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Start-ups by the unemployed: characteristics, survival and direct employment effects

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Abstract Fostering and supporting start-up businesses by unemployed persons has become an increasingly important issue in many European countries. These new ventures are being subsidized by various governmental programs. Empirical evidence on skill-composition, direct job creation and other key variables is rather scarce, largely because of inadequate data availability. We base our analysis on unique survey data containing a representative sample of over 3,100 start-ups founded by unemployed persons in Germany and subsidized under two different schemes: the *bridging allowance* (*BA*) and the *start-up-subsidy* (*SUS*). We are able to draw on extensive pre- and post-founding information concerning the characteristics of the business (start-up capital, industry, etc.) and of the business founders (education, motivation, preparation, etc.). Our main results are: (1) The two programs attracted very different business founders (higher skilled for the BA, more female persons for the SUS), and different businesses were created (less capital intensive for the SUS). (2) We find that formerly unemployed founders are motivated by push *and* pull factors. (3) Survival rates 2.5 years after business founding are quite high (around 70%) and similar for both programs and across gender. (4) However, the newly developed businesses differ significantly in terms of direct employment effects. While around 30% of the founders with the BA already have at least one employee, this is true for roughly 12% of the founders with the SUS.

Keywords Start-up subsidies · Self-employment · Unemployment · Direct employment effects · Survival

JEL Classifications J68 · M13 · L26

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1 Introduction

Fostering and supporting start-up businesses by unemployed persons has become an issue that is discussed as an increasingly important policy

measure in many European countries. These new ventures are being supported by various governmental and EU programs.[1] Potential benefits include not only the end of unemployment for the new entrepreneur, but also some further positive effects, e.g., direct job creation.[2] However, it is often feared that the formerly unemployed lack basic qualifications to become entrepreneurs. Empirical evidence on the characteristics of previously unemployed business founders, their survival rates, direct job creation and other key variables is rather scarce and is usually based on small datasets.[3] One possible reason is that start-up subsidies for the unemployed—despite all activities and discussions—mostly remain only a relatively small component in the active labor market policies (ALMP) of individual countries. However, in Germany things have changed radically in the last decade, making it an important case for other European countries. While the Federal Employment Agency (FEA) funded only 37,000 business start-ups by formerly unemployed individuals in 1994, the number was in excess of 250,000 in 2005 (among them approximately 160,000 in West Germany), which made the support of self-employment all of a sudden a crucial part of ALMP.[4] This increase was, inter alia, driven by a new program known as the 'start-up subsidy' (SUS, *Existenzgründungszuschuss*), which was introduced in 2003 as part of the 'Hartz reforms'.[5] For a period of more than 3 1/2 years, unemployed individuals could choose between two programs supporting their decision to become self-employed: the 'start-up subsidy' and the 'bridging allowance' (BA, *Überbrückungsgeld*), the latter having been implemented earlier, in the late 1980s.[6] Both programs differ in their design, the most important difference being in respect to the amount and duration of the subsidy. While the BA pays recipients the same amount that they would have received as unemployment benefits for a period of 6 months (plus a lump sum of roughly 70% of the same, to cover social security contributions), the SUS runs for 3 years, paying a lump sum of €600/month for the first year, €360/month for the second, and €240/month for the third.

Compared to earlier studies on start-ups by unemployed, our analysis provides several advantages: First of all, this paper investigates what kind of businesses were created by those who took advantage of one of the two programs. Based on a representative dataset of roughly 3,100 West German start-ups of unemployed persons that were subsidized by these two schemes, we have been able to collect a unique panel data set by combining administrative with survey data, allowing us to make a differentiated analysis for several subgroups.[7] Second, we do not

[1] See, for instance, the EU Community Initiative EQUAL, which is funded through the European Social Fund to test inter alia new ways of effectively supporting start-ups by unemployed persons.

[2] For a more general discussion on the value of entrepreneurship and a recent survey on empirical evidence, see van Praag and Versloot (2007). Blanchflower and Oswald (2007) report another possible benefit on the individual level. Based on cross-country evidence they show that self-employed individuals have higher job- and life-satisfaction (when compared to similar employees).

[3] For some earlier evidence in different European countries, see, e.g., Storey and Jones (1987), Evans and Leighton (1990), Storey (1991), Audretsch and Vivarelli (1995), Hinz and Jungbauer-Gans (1999), Pfeiffer and Reize (2000) and Andersson and Wadensjö (2007).

[4] In 2005 the spending on start-up subsidies absorbed roughly 17.2% of all the spending on ALMP in Germany, whereas the EU-15 average was below 5% (European Commission 2005).

[5] The 'Hartz reforms' were (and still are) a large reform of the German labor market, adjusting active and passive labor market policies. Within the reform process, resources were shifted away from traditional active labor market policy programs—like job creation schemes and vocational training programs—to more innovative measures like start-up subsidies and short training programs (see Caliendo and Steiner 2005, for an overview).

[6] Both programs were replaced in August 2006 by a single new program—the new start-up subsidy program (*Gründungszuschuss*)—which will not be analyzed here.

[7] Most yearly surveys on general start-up activities (such as the General/Regional Entrepreneurship Monitor(s), the KfW start-up monitor or the micro-census) and previous studies on start-ups by unemployed persons (such as the articles of Hinz and Jungbauer-Gans 1999 or Pfeiffer and Reize 2000) had, and have, access only to a relatively small and non-representative number of observations (in terms of the absolute number of start-ups by unemployed persons all studies are based on less than 300 observations) and only to a limited amount of socio-demographic and economic variables. Moreover, all studies, with the exception of Hinz and Jungbauer-Gans (1999), argue without having any evidence on motivational variables that start-ups by the unemployed are mostly or only driven by push-motives.

only shed light on the basic characteristics of the business founders (as previous studies did), but also investigate the motivations of becoming self-employed and describe the types of businesses started, their survival rates and the associated direct job creation after 2.5 years as well as the resulting personal incomes of the business founders. Moreover, as we draw on a representative sample of start-ups by unemployed persons, we are further able to systematically compare the personal and business-related characteristics of previously unemployed entrepreneurs in the two schemes. Wherever possible, we also compare their characteristics with those persons who started new businesses, but were not previously unemployed before doing so (hereafter called "other start-ups").[8]

While survival rates 2.5 years after business founding are quite high and similar for both programs, employment effects and incomes differ significantly between the two support schemes. The two programs attracted very different types of individuals, resulting in very different types of businesses. It is fair to say that participants in the BA were relatively more qualified and created larger businesses by using more start-up capital. The reason might be the following: the SUS attracted groups that had been underrepresented not only in the already existing support scheme (the BA), but also among the group of self-employed persons in general. Even though these new target groups created rather small businesses—mostly without any further employees and with no or only little capital—the labor market attachment of the participating individuals was generally raised, while the personal income was increased for the majority of the male SUS founders. The BA, on the other hand, yielded the double dividend policy-makers were hoping for. Survival rates of businesses are high, personal incomes of the majority of all start-up entrepreneurs have gone up, and a remarkable number of additional jobs have been created.

The rest of the paper is organized as follows: Section 2 presents the main characteristics of the bridging allowance and the start-up subsidy. Moreover, we provide a brief general overview of self-employment trends in Germany, to the extent possible, given that the available data with respect to business founders is rather limited. Section 3 describes the data used for the analysis, while Sect. 4 discusses the characteristics of the formerly unemployed business founders, describes the businesses they created as well as survival rates, direct employment effects and the growth of personal incomes. Section 5 summarizes the findings and presents the conclusions.

2 Self-employment trends and start-up subsidies in Germany

In this section, we provide a short overview of the main features of the two programs, the number of entries into the two programs during the last 20 years, and a brief review of some figures with respect to general start-up activities and recent trends in the area of self-employment in Germany and in selected European Countries. Self-employment refers to persons who own, operate and manage a business or profession under their own liability (instead of working for an employer), who report self-employment as their main occupation and who aim to draw their major living income out of their own business.

2.1 Start-up subsidies: program features and number of entries

From 1986 to 2002, the bridging allowance was the only program providing support to unemployed individuals who wanted to start their own business. Its main goal was to cover basic costs of living and social security contributions during the initial stages of self-employment, when the business might not be able to yield adequate income. Usually, self-employed persons need financial support during the start-up period for several reasons[9]: During this time they need to fund some initial investment as well as the costs of living. Besides, they often have to develop their entrepreneurial skills and knowledge

[8] As the labor market situation and the development of new start-ups differ between West and East Germany (due to the economic transformation of East Germany), we focus on West Germany in this paper. For previous evidence on the differing developments, see for instance Fritsch (2004) and Kronthaler (2005).

[9] See, e.g., Blanchflower and Oswald (1998), and Johannson (2000), on the importance of start-up capital and capital constraints for becoming self-employed.

because of having moved from employment or unemployment to self-employment.

