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Social capital access and entrepreneurship☆

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ABSTRACT

We investigate the effect of social capital access on entrepreneurship. Social capital helps entrepreneurs to overcome resource constraints. This is especially important in small communities where we often see a lack of market-oriented institutions such as venture capital firms. Entrepreneurs gain access to social capital via club memberships. Combining differences in the number of individual club memberships with differences in the importance of social capital across communities, we identify a causal small community mark-up effect of individual club memberships on entrepreneurship. Assuming that unobserved heterogeneity that might influence both the individual's selection into clubs and the occupational choice to be an entrepreneur is independent of community size, we find that the effect of club membership on the propensity to be an entrepreneur is 2.6 percentage points larger in small communities than in large communities. Robustness tests support the validity of our identifying assumption and results.

1. Introduction

The occupational choice to start and run an own business depends on individual abilities and skills but also on the access to social capital that facilitates the entrepreneur's access to information and resources (Granovetter, 1985).[3] Particularly, the access to social capital can facilitate information diffusion and technology adoption in the process of product creation (Bramoulle and Kranton, 2007), grant access to resources like labor or finance in the startup phase (Michelacci and Silva, 2007; Amit et al., 1990), and might even provide psychological aid in the business creation process (Sanders and Nee, 1996).

The importance of social capital access in the business creation process varies across communities depending on the institutions used to enforce contracts (Kranton, 1996; Kumar and Matsusaka, 2009). Take entrepreneurial finance as an example which is characterized by information asymmetries regarding the entrepreneur's future performance and prospects.

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[3] Individual entrepreneurial abilities include a person's risk aversion (Fairlie, 2002; Kihlstrom and Laffont, 1979; Cramer et al., 2002) and education (Falck et al., forthcoming; Lazear, 2005), but also practical experience (Fairlie and Robb, 2007) and genetic factors (Nicolaou et al., 2008) play a major role. Beyond these individual skills, social skills grant access to social capital (Glaeser et al., 2002). For a broader overview, see Parker (2009).

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In large communities, venture capital firms that specialize in condensing and evaluating the entrepreneur's performance and prospects provide entrepreneurial finance independent of personal contacts. By contrast, in small communities and in the absence of venture capital firms, social capital comes into play. Here, personal contacts from frequent interactions help to overcome information asymmetries and thus provide another, informal way to access entrepreneurial finance (Guiso et al., 2004; Sobel, 1985; Michelacci and Silva, 2007).[4]

Empirical research on social capital suffers from various identification problems (Durlauf, 2002a,b). As a consequence, evidence of any causal effects of social capital is scarce. As far as the role of social capital in entrepreneurship is concerned, any potential association between individuals' access to social capital and their occupational choices can hardly be interpreted as a causal effect of social capital access since unobserved individual heterogeneity might account for differences in social capital access and at the same time for differences in their occupational choice. A very similar logic applies to the community level. Clearly, one cannot ascribe differences in the levels of entrepreneurship across communities to differences in the importance of social capital as there might be many unobserved confounding community characteristics that are correlated with both entrepreneurship and social capital.

In this paper, we address these endogeneity concerns and attempt to establish plausibly causal effects of social capital access on entrepreneurship under relatively weak assumptions. To this end, we combine differences between individuals with differences across communities. On the individual level, we measure an individual's access to social capital by an individual's club memberships and then draw on individual differences in club memberships. On the community level, we exploit variation in the importance of social capital across communities of different size. We then take the cross-derivative of occupational choice with respect to club memberships and community size and find that the marginal effect of club membership on the propensity to be an entrepreneur is 2.6 percentage points larger in small communities than in large communities.

Our result can be interpreted as a causal small community mark-up effect of club memberships on a person's propensity to be an entrepreneur. In other words, knowing that the importance of social capital differs across community size, an increasing number of club memberships is more valuable in smaller communities where social capital substitutes for the lack of formal institutions (that facilitate, e.g., the access to finance) than in larger communities with supporting formal institutions. Our key identifying assumption is that unobserved heterogeneity that might influence both the individual's access to social capital, i.e., the selection into clubs, and the occupational choice to be an entrepreneur, is independent of community size. Robustness tests that challenge our identifying assumption in various ways support our finding.

The remainder of the paper is organized as follows: Section 2 introduces our method in detail; Section 3 our data. Then, in Section 4, we present our results and conduct several robustness checks that show them to be reliable. Section 5 concludes with some suggestions for further research.

2. The small community mark-up effect of individual club memberships on entrepreneurship

When estimating the effect of social capital access on an individual's occupational choice, omitted variable bias is a major concern. If social capital access is measured through memberships in clubs and associations, it might well be that there is unobserved heterogeneity between individuals that influences both the likelihood of being a club member and the propensity of being an entrepreneur. Thus, these omitted variables cause correlations between the error term and the club membership variable, which biases the estimates. To illustrate this point, imagine there are some people who are outgoing, energetic, active, and adventuresome. These people might more often join clubs than do others; however, they might also be more likely to be an entrepreneur due to the very same character traits. If we do not control for these traits in a multivariate analysis, we might mistakenly attribute the fact that someone is an entrepreneur to her membership in clubs, i.e., access to social capital, although, in reality, it is not club memberships that account for differences in occupational choice but unobserved individual characteristics. This means that the estimated effect of access to social capital on a person's propensity to be an entrepreneur might be upward biased. Due to this kind of endogeneity, the estimated association between club memberships and being an entrepreneur cannot be interpreted as a causal effect of access to social capital on the occupational choice to be an entrepreneur.

