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Abstract

In this paper, we evaluate the success of publicly supported business start-ups by comparing the outcomes of various support measures. Our question is: do business starter get what they need? Since we do not know the needs of the founders we analyse (1) who received which kind of support (financial support, individual coaching, general information) and (2) which kind of support is successful for whom with regard to his/her job history (employed, unemployed or being not part of the job market). While start-up measures possibly could aim at different kinds of effects, our focus is on the effect on subsequent firm growth. The analysis is based on a survey conducted in 2005. The sample was drawn from a highly heterogeneous population of business start-ups. By using propensity score exact matching for success measurement we try to capture those differences.

JEL Classification: J23, M13, C14

Keywords: Business start-ups, public policy, public support, matching

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1. Introduction

New venture support has become a popular field for governments attempting to create more employment possibilities and a vibrant entrepreneurship sector. In order to improve the effectiveness of the policy measures, governments are also interested in the effects their support programmes and measures have on the survival and sustainability of new businesses. Previous research has demonstrated a variety of micro and macro factors which might influence the success of business creation. Nevertheless surprisingly few studies evaluate government measures using comparison groups. By using exact matching for success measurement we try to capture the difference in those factors between business start-ups which have received public support and those that have not.

This paper evaluates the success of publicly supported business start-ups by comparing the outcomes of various support measures at entrepreneur level. The measures comprise five types: two kinds of financial assistance whereby we can differentiate between subsistence payments and the provision of subsidized capital, start-up coaching (before and after the establishment of the new business) and general information seminars. The target group is very heterogeneous and so might be their needs. Thus, the paper asks, whether start-up training and financial measures are oriented towards the needs of start-ups. In other words, do business starter get what they need? Since, however, we do not know the needs of the founder we try to answer this question by analysing who received which kind of support and which kind of support is successful for whom. In line with a human capital approach we assume that the support need of business starters is highly dependent on his/her job history. In the further analysis the business starter are therefore differentiated according to their occupation before the establishment such as employed, not being at the job market (house maker, students etc.) and unemployed.

2. Literature Review

2.1 Effects of public support on business start-ups

All industrialized countries offer support measures for business start-ups. In Germany, the variety of local, Länder and Federal programmes can hardly be overlooked. Surprisingly, few studies so far have seriously evaluated the impact public support has on venture creation and the success of new firms. An important feature in the context of German business start-up support is financial support during the founding period to develop necessary skills to secure a stable new business over time. Those skills comprise on the one hand sufficient technical and commercial know-how but also special entrepreneurial skills to stand risky and uncertainty, to identify possibilities and decision making. Obviously financial support does not help in

developing those skills directly but offers a time window for learning without having to worry about the daily income source (Wießner, 2005:4).

The evaluation results of Pfeiffer and Reize (2000) show that business start-ups out of unemployment with public financial support have the same survival rate and employment effects as non supported business start-ups in general. Additionally, self-employment leads to a lower risk to be unemployed again than wage employment (Reize 2000). Two other studies found – at least on the first view – rather positive results. However, they did not use comparison groups such that no judgement is possible whether the positive results were caused by the start-up support. Wießner (2000) found that 70% of the public financially supported business start-ups from the years 1994/1995 were still self-employed three years after the foundation and every third supported business starter creates at least on additional job during three years after the foundation. A more recent study of Wießner et al. (2005) evaluated the German instruments for supporting unemployed business founders since 2004. The findings show that about 85% of the participants remained self-employed one and a half year after the start of the measure, after which they either switched to wage employment or became unemployed again.

Almus and Prantl (2001) investigate the effects that German subsidized medium- or long-term loans for business start-ups have on the survival rate and the average annual employment growth of assisted firms. By using a statistical matching procedure they find significant positive effects of public assistance on the success indicators of business start-ups. Prantl (2005) further examines the effect of entry subsidies on short- and long-term employment and turnover growth, finding that financial assistance leads in the short run to higher start-up investments and has no effect on employment while in the long run additional employment growth can be observed and turnover is reduced.

Baumgartner and Caliendo (2008) compare the labour market outcomes of start-ups out of unemployment with other unemployed persons and concentrate on the outcome variables "not unemployed" and "in paid or self-employed" as well as "personal income". They find that moving unemployed into self-employment "may prove to be among the most effective" active labour market policy programme "in Germany and elsewhere" (p. 347). Empirical evidence in business start-up support is very rare (e.g. Cueto and Mato, 2006), as Meager (1996) in his five country study pointed out, a conclusive assessment of such schemes does not exist.

Although there is a common sense that phase specific start-up knowledge plays an important role for the success of new businesses, there are no empirical studies which have analysed this so far. Moreover, while there is a wide range of literature about the effects of financial support on the success of business start-ups, surprisingly, the effect of special entrepreneurial training measures is hardly investigated. One of the few studies in this regard, albeit analysing established firms, assessed the impact of assistance for consultancy advice on

the performance of SMEs (Wren and Storey 2002). The authors show that the policy had no impact on survival of smaller SMEs, but it raised survival rates and growth rates for medium-sized firms. Additionally, the authors draw attention to the possible displacement effects of such support, which is a topic only dealt with in few evaluation studies.

