The impact of the EXIST Business Start-up Grant on corporate growth: A group comparison for Dresden (GER)

Introduction
The EXIST Business Start-up Grant (BSG) is one of the most important governmental programs in Germany to support founders by turning their business ideas into actions. This paper investigates the impact of corporate development using a peer group comparison on longitudinal data.

Research Question
Do BSG-funded start-ups outperform non-funded industry peers in terms of:
(i) Risk of cessation
(ii) Survival time
(iii) Employment (FT) development
(iv) Revenue development

Keywords
• corporate growth, governmental start-up assistance, innovation policy, longitudinal analysis, peer group comparison

Conference pillars mainly addressed
• Leading edge concepts, tools and methods to assess impact of B&I policy
• Effects of and policy learning from impact evaluation

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Results
(i) Risk of cessation
• Visual inspection of proportional risk of cessation (Figure 1) is inconclusive because the curves cross each other but lie in the same range overall. However, the result of a performed log-rank test (p = .820) provides evidence that the survival distributions of the two groups are not statistically different. This is supported by a test based on Schoenfeld residuals (p = .397).

(ii) Survival time
• Is almost equal (Table 1) between the two groups which blends into the result of almost equal risk of cessation.

(iii) Employment development
• Related to employment overall. Wilcoxon’s two-sample rank sum test (Table 1) provides evidence to accept an equivalence. Figure 3, which is depicted in Figure 2, on the contrary, groups means outperformed higher employment for the funded Ltds. (Table 1).
• For employment development, the results of analyses of variance are ambiguous and highly affected by outliers which is depicted in Figure 2. Over or under-performance of funded Ltds. depends on the industry sector.

(iv) Revenue development
• Related to revenue overall. Independent test (Table 1) provides evidence to support an overperformance by funded Ltds. Groups’ medians indicate the same (Figure 3).
• Moreover, there are higher probabilities of generating higher revenue for control peers.

Table 1: Results analysis of differences for Survival time, Employment and Revenue by Treatment.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment</th>
<th>Control</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survival time</td>
<td>72 months</td>
<td>73 months</td>
<td>.605</td>
</tr>
<tr>
<td>Employment</td>
<td>18.8</td>
<td>16.8</td>
<td>.354</td>
</tr>
<tr>
<td>Revenue (e.v.n.a.)</td>
<td>3.6</td>
<td>3.5</td>
<td>.040</td>
</tr>
</tbody>
</table>

Table 2: Median values of Employment by Year, n = 72.

<table>
<thead>
<tr>
<th>Year</th>
<th>Median Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>4.2</td>
</tr>
<tr>
<td>2013</td>
<td>4.2</td>
</tr>
<tr>
<td>2014</td>
<td>4.2</td>
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Conclusion and Policy recommendation
• Funded Ltds. do not outperform industry peers in terms of (i) risk of cessation and (ii) survival time.
• Rather non-fledged industry peers perform better than funded Ltds in terms of (iii) employment and (iv) revenue development.
• According to the online survey, for 8 out of 11 respondents, it would have been unlikely or even very unlikely having founded without the BSG funding. So, treatment and control groups Ltds. might differ in their pre-treatment willingness to incorporate.
• The BSG in Dresden might not fund the founders ready to fly high, as intended, but helps start-ups to see the light of day, which tally with the “theory of external assistance as the support option of last resort” (Jutta Eltes & Weihs 2017).

Policy recommendation
• The start-up agents responsible for the BSG funding should increase active sourcing in order to not rely on the people who come in and apply for a BSG funding.
• BSG funding might provide even more guided preparation during the one year funding period with regard to the “theory of external assistance as a knowledge resource” by Chriom and McMullan (2004).

Limitation and Further research
• Group sizes of 21 and 18 companies do not meet the self-proclaimed sample size threshold of n = 30, with regard to Student’s t distribution and the associated t-test.
• The results are not representative for Germany and must be interpreted even for the case of Dresden with caution.

Further research
1. Replicating on a larger sample size to meet the threshold of n = 30, at least.
2. Detecting peers with different methods. e.g. testing mining the companies’ object, to certify僵尸 matching (investigator triangulation).
3. Verifying the same pre-treatment conditions for the two groups to justify the matching.
4. Conducting qualitative analysis to investigate the reasons for the corporations’ development on an individual basis.
5. Taking advantage of variables from the self-collected dataset, which are not considered in this paper already, e.g. Year of incorporation.

Method

Data set
The self-collected dataset was created by conducting desk research and field research (online survey) due to a lack of reliable and publically accessible longitudinal micro-level data at the time point.

Cross-sectional:
• Treatment group (BSG): Limited liability corporations (Ltds.) in Dresden (GER) funded by the BSG (n=21) provided by Dresden Centre for Business and Industry on FT
• Control group (BSG): non-funded (n=18) which would have been eligible for a BSG funding. The eligibility criteria were accessed to information related to the Ltds’ time of incorporation, e.g. its registered object, in retrospect by two independent experts (four-years principle). Two independent sources were needed, one provided by Dresden Chamber of Commerce and one retrieved from the database Amadeus.

Longitudinal:
• Period of incorporation: 2008 - 2011
• Observation period: First five post-incorporation years (data on corporate development obtained from the two independent datasets and an online survey)

Measurement
(i) Risk of cessation
(ii) Survival time
(iii) Employment development
(iv) Revenue development

Method
Cox proportional hazards regression
Log-rank test
Schoenfeld residual test
Two-way Analysis of variance
Kaplan-Meier survival curves
Type II terms of regression
Displacement adjustment

Cumulative odds ordinal logistic regression

Survival analysis

References
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• .01 ≤ r
• .040°
• .000
• .082*
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