The problem of omitted variables could obviously be reduced by including a wide range of control variables for relevant personal characteristics in the model. However, due to data restrictions and since there is no clear theory on the determinants of social capital formation, the problem cannot be completely resolved in this way in practice (Durlauf, 2002a,b). To address these endogeneity concerns, we estimate community-specific correlations of social capital access and entrepreneurship by exploiting the variation in club memberships between individuals within communities and then draw on the differing impact of social capital on being an entrepreneur across communities of different size. This procedure allows us to identify a causal small community mark-up effect of club memberships on entrepreneurship under the identifying assumption that the self-selection process into clubs on unobservable individual characteristics that at the same time influence entrepreneurship is not different across community types.[5]

[4] Kumar and Matsusaka (2009) refer to these two types of social capital as "local capital" and "market capital". The former relies on social networks while the latter relies on impersonal market institutions.

[5] We are aware of the fact that large community size is often negatively correlated with (pro)social behavior (Putnam, 2000). However, this does not interfere with our identifying assumption.

We start the description of our identification strategy by two simple linear occupational choice equations; Eq. (1) is for individuals in small communities and Eq. (2) for individuals in large communities:

$$E[Y \mid S = 1, C, X] = \beta_{S=1} C + X\Theta_{S=1} \tag{1}$$

$$E[Y \mid S = 0, C, X] = \beta_{S=0} C + X\Theta_{S=0}, \tag{2}$$

In these equations, $E[\,.\,]$ is the expectation operator, and Y is the occupational choice, which is unity for entrepreneurs and zero for employees. S is a dummy variable equal to unity if an individual lives in a small community and zero if she does not. C stands for the number of club memberships and X is a vector of controls. It is clear that our partial correlation coefficients on club memberships in small and large communities, $\beta_{S=1}$ and $\beta_{S=0}$, cannot be interpreted as causal parameters. Rather, we make use of these coefficients to start building our identification strategy. In particular, after the coefficients $\beta_{S=1}$ and $\beta_{S=0}$ are estimated from within community variation, we go on and compute the difference of these community specific club membership coefficients, i.e., $\beta_{S=1} - \beta_{S=0}$. We argue that proceeding like this enables us to identify the causal small community mark-up effect of club memberships on entrepreneurship since unobserved heterogeneity cancels out as long as the self-selection of individuals into clubs on unobservable individual characteristics that at the same time influence entrepreneurship is not different across community of different size. To make this point clear, we transform our strategy into a simple linear probability model:

$$\text{Prob}[Y = 1 \mid .\,] = \alpha S + \beta_{S=0} C + \gamma SC + X\Theta + \varepsilon \tag{3}$$

The coefficient α captures differences in entrepreneurship across communities. $\beta_{S=0}$ is a coefficient indicating correlations between entrepreneurship and club memberships for individuals from large communities. The coefficient γ on the interaction between club memberships and a community size indicator is the result of a cross derivative of occupational choice with respect to club memberships and community size and thus equals $\beta_{S=1} - \beta_{S=0}$ (see Eqs. (1) and (2)). Consequently, γ can be interpreted as the small community mark-up effect of club memberships on entrepreneurship. ε is a clustered error term.

In order to be able to claim causality for our coefficient γ, we rely on the crucial assumption that the self-selection of individuals into clubs on unobservable individual characteristics that at the same time influence entrepreneurship is not different across community size. To put it in different terms, we assume that unobserved characteristics that are correlated with both club membership and entrepreneurship work in the same way in small and large communities. If this assumption holds, unobserved individual as well as community-level heterogeneity cancels out and the coefficient on the interaction term γ can be interpreted as the causal small community mark-up effect of club memberships on entrepreneurship. We are aware that individuals might self-select into small or large communities; as a consequence, the error term would be correlated with the small community dummy. However, this does not harm our identification strategy as long as we do not interpret the coefficient α from Eq. (3). In the same manner, self-selection into clubs results in a correlation of the error term with the variable measuring the number of club memberships; again, this does not disrupt a causal analysis of the small community mark-up effect of club memberships as long as we do not interpret our coefficient $\beta_{S=0}$ directly. The small community mark-up effect of club memberships, γ, is the only coefficient we are interested in. Whether this coefficient is causal depends on the validity of our key identifying assumption, i.e., whether the self-selection process into clubs on unobservable individual characteristics correlated with entrepreneurship is indeed not different across community size. By definition, this cannot be tested rigorously. However, we will present some neat empirical evidence in favor of this assumption later in this paper.

3. Data on club memberships and entrepreneurship

The ALLBUS survey is a valuable data source for our research question. It can be viewed as the German equivalent to the U.S. General Social Survey (GSS) and currently covers the period from 1980 to 2008. The dataset is based on regularly repeated, representative surveys of the German population conducted through personal interviews. ALLBUS covers a wide range of topics pivotal to empirical research in social sciences. A core set of questions is asked in every wave of the survey, with various sets of additional questions added in different years. Terwey and Baltzer (2009) provide detailed information on the ALLBUS surveys in general and present all variables available in the cumulated dataset from 1980 till 2008.

We focus on the period from 1980 to 1992 because of the availability of information on club memberships and industries. For these years, we have information on 24,754 individuals. From 1991 onward, ALLBUS includes individuals from Eastern Germany. However, due to a lack of comparability regarding private club memberships, we drop all 2692 observations for Eastern Germany for 1991 and 1992. Furthermore, we retain only employees or entrepreneurs, leaving us with 10,010 observations. As to the concept of entrepreneurship, ALLBUS covers two different kinds of activities. First, it includes self-employed individuals who work for themselves and gain income by operating all tasks personally. And second, it also contains entrepreneurial individuals who are business owners, i.e., who run their own businesses and employ other persons. Due to data limitations, it is not possible to distinguish between these two kinds of individuals; therefore, both are regarded as being entrepreneurs in our context. Additionally, we drop 3034 observations from entities inappropriate to our purpose. These include industries such as agriculture, nonprofit organizations, private households, local authorities, and organizations from the social security system, but also individuals from the energy and water supply industry as well as from the mining