2.2 The importance of human capital for business start-up and success

Human capital plays an important role with respect to entrepreneurial know-how as well as with respect to access to external resources. With regard to the influence of human capital on entrepreneurship, some authors (e.g., Kolvereid, 1996) claim a more indirect influence through an effect on attitude and subjective norms, which influence the propensity for entrepreneurship. Others (e.g., Aldrich, 1999) emphasize the importance of human capital itself as a source of entrepreneurial knowledge, where education and professional experiences will facilitate the way into entrepreneurship and influence survival and success. In this view, a higher level of human capital increases entrepreneurial alertness regarding opportunities as well as the ability to exploit these opportunities. Additionally, human capital might indirectly influence access to resources, thus impacting on business development beyond the start-up phase.

Human capital expresses itself through factors such as the origin of the entrepreneur, the (professional) education, work experiences and previous management experiences. Results relating to the socialization of entrepreneurs such as the importance of an entrepreneurial family background are not conclusive: some studies show a positive effect on entrepreneurship, others not. Age influences the human capital resources of entrepreneurs in two ways. Whilst knowledge, know-how and personal abilities will increase with age, professional mobility could decrease, thus rendering a business start-up less likely the older the person (e.g., Klandt 1984). Gender might have an additional influence where women temporarily leave the labour market for child rearing and thus have fewer opportunities to accumulate professional experiences.

With regard to education and professional experiences, research has shown this to positively influence entrepreneurship and business formation (e.g., Cooper and Dunkelberg, 1986; Evans and Leighton, 1990; Martin and Grubb, 2001). For example, in West Germany, every second new entrepreneur previously worked in the same branch (Pannenberg, 1997, 1998). Brüderl et al. (1996) demonstrated for their sample of Bavarian new entrepreneurs that entrepreneurs are significantly more likely to set up larger enterprises in terms of initial capital and initial employment in case they have long professional and previous sectoral experience as well as management experience and previous experiences in self-employment. Other studies indicate that habitual entrepreneurs succeed more often in starting another business, due to already existing networks or their ability to recognize business opportunities whilst the previous entrepreneurial experiences as such do not play a significant role in

explaining any differences between habitual and non-habitual founders (e.g., Alsos and Kolvereid, 1998; Westhead and Wright, 1998).

In general, economic theory suggests that increased unemployment would lead to increased entry into entrepreneurship as the opportunity costs of starting a business are decreased (Evans and Jovanovic, 1989). Recently, research has shown that unemployment (and thus a lack of professional experience, of self-confidence in combination with fewer resources) plays a major role with respect to business success in terms of employment growth (Hinz and Jungbauer-Gans, 1999). Employment growth is significantly lower in businesses of unemployed founders, and it is connected to the duration of unemployment. A consequently low capital resource base plus a lack of access to external credit, which might be expected the longer the duration of unemployment, might constrain further business development, in the case unemployed entrepreneurs would need to fall back on the resource base of their enterprises to e.g., compensate for a drop in demand. Aldrich and Auster (1986) labelled these phenomena the liabilities of "newness" and "smallness", drawing attention to the fact that especially newer and micro enterprises experience difficulties in surviving and growing, which might be aggravated in the case of unemployed founders.

Drawing on results from this stream of literature we therefore suggest that support needs of business starters are highly dependent on his/her labour market history; and that different kinds of measures have a different effect on the success of the business start-up.

2.3 Start-up Support and Firm Growth

On the background of the literature review and the desired effects of the instruments, hypotheses about the expected signs of treatment effects can be derived for the three groups of entrepreneurs scrutinized. In general, firm growth in respect to both employment and turnover is only one of several possible positive effects of business start-up support. In addition, a higher stability of the start-ups in respect to survival time could be aimed at. Due to the high survival rate of the start-ups in our sample, however, this aspect cannot be analysed with our dataset. A third possible aim of start-up support would be to increase the population of new firms in general by introducing individuals to the possibilities of founding new businesses and giving financial aid.

Of course, also firm growth is not the central goal of business firms. Entrepreneurs often do not aim at growth in respect to employment and turnover, but just to be independent and earn modest financial means for their living. However, in most cases, new start-ups need a certain period of time to start business activities. State aid can possibly reduce this time period and therefore lead to higher growth in turnover in the first years of business activity. Additionally, one aim of state funded support for new businesses is to increase employment. So, also the question arises, how far these support measures lead to higher employment growth rates later on. By analysing the growth effects, we have to keep in mind the difference

between growth and level. By comparing two start-ups with the same turnover or employment after a certain time period that start-up with the lower initial turnover or employment subsequently exhibits the higher growth rates.

The observed firm growth induced by different policy instruments should – this is what we would expect – depend on the individual situation of the entrepreneur which varies substantially. Table 1 shows the treatment effects we expect for previously employed (E) or unemployed (U) individuals and individuals who have not been in the labour market before starting their businesses (N). We expect differences between these kinds of start-ups especially in respect to employment growth. While start-ups from unemployment should more likely be aimed at creating an existence independent from state aid in order to prevent individual unemployment, we expect these entrepreneurs to be more reluctant to create additional jobs compared with the previously employed individuals. We also expect them also to have lower average turnover. However, turnover growth also depends on the initial level of turnover which should be lower on average. Therefore, there is no ex ante reason to believe that turnover growth is lower or higher compared with start-ups from employment. Entrepreneurs who have not been in the labour market before as such are rather heterogeneous. They comprise individuals who had cared about the household before and want to increase household-income as well as academics who are planning to start up a new business as spin-off. Therefore, we expect them to be in between the other two groups in respect to employment growth.