The government's aim when supporting formerly unemployed individuals with BA is twofold: First, to integrate them into the labor market and increase their long-term labor market attachment. To a certain extent, a return to wage employment would also be seen as a success.[10] Second, the government further hopes that the new businesses create additional jobs and therefore spur overall growth. The BA supported the first 6 months of self-employment by providing the same amount that the recipient would have received in case of unemployment. Since the unemployment scheme also covered social security contributions, including health and retirement insurance, etc., an additional lump sum for social security was granted, equal to approximately 70% of the unemployment support. Unemployed people were entitled to BA, conditional on their business plan being approved externally, usually by the local chamber of commerce. Thus, approval of an individual's application did not depend on the local labor office.[11]

In January 2003, SUS, the second program, was launched to support unemployed people starting new businesses. The goal of SUS was to make available social security during the initial phase of self-employment and to cover part of the basic cost of living in the first year of support. So, in contrast to the BA, the SUS focused more heavily on provision of social security for the newly self-employed persons, not for the first 6 months but for the first 3 years. Therefore, different from the BA the support was not related to the individual's benefit level, but comprised a lump sum payment of €600/month in the first year, €360/month in the second year and €240/month in the third year, with the condition that support in the second and third year was granted only if the income of the entrepreneur did not exceed €25,000 in the previous year. SUS recipients were obligated to contribute to the statutory pension insurance fund (which BA recipients are not), but could claim a reduced rate for national health insurance.[12] When the SUS was introduced in 2003, applicants did not have to submit business plans for prior approval, but were required to do so after November 2004, as was already the case with the BA. Government's expectations on the SUS in terms of output were lower than for the BA. Supported persons were supposed to give self-employment a try in the first place (see Hartz-Kommission 2002, p. 165), and, depending on their experience, they were expected to continue to be self-employed or to become regularly employed again. The overall target was to integrate persons in the first labor market and to avoid a return to unemployment.[13]

Hence, between January 2003 and July 2006, unemployed individuals could freely choose between the two programs to support their new businesses. One scheme was financing the first 6 months of self-employment by providing what the individual would have received in unemployment benefits (BA), and the other offered a fixed, yet declining, amount for the first 3 years of self-employment with the risk of losing the support if the income grew beyond specified limits (SUS). In this institutional framework, the BA would be the rational choice if the unemployment benefits were fairly high or if the entrepreneur expected to generate an income higher than €25,000 in the first year. To give an example: The maximum amount of financial support an individual could receive under the SUS was €14,400 over 3 years. In order to receive the same amount with the BA, an individual needed unemployment benefits of approximately €1,400/month, which would pay him the same amount within 6 months. On the other hand, if an individual only had unemployment benefits of, e.g., €800/month, she would receive only €8,160 under the BA and still the fixed amount of €14,400 under the SUS. It should be emphasized that not only the level of unemployment benefits, but also time preferences, the individual's discount rate and expectations about incomes out of self-employment activities in the first 3 years determine the choice between the two programs (see also Sect. 4.1).

[10] It should be emphasized that persons kept their claims for remaining unemployment benefits for 4 years after their start as a self-employed. Thus, they had a high incentive to return into unemployment if they failed as self-employed.

[11] Access to this program was eased in 2002. Until 2002, persons had to stay unemployed for a minimum of 1 month before they were allowed to apply for the BA. From 2002 onwards, it was possible to apply for the BA right away from the first day of unemployment.

[12] See Koch and Wießner (2003) for details.

[13] For further details on the intentions of having introduced SUS as a second program in addition to the BA, see the report of the Hartz-Kommission (2002). See Table 1 for more details on both programs.

Table 1 Design of the programs

	Bridging allowance	Start-up subsidy
Entry conditions	Unemployment benefit *entitlement*	Unemployment benefit *receipt*
	Approval of the business plan by an external source (e.g., chamber of commerce)	Approval of the business required as of November 2004
Support	Participant receives UB for 6 months	Participants receive a fixed sum of €600/month in the first year, €360/month (€240/month) in the second (third) year
	To cover social security liabilities, an additional lump sum of approx. 70% is granted	Claim has to be renewed every year, income is not allowed to exceed €25,000 per year
Other	Social security is left at the individual's discretion	Participants are required to join the statutory pension insurance and receive a reduced rate on the statutory health insurance
Details	§57(1) Social Code III	§421 l Social Code III

The number of beneficiaries of the two programs during the last 2 decades makes clear that support measures towards self-employment have gathered increasing importance in Germany's active labor market policy (ALMP). While the Federal Employment Agency funded only 5,600 persons under the BA in 1986, the number increased to 37,000 business start-ups in 1994, and further to 125,000 in 2002, the year before the second scheme was introduced (see Fig. 1). In 2003, the number of start-ups financed under either one of the two schemes doubled to more than 250,000; 159,000 individuals used the BA route and another 97,000 applied for the SUS. Due to some changes in the eligibility conditions introduced between 2004 and 2005, the number of total start-ups under the two programs peaked in 2004; the 350,000 entries were almost equally divided between the two schemes. In that year, almost 10% of Germany's registered unemployed persons participated in the programs; assistance provided under the two schemes accounted for 17% of the total spending on ALMP. That made these two programs together, in terms of participants and spending, the most important of the year, followed by vocational training (185,000 entries), wage subsidies (160,000) and job creation schemes (150,000).[14] In 2005, the number of entries into BA and SUS was almost identical to 2003. In the first 7 months of 2006, another 100,000 set up businesses with support from the BA and 43,000 from the SUS. In line with a general policy to reduce the number of active labor market programs (see, e.g., Eichhorst and Zimmermann 2007), the two programs were replaced in August 2006 by a single new program—the new start-up subsidy (*Gründungszuschuss*)—which is not analyzed here.[15]

2.2 Self-employment trends

In order to be able to compare in later sections the characteristics of businesses set up by unemployed persons with other start-ups, we provide in this subsection a short review of some self-employment trends. It has to be emphasized, however, that this data, such as the number of yearly start-ups, the share of start-ups by previously unemployed among all new businesses and their relevant characteristics, does not provide exact information in Germany.[16]

[14] It should be noted that unemployed individuals can in principle participate in any of the mentioned programs. Their case worker in the local labor office assesses their needs and makes suggestions based on this assessment and the local situation. One difference between the start-up subsidies and the other programs is that individuals could not be assigned against their will in the start-up subsidies. Once an individual participates in one program, he or she is not allowed to participate in another one at the same time.

[15] See Caliendo and Kritikos (2009) for further details on the new program.

[16] All existing statistics suffer either from the problem of under- or over-estimation of the yearly number of start-ups. Moreover, almost none of the sources is able to reveal how many of the founders started businesses out of unemployment; that is why we are able to present only some broad trends. For further details, see Fritsch et al. (2002) or Kritikos and Kahle (2006).

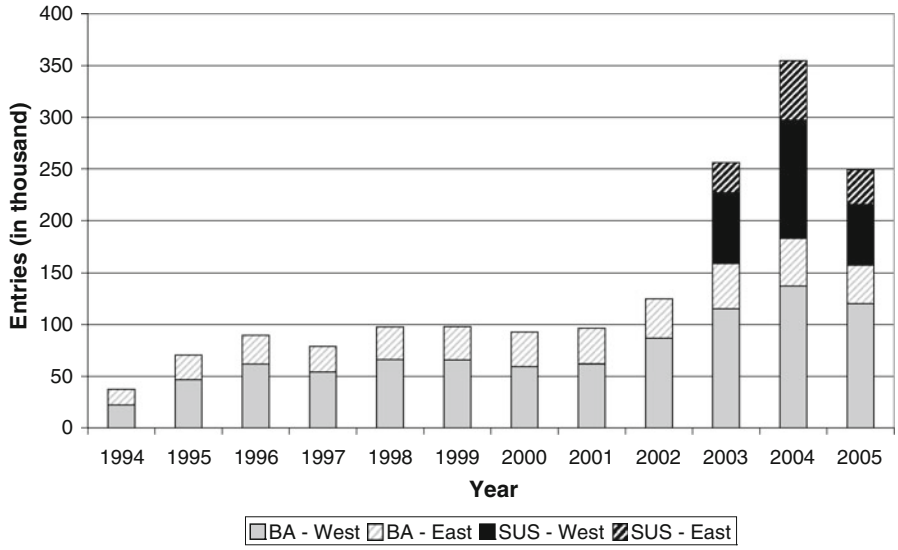

Fig. 1 Entries in start-up programs, 1994–2005. *Note*: *BA* bridging allowance, *SUS* start-up subsidy