industry where no entrepreneurs are found in our sample. Individuals working for the German postal service and for the German railway were dropped as well, since these were state-owned enterprises during the period our research covers. The excluded industries differ from the other industries in our sample in various ways, e.g., barriers to entry or the employment status of its employees. For instance, telecommunication (formerly part of the German postal service) was a state monopoly until 1998 and, even today, more than 40% of Deutsche Telekom's employees have the status of civil servants (cf. Czernich et al., 2008). Information on club membership is missing for 898 individuals. After checking for the randomness of the missing values, we drop these observations. Finally, we drop 56 remaining non-Germans since we expect club membership and entrepreneurship to be systematically different for this subgroup of foreign individuals (see Sanders and Nee, 1996). Our final sample contains 6022 individuals.

As our dependent variable we use a binary variable which has the value of unity if an individual is an entrepreneur and is zero if she is employed. As a measure for access to social capital, we use a variable that counts the number of an individual's memberships in private associations and clubs. ALLBUS contains information on an individual's membership in a political party, a religious association, a choir, a sports club, any type of hobby club, a citizens' group or initiative, any type of social club, a charity, a displaced persons' group, or a youth club. It is important to stress that we deal only with those associations and clubs that can be described as involving private leisure activities. To capture differences across communities, we introduce a dichotomous variable that takes the value of one for small communities and is zero for large communities. We are well aware that measuring community size simply according to administrative borders can be misleading. A small community adjacent to a big city differs in many respects from a community with the same number of inhabitants that is located somewhere in the periphery. To overcome these problems, Boustedt (1975) developed community type variables for Germany that describe communities in socioeconomic terms, largely independent of their administrative borders. The original Boustedt variable groups communities into seven categories according to the number of inhabitants of the specified socioeconomic community. We aggregate the available data by defining a community-type variable that comprises only two categories: one category is comprised of individuals living in small communities with less than 5000 inhabitants, the other is comprised of individuals living in large communities with 5000 or more inhabitants. This categorization proved to be the clearest and most consistent one given the goal of our research. Our main variable of interest is an interaction term of the dichotomous community type variable with the variable measuring the number of club memberships.

We use various control variables to take into account differences in individual, industrial, and community-level characteristics, as well as time that might influence a person's occupational choice. In particular, we introduce an individual's gender since research has shown pronounced differences between men and women as to the propensity of being an entrepreneur (e.g., Blanchflower, 2000). Moreover, we control for an individual's marital status. Singles are more likely to be an entrepreneur, since any risk involved in such an endeavor would be their alone, that is, they are not responsible for the safety, financial or otherwise, of a spouse or children. Or, in other words, one could say that being married shows a time allocation preference for family. To control for embeddedness in the community, we introduce a dummy variable indicating whether a person is a tenant or owns his or her own house or flat. According to DiPasquale and Glaeser (1999), home ownership decreases mobility, which, in turn, provides an incentive to interact with the local community and thus create more contacts with neighbors. To capture human capital effects, we include a person's age and education. Information on the respondents' secondary (and higher) education is available for the entire time period analyzed. We generate a categorical variable signifying whether an individual has no or lower secondary school education, medium, upper secondary education or whether she holds a degree of a university or a university of applied sciences. Additionally, we introduce a variable that groups people into one of three categories according to their previous spells of unemployment during the last 10 years; these categories are "no unemployment at all", "less than a year", or "more than a year". Furthermore, we add federal states fixed effects as well as industry fixed effects. Finally, we use year dummies to capture common time effects, i.e., macroeconomic effects and legal changes.

4. Empirical evidence on social capital access and entrepreneurship

4.1. The association between club memberships and entrepreneurship

Before running the multivariate regressions, we provide some descriptive statistics of our dataset. Table 1 shows the absolute numbers and the ratios of entrepreneurs and employed individuals, respectively. Out of the 6022 observations in our sample, 5198 individuals are classified as employees (86.3 percent), whereas 824 are entrepreneurs (13.7 percent). Furthermore, it can be seen that the share of entrepreneurs as compared to the entire sample varies only slightly between small and large communities. Indeed, a two-sided Fisher's exact test cannot reject the null hypothesis that occupational status is independent of community size. Analyzing this structure in more depth by further disaggregating large communities into three categories, no perfectly clear picture can be found.

The Appendix A contains tables and figures describing the dataset in more detail. Information is given on the distribution of the individuals across the German federal states (see Table A1) as well as across industries (see Table A2). Most importantly, it can be seen that the distribution of entrepreneurs across industries does hardly differ at all between small and large communities (see Table A3), which gives some support to the comparability of these areas, at least for our purposes. Moreover, we present summary statistics for all the remaining control variables used later in the multivariate regressions, namely, gender, age, house ownership, marital status, education, and previous unemployment (see Table A4 and Fig. A1).

Table 1
Occupational status across communities.

	Employee	Entrepreneur	Total
Small community	683	122	805
	(84.84)	(15.16)	(100.00)
Large community	4515	702	5217
	(86.54)	(13.46)	(100.00)
5000–49,999 inhabitants	1146	164	1310
	(87.48)	(12.52)	(100.00)
50,000–499,999 inhabitants	927	157	1084
	(85.52)	(14.48)	(100.00)
500,000 and more inhabitants	2442	381	2823
	(86.50)	(13.50)	(100.00)
Total	5198	824	6022
	(86.32)	(13.68)	(100.00)

Notes: The figures represent the number of observations; percentage shares are given in parentheses.