Financial support schemes aim at easing the initial start-up phase and bridging some time until the business can support itself. It should not be directly associated to employment growth. The influence on turnover growth is difficult to assess. However, the financial resources available reduce the economic pressure to generate high turnover in the beginning, which could lead to higher growth rates later on. The effects of credits are diverse. Usually, credits are only given to firms that develop a business-plan which should be associated with higher growth rates. Furthermore, by raising a credit, the entrepreneur creates some pressure to reimburse the financial means in the future. Therefore, credits should be associated at least with higher rates of turnover growth. Growth in employment often also increases the risk by establishing an additional cost factor. Thus, we expect no effect.

Table 1: Expected signs of Treatment effects

	Financial Support	Credit	Information	Coaching before	Coaching after
Positive employment growth	0 (E/ U/N)	0 (E/U/N)	0 (E/U/N)	+/E), 0 (U,N)	+(E), 0 (U,N)
Positive turnover growth	+ (E/U/N)	+ (E/U/N)	0 (E/U/N)	+(E/ U/N)	+(E/U/N)

Information seminars often aim at giving the entrepreneurs help as to whether it is advisable for them to start a new business. Therefore, we expect their effect to be more on reducing drop-out rates than influencing growth rates. Individual coaching measures help the entrepreneurs by giving them advice how to set up a business plan and to organize their businesses in general. We expect them to influence turnover growth by making the organisation more efficient and maybe also lead to higher employment growth at least for the start-ups from employment.

3. Data Sets, Estimation Strategy and Methodology

3.1 Data Sets

The paper draws on a survey which was conducted by RWI and SÖSTRA in the context of an evaluation of the European Social Fund measures for new business start-ups in Germany in the period 2000 to 2006. Our dataset originates from questionnaire surveys among participants in publicly funded business start-up support and non-participants respectively. We collected about 11,300 addresses of start-ups from craft chambers and chambers of commerce as well as project executing organisations from several regions in East and West Germany. The participants are made up by a rather broad range of entrepreneurs both from craft trades and the industry sector. Start-ups of formerly unemployed persons are important. However they do not dominate. Due to a return rate of 44.6% respectively 15% our net sample consists of 3,650 firms. The sustainability of the support was of special interest in our analysis. Thus, we drew firms which were supported after the year 2000 and before 2003. Also our control group was chosen from firms which were founded in that period. Due to the broad focus of the support at hand, we abstained from other restrictions.

Regardless of the different groups of business start ups the sample is highly selective with respect to the success of the establishment. Over 90% of the founders stated that their business is successful. This result is not surprising, business starter which were not successful on the one hand may be ashamed about their failure and therefore be less motivated in reporting, on the other hand unsuccessful businesses start-ups may have already been closed and the questionnaire has never reached the addressee.

3.2 Outcome Measures and Estimation Strategy

Because of the sample selection we chose outcome measures that reflect the extent of the success rather than the success itself and that could cope with the differences in size of the business start-up at the beginning of the establishment. Such outcome measures are: positive growth in employment and turnover between the second and the third year of the business start-up existence as well as turnover per employee two years after the founding. Due to the

heterogeneity of our sample, getting unbiased estimation results is rather challenging. Therefore, our control variables comprise primarily socio-demographic variables, i.e. age, gender, health status, immigrant status and branch variables. Unobservable individual traits like cognitive ability are persistent over time; they will be partly reflected in individual education (schooling degree, highest vocational degree and previous profession) and the labour market history of respondents.

As the literature review already showed, the labour market history is a very important feature for the success of the business start up. Thus, we always split the sample in three groups according to the last activity of individuals prior to the establishment of the new business: (1) business starter that were employed before the establishment, (2) business starter that were unemployed before the establishment and, (3) business starter that were not part of the job market before the establishment, such as family workers, students, early retired persons etc.. Additionally, the motivation of the founders might have another important possible impact on our success indicators. Motivation is captured in our survey by asking how important different motivational features like a good business idea or own job creation have been.

The aim of our study is to analyze the benefit individuals draw from the different kinds of public start-up support. Because we can not control for quality and content of the measures, we are only able to differentiate if the founder has participated in general information measures or individual coaching before and after the establishment of the new business. Additionally we asked for financial assistance whereby we can differentiate between subsistence money (labelled "financial support") and the provision of subsidized capital ("credit allowance"). We assume that the various kinds of support combination have different effects on business start up success. Therefore we use additionally support measures for exact matching.

3.3 Methodology: Probit regression and Matching Procedure

For analyzing sample heterogeneity we use on the one hand simple descriptive data interpretation and on the other hand multivariate marginal Probit regressions[2] that permit to identify the determinants of participation in public business start up support in terms of the different features of the participants.