Basic data of yearly start-ups are provided by the "Institute for Small Business research" (Institut für Mittelstandsforschung, IfM). The IfM carries out a complete annual inventory count (based on administrative data of the tax authorities) in the area of the "industrial economy", which covers about 80% of all start-ups and excludes only "professional persons" (e.g., lawyers, architects, etc.). For the year 2003, the first year of the SUS, the IfM observed (in comparison to 2002) an increase from 452,000 to 509,000 and in 2004 to 573,000 in the number of start-ups. In 2005, it dropped to 501,000 start-ups (for all data see Institut für Mittelstandsforschung 2007). This observation reveals that there was a significant increase in the number of start-ups in comparison to the year before the SUS was launched. Moreover, between 2003 and 2005, there was a parallel growth in the total number of start-ups and in the number of start-ups by unemployed. Without having information about the precise share of start-ups by unemployed persons within the IfM dataset, this observation indicates, to a certain extent, that the increase in the total number of start-ups was driven by previously unemployed persons.[17]

Focusing on the socio-demographic characteristics of business founders, our analysis in the next section requires an overview of three more variables, namely gender, education and age. Information about the first variable, gender, can be found in the micro-census (*Mikrozensus*), which is a representative 1% sample drawn every year, in early spring, from the total population of Germany (see, e.g., Piorkowsky 2008). The micro-census reveals that start-ups are predominantly initiated by men. Between 1996 and 2003, the share of men in total start-ups was more or less unchanged at around 72% (leading to similar shares among the total number of self-employed, too). With the new support scheme SUS, the ratio slightly shifted in favor of female start-ups; in the subsequent 2 years, the share of female start-ups increased from 28% to about 30%.[18]

Education and age of business founders are two variables observed in the start-up monitor of the state-owned bank KfW (Kreditanstalt für Wiederaufbau), which provides a yearly report on start-ups, and the German Socio-Economic Panel (SOEP), a representative panel survey containing information about the socio-economic situation of 22,000 individuals living in 12,000 households in Germany. Besides, we

[17] Caliendo et al. (2009) analyze—based on the German Socio-Economic Panel (SOEP)—the risk-attitudes of nascent entrepreneurs in 2004 and show that during this period about every second person started self-employment out of unemployment. However, since the data cover only 150 business founders, it is too small for an annual analysis of whether the growth in start-ups by unemployed persons had a direct effect on the number of self-employed.

[18] Similar trends were also observed in smaller samples; see Hinz and Jungbauer-Gans (1999), Kreditanstalt für Wiederaufbau (2006) or Wagner (2007). However, only the micro-census—due to its larger sample size—allows one to point out the change in the share of female start-ups.

can also extract some information from two earlier studies of Hinz and Jungbauer-Gans (1999) and Pfeiffer and Reize (2000), which compared start-ups by unemployed persons (then supported by the BA) with other start-ups with respect to education.

All sources have observed the same tendencies with respect to education. Hinz and Jungbauer-Gans (1999) report that founders of start-ups are—irrespective of their previous employment status—highly educated. A little less than 50% of the observed business founders had, for instance, general or specialized secondary schooling. The SOEP panel data have observed similar shares of highly educated in start-ups and revealed that the share of those who have finished upper secondary schooling and/or tertiary education among business founders is higher than in the total population of employed and unemployed persons (see Caliendo et al. 2009).[19]

With respect to the age of the founders of start-ups, both surveys (the KfW start-up monitor and the SOEP) observe a U-shaped distribution over the last few years; the highest share among all founders can be found in the age group between 30 and 40 years, while there are decreasing shares in both directions (between 14 and 29 years as well as above 40 years). It is also interesting to note that Pfeiffer and Reize (2000), whose sample systematically excludes the smaller businesses, also observe a U-shaped distribution with its peak between 30 and 35 years. In Sect. 4.1 we will compare the distribution of these variables for both support schemes and relate the results with the general trends observed here.

Increasing start-up activities can have a lasting impact on the economy only if there is a positive balance between entries into and exits from self-employment, i.e., when the total number of self-employed persons increases. Information about the growth in the number of self-employed persons can also be derived from the micro-census. It shows that there has indeed been a constant increase in the number of self-employed persons in Germany during this period (see Fig. 2). Three further observations are particularly worth mentioning: (1) In 2005, for the first time, the number of self-employed persons was estimated at over 4 million (and increased further in 2006); (2) during the last 15 years, the total number of self-employed persons has increased by 1.2 million persons.[20] (3) The increase in the number of self-employed persons is mostly accounted for by persons who became self-employed without creating any further jobs. As the micro-census reveals, the number of solo entrepreneurs has increased during the last 15 years (1991–2006) by 1 million, while the number of self-employed persons who created further jobs grew only by 200,000 persons during the same period (see Fig. 2).[21]

In this context it is also interesting to note how the share of self-employed persons in Germany developed compared to other major European countries. As the OECD employment statistics reveal, the mentioned increase in the self-employment rate in Germany is—with an increase from 10.8% to 12.2% in the last 10 years (between 1996 and 2006)—rather unique. The share of self-employed persons among all employed persons dropped in the same time period in all other major European countries (see Table 2), for instance, in Great Britain from 14.9% to 13.2%, in France from 10.4% to 9.0%, in Italy from 29.3% to 26.7% and in Spain even from 24.7% to 17.9%. It cannot be excluded that the reverse development in Germany is due to the high increase of start-ups by the unemployed.

3 Data

We use a unique dataset that originates from a large evaluation project for the Federal Ministry of Labor and Social Affairs (for details see Caliendo et al. 2006). The data consist of a random sample of approximately 3,100 participants who became self-employed in West Germany in the third quarter of 2003, with support from either SUS or BA; approximately 1,500 participants used the SUS and 1,600 the BA. By combining administrative data from the

[19] The micro-census reveals a similar trend among the stock of self-employed persons: share of those having finished upper secondary schooling among self-employed persons is around 41%, whereas among all employed persons it is only 29%, c.f. Statistisches Bundesamt (2005).

[20] In 1991, the same report (micro-census) had estimated about 3 million persons in self-employment.

[21] This tendency is expected to be sustained in the future: the micro-census observed that only 20% of all start-ups in the year 2005 employed other persons, whereas in 1996 30% of them offered jobs to others (for all figures, cf. Piorkowsky 2008).

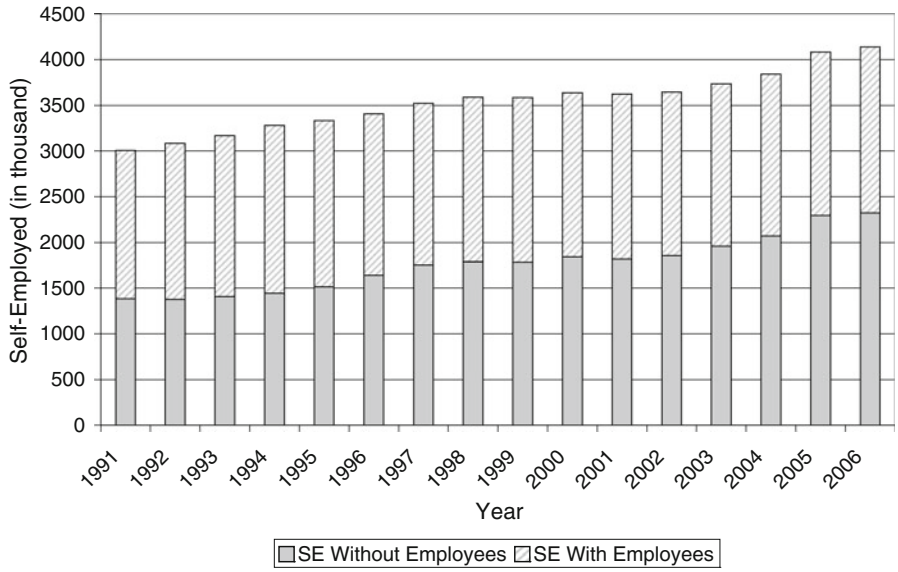

Fig. 2 Number of self-employed with/without employees, 1991–2005. *Source*: Piorkowsky (2008)

Table 2 Self-employment rates in major European countries[a]

Country	Years											Change 1996–2006 (in %)[b]
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	
Austria	10.6	10.5	10.7	10.6	10.4	10.7	10.7	10.6	10.7	10.8	11.0	3.8
Denmark	8.4	7.9	8.2	8.0	7.7	8.0	8.2	8.1	7.8	7.8	8.2	−2.4
England	14.9	14.5	13.7	13.2	12.8	12.8	12.7	13.2	13.6	13.0	13.2	−11.4
Finland	13.9	13.8	13.4	13.1	12.9	12.3	12.2	12.3	12.1	12.0	12.2	−12.2
France	10.4	10.1	9.8	9.5	9.2	8.9	8.8	8.8	8.9	9.0	9.0	−13.5
Germany	10.8	10.9	11.0	10.8	11.0	11.1	11.2	11.4	12.1	12.4	12.2	13.0
Greece	32.7	32.3	32.3	32.1	32.3	31.5	31.3	31.0	30.2	30.1	29.8	−8.9
Ireland	19.6	19.4	18.8	17.8	17.6	17.0	16.8	16.7	17.2	16.6	15.9	−18.9
Italy	29.3	29.1	29.1	28.6	28.5	28.2	27.7	27.5	28.4	27.0	26.7	−8.9
Netherlands	10.8	11.0	10.5	10.6	10.8	10.4	10.5	10.7	11.1	11.2	N/A	3.7
Portugal	26.6	26.0	25.6	24.6	23.4	24.6	24.7	24.9	24.2	23.5	22.7	−14.7
Spain	24.7	23.5	22.7	21.3	20.2	19.8	19.0	18.3	18.1	18.2	17.9	−27.5
Sweden	10.6	10.4	10.2	10.3	10.0	9.7	9.5	9.4	9.6	9.6	9.8	−7.5