Table 2 shows the distribution of club memberships across communities and across entrepreneurs and employees. We see that, in total, the average number of club memberships is higher for entrepreneurs (1.0) than for employees (0.8). A two-sided *t*-test confirms that this difference is statistically highly significant. Furthermore, Table 2 illustrates that the average number of club memberships steadily decreases for both employees and entrepreneurs as the community becomes larger. It is remarkable, though, that for every community size, the mean is higher for the entrepreneurs than it is for the employees. While in small communities with less than 5000 inhabitants, the entrepreneurs (employees) join 1.7 (1.1) associations/clubs on average, this figure drops to 0.8 (0.7) in large communities with 500,000 or more inhabitants.

In sum, the descriptive statistics suggest that entrepreneurs differ from employees in terms of club memberships. It might well be that people get access to social capital through club memberships, which, later on, creates a solid foundation to build on when being an entrepreneur. Whether the differences in club memberships are driven by unobserved heterogeneity between entrepreneurs and employed individuals, is hard to assess empirically. Indeed, this problem of an omitted variable bias distorting any causal analysis of social capital is widely discussed in the social capital literature (Durlauf, 2002a,b). We share these concerns; however, as argued in Section 2, what we can do is estimate the causal small community mark-up effect of club memberships on entrepreneurship in a multivariate setting.

4.2. How large is the small community mark-up effect of club memberships on entrepreneurship?

We have concerns about omitted variables, which might account for people being members in clubs but at the same time make them more likely to be an entrepreneur. This potential self-selection bias distorts any standard multivariate analysis where club membership is introduced as an independent variable to explain occupational choice. We face this problem by arguing that the self-selection bias cancels out if we focus on analyzing the impact of social capital access across communities of different size, the underlying assumption being that the self-selection bias is not different across community size. If this assumption holds, we should be able to identify a causal small community mark-up effect of club memberships on entrepreneurship.

Table 3 sets out the central steps of our multivariate analysis. In the linear probability model of column 1, only the control variables are used to predict a person's propensity to be an entrepreneur. The coefficients of the control variables show the expected signs. Women are less likely than men to be an entrepreneur, which is in line with the findings of, e.g., Blanchflower

Table 2
Number of club memberships across communities and occupational status.

	Employee	Entrepreneur	All
Small community	1.09	1.65	1.17
	(1.04)	(1.28)	(1.10)
Large community	.76	.91	.78
	(.87)	(1.06)	(.90)
5000–49,999 inhabitants	.92	1.16	.95
	(.98)	(1.23)	(1.02)
50,000–499,999 inhabitants	.81	.99	.83
	(.90)	(1.16)	(.94)
500,000 and more inhabitants	.66	.78	.68
	(.79)	(.91)	(.81)
Total	.80	1.02	.83
	(.90)	(1.13)	(.94)

Notes: The figures show averages; standard deviations are given in parentheses.

Table 3
Determinants of occupational choice: linear probability models.

	OLS coefficient on occupational status		
	(1)	(2)	(3)
Club memberships		.016***	.012*
		(.006)	(.006)
Club memberships × small community			.026**
			(.013)
Small community	.017	.011	−.018
	(.015)	(.015)	(.017)
Female	−.093***	−.090***	−.089***
	(.009)	(.009)	(.010)
House owner	.059***	.054***	.054***
	(.010)	(.010)	(.010)
Married	−.022**	−.024**	−.024***
	(.010)	(.010)	(.010)
Age	.005***	.005***	.005***
	(.000)	(.000)	(.000)
Education (omitted category: no or lower secondary)			
Medium secondary education	.043***	.042***	.042***
	(.010)	(.010)	(.010)
Higher secondary education	.081***	.079***	.080***
	(.020)	(.020)	(.020)
University degree	.182***	.181***	.181***
	(.018)	(.018)	(.018)
Previous unemployment (omitted category: no unemployment)			
Less than a year	.008	.009	.009
	(.015)	(.015)	(.015)
More than a year	−.019	−.016	−.016
	(.015)	(.015)	(.015)
Federal state dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	5473	5473	5473
R^2	0.2324	0.2342	0.2349

Notes: The dependent variable occupational status takes the value of unity for entrepreneurs and is zero for employees. For descriptive statistics of the control variables, see Tables A1, A2, and A4 and Fig. A1 in the appendix. Clustering robust standard errors in parentheses.

* 10% level of significance.
** 5% level of significance.
*** 1% level of significance.

(2000). Being a house or a flat owner, i.e., being a person with assumed low mobility, is associated with a higher propensity of being an entrepreneur. Married men and women have different time allocation preferences than singles, which makes them less likely to start their own businesses. Moreover, age is positively associated with being an entrepreneur. The propensity of being an entrepreneur increases monotonically with education whereas previous unemployment shows no significant correlations with a person's occupational choice. Holding all other covariates constant, the dummy for living in a small community shows no direct association with the propensity of being an entrepreneur.

In column 2 of Table 3, we introduce the number of club memberships as a measure for the access to social capital. Membership in associations and clubs is positively associated with a person's propensity to be an entrepreneur. Indeed, the coefficient of the club membership variable is highly significant, while the coefficients of the covariates remain remarkably similar; in fact, they hardly change at all. However, introducing club memberships as an independent variable and interpreting the positive sign of the coefficient is misleading because the coefficient is only a biased estimated of the causal effect of club memberships on individual occupational choice; omitted variables might be responsible for the sign and size of the coefficient. Thus, it might, at least to a certain degree, not be access to social capital but, instead, underlying unobserved personal characteristics that account for the positive association with a person's propensity to be an entrepreneur.