When it comes to our aim to estimate treatment effects for the different policy instruments in respect to the different outcome measures, the theoretical framework corresponds to the general matching framework: Assume that Y_i^1 denotes a response of individual i to a labour market programme and that Y_i^0 gives the state of individual i with no treatment. If the binary variable T_i indicates the treatment status of individual i, then the

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[2] Multivariate marginal Probit is a widespread method to identify impacts on binary outcome variables. For an introduction in the methodology see for example Wooldridge (2003), Chapter 7.

observed outcome is $Y_i = T_i Y_i^1 + (1 - T_i) Y_i^0$. This approach to the evaluation problem is known as the potential outcome approach to causality (e. g. Rubin, 1974, 1977; Holland 1986; Kluve, 2004). In order to identify the treatment effect in that framework would require the response of one individual to be independent from all other individuals. This framework assumes that there is only one of two potential outcomes for each individual (Y_i^0 and Y_i^1) depending on the two treatment states and that there are no further potential outcomes depending on the treatment assignment of the individual (stable unit treatment assumption – SUTVA, Rubin, 1986).

Within this framework, the individual treatment effect is given by $\delta_i = Y_i^1 - Y_i^0$. This effect is never observable because for each individual either the observation Y_i^0 or Y_i^1 is missing. The average treatment effect therefore is given by:

$$E(\delta_i \mid T_i = 1) = E(Y_i^1 \mid T_i = 1) - E(Y_i^0 \mid T_i = 1).$$

While we can observe $E(Y_i^1 \mid T_i = 1)$ for the individuals in the treatment group, the counterfactual $E(Y_i^0 \mid T_i = 1)$ cannot be directly observed. If treated individuals differ systematically from non-treated individuals, because selection into the treatment group is non-random, the counterfactual expected value differs from the observation for non-treated individuals $E(Y_i^0 \mid T_i = 0)$. If the vector of variables X which determines selection into treatment is known, the conditional expectation $E(Y_i^0 \mid X, T_i = 1)$ is equal to $E(Y_i^0 \mid X, T_i = 0)$. In this case, selection into treatment can be controlled for by conditioning on X (conditional independence assumption).

However, exact matching will be impossible if X is of high dimension. Therefore, Rosenbaum and Rubin suggest matching on the one-dimensional propensity score. The propensity score denotes the probability to participate in treatment given the vector X, $p(x) = \Pr(T = 1 \mid X = x)$, where Pr denotes the probability. They show that in case X removes selection bias, then matching on p(X) will do so either.

We use optimal full matching on the propensity score with restrictions on the cell size (Rosenbaum, 1995). This algorithm restricts matching to the close vicinity of each individual by introducing a calliper with $\tau > 0$. Our algorithm utilizes all untreated units with a finite distance to a treated individual. In our calibration, an individual in the comparison group must not be matched to more than 10 treated, while one treated is not matched to more than 30 untreated individuals. By these restrictions, we make sure that individual cells do not contain too many individuals.

Calliper width varies with the estimated value for the propensity score. In our estimates, we set $\alpha = 0.01$, $\beta = 0.04$ and $\gamma = 0.6$. We chose the matching parameters to balance between matched pairs and number of matches found. While the distance between the propensity score of treated and controls were allowed to be somewhat larger with higher

propensity scores, the programme requires differences to be rather small in case of small propensity scores. We also did some not reported sensitivity checks. However, our results in general were rather robust to changes of these three parameters. In addition, we match exactly on variables that seem rather important for catching unobserved heterogeneity.

Those variables are: a) region: East or West Germany, b) sex: women or men, and c) till e) other additional types of public promotion, such as financial aid, credit, general information as well as individual coaching before and after the establishment of the new business to capture multiple attendance in public promotion.

4. Results

4.1 Who gets which kind of support? Some empirical evidence

The importance of the different kinds of public support differs between the East and West German Länder. We also find notable differences between male and female founders (Table 2). The columns do not sum up to 100%, because many business starters participated not only in one measure but in two or more. In general, the share of entrepreneurs who did not rely on public support was higher for establishments out of employment than for establishment out of unemployment. The share of start-ups by individuals who were not in the labour market before who did use support in our sample is somewhere in between. In General, a higher share of the East German start-ups did use financial aid.
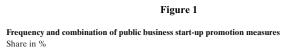
Coaching measures and bank credits are used to a lesser extent. Previously unemployed founders and non-labour market participants as well as East German founders in all three groups draw on financial assistance to a large extent, partly reflecting a lack of financial resources in these groups, but partly also the availability of special programmes.
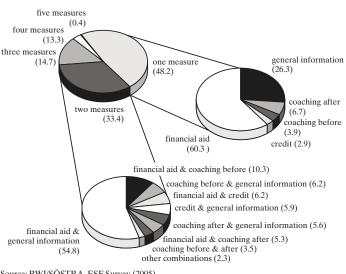
Table 2: Participation in public business start-up support by region and gender

