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## **The Impact of Self-Employment Experience on the Attitude towards Risk**

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### **Abstract**

Most empirical studies on self-employment decisions assume stable risk attitudes. We allow for endogeneity on both sides, when examining the relationship between risk attitudes and entrepreneurship. We find that entering self-employment is associated with a relative increase in the individual risk measure. We conjecture that experiencing self-employment affects an individual's perception of risk and leads to a quantitatively large and statistically significant shift in the measured attitude towards risk. By uncovering the two-way interaction between risk attitudes and self-employment, our study contributes to a better understanding of the effect of incentive and nudging policies that aim at fostering sustainable entrepreneurship.

## 1. INTRODUCTION

Entrepreneurship is considered to be an engine for labour market stabilization, for structural change, and for economic growth (Audretsch & Fritsch 1994). Entrepreneurship is also crucial in providing the competitive market entry forces that prevent excess profits, supporting efficient market outcomes (Audretsch, Keilbach & Lehmann 2006). Therefore, it is crucial to understand the determinants of entrepreneurs' decisions to enter self-employment in the first place. One factor that has been widely discussed as a crucial determinant of the self-employment decision is the individual's attitude towards risk (Bellante and Link 1981; Barsky et al. 1997; Cramer et al. 2002; Fairlie 2002; Lazear 2005; Caliendo, Fossen and Kritikos 2009, 2014).<sup>1</sup> Since studies comparing the risk attitudes reported by entrepreneurs to those reported by other individuals generally report higher values for the entrepreneurs, the usual conjecture is that a positive attitude towards risk is a prerequisite for self-employment. In this study, we provide empirical evidence contradicting this conjecture. Our analyses show that the direction of causality may well be reversed. It seems that the individuals' attitudes towards risk do not affect their self-employment decisions, but that these risk attitudes themselves are affected by the experience of self-employment.

Using a large general population panel, we show that the reported risk attitudes of individuals entering self-employment shift towards more risk-taking *after* experiencing self-employment. Hence, we add to the mounting evidence that attitudes towards risk are not generally stable over time, but may be affected by the general economic situation or by individual experiences (Bowles 1998; Heaton and Lucas 2000; Guiso and Paiella 2008). Our central contribution is to show that risk-taking attitudes are not generally the antecedent of self-employment, but often result from a self-employment experience.

Using data from different waves of an experimentally validated questionnaire, the German Socio-Economic Panel (SOEP), we examine whether individuals' risk attitudes affect or are affected by the entry into self-employment.<sup>2</sup> The SOEP contains questions on individuals' willingness to take risks in general and in specific contexts, including risk attitudes in an individual's professional career. This risk measure has been shown to constitute a relevant domain for employment decisions (Caliendo, Fossen and Kritikos 2010). We apply a difference-in-difference approach and examine whether individuals' risk measure is affected by entry into self-employment. We test whether those individuals who become self-employed within the time frame of our panel data (i.e. are not self-employed in 2004, but are self-employed later) express a different trend in risk attitudes than individuals who do not enter self-employment. We find that entry into self-employment leads to a relative increase in risk attitudes, an increase that is quantitatively large and significant even after controlling for individual

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<sup>1</sup> See also Jaeger et al. (2010) for a similar result in the context of risk attitudes and migration.

<sup>2</sup> Our focus group consists of those individuals, who either report dependent employment or unemployment in the first wave eliciting risk attitudes (in 2004), but report self-employment in later waves of the panel survey. We call these individuals "future self-employed" or "future entrepreneurs" and differentiate them from the "not self-employed" (who never indicate self-employment) and from the "2004 self-employed" who already indicated being self-employed in the first wave in 2004.

characteristics, different employment status, duration of self-employment, or whether one's father was an entrepreneur. We further show that these changes in risk attitudes dominate the effect of initial differences in individual risk levels.