To avoid these endogeneity problems, we switch the focus to the causal small community mark-up effect of club memberships on entrepreneurship and introduce an interaction of club memberships with the small community dummy. The coefficient of this pivotal variable shows the mark-up effect of access to social capital in small communities as compared to larger communities, conditional on all other covariates. We have argued above that we expect a positive mark-up effect of social capital access in small communities since social capital should be more important in small communities where it compensates for the lack of formal market-oriented institutions. The estimated mark-up can be interpreted as being of a causal nature if the self-selection process into clubs on unobservable individual characteristics correlated with occupational choice in small communities is not different from the self-selection process in larger communities. Any baseline differences between small and large communities are accounted for by the small community dummy whereas the coefficient on the non-interacted club membership variable now captures the association between club memberships and occupational choice

in large communities. Column 3 of Table 3 presents the results of this empirical strategy. We see that the interaction term is positive and significant at the 5 percent level. Assuming that the self-selection process is the same across communities of different size, we interpret the coefficient of the interaction term as the causal small community mark-up effect of club memberships on entrepreneurship. Holding everything else constant, having marginally increased access to social capital in small communities increases the propensity to be an entrepreneur by 2.6 percentage points more than in large communities. Taking into account that, in our sample, 13.5 percent of all individuals living in large communities are entrepreneurs while this share is 15.2 for individuals living in small communities, our estimates suggest that access to social capital can account for more than this gap. Consequently, one could conclude that without the mark-up effect of social capital, small communities would be disadvantaged in terms of entrepreneurship as compared to larger communities.

4.3. Assessing the validity of our identifying assumption

The causal interpretation of the small community mark-up effect of club memberships depends on the validity of our key identifying assumption, namely that the self-selection process into clubs on variables that also influence entrepreneurship in small communities is not different from the self-selection process in large communities. Since individuals might self-select into clubs on unobservable characteristics, our assumption is not rigidly testable with data. However, at least for observable characteristics, we can check whether the self-selection process into clubs is similar across communities of different size.

One concern might for example be that people living in large communities are socialized in a different way than people living in small communities. Although in general this does no harm to our identification strategy, there is one specific feature about socialization which could indeed play a role. If people with the same characteristics that also influence occupational choice self-select into clubs in small communities but do not do so in larger communities, the small community mark-up effect of club memberships would just represent this differences in socialization across communities of different size. To check whether we can find any obvious differences in the selection process into clubs across communities, we run regressions with the number of club memberships as our outcome variable. As explaining variables we include all covariates and their interactions with the small community dummy. If the self-selection process is different on observables across communities, we should observe these interactions being statistically different from zero. Column 1 of Table 4 presents the results of this exercise, which suggest that females join clubs less often than do males. Married individuals more often join clubs; the same is true for owners of a house, i.e., for less mobile persons. Moreover, we can see that the amount of previous unemployment is negatively associated with club membership. For the validity of our key identifying assumption, it is only the coefficients of the interaction terms that are crucial. Here, we find that females in small communities are less likely to join clubs than females in larger communities. Apart from this fact, the coefficients of all other interaction terms are not statistically different from zero, which makes us confident that the selection process into clubs might indeed not be very different across communities of different size. Before addressing potential problems arising from the selection differences of women across communities, we discuss a further issue that could pose a problem to our key identifying assumption.

One might argue that another reason why the self-selection process into clubs could be different across communities of different size can be found in an unobserved migration story. Since an individual has the opportunity to move, clearly, there is a choice component in the decision to reside in a small or large community. If people who do not care about club memberships but are otherwise similar to their community fellows are more likely to move from small communities to large communities, this could account for the identified small community mark-up effect of club memberships and disrupt a plausibly causal interpretation. We address this potential problem by deliberately focusing on these subgroups in our dataset. In particular, we create a subsample with mobile individuals in large communities and immobile individuals in small communities. We consider an individual mobile if she had lived in her current community for less than 25 percent of her lifetime by the time of the interview. An individual is categorized as being immobile if she had lived in her current community for more than 25 percent of her lifetime by the time of the interview. We then rerun the regression with club membership as dependent variable for this subsample (column 2 of Table 4). The emerging picture is very similar to the one already gained in column 1 of Table 4. Mobile women living in large communities more often join clubs than their immobile counterparts living in small communities. Again, the coefficients of all other interactions are not different from zero.

To respond to the robust finding that the selection into clubs for women is different across community size, we estimate our occupational choice equation again, this time additionally including the triple interaction Clubs $\times$ small community $\times$ female and all the respective double interactions. The estimated coefficient for the small community mark-up effect of club memberships is not statistically different from the coefficient shown in column 3 of Table 3. The same is true if we restrict our sample to males. This makes us confident about the robustness of our results and confirms our plausibly causal interpretation of the small community mark-up effect of club memberships on the propensity to be an entrepreneur.

Of course, the self-selection process into clubs might still be different across community size on unobservable individual characteristics. But note that the coefficient of the interaction between club memberships and the community size dummy is more than double the size of the main effect. This suggests that the association of club memberships and entrepreneurship in small communities is more than three times higher than the association of club memberships and entrepreneurship in larger communities. Thus, the magnitude of the coefficient on the interaction term suggests that the part of the effect of club membership on entrepreneurship that is accounted for by unobserved heterogeneity between entrepreneurs and employees would have to be three times higher in small communities as compared to large communities in order to completely wipe out a causal small community mark-up effect of access to social capital on entrepreneurship.

Table 4
Selection into clubs.