| | West Germany | | | | East Germany | | | |
| | Male | | Female | | Male | | Female | |
	No.	%	No.	%	No.	%	No.	%
Establishment out of employment								
Financial support	52	25.5	20	30.3	33	47.8	19	65.5
General information	55	27.0	15	22.7	25	36.2	13	44.8
Coaching before establishment	19	9.3	13	19.7	11	15.9	5	17.2
Coaching after establishment	25	12.3	10	15.2	14	20.3	6	20.7
Credit	37	18.1	8	12.1	3	4.3	3	10.3
No public support	95	46.6	32	48.5	23	33.3	7	24.1
Total	204		66		69		29	
Establishment out of unemployment								
Financial support	109	67.3	61	79.2	147	71.7	92	70.2
General information	78	48.1	33	42.9	114	55.6	67	51.1
Coaching before establishment	20	12.3	19	24.7	35	17.1	21	16.0
Coaching after establishment	12	7.4	17	22.1	40	19.5	24	18.3
Credit	17	10.5	13	16.9	14	6.8	6	4.6
No public support	20	12.3	1	1.3	18	8.8	12	9.2
Total	162		77		205		131	
Establishment out of labour market non participants								
Financial support	47	42.3	86	54.8	34	61.8	28	68.3
General information	42	37.8	54	34.4	25	45.5	21	51.2
Coaching before establishment	17	15.3	39	24.8	3	5.5	7	17.1
Coaching after establishment	12	10.8	12	7.6	8	14.5	7	17.1
Credit	6	5.4	8	5.1	2	3.6	2	4.9
No public support	35	31.5	35	22.3	10	18.2	9	22.0
Total	111		157		55		41	

Source: RWI/SÖSTRA survey 2005.

Figure 1 shows the frequency of participation and the chosen combinations in case of multiple measurement participation. 48.2 % of the business starters participated in just one measure and this was mainly financial aid (60.3 %) followed by general information (26.3 %). If participants combined two kinds of public support it was mostly financial aid and general information seminars followed by financial aid and coaching before the establishment of the new business. Other support combinations are rather equally distributed. Combinations of individual coaching (before or after) and credit allowance were rather seldom ("other combinations").

Figure 1

Frequency and combination of public business start-up promotion measures
Share in %

five measures (0.4)
four measures (13.3)
three measures (14.7)
one measure (48.2)
general information (26.3)
coaching after (6.7)
coaching before (3.9)
credit (2.9)
financial aid (60.3)
two measures (33.4)

financial aid & coaching before (10.3)
coaching before & general information (6.2)
financial aid & credit (6.2)
credit & general information (5.9)
coaching after & general information (5.6)
financial aid & coaching after (5.3)
coaching before & after (3.5)
other combinations (2.3)
financial aid & general information (54.8)

Source: RWI/SÖSTRA, ESF Survey (2005).

To investigate the *motivational differences* between the different groups of founders we used a 5-point Likert Scale in our survey by posing the question, how important the different motivations like "own job creation", "independency of state aid", "to be my own boss", "income improvement" and "a good business idea" were for the establishment of the new business. The box plots in Figure 2 illustrate the respondents' motivational attitudes. For representing the average rating, we used the median (not mean). Variation is given by 75 and 25 percentiles and in addition upper and lower adjacent values (at least two mentions). Dots show whether there were individual outside values. The values go from 1 (very important) to 5 (unimportant).

It is not surprising that the motivation for own job creation is the highest in the sample with previous unemployed founders, but it is also very important for supported and important for not supported business starter of the other two groups. The results in respect to "independence of state aid" are more heterogeneous between the three groups. While the business starters out of unemployment on average assess this motivation as "important", it is "more or less important" for the formerly employed business starters. In the third group we can observe differences between promoted and not promoted business start ups. Not promoted business starter find the independence of state aid as a less important motivational

14

feature while it is important for the supported business starters that were not at the job market before the establishment of the new business.

Figure 2

Motivation of business start-up – by public promotion and previous occupation

Source: RWI/SÖSTRA, ESF Survey (2005).

The different groups all together state in the majority that "be my own boss" is a very important motivation to set up the new business. This is rather astonishing and somehow comforting because one could have assumed that this form of "self-actualization" statement would be of minor priority for the entrepreneurs who were formerly unemployed or not in the job market. In the case of the motivations "improvement of income" and "good business idea" we can identify, that there are only minor differences between the groups.

The non promoted former unemployed founders are not completely in line with the other groups. While in the other groups the motivation "improvement of income" and "good business idea" seems to be important on average, they are just more or less important for the group of not supported unemployed founders. However, the distribution of answers is rather similar. This suggests that formerly unemployed persons who were not supported are a bit less convinced about their business idea and have lower expectations with respect to their income development.

There are notable differences concerning the probability of participation in different kinds of measures with regard to sector, motivation of entrepreneurs, and their labour market status previous to setting up an own business (Table 3). The probability of *women* to get public support at all is about 19% higher compared to their male counterparts. Also, women are 13% more likely to receive financial support whereby there are no significant differences between sexes regarding other support measures. In contrast, the probability for women to participate in individual start-up coaching before the establishment of the new business is around 7% higher compared to the male business starter.

For *business starters in East Germany* the probability to attend public support in general is around 26% higher than for business starter in West Germany, reflecting both the need for general support in a turbulent economic environment and the lack of overall resources to start a business. Other demographic variables like age, marital & immigrant status, children and health problems have a lesser influence on the probability to participate in public business start-up support. People with children are 8% more likely to participate generally in public support, although we would need to control for gender in this regard. Regarding the age influence, the probability of receiving financial support decreases for about 1% with every year. Immigrants are also about 32% less likely to receive financial support, which might signal their access to ethnic networks of assistance, but they are about 10% more likely to participate in coaching before the establishment of the new business. This is however also a result of the existence of special measures for immigrants within the sample.