Source: OECD (2008), ILO (2008)

[a] Self-employment rates measured as a percentage of total civilian employment

[b] No data available (N/A) for 2006 in The Netherlands, hence change between 1996 and 2005

FEA with survey data, we are able to present details on the characteristics of a representative sample of formerly unemployed business founders and the characteristics of their businesses. For the administrative part, we use data based on the 'Integrated Labor Market Biographies' (ILMB, *Integrierte Erwerbs-Biographien*) of the FEA, containing relevant register data, e.g., socio-demographic variables or the labor market history of individuals.

These administrative data were enriched with computer-assisted telephone interviews; persons who started their business between July and September 2003 were surveyed twice with a standardized questionnaire. The first interviews took place in January/February 2005 and the second round in January/February 2006. Most importantly, individuals self-reported in detail certain characteristics of their businesses, including start-up capital and

industry. They also provided details about their preparation, motivation and previous knowledge/experience, as well as about reasons for failure if they reported that they were no longer self-employed. At the time of the second interview, individuals who were still self-employed had been running their business for around 2.5 years and were asked about their employment status, the number of employees and their personal income, while those persons who failed were asked about their actual employment status. We will discuss the characteristics of the business founders in Sect. 4.1 before we describe the motivation and preparation in Sect. 4.2. The types of businesses created will be presented in Sect. 4.3 before we turn to survival rates (Sect. 4.4), direct job creation (Sect. 4.5) and income (Sect. 4.6).

What should be kept in mind at this stage is that a majority of persons utilizing the SUS were still receiving a subsidy at the end of our observation period, i.e., the time of the second interview. Only those who had exceeded the income limit of €25,000 in the previous year had lost access to the subsidy. Clearly, it would be nice to have an observation window that covers the time after the subsidy has completely run out. However, we argue that the amount of €240 received in the third year is quite small. Therefore, we believe that our analysis gives an approximate indication of the situation without the subsidy where only a small adjustment of survival rates should take place once the support with SUS runs out.[22]

4 Descriptive analysis of BA and SUS business founders

4.1 Characteristics of the business founders

Table 3 contains sample means of selected variables describing the characteristics of the business founders based on administrative records measured at the beginning of the start-up. In order to reveal differences between participants under the two programs and gender differences within a program, we add results from a *t*-test of mean equality among the four groups. We report *p*-values that refer to differences between men and women in BA (p_1), men and women in SUS (p_2), men in BA and SUS (p_3) as well as women in BA and SUS (p_4). The *p*-value refers to the significance level below which the hypothesis of mean equality can be rejected, e.g., a value of 0.05 shows that means are not equal at a significance level of 5%.

A first glance at the number of observations reveals clear gender differences between both programs. The male–female ratio is about 3:1 for BA, thus very similar to the ratio in the overall population of business founders and of self-employed persons (as we showed before, for several years the share of female start-ups accounted for 28% of the overall start-up population). We observe a very different ratio, approximately 1:1, for the SUS, making clear that the design of the SUS seemed to be particularly attractive for females. The results of the *t*-tests (columns 5–8) also reveal that the marital status clearly varies between genders and programs. While the majority of the male business founders who used the BA are married, this is true for only 43% of the women. On the other hand, nearly 60% of the female participants in SUS are married, possibly indicating that these women are using self-employment mainly to generate additional income for the household. Women in SUS also have significantly more children (see p_4) than their counterparts in BA, and are significantly more reluctant to work full time.

Looking at the age distribution once again shows some interesting differences between men and women in SUS (p_2) and men in SUS and BA (p_3). Most of the start-ups are aged between 30 and 39 years (around 40%), which is, as we showed in Sect. 2.2, very similar to the overall age composition of business founders. One exception was found again in the SUS, where we observed a significantly higher share of younger male individuals. The mean age in this group is 37.7 years, whereas it is 39 for other groups.

Further differences emerge among the groups' qualifications (see Table 4). Comparing qualifications by the highest school degree or the variable 'job qualifications'—which is an assessment by the case manager in the local labor office—we see that BA participants are significantly more highly qualified.

[22] Moreover, the subsidy had a mandatory use, as the participants were obliged to pay the money into the social security system. Thus, it had only an indirect effect on the income of the observed participants and could not be used for covering the cost of living.

Table 3 Socio-demographic background of the business founders[a]

	Start-up subsidy		Bridging allowance		*t*-tests of mean equality[b]			
	Men	Women	Men	Women	p_1	p_2	p_3	p_4
Married	0.452	0.582	0.631	0.432	0.000	0.000	0.000	0.000
Health restrictions	0.089	0.044	0.040	0.034	0.634	0.001	0.000	0.444
German	0.338	0.295	0.286	0.241	0.087	0.077	0.013	0.055
Desired working time: full-time	0.979	0.550	0.993	0.833	0.000	0.000	0.004	0.000
Children	0.270	0.521	0.387	0.299	0.002	0.000	0.000	0.000
Age (in years)	37.7	39.2	39.4	39.4	0.918	0.001	0.000	0.781
Age category								
18–29 years	0.239	0.131	0.135	0.111	0.226	0.000	0.000	0.000
30–39 years	0.339	0.393	0.381	0.429	0.099	0.028	0.054	0.352
40–49 years	0.281	0.352	0.353	0.325	0.326	0.003	0.001	0.375
50–64 years	0.141	0.124	0.131	0.135	0.840	0.331	0.533	0.594
Observations	811	704	1,207	378				

[a] Characteristics are measured at the beginning of the start-up, based on administrative records. Numbers are shares unless stated otherwise

[b] p-values refer to t-tests of mean equality in the variables between men and women in BA (p_1), men and women in SUS (p_2), men in BA and SUS (p_3) as well as women in BA and SUS (p_4)

For example, the share of individuals who had completed upper general or specialized secondary schooling is high among participants in BA—it is almost the same as in the overall start-up trend (44% of men / 56% of women, see Hinz and Jungbauer-Gans 1999). For SUS participants it was much lower (29% of men / 35% of women). Job qualifications show a similar picture. Here, 24% of the male and 33% of the female participants in BA are ranked as highly qualified, whereas this is true for only 12% (17%) of the male (female) participants in SUS.[23]

Based on the above, it is not surprising that participants in BA also have a more favorable labor market history. Compared to SUS, fewer of them faced long-term unemployment before starting a business (Table 4). They also have higher and longer claims for unemployment benefits. The differences are substantial: for instance, male BA recipients received an average monthly unemployment support of €1,164 before starting a program, whereas for SUS recipients it amounted only to €700/month. Furthermore, looking at the distributions of monthly unemployment benefits shows that more than 22% of the male BA founders gathered more than €1,500/month, whereas this was true only for 2.2% of the male SUS founders. Moreover, it is worth mentioning that the remaining period of benefit entitlement significantly differed between the two groups—approximately 7 months for BA recipients and 5 for SUS recipients.

Given the relatively stable popularity and participant structure of the BA program—even after the introduction of the SUS—one can argue that the BA attracted a 'clientele' that is very similar to the overall population of start-ups in its basic socio-demographic characteristics (gender, age and qualification). This means at the same time that when comparing the basic characteristics of SUS start-ups with the general start-up population in Sect. 2.2, the SUS attracted a different clientele, which is under-represented among the self-employed. It can be stated that participants in SUS are less qualified (when compared to BA participants), have lower unemployment benefits and would have received less financial support under the BA. However, looking at the distribution (especially at the maximum amount or the 99th percentile) also makes clear that there is no clear cutoff value making people choose either one of the two programs. The choice also depended on other factors, e.g., the already mentioned income expectations and time preferences.

[23] Health constraints do not play a major role; the majority of participants indicate having no such constraints.