	OLS coefficient on club memberships			
	(1)		(2)	
	Coeff.	Std. err.	Coeff.	Std. err.
Female	−.178***	(.035)	−.453***	(.093)
Small community × female	−.263***	(.087)	− 287**	(.133)
House owner	.284***	(.033)	.314***	(.077)
Small community × house owner	−.013	(.073)	.086	(.125)
Married	.110***	(.033)	.225**	(.098)
Small community × married	−.013	(.073)	.171	(.130)
Age	.001	(.001)	.005	(.004)
Small community × age	.003	(.004)	.009	(.006)
Education (omitted category: no or lower secondary)				
Medium secondary education	.048	(.035)	.196	(.133)
Small community × medium secondary education	.111	(.105)	.173	(.141)
Higher secondary education	.110*	(.057)	.055	(.226)
Small community × Higher secondary education	−.017	(.232)	.257	(.310)
University degree	.061	(.045)	.120	(.248)
Small community × University degree	.106	(.243)	−.114	(.266)
Previous unemployment (omitted category: no unemployment)				
Less than a year	−.069*	(.038)	−.174	(.108)
Small community × less than a year	−.062	(.091)	−.008	(.131)
More than a year	−.232***	(.049)	−.151	(.137)
Small community × more than a year	.123	(.124)	.022	(.222)
Small community dummy	−.205	(.270)	−.205	(.445)
Federal state dummies	Yes		Yes	
Small community × federal state dummies	Yes		Yes	
Industry dummies	Yes		Yes	
Small community × industry dummies	Yes		Yes	
Year dummies	Yes		Yes	
Small community × year dummies	Yes		Yes	
N	5473		1128	
R^2	0.1134		0.2024	

Notes: In column 1, the regressions are run on the whole sample with the small community dummy being 1 for all individuals living in small communities with up to 5000 inhabitants and zero otherwise. In column 2, the sample is restricted to all immobile individuals from small communities and all mobile individuals from larger communities. We define an individual as "mobile" if she had lived less than 25 percent of her lifetime in the current community by the time of the interview. For descriptive statistics of the control variables, see Tables A1, A2, and A4 and Fig. A1 in the appendix. Clustering robust standard errors in parentheses.

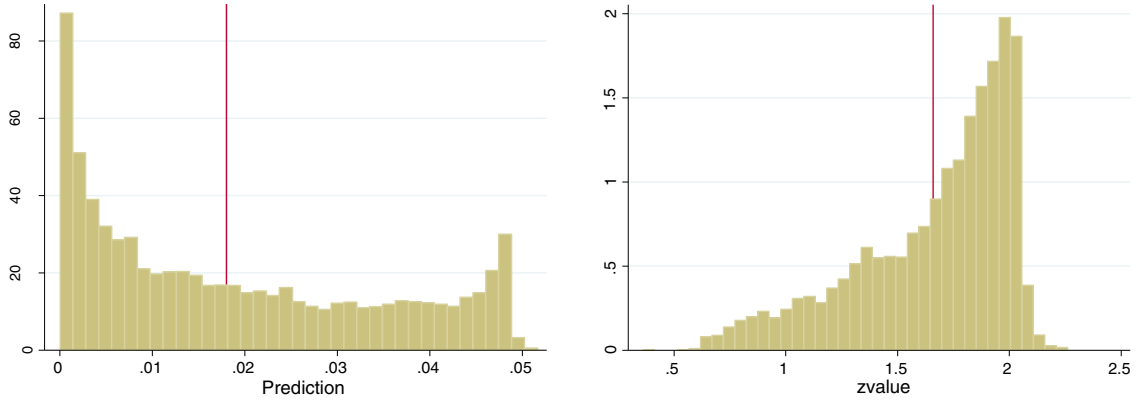
* 10% level of significance.
** 5% level of significance.
*** 1% level of significance.

4.4. Dealing with reverse causality

So far, we have assumed that individuals build up social capital by joining clubs, which in turn increases their propensity to be an entrepreneur. But it might also be the other way round and entrepreneurs join clubs more often than do employees. This reverse causality problem might hamper our results. Note, however, that this does not bias our causal small community mark-up effect of club memberships if the extent of reverse causality does not differ across community size. One instance where the degree of reverse causality would differ across communities would emerge if entrepreneurs in small communities were confronted with social pressure to join clubs whereas this was not the case in larger communities. One might argue whether this is really the case. Since we do not want to introduce this assumption, we present further arguments against any reverse causality concerns. Unfortunately, we only have repeated cross-sectional data and thus can only observe an individual over time insofar as the survey contains retrospective questions. However, there are several points that speak out in favor of our interpretation of the results.

From the very beginning, our club membership variable is constructed in a way that excludes all memberships in employer, entrepreneur, or trade associations, as well as union memberships. Memberships in these kinds of associations are the most obvious source of reverse causality because it is safe to assume that people are more likely to join an employers' association, entrepreneurs' association, or trade association after they have become an entrepreneur themselves. If the rate of unionization is smaller than the rate of entrepreneurs being members in employers' association, entrepreneurs' association, or trade associations, a positive correlation would emerge between being an entrepreneur and the number of associational activities which does not represent the line of causality we are interested in. Therefore, excluding occupation-related club memberships seems essential.

To further check that our results are not mainly driven by reverse causality, we restrict our sample to those individuals, who recently made a particular kind of occupational choice which either made them entrepreneurs (young entrepreneurs) or choose a new job as employee. The more recent their occupational choice, the more likely it is that the point of time



Notes: The graph on the left-hand side shows the density distribution of the marginal small community mark-up effects of club memberships in our nonlinear model whereas the graph on the right-hand side plots the density distribution of the respective z-values. The red vertical lines indicate means.

Fig. 1. Marginal effects and *z*-values of the nonlinear model. *Notes*: The graph on the left-hand side shows the density distribution of the marginal small community mark-up effects of club memberships in our nonlinear model whereas the graph on the right-hand side plots the density distribution of the respective *z*-values. The red vertical lines indicate means. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

these individuals joined clubs lies before the point of time they made their occupational choice. We start out by looking at those whose last occupational choice lies within the last five years preceding the survey interview and then stepwise reduce this time frame down to one year. Of course, the number of observations declines sharply and therefore, we do not want to interpret the results on these small subsamples rigorously. However, it is at least encouraging to see that the occupational choice estimations for these subsamples yield results that are not statistically different from the ones presented in Table 3, with the coefficients for the small community mark-up effects of club memberships lying in a range from .012 to .036.