Table 3: Probit Estimation: Participation probability in Public business start-up support

Variables	Public support in general	Financial support	Credit	General information	Coaching before	Coaching after
	Public Support					
Demographic variables			*Marginal effects (Standard errors)*			
Women	0.194***	0.132***	0.023	-0.015	0.072***	0.021
	(0.032)	(0.036)	(0.018)	(0.034)	(0.026)	(0.024)
East Germany	0.257***	0.105***	-0.049***	0.068***	-0.032	0.076***
	(0.030)	(0.036)	(0.015)	(0.034)	(0.023)	(0.025)
Age	-0.004**	-0.007***	-0.001	0.000	-0.001	-0.001
	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Single	0.050	-0.036	-0.005	0.025	0.040	0.028
	(0.038)	(0.042)	(0.017)	(0.039)	(0.029)	(0.027)
Children	0.083***	0.031	0.007	-0.015	-0.004	-0.020
	(0.031)	(0.034)	(0.015)	(0.031)	(0.022)	(0.021)
Immigrant	0.008	-0.108	-0.031	-0.014	0.095**	0.013
	(0.062)	(0.067)	(0.022)	(0.062)	(0.053)	(0.047)
Health problems	0.019	0.053	-0.034	0.072	0.040	-0.038
	(0.064)	(0.0677)	(0.036)	(0.060)	(0.039)	(0.047)
Schooling degree	**Reference group: no schooling degree**					
Secondary degree (9 years)	0.018	-0.104	0.029	0.123*	-0.058	0.100*
	(0.065)	(0.071)	(0.040)	(0.070)	(0.039)	(0.062)
Secondary degree (10 years)	0.009	-0.127**	0.045	0.113*	0.031	0.050
	(0.060)	(0.064)	(0.033)	(0.061)	(0.043)	(0.045)
University entrance diploma	0.052	-0.024	0.026	0.092	0.016	0.082*
	(0.057)	(0.062)	(0.033)	(0.060)	(0.042)	(0.046)
Vocational degree	**Reference group: no vocational and college degree**					
In-firm training degree	-0.055	-0.003	0.006	-0.061*	0.033	0.022
	(0.037)	(0.038)	(0.017)	(0.035)	(0.026)	(0.025)
Technical college degree	-0.041	-0.052	-0.007	0.043	0.009	0.008
	(0.037)	(0.038)	(0.016)	(0.036)	(0.025)	(0.024)
University degree	0.045	-0.012	0.007	-0.016	-0.038	0.011
	(0.041)	(0.044)	(0.022)	(0.041)	(0.027)	(0.029)
Previous position	**Reference group: unskilled worker**					
Skilled worker	-0.003	0.035	-0.026	0.027	0.039	0.066**
	(0.046)	(0.046)	(0.022)	(0.043)	(0.030)	(0.032)
Leading position	-0.035	0.007	0.011	0.003	0.036	0.085**
	(0.052)	(0.052)	(0.025)	(0.049)	(0.037)	(0.041)
Self-employed	-0.219***	-0.222***	-0.051**	-0.158**	0.019	0.050
	(0.079)	(0.070)	(0.016)	(0.061)	(0.054)	(0.059)
Not at the job market	0.148***	0.184***	-0.060***	0.171***	0.071**	-0.020
	(0.036)	(0.042)	(0.015)	(0.044)	(0.035)	(0.028)
Unemployed	0.261***	0.352***	-0.040**	0.231***	0.057**	0.008
	(0.033)	(0.035)	(0.016)	(0.037)	(0.028)	(0.026)

still Table 3	Public support in general	Financial support	Credit	General information	Coaching before	Coaching after
Sector	**Reference group: Service sector**					
Building & Construction	-0.093**	0.005	-0.018	-0.031	0.034	-0.002
	(0.044)	(0.044)	(0.018)	(0.041)	(0.031)	(0.028)
Education	0.190**	0.253**	0.091	0.087	0.087	0.075
	(0.070)	(0.086)	(0.081)	(0.099)	(0.084)	(0.084)
Energy & water supply	-0.231	0.227*	-0.047	-0.041	0.015	[1]
	(0.150)	(0.109)	(0.025)	(0.122)	(0.097)	
Hotel & restaurant	0.036	-0.072	-0.017	0.018	0.064	0.026
	(0.078)	(0.077)	(0.031)	(0.074)	(0.060)	(0.052)
Health & welfare	0.007	-0.021	0.017	-0.018	-0.028	0.001
	(0.075)	(0.075)	(0.040)	(0.068)	(0.045)	(0.050)
Housing	-0.083	-0.081	-0.034	0.019	-0.036	0.007
	(0.059)	(0.058)	(0.017)	(0.054)	(0.034)	(0.037)
Trade	-0.076**	-0.021	0.006	0.005	0.014	0.028
	(0.037)	(0.037)	(0.017)	(0.034)	(0.025)	(0.024)
Communications & information transmission	0.064	0.132*	0.041	-0.032	0.124**	0.030
	(0.064)	(0.067)	(0.042)	(0.067)	(0.061)	(0.049)
Insurance & banking	-0.176**	-0.063	-0.006	-0.156**	0.015	-0.058
	(0.075)	(0.072)	(0.032)	(0.059)	(0.050)	(0.036)
Agriculture & forestry	-0.172**	-0.079	-0.054*	-0.062	-0.020	0.076
	(0.091)	(0.088)	(0.016)	(0.077)	(0.054)	(0.067)
Other public and personal services	-0.050	-0.049	-0.003	0.006	0.033	0.015
	(0.038)	(0.039)	(0.017)	(0.036)	(0.027)	(0.026)
Manufacturing	0.046	-0.035	0.009	-0.069	-0.042	0.046
	(0.060)	(0.070)	(0.030)	(0.061)	(0.042)	(0.050)
Craft	**Reference group: Craft firms**					
No craft firm	0.025	-0.005	-0.084***	-0.063	0.021	0.006
	(0.042)	(0.044)	(0.025)	(0.041)	(0.028)	(0.027)
Full time income source	**Reference group: half-time income source**					
Full time	0.365***	0.2858***	0.076***	0.065	0.008	0.036
	(0.045)	(0.0419)	(0.011)	(0.042)	(0.029)	(0.027)
N	1201	1201	1201	1201	1201	1201
Pseudo R²	0.2615	0.1680	0.1329	0.0891	0.0548	0.0436