Table 4 Qualification and labor market history of the business founders[a]

	Start-up subsidy		Bridging allowance		*t*-tests of mean equality[b]			
	Men	Women	Men	Women	p_1	p_2	p_3	p_4
School degree								
No/low degree	0.475	0.310	0.324	0.164	0.000	0.000	0.000	0.000
Middle secondary degree	0.237	0.335	0.239	0.278	0.124	0.000	0.923	0.053
Upper secondary schooling	0.289	0.355	0.437	0.558	0.000	0.006	0.000	0.000
Monthly unemployment benefits (in €)	700	518	1,165	893	0.000	0.000	0.000	0.000
(Standard deviation)	(330)	(269)	(449)	(395)				
<300€	0.098	0.189	0.026	0.048	0.036	0.000	0.000	0.000
300€–599€	0.265	0.447	0.031	0.158	0.000	0.000	0.000	0.000
600€–899€	0.398	0.281	0.218	0.332	0.000	0.000	0.000	0.085
900€–1,199€	0.161	0.067	0.277	0.241	0.172	0.000	0.000	0.000
1200€– 1,499€	0.056	0.012	0.225	0.158	0.006	0.000	0.000	0.000
>1500€	0.022	0.004	0.223	0.064	0.000	0.004	0.000	0.000
Median (in €)	690	480	1110	843				
99th percentile (in €)	1,620	1,320	2,430	1,998				
Maximum amount (in €)	1,860	2,070	3,060	2,538				
Remaining benefit entitlement (in months)	4.72	5.02	7.31	6.83	0.184	0.304	0.000	0.000
RBE $\leq$ 1 month	0.476	0.452	0.264	0.302	0.156	0.346	0.000	0.000
Duration of last unemployment								
<3 months	0.300	0.341	0.321	0.325	0.863	0.086	0.318	0.607
3 months to <6 months	0.207	0.156	0.239	0.206	0.183	0.011	0.089	0.038
6 months to <1 year	0.284	0.344	0.314	0.352	0.170	0.012	0.145	0.790
1 year to <2 years	0.210	0.159	0.126	0.116	0.624	0.012	0.000	0.057

[a] Characteristics are measured at the beginning of the start-up, based on administrative records. Numbers are shares unless stated otherwise

[b] p-values refer to t-tests of mean equality in the variables between men and women in BA (p_1), men and women in SUS (p_2), men in BA and SUS (p_3) as well as women in BA and SUS (p_4)

4.2 Motives and preparation of the start-ups

Having highlighted the differences between the business founders, we now investigate whether there are also differences in the motives to set-up a business and the preparations undertaken to do so.

Table 5 highlights some important pre-start-up characteristics, which were investigated retrospectively during the first interview in January/February 2005. Individuals reported whether they had previous working experience in the sector in which they aimed to start their business. It becomes evident that nearly three quarters of the participants who used the BA had experience of regular employment in the same industry, and there were no differences between men and women. On the other hand, the share of men and women in SUS with experience of regular work in the same industry is significantly lower. These individuals, however, reported having significantly more experience of handling similar work in their spare time, indicating that some of these start-ups were probably moonlighting before they decided to run an official business. Moreover, around 13% of all individuals started their business without any relevant experience; one significant exception here are women in SUS, where nearly 20% of the individuals started without any relevant experience. This observation might be interpreted in several ways. Persons launching a business without any previous experience made their decision (1) either because they had no choice since they were running out of entitlement for unemployment support or (2) because the business

Table 5 Experience, preparation and motivation[a]

	Start-up subsidy		Bridging allowance		*t*-tests of mean equality[b]			
	Men	Women	Men	Women	p_1	p_2	p_3	p_4
Experience before start-up								
Yes, from regular work	0.633	0.543	0.727	0.728	0.972	0.000	0.000	0.000
Yes, from secondary work	0.279	0.264	0.204	0.243	0.101	0.528	0.000	0.455
Yes, from leisure time	0.359	0.338	0.260	0.230	0.242	0.398	0.000	0.000
No	0.132	0.193	0.131	0.130	0.949	0.001	0.946	0.008
Preparation for start-up								
Self-consulted potential costumers	0.470	0.440	0.496	0.431	0.027	0.251	0.243	0.773
Attendance of informative meetings	0.372	0.500	0.511	0.622	0.000	0.000	0.000	0.000
Use of coaching and consulting	0.190	0.266	0.330	0.442	0.000	0.000	0.000	0.000
Support by others	0.390	0.428	0.599	0.566	0.257	0.134	0.000	0.000
No certain preparation	0.147	0.125	0.077	0.082	0.754	0.220	0.000	0.031
Motives for start-up								
I always wanted to be my own boss	0.560	0.459	0.553	0.487	0.023	0.000	0.778	0.380
Termination of unemployment	0.831	0.838	0.750	0.712	0.140	0.715	0.000	0.000
Exhaustion of unemployment benefit entitlement	0.349	0.372	0.246	0.262	0.535	0.348	0.000	0.000
Advice from the labor agency	0.179	0.234	0.122	0.164	0.034	0.007	0.000	0.007
I already had first customers	0.650	0.570	0.601	0.598	0.901	0.001	0.028	0.369
I spotted a market gap	0.279	0.385	0.313	0.333	0.463	0.000	0.097	0.093
Avoidance of regional mobility	0.307	0.372	0.302	0.270	0.238	0.007	0.794	0.001
Push *and* pull-motivation[c]	0.459	0.382	0.382	0.331	0.072	0.003	0.000	0.527

[a] Characteristics are based on retrospective information from the first interview in January/February 2005. Numbers are shares unless stated otherwise

[b] *p*-values refer to t-tests of mean equality in the variables between men and women in BA (p_1), men and women in SUS (p_2), men in BA and SUS (p_3) as well as women in BA and SUS (p_4)

[c] Individuals who answered 'I always wanted to be my own boss' and 'termination of unemployment' simultaneously as motives for start-up

they started was relatively simple, needing no special competencies.

Fewer differences emerged when individuals were specifically asked what kind of preparation they undertook. In general, participants in BA used more preparation than participants in SUS, and the main source of support was coaches and consultants. When focusing on the motivation for becoming self-employed, three motives are mentioned most often, namely (1) "termination of unemployment," (2) "being my own boss" and (3) "had first customers," where the differences in these motives between BA and SUS are smaller than expected. Clearly, the central "push" motive—termination of unemployment—is significantly more important for individuals in SUS, while the typical "pull" motive—"being my own boss"—is equally distributed between men (around 55%) and women (around 47%) in BA and SUS. Additionally, the third main motive—"I had first customers"—also a "pull" motive, is reported by about 60% of the individuals, while men in SUS are outliers with a share of 65%. This observation is certainly important when we compare it with earlier studies. For instance, Evans and Leighton (1990), Meager (1992) or Pfeiffer and Reize (2000) differentiated between "push" or "necessity" start-ups, i.e., those initiated by unemployed persons, and "opportunity" or "pull" start-ups in case the business founder was regularly employed (or elsewhere) before. Our analysis makes clear that this differentiation has to be modified with respect to the start-ups by unemployed. A significant share of these persons

is guided by both motives: they want to, and they have to become self-employed at the same time. Evidence for this observation can directly be found in our survey. We allowed multiple answers to questions on the motives for becoming self-employed and find that little less than 40% of the BA-business founders and even more than 40% of the SUS start-ups declared that both push *and* pull motives were the reason for their decision (see again Table 5).

4.3 Types of businesses started

We have seen so far, that the characteristics and motives of the founders in the two programs are quite different. Based on these findings, we further analyze to what extent these differences also translate to different types of businesses.

When looking at the industries in which the start-ups enter (upper half of Table 6), it becomes obvious that there are more gender than program differences. For example, men in SUS and BA are equally likely to opt for a start-up in the construction sector (around 12%), whereas only 2% of the women choose this sector; 60% of the females in BA and SUS chose "other services", while only 30% of the males did so.

Strong gender and program differences were observed with respect to the amount of capital used during the start-up period. Men clearly invest more than women, and participants in BA invest more than participants in SUS. About 50% of the individuals starting with SUS claimed that they did not use any start-up capital at all. While this is true for only approximately 35% of the business founders with BA, the differences get even sharper when concentrating on start-ups with capital of more than 10,000€. Of the males 38% and of the females 29% in BA invested more than 10,000€ in their business, whereas only 17%/11% of the men/women in SUS did so.

Further interesting results can be obtained when looking at the averages of invested capital and the shares of own capital that founders used for starting their businesses. Male business founders with BA invested the highest amounts (almost 18,000€), used more of their own capital (little more than 13,000€) and asked for more external financing (little less than 5,000€) than the remaining three groups. They were followed by female founders with BA (with a total average investment of 12,600€ own capital of 8,700€ and external financing of little less than 4,000€). Average investments of male/female SUS business founders were about the half of their BA counterparts. All together, it is remarkable that the average share of own capital used to start the businesses is above 70%.[24] With respect to female BA founders, two further characteristics should be emphasized: they invested more than the SUS male founders, and they had (little less than 70%) the lowest share of own capital. We further asked whether business founders needed capital infusion for a second time after the start-up period. Between 30% and 40% of the persons answered yes—most often to finance further growth of their business (in more than 60% of the cases) or for certain projects (in little less than 30% of the cases). It is remarkable again that among BA participants in particular, female start-ups had invested significantly more often for a second time in their businesses than male start-ups in BA and their female counterparts in SUS.