Even if we cannot dismiss all reverse causality concerns, one should keep in mind that occupational choice theory models the decision to be an entrepreneur not as a once and for all decision but rather as a decision that is made repeatedly every period (Kihlstrom and Laffont, 1979). This means that access to social capital that is developed during times of running a business can have an impact on the propensity of staying an entrepreneur, i.e., the decision to be an entrepreneur in the next period.[6] Therefore, one might argue that it does not matter at which point in time social capital is built up. It always influences an individual's occupational choice – either the decision to become an entrepreneur for the very first time or the repeated decisions to stay an entrepreneur. We consider both effects interesting and in the end, it seems appropriate to interpret both of them as effects of access to social capital on entrepreneurship, although we might not be able to cleanly separate them from each other in our analysis.

4.5. Further robustness checks

Since occupational choice is a binary variable, we might wish to check the robustness of our findings in a nonlinear model. To this end, we estimate a probit occupational choice model as an alternative to the linear probability model presented so far. Given that small and large communities differ in their average levels of club memberships, the results from this probit model could also depend to some extent on the functional form assumptions about the effects of club memberships on entrepreneurship. This is why we generally prefer the linear probability specification. Nevertheless, the results from the nonlinear model are displayed in Table A5 of the Appendix A. We repeat the empirical proceeding from Table 3 and start out with a regression that only includes our control variables. In column 2 of Table A5, we add the club membership variable and in column 3, we finally introduce our main variable of interest, the interaction of the club membership variable with the small community dummy.

Following Ai and Norton (2003), the marginal small community mark-up effect of club memberships is computed by taking the derivative of being an entrepreneur with respect to club memberships and then taking the difference between small and large communities. The marginal small community mark-up effects of club memberships on entrepreneurship, estimated from the probit model, are consistently greater than zero with an average of .019. Fig. 1 plots the distribution of the estimated marginal effects and the respective *z*-values. Taken together, these results are remarkably similar to the

[6] This logic also applies if occupational choice decisions involve sunk costs even though the threshold to shut-down a business is higher in the presence of sunk costs.

ones obtained in the linear specification. It is encouraging to see that our previous findings are fully confirmed and we can conclude that our results are not sensitive to the functional form specification.

Finally, we allow for heterogeneous effects of the covariates across communities by interacting all controls with the small community dummy. Also in this specification, our findings are confirmed. The estimated coefficient on the interaction term between the small community dummy and the club membership variable does not differ from the result obtained in column 3 of Table 3.

5. Conclusions

In this paper, we investigate the effect of social capital access on entrepreneurship. Thus, our paper contributes to the literature on social capital and how it affects different economic outcomes such as new firm location (Michelacci and Silva, 2007), financial development (Guiso et al., 2004), job availability (Bayer et al., 2008), or growth (e.g., Knack and Keefer, 1997; Routledge and von Amsberg, 2003).[7]

We claim that we can isolate a small community mark-up effect of club memberships on entrepreneurship. To this end, we draw on the intuition that the importance of social capital depends on community size (Kranton, 1996; Kumar and Matsusaka, 2009). Whereas in large communities we see formal market-oriented institutions such as specialized venture capital firms providing entrepreneurial finance, in small communities would-be entrepreneurs often face a lack thereof. In this situation, social capital can play a role substitutive for more formal institutions. As such, it can for example help to overcome information asymmetries regarding the entrepreneur's future performance and prospects and thus pave the way to entrepreneurial finance.

We use club memberships as a measure for an individual's access to social capital and exploit the variation in the importance of social capital across community size to identify a plausibly causal small community mark-up effect of club membership on entrepreneurship under a relatively weak assumption. Our key identifying assumption is that unobserved individual heterogeneity that might influence both the individual's club memberships and the occupational choice to be an entrepreneur is independent of community size. Indeed, we could collect some neat evidence supporting our idea. Based on this identifying assumption, we find that there is a causal small community mark-up effect of social capital access which accounts for an increase of 2.6 percentage points in the propensity to be an entrepreneur.

Our analysis is based on the intuition that social capital can be a substitute for market-oriented institutions in small communities (Kumar and Matsusaka, 2009). This might lead to the question of whether it is desirable to establish more market-oriented institutions in small communities in order to formalize market exchange. Following Kranton (1996), this is not clear per se because there might as well be negative feedback loops of the emergence of new institutions on social capital deeply rooted in a community. For future research, it would thus be especially interesting to ask to what extent social capital is affected by formal institutions (cf. Tabellini, 2008). Along this line, Aghion et al. (2008) present the example of a minimum wage policy having a deleterious effect on the willingness of labor market participants to cooperate. The authors find that in the case of strong state regulations regarding the minimum wage, the labor market becomes characterized by distrustful labor relations and low union density. These findings demonstrate the value of future research on the interplay of social capital and formal institutions.

Appendix A.

See Fig. A1 and Tables A1–A5.

Table A1
Distribution of individuals across federal states.

	Frequency	Percent
Schleswig Holstein	257	4.27
Hamburg	230	3.82
Lower Saxony	635	10.54
Bremen	77	1.28
Northrhine Westfalia	1567	26.02
Hesse	553	9.18
Rhineland Palatinate	360	5.98
Baden–Wuerttemberg	894	14.85
Bavaria	1122	18.63
Saarland	101	1.68
Berlin (West)	226	3.75
Total	6022	100.00

[7] For a broad overview of the use of social capital in economics, see Sobel (2002).

Table A2
Distribution of individuals across industries.