Notes: RWI/Söstra 2005, own calculations. The estimation is based on the Probit – Method. The coefficient describes the „marginal effects". *Significant at the 10 % level; ** Significant at the 5% level; *** Significant at the 1% level. Standard errors in parentheses. [1]Estimation could not be conducted since no respondents in the energy sector participated in coaching after the establishment of new business.

Education in terms of schooling and vocational degree hardly matters for participation in public support. The results for occupation before the establishment confirm the descriptive findings (Table 2). Previously self employed persons are less likely to get public start-up support in general, financial support, credit allowance and to participate in general information measures. Additionally it is the skilled employees (in leading positions) that are

more likely to participate in individual coaching measures after the establishment of new businesses.

4.2 Which kind of support leads to success by whom? Empirical Findings

In general, the results of our calculations of programme effects seem to confirm some of our expectations (table 4). As expected, business starters that received financial support are on average less successful in terms of positive employment growth but more successful in terms of positive turnover growth. Business starters that participated in general information programmes are less likely to experience positive employment growth while the insignificant estimate for turnover growth is in line with our expectations. Business starters that participated in individual coaching before the establishment were more successful at least in terms of a positive employment growth. Other than expected, the results indicate no positive effect in respect to growth in turnover.

Table 4: Results of propensity score exact matching: Total sample

	Positive employment growth				
	Financial Support	Credit	Information	Coaching before	Coaching after
ATET (Standarderror)	-0.069*	0.1714***	-0.061**	0.082**	0.022
	(0.036)	(0.057)	(0.030)	(0.041)	(0.046)
Number of treated after matching	404	83	364	134	135
Mean prop.score of matched treated	0.606	0.140	0.470	0.182	0.175
Mean prop.score of matched untreated	0.606	0.140	0.468	0.182	0.174
Mean prop.score of unmatched untreated	0.488	0.105	0.398	0.147	0.141
	Positive turnover growth				
	Financial Support	Credit	Information	Coaching before	Coaching after
ATET (Standarderror)	0.078*	-0.025	-0.050	0.016	-0.024
	(0.042)	(0.063)	(0.040)	(0.050)	(0.048)
Number of treated after matching	404	82	364	134	135
Mean prop.score of matched treated	0.606	0.141	0.470	0.182	0.175
Mean prop.score of matched untreated	0.606	0.141	0.468	0.182	0.174
Mean prop.score of unmatched untreated	0.488	0.104	0.398	0.147	0.141

Source: RWI/Söstra 2005, own calculations.

Table 5: Results of propensity score exact matching: Unemployed before business started

	Positive employment growth				
	Financial Support	Credit	Information	Coaching before	Coaching after
ATET (Standarderror)	-0.052 (0.057)	0.098 (0.071)	-0.089** (0.043)	0.071 (0.068)	-0.057 (0.061)
Number of treated after matching	182	33	175	56	62
Mean prop.score of matched treated	0.715	0.113	0.552	0.166	0.188
Mean prop.score of matched untreated	0.714	0.113	0.551	0.166	0.187
Mean prop.score of unmatched untreated	0.681	0.089	0.523	0.148	0.160
	Positive turnover growth				
	Financial Support	Credit	Information	Coaching before	Coaching after
ATET (Standarderror)	0.052 (0.071)	-0.038 (0.098)	-0.006 (0.058)	-0.175** (0.078)	-0.090 (0.076)
Number of treated after matching	182	33	175	56	62
Mean prop.score of matched treated	0.715	0.113	0.552	0.166	0.188
Mean prop.score of matched untreated	0.714	0.114	0.551	0.166	0.187
Mean prop.score of unmatched untreated	0.681	0.088	0.523	0.148	0.160

Source: RWI/Söstra 2005, own calculations.

Interestingly, the results for the group of *previously unemployed business starters* show no positive effects on subsequent firm growth (see Table 5). There are even some negative effects of general information and individual coaching before the establishment. So far, we find no evidence that public support is able to increase the performance of start-ups by previously unemployed entrepreneurs.