4.4 The survival rates

A first index to measure the success of start-ups is their survival rate. Figure 3 shows the survival rates, differentiated by gender and program, between the month of business foundation (third quarter of 2003) and the time of the second interview in January/February 2006. Remember that the support from BA runs only for 6 months, so we were able to observe individuals without receiving the subsidy for about 2 years. Individuals making use of the SUS who had not earned more than 25,000€ in the previous year and were still self-employed were mostly receiving the third year's subsidy (240€ per month) at the time of the interview. Hence, when comparing the survival rates of the two support schemes, this needs to be taken into account. The survival rates were higher for individuals in SUS, irrespective of gender. It also becomes obvious that in the first few months after start-up (when both programs were still running), there are no significant differences in the survival rates between the two programs. However, shortly after the BA runs out some individuals have to end

[24] Similar trends were observed by Levenson and Willard (2000) in US data and by Parker and van Praag (2006) in Dutch data.

Table 6 Industry and start-up capital of the business[a]

	Start-up subsidy		Bridging allowance		*t*-tests of mean equality[b]			
	Men	Women	Men	Women	p_1	p_2	p_3	p_4
Industry of start-up								
Agriculture, forestry, fishery	0.027	0.003	0.007	0.005	0.775	0.000	0.000	0.527
Crafts	0.129	0.055	0.110	0.040	0.000	0.000	0.193	0.258
Construction	0.125	0.023	0.122	0.029	0.000	0.000	0.865	0.522
Retail	0.166	0.166	0.152	0.124	0.185	0.989	0.378	0.067
Transport, logistics	0.049	0.016	0.035	0.021	0.184	0.000	0.107	0.509
Banking, insurance	0.038	0.023	0.084	0.056	0.072	0.083	0.000	0.005
Information technology	0.095	0.021	0.116	0.040	0.000	0.000	0.131	0.079
Other services	0.305	0.607	0.296	0.587	0.000	0.000	0.690	0.539
Other industries	0.065	0.087	0.078	0.098	0.221	0.117	0.284	0.540
Start-up capital								
No start-up capital	0.496	0.580	0.349	0.397	0.090	0.001	0.000	0.000
Up to 2,500 Euro	0.137	0.155	0.078	0.116	0.020	0.323	0.000	0.084
Up to 10,000 Euro	0.203	0.158	0.208	0.201	0.773	0.021	0.807	0.072
10,000 Euro and more	0.164	0.108	0.365	0.286	0.004	0.002	0.000	0.000
Share of own capital	75.64	75.58	72.73	69.36	0.224	0.982	0.009	0.325
Amount of own capital (in €)	6882.4	4382.8	13017.9	8730.5	0.050	0.000	0.004	0.103
Additional capital needed	0.339	0.310	0.286	0.409	0.001	0.416	0.000	0.004
Financing further growth	0.695	0.683	0.611	0.618	0.908	0.852	0.008	0.375
Financing of projects	0.260	0.228	0.340	0.289	0.426	0.579	0.006	0.000
Replacement finance	0.366	0.317	0.291	0.289	0.985	0.433	0.040	0.278
Emergency finance	0.145	0.129	0.197	0.211	0.803	0.722	0.024	0.002
Other reasons	0.069	0.158	0.108	0.132	0.590	0.029	0.752	0.012

[a] Characteristics are based on retrospective information from the first interview in January/February 2005. Numbers are shares unless stated otherwise

[b] *p*-values refer to t-tests of mean equality in the variables between men and women in BA (p_1), men and women in SUS (p_2), men in BA and SUS (p_3) as well as women in BA and SUS (p_4)

their businesses, and slightly lower survival rates emerge for the BA.[25]

Table 7 shows the employment status of the individuals at the end of our observation period and reveals that the survival rates range between 73.4% for women in SUS and 66.7% for women in BA. In this context, the important fact is that these survival rates are similar to earlier observations, when there was a significantly lower share of start-ups by unemployed persons. Previous studies (when the number of start-ups funded by the BA program was below 100,000 persons per year) recorded survival rates of 90% after 1 year (c.f. Pfeiffer and Reize 2000), 80% after 2 years (Hinz and Jungbauer-Gans 1999) and 70% after 3 years (c.f. Wießner 2001), which are quite similar to the survival rates in the present analysis.[26] Moreover, the first two studies found no significant differences between survival rates of start-ups by unemployed persons and other start-ups.

Table 7 highlights two more things of importance. First, even though the survival rates are the highest for start-ups making use of the SUS, a higher share of men in BA reports to be self-employed at the second

[25] As we mentioned in the last section, we expect that the survival rates of SUS will adjust in a similar modest way to those of the BA once the support with SUS runs out.

[26] It should also be mentioned that in ten OECD countries failure rates of newly founded businesses, after 2 years, are between 20 and 40% (see Bartelsmann et al. 2005).

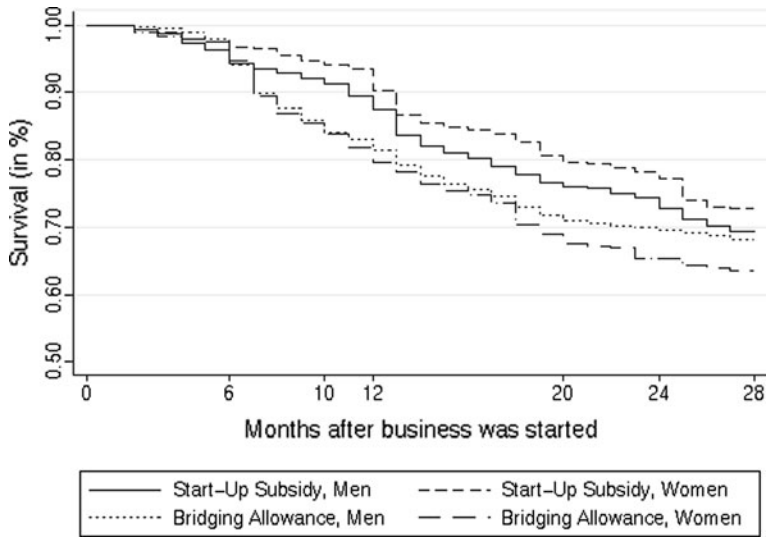

Fig. 3 Survival rates in self-employment. *Source*: Own calculations

Table 7 Employment status at interview month[a]

	Start-up subsidy		Bridging allowance	
	Men	Women	Men	Women
Self-employed	68.8	73.4	71.0	66.7
Regular employed[b]	11.0	7.7	13.2	16.7
Unemployed	15.0	7.7	10.7	9.2
Other	5.2	11.2	5.1	7.4
Permanently self-employed[c]	68.8	72.2	67.4	63.5
Observations	811	704	1,207	378

[a] Interviews took place in January/February 2006, that is at least 28 months after the businesses were founded

[b] Includes 'Midi-Jobs' which are jobs in an income range between €401–800

[c] Refers to individuals who have been permanently self-employed during the observation period

interview. These individuals closed their previous firm during the observation period but re-started with a new business. To distinguish these cases, Table 7 also contains the share of individuals who were permanently self-employed during the observation period. A second thing to note is that not every closed business is a failure per se, at least when the second goal of the support schemes is used, namely to enable individuals to return to working lives. In this context it should be emphasized that a significant percentage of individuals found regular employment in due course (i.e., after setting up their businesses), so that in all four subgroups 81% to 87% were either self-employed or had found regular employment. Only 8% to 15% of the individuals had again been registered as unemployed, at the time of the interview.

4.5 Direct job creation

Besides creating a job for the self-employed persons themselves and ending their unemployment, public authorities usually tie the provision of start-up subsidies with the hope for further direct employment effects which would yield a 'double dividend'.[27]

Earlier empirical evidence available on the number of direct jobs created by start-ups varies widely. Most importantly, as already mentioned in Sect. 2, there has been a clear trend, according to which the number of entrepreneurs with further employees has been growing in the last 15 years at a much lower rate than the number of solo entrepreneurs. In line with this trend the micro-census revealed that the share of start-ups with further employees dropped from 30% to 20% during the last decade. Unfortunately this data

[27] We are fully aware that direct employment effects are only one part of all effects of newly created businesses. For further analysis of indirect positive and negative effects in the case of Germany, see Fritsch and Müller (2008), who identified an S-shaped employment effect of newly formed businesses. See also Fritsch (2008) for an overview of similar analysis conducted for various other countries. However, the aim of our study is different. We primarily aim to analyze to what extent start-ups by unemployed persons create further jobs, if at all.