Our results help to explain divergent findings in the entrepreneurship literature. While Cramer et al. (2002) find support for a positive relationship between risk tolerance and selection into entrepreneurship, Barsky et al. (1997) find no statistically significant effect of risk tolerance. Caliendo, Fossen and Kritikos (2009) show that individuals with lower risk aversion are more likely to enter self-employment than more risk averse individuals. Hartog, Ferrer-i Carbonell and Jonker (2002) present evidence that successful entrepreneurs are less risk averse than regular employees. Fairlie (2002) provides indirect evidence on the hypothesis that risk seeking individuals are more likely to choose self-employment. He shows that a personal history in drug dealing (a presumably risky activity) has a significantly positive effect on the probability of later self-employment in legal businesses. Using longitudinal data set on risk tolerance, Ahn (2010) finds that relative risk tolerance has a positive and statistically significant effect on the probability of entering self-employment. Sarasvathy, Menon and Kuechle (2013), however, argue that entrepreneurs fall along the entire risk attitude spectrum (see also Brockhaus 1980; Sarasvathy, Simon and Lave 1998).

Our study adds to the literature on risk attitudes and self-employment by showing that dynamic risk attitudes may be one reason for the mixed findings so far. We find that the willingness to take risks substantially increases after experiencing self-employment. We conjecture that the perception of risk may be affected by entering into self-employment much in the same way as it is by a shift in the general economic situation does. A number of studies on risk attitudes and portfolio choice have shown that changes in the economic situation affect investors' perceptions of background risk and, ultimately, influencing their risk attitudes (Heaton and Lucas 2000; Guiso and Paiella 2008).

Our result has several implications for understanding self-employment decision and fostering sustained entrepreneurship. First, our results raise serious doubts, whether eliciting risk attitudes can contribute to the identification of future entrepreneurs. Quite contrary, we observe a "reverse causality" establishing a shift in risk attitudes that follows from the entry into self-employment. Second, our study uncovers another aspect of self-employment that may be substantially slowing down the entrepreneurial development. Our study is the first to show that fostering entrepreneurship may be facilitated by programs that help individuals adapt their risk attitudes towards the levels that self-employment requires.

## **2. DATA**

The SOEP, the underlying data set, is a representative survey of the German population that was initiated in 1984. It contains a large variety of longitudinal information on approximately 22,000

individuals.<sup>3</sup> Risk attitudes were elicited twice in the SOEP (in 2004 and in 2009). Therefore, we use the SOEP waves from 2004 to 2009 and consider the waves of 2003, 2010, 2011, and 2012 for our robustness analyses. We focus on the change in the risk attitude that individuals report concerning their professional career.<sup>4</sup> We denote the individuals' reported risk attitudes in 2004 as *risk04* and those reported in 2009 as *risk09*. The behavioural relevance of the risk attitude measures in the SOEP have been shown in a large-scale experiment (using a representative sub-sample of 450 participants) by Dohmen et al. (2011).<sup>5</sup>

We identify entry into self employment using two different proxies. The first proxy is based on the variable "main occupation" that is reported by all individuals in every wave. We are only interested in individuals reporting "employed", "self-employed", or "unemployed" as their main occupation. We classify individuals as "future self-employed" if their reported main occupation changes from employed or unemployed in 2004 to self-employment in one of the subsequent years (*selfemp*). Our second proxy is somewhat broader, because we also count individuals as self-employed who report income from self-employment, even if they do not report self-employment as their main occupation. With this procedure individuals are classified as "future self-employed" if they report to have no income from self-employment in 2004, but report having income from self-employment in some year after 2004 (*inc\_selfemp*). We use both proxies (i.e. *inc\_selfemp* and *selfemp*) as dummy variables in the empirical analysis, where the value of 1 indicates future self-employed individuals.

We restrict our sample to all individuals between 17 years of age in 2004 and 65 years of age in 2009, who were either employed or unemployed in 2004.<sup>6</sup> This leaves us with a balanced panel data set containing information on 7353 individuals. When our comparisons are based on self-employment income, we have 324 future self-employed individuals (i.e. individuals without self-employment income in 2004, but with self-employment income during the period from 2005 to 2009). When our comparisons are based on self-employment as the main occupation, we have 267 future self-employed

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<sup>3</sup> For more detailed information about the SOEP, see Wagner, Burkhauser and Behringer (1993) and Wagner, Frick and Jürgen Schupp (2007). Further information is available at [http://www.diw.de/en/diw\\_02.c.221178.en/about\\_soep.html](http://www.diw.de/en/diw_02.c.221178.en/about_soep.html) (accessed February 3, 2014).