Within the group of *previously employed business starters* the results in Table 6 show just one significant positive effect of the participation in coaching measures after the establishment of the new business on positive turnover growth.

Table 6: Results of propensity score exact matching: Employed before business started

	Positive employment growth				
	Financial Support	Credit	Information	Coaching before	Coaching after
ATET (Standarderror)	-0.153 (0.116)	0.211 (0.137)	-0.078 (0.105)	0.003 (0.128)	0.102 (0.119)
Number of treated after matching	42	18	0.332	20	24
Mean prop.score of matched treated	0.357	0.207	0.329	0.109	0.1644
Mean prop.score of matched untreated	0.357	0.206	0.300	0.110	0.164
Mean prop.score of unmatched untreated	0.308	0.195	0.332	0.091	0.146
	Positive turnover growth				
	Financial Support	Credit	Information	Coaching before	Coaching after
ATET (Standarderror)	0.060 (0.084)	0.091 (0.127)	-0.169 (0.107)	0.028 (0.145)	0.187* (0.096)
Number of treated after matching	42	18	44	20	24
Mean prop.score of matched treated	0.357	0.207	0.322	0.109	0.1644
Mean prop.score of matched untreated	0.357	0.206	0.320	0.110	0.164
Mean prop.score of unmatched untreated	0.308	0.199	0.298	0.091	0.146

Source: RWI/Söstra 2005, own calculations.

In the case of *business starters that were not part of the labour market* before foundation, the participants of coaching before the establishment are more successful in terms of positive employment growth (table 7). Additionally business starters that received public credit allowance or participated in coaching measures before the establishment perform better with respect to positive employment growth than those who did not. However, the participation in general information measures has a significant negative effect on employment.

To sum up, there are only few effects of all measures in every group. As expected, general information measures have no or even a significant negative effect on firm growth. Coaching before has a negative effect on employment growth in the group of previous unemployed business starter and a positive effect in the group of business starter that were not part of the job market before the foundation. Individual coaching after the foundation has just a positive effect in the group of former employees on turnover growth and credit allowance has just a positive effect in the group that were not part of the job market before. With regard to the whole sample we can observe positive effects of credit allowance and coaching measures on employment growth while financial support has an effect on positive employment growth.

Table 7: Results of propensity score exact matching: Not part of the job market before business started

	Positive employment growth				
	Financial Support	Credit	Information	Coaching before	Coaching after
ATET (Standarderror)	-0.063	0.168***	-0.115***	0.092*	0.034
	(0.047)	(0.065)	(0.036)	(0.054)	(0.056)
Number of treated after matching	251	69	241	86	103
Mean prop.score of matched treated	0.617	0,147	0.488	0.159	0.185
Mean prop.score of matched untreated	0.617	0,148	0.487	0.159	0.184
Mean prop.score of unmatched untreated	0.477	0,123	0.408	0.125	0.157
	Positive turnover growth				
	Financial Support	Credit	Information	Coaching before	Coaching after
ATET (Standarderror)	0.045	0.016	-0.040	-0.029	0.015
	(0.054)	(0.069)	(0.049)	(0.063)	(0.057)
Number of treated after matching	251	68	241	86	103
Mean prop.score of matched treated	0.617	0.149	0.488	0.159	0.185
Mean prop.score of matched untreated	0.617	0.149	0.487	0.159	0.184
Mean prop.score of unmatched untreated	0.477	0.123	0.408	0.125	0.157

Source: RWI/Söstra 2005, own calculations.

5. Discussion and implications

The missing effect for general information measures should be associated with the general aims of these measures. As expected, coaching is more successful in the whole sample and in case of former employed business starter or business starter that were not part of the job market. Thus, the "time to learn" hypothesis may work, as necessary skills are taught in some detail before the establishment in contrast to the general information measures that comprise just one day or even less in the majority of the cases. Especially individual coaching after the establishment is successful in the group of former employed founders. We know from our participation probability regression that it is overall the higher skilled employees partly in leading position that participated in coaching after the establishment – probably knowing which kind of skills they need and carefully choosing the appropriate measures. Here, the question comes up, how to finance long-term individual coaching measures that are costly and time-consuming and of course windfall gains may exist, because we do not know the willingness to participate without support – especially in the group of previously employed founders.

The effects in respect to financial support are in line with our expectations. Public credit allowance has a positive effect on employment growth in the whole sample and in the group of founders that were not part of the job market before the establishment. This shows that

those business starter mostly former students and house maker do need the public subsidies for a good performance. However, it is this group that is less likely to receive credit allowance, so a very caution policy implication would recommend the expansion of the measure for especially this target group.

No or negative effects of all measures in the group of previously unemployed business starters might result from unobserved characteristics of the participants that lead to a participation in general information measures such as a high uncertainty concerning how to establish the new business and obviously all measures do not effectively reduce this uncertainty. One possible interpretation from our results is that it apparently difficult to target support for this group. Otherwise, this might be the group with the least propensity to grow in respect to both employment and turnover.

Overall, results underline recent debate around evidence-based policy measures and emphasize urgent need for needs-based support. On the whole, our paper contributes to the ongoing discussion of what makes public support successful in bringing a perspective from a matched sample.

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