Table 8 Direct employment effects and future development[a]

	Start-up subsidy		Bridging allowance		*t*-tests of mean equality[b]			
	Men	Women	Men	Women	p_1	p_2	p_3	p_4
First interview after 16 months								
Start-ups with employees	0.088	0.072	0.296	0.215	0.010	0.299	0.000	0.000
Number of employees	2.28	2.10	3.83	3.51	0.737	0.712	0.007	0.000
Share of regular employees	0.217	0.337	0.378	0.495	0.362	0.612	0.444	0.167
Second interview after 28 months								
Start-ups with employees	0.145	0.094	0.329	0.256	0.025	0.009	0.000	0.000
Number of employees	2.40	3.00	4.16	3.91	0.747	0.345	0.693	0.000
Share of regular employees	0.218	0.165	0.367	0.283	0.147	0.413	0.137	0.000
Employees in the future? (Asked at second interview after 28 months)								
Yes, surely	0.066	0.047	0.113	0.031	0.001	0.195	0.008	0.375
Rather yes	0.230	0.106	0.306	0.214	0.014	0.000	0.006	0.000
Rather no	0.394	0.271	0.333	0.313	0.604	0.000	0.040	0.278
No, by no means	0.311	0.577	0.248	0.443	0.000	0.000	0.024	0.002

[a] Characteristics are measured at the first (second) interview in January/February 2005 (2006). Numbers are shares unless stated otherwise

[b] p-values refer to t-tests of mean equality in the variables between men and women in BA (p_1), men and women in SUS (p_2), men in BA and SUS (p_3) as well as women in BA and SUS (p_4)

source does not give information about the number of persons employed by the entrepreneurs.[28]

Table 8 shows the share of start-ups with at least one employee at the time of the interview. Figures for the four groups are clearly varying. While 33% (26%) of the men (women) in BA already have at least one employee, this is true for only 14% (9%) of the men (women) in SUS. More BA start-ups have employees and the number of persons employed by them is around four, thus higher again than the number of persons employed by SUS start-ups. Hence, we can state that the direct employment effects of the BA are on a similar level as for other start-ups mostly coming out of an employed position. In contrast to the BA, direct employment effects of individuals using the SUS were rather small.[29]

In our survey, we also aimed to find out whether the solo entrepreneurs would like to employ further persons in the future or whether they rule out this possibility, irrespective of the future development of their business. We observe that most of the individuals who did not have employees at the time of the interview do not plan to have any in the future either, even if the business grows. For instance, 58% of women in SUS do not want employees 'by any means'. Including the 27% who answer 'rather no', 85% of the start-ups will probably not offer significant job creation in the future. Thus, most of the solo entrepreneurs deliberately aim to stay self-employed without any further staff, indicating that the trend towards solo-entrepreneurship, which came up in the last 15 years (see Sect. 2.2), is likely to continue in the future. On the other hand, 42% of the male participants receving BA answer 'yes' (or 'rather yes'), indicating that some further direct job creation

[28] There are several other sources providing such information. However, the share of solo entrepreneurs is under-represented in most of these sources as there have been regular reports of the share of start-ups with further employees being higher than what is reported in the micro-census. For instance, Hinz and Jungbauer-Gans (1999) report that in 1996 only 53% among the formerly employed and 76% among the formerly unemployed founders were sole entrepreneurs, while the micro-census reported that 70% of all start-ups did not have any further employees. Later on, similar differences were reported between the representative micro-census and the non-representative data KfW (2004, 2005).

[29] It is worth mentioning that start-ups usually pay lower wages to their employees than well-established firms. Nevertheless, these employees appear to be more satisfied, cf., Winter-Ebmer and Zweimüller (1999) for Swiss and Brixy et al. (2007) for German data.

effects might be possible. Clearly, this is speculation at this point of time and needs to be verified. Last but not the least, when comparing the employment effects in Table 8 after 1.5 and 2.5 years, it is interesting to note that the crucial decision, whether further persons will be employed in a newly created business, seems to have been made relatively early in the lifetime of a small business. With the exception of male SUS start-ups, additional job creation in the second year was positive but relatively low.[30]

4.6 The personal income of the business founders

As BA-supported business founders invested more capital and employed more persons than SUS-supported businesses, we also aimed to find out whether these activities paid in terms of higher incomes for BA start-ups. Table 9 reveals that this is true. Income relations are the same as the relations of invested capital and of direct employment effects. This means that BA-supported male business founders earned the highest income: their average net monthly income was around 2,350€, certainly a remarkable amount. They were followed by female BA start-ups, who earned on average 600€ less per month than their male counterparts. The income of SUS start-ups was around 1,000€ for women and a little less than 1,500€ for men.

Clearly, these incomes cannot be directly compared since the individual characteristics of the founders differ significantly. Therefore, we compare self-employment incomes of individuals with their previous income (when they were employed). Table 9 again reveals that the mean net income of all subgroups was higher from self-employment activities than from their previous employed positions (differences in incomes were between 135€ per month for female SUS start-ups and almost 500€ per month for male BA start-ups).[31] Additionally, we calculated the median income and found out that it was still higher for men (between 160€ and 170€) and that around 55% of them earned more than in their last position as an employee. The opposite is true for female business founders: here, the median income was equal to the last income as an employee for the BA start-ups, and it was 140€ less for SUS start-ups. Accordingly, only 45% of female SUS start-ups earned more as self-employed persons, indicating that there were few female start-ups whose income was significantly above the average in 2005.[32]

As questions related to income are sensitive, we cross-checked the answers. We also asked the start-ups in the survey of 2005 how their actual income in 2004 (in their first year of self-employment) compared with their income in the previous year, i.e., 2003 (when most of them were still employed); we asked them in the 2006 survey once again how their actual income in 2005 (in their second year of self-employment) compared with their income from the first year of self-employment (in 2004). We have calculated in Table 9 the shares of all possible parameter variations and have found support for the distributions of incomes calculated earlier. For instance, 45% of male start-ups supported with BA reported to have earned less income in 2005 (compared to 2003).[33] The calculation of the median indicated that 55% earned more in 2005 than in 2003.

The complete overview of incomes earned in self-employment tells us that the majority of the persons are not doing worse than before, when they worked as employees. Thus, a long existing prejudice that start-ups by unemployed persons are generating rather tiny incomes needs to be revised. We do not find evidence for this prejudice in our data when we focus on incomes 2.5 years after businesses were launched.

A different picture emerges when focusing on incomes generated in the first year when the

[30] The last observation corresponds, to a certain extent, to the findings of a long-term analysis conducted by Fritsch and Weyh (2006) over 18 years. They conclude (see Fritsch and Weyh 2006, p. 256) that "newly established businesses tend to start with growing employment, but after 1 or 2 years employment tends to be stagnant, or to decline."

[31] It should also be highlighted that the relative increase in income is higher for male participants in SUS compared to male participants in BA.

[32] Interestingly, there has not been much research on this question; the existing research shows that there are mixed findings with respect to the comparison of the income generated by self-employed persons in relation to the income of wage earners with similar characteristics. Hamilton (2000) showed that entrepreneurs "have both lower initial earnings and lower earnings growth than in paid employment." In contrast to this, Rosen and Willen (2002) and Fairlie (2005) find that entrepreneurs have higher mean and median income levels than employed persons.

[33] To be more specific, 19.1% report that the income had declined in 2004 and 2005, 21.0% report a decline in 2004 and a constant level in 2005, and 4.8% report to have earned the same in 2004 as in 2003, but less in 2005.

Table 9 Development of income between 2003 and 2005[a]

	Start-up subsidy		Bridging allowance		*t*-tests of mean equality[b]			
	Men	Women	Men	Women	p_1	p_2	p_3	p_4
2004 vs. 2003: lower								
2005 vs. 2004: lower	0.191	0.262	0.216	0.274	0.020	0.001	0.182	0.667
2005 vs. 2004: equal	0.210	0.217	0.174	0.167	0.776	0.752	0.043	0.056
2005 vs. 2004: higher	0.215	0.218	0.229	0.252	0.367	0.882	0.461	0.217
2004 vs. 2003: equal								
2005 vs. 2004: lower	0.048	0.028	0.044	0.025	0.100	0.051	0.636	0.723
2005 vs. 2004: equal	0.062	0.069	0.065	0.066	0.952	0.622	0.822	0.854
2005 vs. 2004: higher	0.061	0.058	0.078	0.085	0.685	0.824	0.145	0.103
2004 vs. 2003: higher								
2005 vs. 2004: lower	0.060	0.031	0.031	0.027	0.713	0.010	0.002	0.719
2005 vs. 2004: equal	0.059	0.037	0.061	0.033	0.040	0.062	0.845	0.710
2005 vs. 2004: higher	0.094	0.079	0.103	0.071	0.073	0.315	0.531	0.644
Monthly income at second interview								
Income (in €)	1445.48	949.40	2347.54	1764.68	0.000	0.000	0.000	0.000
Approximated income before unemployment								
Monthly net income (in €)	1076.72	862.61	1940.77	1487.89	0.000	0.000	0.000	0.000
Change in income								
Mean difference (in €)	370.21	135.86	497.94	390.86				
Median difference (in €)	161.53	−138.46	172.30	−1.92				
Share with positive difference[c]	57.3	44.9	54.9	50.4				

[a] Income information is based on the first (second) interview in January/February 2005 (2006); approximated income before unemployment is based on administrative records. Numbers are shares unless stated otherwise

[b] *p*-values refer to t-tests of mean equality in the variables between men and women in BA (p_1), men and women in SUS (p_2), men in BA and SUS (p_3) as well as women in BA and SUS (p_4)

[c] Share of individuals where income difference is positive

businesses were freshly launched. As we mentioned in Sect. 2.1, incomes at the beginning of self-employment activities are expected to be relatively low. Our dynamic analysis of incomes of the supported start-ups underpins this expectation. As Table 9 shows, between 60% (of male start-ups) and 70% (of female start-ups) declared that their income in 2004 was lower, or even much lower, than in 2003. This shows that instruments such as the BA or the SUS can play an important role in the initial period of start-ups when incomes are traditionally low.