<sup>4</sup> The exact question is: "People can behave differently in different situations. How would you rate your willingness to take risks in your (professional) career?" People respond to an 11-point scale, where values of 0 indicate high risk aversion and values of 10 indicate full willingness to take risks. This measure has also been used in a number of other studies (e.g. Caliendo, Fossen and Kritikos, 2009 and 2014).

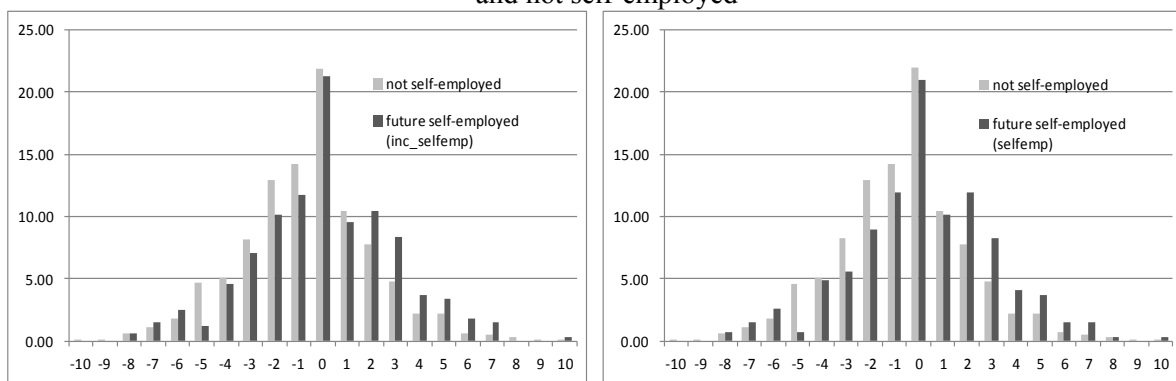
<sup>5</sup> The appropriate measurement of risk attitudes is subject of a lively debate. We rely on the subjective self-assessment of risk attitudes as also used by numerous other authors (Caliendo, Fossen and Kritikos, 2009 and 2014; Jaeger et al., 2010; Dohmen et al., 2012). Some authors argue that risk preferences revealed in choice behaviour are more reliable than self-reported risk attitudes (e.g. Necker and Voskort, 2014). Some authors use hypothetical choices to reveal risk preferences (e.g. Barsky et al., 1997; Cramer et al., 2002). However, comparing risk preference revealed by actual lottery choices and self-reported risk attitudes, Dohmen et al. (2011) can confirm the behavioural relevance of self-reported risk attitudes.

<sup>6</sup> This means that we exclude non-employed individuals, individuals in vocational training, individuals doing an internship, and individuals in military or civil service from the analysis. We also exclude individuals with missing information on any of the variables used to perform the analysis. Regarding the choice of occupational profiles, robustness checks show that the exclusion of certain groups does not affect the significance and direction of the results.

individuals (i.e. individuals who were not self-employed in 2004, but were self-employed starting at some point in the period from 2005 to 2009). We sometimes refer to the rest of the individuals in our sample as the “others”. Please, note that this group contains those who never enter self-employment (the “not self-employed”). Those who were already self-employed in 2004 (the “2004 self-employed”) are excluded from the analysis.

### 3. RISK ATTITUDES OF FUTURE SELF-EMPLOYED AND OTHERS

FIGURE 1  
Distributions of changes in risk attitudes from 2004 to 2009 for future self-employed and not self-employed



Source: Authors own illustration from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Figure 1 shows the distributions of the change rates in the willingness to take risks ( $risk0409$ ) for the future self-employed and for the others (individuals with no transition to self-employment) between 2005 and 2009. We derive the change in individual risk attitudes by calculating the difference in risk values from 2009 and 2004 ( $risk0409 = risk09 - risk04$ ). Because both  $risk04$  and  $risk09$  are measured on 11-point scales, the variable  $risk0409$  can reach values from  $-10$  to  $+10$ . The left-hand side of figure 1 depicts the distribution of changes in risk attributes for the future self-employed and the others, when the proxy for self-employment is based on income from self-employment ( $inc\_selfemp$ ). On the right-hand side, the distributions are shown for the self-employment proxy based on the main occupation ( $selfemp$ ). Evidently, there are substantial changes in individual risk attitudes over time, regardless of the transition towards self-employment. Only roughly 21% of the future self-employed and 22% of the others show stable patterns in their risk attitudes.