	Frequency	Percent
Chemical industry, petroleum processing	211	3.77
Plastics, rubber industry	77	1.38
Earths, stones, fine ceramics	75	1.34
Metal industry	335	5.99
Steel, machines, car manufacturing	655	11.71
Electrical engineering, optics	462	8.26
Wood, paper, printing industry	207	3.70
Leather, textile industry	191	3.42
Food, beverages and tobacco industry	207	3.70
Primary building industry	345	6.17
Secondary building industry	225	4.02
Wholesale industry	355	6.35
Trade negotiations	40	0.72
Retail industry	760	13.59
Transport, information transmission	181	3.24
Credit institutions, banks	199	3.56
Insurances	146	2.61
Diverse services	921	16.47
Total	5592	100.00

Table A3
Entrepreneurs across industries and community size.

	Large community	Small community	Total
Chemical industry, petroleum processing	1	0	1
	(0.15)	(0.00)	(0.13)
Plastics, rubber industry	4	0	4
	(0.59)	(0.00)	(0.50)
Earths, stones, fine ceramics	3	0	3
	(0.44)	(0.00)	(0.38)
Metal industry	8	3	11
	(1.18)	(2.56)	(1.38)
Steel, machines, car manufacturing	7	2	9
	(1.03)	(1.71)	(1.13)
Electrical engineering, optics	14	1	15
	(2.06)	(0.85)	(1.88)
Wood, paper, printing industry	13	5	18
	(1.91)	(4.27)	(2.26)
Leather, textile industry	21	2	23
	(3.09)	(1.71)	(2.89)
Food, beverages and tobacco industry	10	7	17
	(1.47)	(5.98)	(2.14)
Primary building industry	14	4	18
	(2.06)	(3.42)	(2.26)
Secondary building industry	42	10	52
	(6.19)	(8.55)	(6.53)
Wholesale industry	21	3	24
	(3.09)	(2.56)	(3.02)
Trade negotiations	30	2	32
	(4.42)	(1.71)	(4.02)
Retail industry	151	23	174
	(22.24)	(19.66)	(21.86)
Transport, information transmission	29	3	32
	(4.27)	(2.56)	(4.02)
Credit institutions, banks	3	0	3
	(0.44)	(0.00)	(0.38)
Insurances	27	7	34
	(3.98)	(5.98)	(4.27)
Diverse services	281	45	326
	(41.38)	(38.46)	(40.95)
Total	679	117	796
	(100.00)	(100.00)	(100.00)

Notes: Percentage shares in parentheses.

Table A4
Further distribution figures for control variables.

	Frequency	Percent
Gender		
Male	3912	64.96
Female	2110	35.04
Total	6022	100.00
House owner		
Tenant	3279	54.80
House/flat owner	2705	45.20
Total	5984	100.00
Marital status		
Single	2140	35.54
Married	3881	64.45
Total	6022	100.00
Education		
No or lower secondary	3395	56.63
Medium secondary	1620	27.02
Upper secondary	397	6.62
University degree	583	9.72
Total	5995	100.00
Previous unemployment		
No	4961	83.24
Less than one year	708	11.88
More than one year	291	4.88
Total	5960	100.00

Table A5
Determinants of occupational choice: nonlinear models.

	Probit coefficient on occupational status		
Club memberships		.089***	.065**
		(.027)	(.032)
Club memberships × small community			.121**
			(.060)
Small community	.063	.026	−.131
	(.083)	(.083)	(.100)
Female	−.497***	−.480***	−.478***
	(.051)	(.051)	(.052)
House owner	.342***	.316***	.321***
	(.059)	(.060)	(.061)
Married	−.088	−.103*	−.101*
	(.054)	(.055)	(.055)
Age	.025***	.025***	.025***
	(.002)	(.003)	(.003)
Education (omitted category: no or lower secondary)			
Medium secondary education	.234***	.228***	.227***
	(.056)	(.056)	(.057)
Higher secondary education	.449***	.442***	.443***
	(.104)	(.106)	(.106)
University degree	.762***	.756***	.755***
	(.068)	(.069)	(.069)
Previous unemployment (omitted category: no unemployment)			
Less than a year	.091	.096	.099
	(.094)	(.096)	(.096)
More than a year	−.153	−.130	−.129
	(.104)	(.103)	(.102)
Federal state dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	5473	5473	5473
Pseudo R^2	0.2842	0.2867	0.2875

Notes: The dependent variable occupational status takes the value of unity for entrepreneurs and is zero for employees. For descriptive statistics of the control variables, see Tables A1, A2, and A4 and Fig. A1 in the appendix. Clustering robust standard errors in parentheses.

* 10% level of significance.

** 5% level of significance.

*** 1% level of significance.

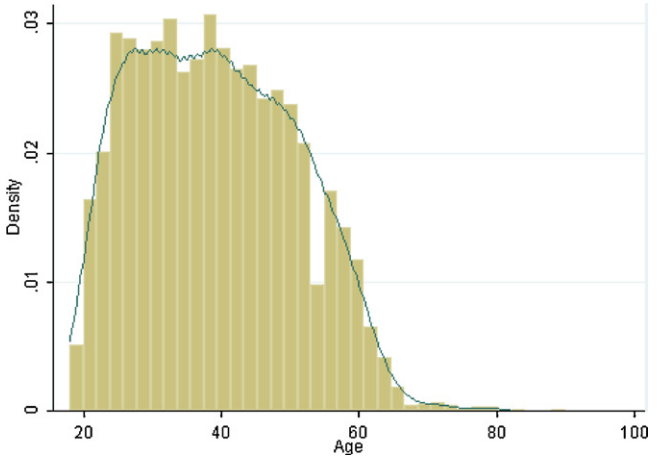


Fig. A1. Age distribution of individuals.

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