.291** (0.146)	-0.268 (0.175)
<i>Log(establishment size)</i>	0.0716** (0.0316)	0.0685** (0.0311)	0.0690** (0.0309)
<i>Decreasing volume of work</i> (Yes = 1)	0.348*** (0.0684)	0.354*** (0.0690)	0.351*** (0.0688)
<i>Increasing volume of work</i> (Yes = 1)	-0.316*** (0.0721)	-0.290*** (0.0724)	-0.285*** (0.0722)
<i>Independent firm</i> (Yes = 1)	-0.110 (0.0960)	-0.113 (0.0959)	-0.110 (0.0956)
<i>Construction</i> (Yes = 1)	0.0545 (0.125)	0.0149 (0.123)	0.00455 (0.122)
<i>Service</i> (Yes = 1)	0.120 (0.0928)	0.101 (0.0934)	0.0902 (0.0936)
<i>Location in SA/MW</i> (Yes = 1)	0.0953 (0.0743)	0.0917 (0.0741)	0.0839 (0.0740)
<i>Use of atypical form of labor</i> (Yes = 1)	0.0387 (0.0776)	0.0460 (0.0779)	0.0351 (0.0777)
Pseudo R ²	0.185	0.1834	0.176
Observations	211	211	211

Notes: Robust standard errors in parentheses/ *** p < 0.01, ** p < 0.05, * p < 0.1/ Reporting of marginal effects

Conclusions

In this study, we investigate the effect of transition on the performance of those East German organizations that survived the transition, using the theory of organizational learning as a foundation. We argue that the worsening external conditions of the later phase of the GDR created a “milieu” unfavourable to the development of internal structures within new organizations adequate to cope with the rules of a market economy. In the GDR, there was only little room for

entrepreneurial spirit and autonomy within organizations. Drawing on the idea of institutional embeddedness, we assume that this atmosphere was at its most intense during the culmination of socialist production modes in the 1970s and 1980s.

We find that firms founded in the second half of the GDR's lifespan have worse growth prospects than other East German firms even nearly 15 years after German reunification. It thus appears that there are cohort effects with regard to when a firm was founded in the GDR. It is noteworthy that there are also severe differences in regard to growth prospects between firms founded in the early-GDR period and those ones founded in the late-GDR period. We conclude from the econometric analysis that organisations founded in the final stages of the GDR's lifecycle have lower prospects of employment growth due to the "milieu" that created organizations that encountered and still suffer from enormous problems in changing and adapting their imprinted structures and routines.

The results of our research have important policy implications. First, the difficulty with which late-GDR start-ups have adapted, if they have adapted, to the market economy means that these firms are not a viable source of employment creation. Thus, taking care, of course, not to disturb the "natural" process of market selection, it might be worth investigating whether some type of consulting and/or management assistance could help these firms more easily adapt to the "new" environment.

Policymakers considering such assistance would benefit enormously from a more fine-grained analysis of the employment dynamics of old and new firms in East Germany. A limitation of the current study is its cross-sectional design and lack of in-depth information on routines and resources, deficits that could be addressed by future research. Another fruitful avenue of further research would be an analysis of new management techniques and innovation strategies within former GDR firms.

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