A more detailed comparison of the two distributions reveals differences between the future self-employed and the others. While both distributions are centred on zero, the distribution of the changes in the risk attitudes (in both figures) leans more to the right-hand side for the future self-employed than for the others (see also table 1). Hence, a greater fraction of the future self-employed than of the others exhibit an increase in their reported attitudes towards risk.

TABLE 1  
Risk attitudes 2004 to 2009 for not self-employed, future self-employed, and 2004 self-employed

	not self-employed	future self-employed		2004 self-employed	
		<i>inc_selfemp</i>	<i>selfemp</i>	<i>inc_selfemp</i>	<i>selfemp</i>
Average risk attitude 2004	3.913	4.876	4.835	5.27	5.21
Average risk attitude 2009	3.284	4.913	5.014	4.672	4.612
Average change in risk attitude	-0.629***	0.037	0.179	-0.597***	-0.598***
% negative change in risk attitude	48.94	39.51	37.08	50.74	51.30
% positive change in risk attitude	29.14	39.20	41.95	31.99	31.13
N	7029	324	267	544	575

Source: Authors own calculation from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27. Notes: \*\*\* indicate significance at the 1% level of the mean comparison test for average risk attitudes in 2004 and 2009.

Table 1 provides additional results of some basic descriptive statistics. We depict the average reported risk attitudes for the years 2004 (*risk04*) and 2009 (*risk09*), as well as the change in the risk attitude (*risk0409*), for the not self-employed, for the future self-employed and for the 2004 self-employed. The risk attitudes of the future self-employed and the 2004 self-employed are generally greater than for the measures of those, who are not self-employed. Hence, as in earlier Studies (e.g. Caliendo, Fossen and Kritikos, 2009 and 2014), we also find that self-employment is correlated with a higher risk attitude than dependent employment. However, while the future self-employed, on average, experience an increase of their risk attitude index (0.04 to 0.18, depending on which proxy we use), both those who were never self-employed and those who were already self-employed in 2004 show decreasing risk attitudes (by about 0.60 points). We conjecture that there is a general decrease in the risk attitude measure – perhaps driven by the economic breakdown of 2008 – that affects everyone, but is more than compensated by an increase in the risk attitude of those who enter self-employment.

In table 2 we present the changes in the risk attitudes (from 2004 to 2009) of the future self-employed (based on the income proxy) and of the others. The table is sub-divided by a variety of socio-economic characteristics. These characteristics later serve as controls in the regressions analyzing the effect of self-employment on risk attitudes. We observe an increase in the reported risk attitudes of the vast majority of sub-categories (24 of 37) for the future self-employed. In contrast, the others are generally characterized by a reduction in their risk attitudes in all sub-categories. In the cases, in which the future self-employed show negative changes, the decrease in their risk attitudes are smaller than the decrease exhibited by the others.

TABLE 2  
Average change in risk attitudes of future self-employed (*inc selfemp*) and others