5 Conclusion and outlook

Empirical findings on the characteristics of unemployed business founders, their survival rates, direct job creation and other key variables are rather scarce. This might be the case for two reasons. One is that start-up subsidies are usually one small component in the larger menu of active labor market policies of different countries. On the other hand, previously unemployed start-ups are often viewed as less serious business founders as it is often argued that they are "born out of necessity". In this respect, the German government made, in the beginning of this decade, a significant change: it eased the access to its existing instrument, the bridging allowance (BA), and it implemented in 2003 a second instrument, the start-up subsidy (SUS). Between 2003 and mid 2006, about one million previously unemployed persons took advantage of one of the two instruments. As a consequence, start-ups by unemployed persons began to play a major role in both labor market policy and economic policy at large. Furthermore, it cannot be excluded that for this reason the share of

self-employed persons significantly increased in Germany over the last decade in contrast to a declining trend in most other European countries.

We base our analysis on a large representative data set which combines administrative and survey data and contains information on 3,100 start-ups by unemployed persons set up in the year 2003. We follow individuals for about 2.5 years and are able to present detailed information on pre- and post-founding characteristics. Accordingly, our findings are to the best of our knowledge the first ones which allow representative conclusions to be drawn based on a large sample of start-ups by unemployed persons.

The main results of our analysis are: the two programs—different in their design—attracted different kinds of persons. While the BA was used by persons whose characteristics are similar to the typical characteristics of all start-ups, the SUS was used by groups under-represented in the population of typical business founders. Especially female and young male start-ups, as well as persons who were relatively less formally qualified (in terms of their highest school degree) felt attracted by the new program. Looking at the motivation for becoming self-employed, our research revealed a new phenomenon. While it is often believed that business founders who were previously unemployed have to be treated at par with those setting up businesses out of necessity, we observed that almost half of the supported entrepreneurs were guided by both push and pull motives at the same time. Moreover, comparing the other pre-founding characteristics of SUS with BA start-ups, we observed that BA start-ups had gathered more experience from regular work in the segment where they wanted to launch their business and had made more efforts to prepare their ventures. Survival rates are relatively similar for the four subgroups and average out at about 70%.[34] The above highlighted differences mostly affected the sizes of the created businesses. Male BA founders (followed by female BA founders, male SUS founders and female SUS founders) invested the highest amounts of capital, employed the largest number of additional employees, and consequently generated the highest incomes.

In this context, some further observations should be emphasized. First, the direct employment effects are of considerable significance for all business founders making use of the BA, while the vast majority of SUS start-ups said that they deliberately want to stay alone in their firm, even if their business would allow further job creation. This confirms a new trend of solo-entrepreneurship, observed in Germany for the last 15 years. Secondly, it is remarkable that the investment pattern differed among BA founders. Compared to males, female BA founders invested less during the start-up period but more after one or two years of running their own business successfully. Third, 2.5 years after the businesses were launched, the average incomes were in all four subgroups and the median incomes were for the male entrepreneurs above the average/median incomes from their last employment activity. In contrast to this, in the first year of their self-employment activity, between 60% and 70% of the start-ups stated that their income was below their last income as an employee, to a certain extent justifying the support from the BA and the SUS.

One further issue that is important in this context is the possible occurrence of deadweight losses. The definition of a deadweight loss in relation to start-up subsidies translates into the question whether individuals would have founded their businesses even without a subsidy, and whether their success would have had the same probabilities with and without the subsidy. In particular, the second part of this question cannot be answered easily. A matching of start-ups by similar unemployed persons would need to be carried out, where the treatment group is supported with BA or SUS and the control group is not. In Germany, however, there is almost no unemployed person who starts self-employment without one of the two support schemes, which is why such a matching is not possible.[35]

Based on the data at hand, we are therefore only able to partly answer the first part of the question. We are able to give some self-reported evidence on how

[34] Moreover, a considerable portion of persons who terminated their self-employment activities were able to return to regular employment.

[35] Other related matchings in this research area, which are, however, not apt to answer this particular question, were done by Pfeiffer and Reize (2000), who compared start-ups by unemployed persons with other start-ups, and by Baumgartner and Caliendo (2008), who compared start-ups by unemployed persons with a control group of other unemployed persons who were looking for other employment opportunities.

Table 10 Start-up without subsidy?[a]

	Start-up subsidy		Bridging allowance		*t*-tests of mean equality[b]			
	Men	Women	Men	Women	p_1	p_2	p_3	p_4
Start-up without subsidy?								
Yes	0.369	0.314	0.469	0.471	0.947	0.025	0.000	0.000
Yes, but on a smaller scale or later	0.319	0.312	0.285	0.278	0.814	0.761	0.100	0.258
No, by no means	0.300	0.366	0.232	0.231	0.993	0.008	0.001	0.000

[a] The question was asked retrospectively in the first interview in January/February 2005. Numbers are shares unless stated otherwise

[b] p-values refer to t-tests of mean equality in the variables between men and women in BA (p_1), men and women in SUS (p_2), men in BA and SUS (p_3) as well as women in BA and SUS (p_4)

many persons indicated that they would have started their businesses without a subsidy. Our survey (Table 10) reveals that potential deadweight losses seem to be smaller for the SUS than for the BA. Nevertheless, this observation should be interpreted very carefully, because at the time of the interview individuals had been self-employed for 16 months so that we are not able to exclude that these persons see their decisions different from their retrospective point of view.[36]

Last but not least, it is worth speculating about the reasons why the SUS attracted people different to the typical BA business founder. There might be two internal reasons having to do with the specific design of the SUS and one external reason driving these specific findings. First, with respect to female business founders, previous research (see, e.g., Caliendo et al. 2009) revealed that in the overall population women are more risk averse than men. As the willingness to take certain risks is one driving force of the decision to become self-employed, the higher share of risk averse female persons in the population can explain to a certain extent why more than twice as many male than female start-ups were observed each and every year until the SUS was introduced. The long-term support in the SUS over 3 years with a fixed amount of money might have given potential female business founders some form of security making their decision easier to start a self-employment activity despite their higher risk aversion. Second, with respect to young male and less formally qualified start-ups it is certainly true that the lump-sum payment offered under the SUS lead to a higher financial support than under the BA (where the subsidy depended on their last wage income). We speculate that the higher amount of money gave these groups of persons enough financial support to survive the initial period of self-employment until they expected to be able to pay for their living out of their self-employment incomes. Besides these two mechanism-dependent driving forces, there is probably a third reason that should be highlighted. For the first time the government decided to make an aggressive marketing campaign for their support mechanisms—in particular for the SUS. It seems as if it became clear to the government that it is also necessary to advertise such support schemes even if financial support is granted to potential users of such schemes.

We conclude that two significantly different programs supporting self-employment activities are worth considering if the two programs are apt to attract a different clientele. A considerable number of start-ups by unemployed persons are still self-employed 2.5 years after they launched their businesses and able to generate remarkable incomes. With the SUS, females and lower qualified individuals were attracted to self-employment. Other European countries might be inspired by this development—if their policy goal is to increase self-employment rates in general and in the group of under-represented individuals in specific. Overall, the results described here are rather promising, but further research is needed. Analyzing the long-run impacts of the two programs on an individual and macroeconomic level as well as identifying the causal

[36] In fact, nearly 50% of the individuals using a BA reported that they would have started their business in any case, around 28% would have started on a smaller scale, and only 23% would not have started at all. For the SUS, for both men and women the answers are about equally divided among the three questions. Hence, possible deadweight losses seem to be smaller here.

effects within an evaluation framework are two of the most imminent further research steps needed.

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