	Average risk change		N		Percent of N	Percent of category	
	others	future self-employed	others	future self-employed	future self-employed	others	future self-employed
All	-0.629	0.037	7029	324	4.41		
Sex							
Male	-0.619	-0.238	3546	193	5.16	50.45	59.57
Female	-0.640	0.443	3483	131	3.62	49.55	40.43
Age							
17-25	-0.171	0.043	480	23	4.57	6.83	7.10
26-35	-0.413	0.354	1507	99	6.16	21.44	30.56
36-45	-0.641	0.116	2393	112	4.47	34.04	34.57
46-60	-0.825	-0.411	2649	90	3.29	37.69	27.78
ISCED							
0-2	-0.449	0.087	809	23	2.76	11.64	7.32
3-4	-0.657	0.226	3958	159	3.86	56.97	50.64
5-6	-0.659	-0.227	2181	132	5.71	31.39	42.04
Work exp.							
0	-0.070	0.172	243	29	10.66	3.46	8.95
0.1-5	-0.424	0.140	1175	57	4.63	16.72	17.59
5.1-10	-0.584	0.633	1167	79	6.34	16.61	24.38
>10	-0.725	-0.321	4441	159	3.46	63.21	49.07
Unemp exp.							
0	-0.570	0.168	4256	184	4.14	60.58	56.79
0.1-1	-0.682	-0.431	1445	72	4.75	20.57	22.22
1.1-2	-0.639	-0.194	485	31	6.01	6.90	9.57
>2	-0.824	0.486	840	37	4.22	11.96	11.42
Job duration							
0-5	-0.486	-0.051	2320	157	6.34	36.73	58.15
6-15	-0.642	0.175	2336	80	3.31	36.99	29.63
>15	-0.719	-0.242	1660	33	1.95	26.28	12.22
Married							
No	-0.620	-0.073	2556	137	5.09	36.36	42.28
Yes	-0.635	0.118	4473	187	4.01	63.64	57.72
Kids							
0	-0.690	-0.085	4305	177	3.95	61.25	54.63
1	-0.607	-0.286	1414	77	5.16	20.12	23.77
≥2	-0.455	0.700	1310	70	5.07	18.64	21.60
Living							
East	-0.772	0.021	1850	94	4.84	26.32	29.01
West	-0.578	0.043	5179	230	4.25	73.68	70.99
Origin							
Abroad	-0.415	0.375	458	16	3.38	6.52	4.94
Germany	-0.644	0.019	6571	308	4.48	93.48	95.06
Disable							
No	-0.613	0.055	6568	307	4.47	93.63	94.75
Yes	-0.877	-0.294	447	17	3.66	6.37	5.25
Inc. Finance							
No	-0.614	0.234	5306	214	3.88	75.49	66.05
Yes	-0.676	-0.345	1723	110	6.00	24.51	33.95
Height							
0-180	-0.647	0.132	5727	243	4.07	81.62	75.00
≥181	-0.556	-0.247	1290	81	5.91	18.38	25.00
Father entrep.							
No	-0.649	0.007	6440	276	4.11	91.62	85.19
Yes	-0.418	0.208	589	48	7.54	8.38	14.81

Source: Authors own calculation from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Notes: (Control) variables refer to the year 2004. A detailed description of the variables appears in the appendix.

#### 4. ENTRY TO SELF-EMPLOYMENT AS DETERMINANT OF RISK ATTITUDES

The results of the descriptive analysis show that individual risk attitudes change over time, but they do so in very different ways for those who enter self-employment than for the others. In search of a causal effect of entry into self-employment on risk attitudes, we apply a difference-in-difference (DiD) design (Ashenfelter 1978; Card and Krueger 1994).<sup>7</sup> The basic idea of our DiD identification strategy is to calculate the difference of the mean risk attitudes of the future self-employed and the others before and after the future self-employed entered self-employment. Hence, the “treatment” in our empirical analysis is the entry into self-employment and the future self-employed are our “treatment group”, while the others are our “control group”. We measure the risk attitudes of all individuals both *before* (in 2004) and *after* (in 2009) the individuals in the treatment group “receive the treatment” (i.e. experience entry to self-employment).

Several assumptions must hold to infer the causal effect for the treated group. First, the treatment should not affect the non-treated group (see Rubin 1977), i.e. there should not be any relevant interactions between future self-employed and the others. In our case, it seems straightforward that we can assume that an individual’s entry to self-employment has no direct or indirect effect on another individual’s risk attitude.

Second, the setup should avoid pre-treatment endogeneity issues (Lechner 2011). Specifically, in our case, these issues would arise, if individuals had anticipated their entry into self-employment and had already adapted their pre-treatment risk attitudes that we measure in 2004. We can partially control for the pre-treatment endogeneity issue by using a question from the SOEP wave of 2003 that asks individuals to estimate the probability of their entry into self-employment within the next two years. Restricting our sample to those individuals who report a zero probability of entering self-employment, we can plausibly assume that no one exhibits a pre-treatment adaptation of risk attitudes based on a hidden intention to become self-employed in 2004. The results of this robustness check – as we demonstrate later on in this paper – are fully in line with the results based on the entire sample. Hence, we are convinced that pre-treatment endogeneity issues are not biasing our results.

Third, the common trend assumption is a key element of the DiD design (Lechner 2011). In our case, it implies that if the future self-employed had not entered self-employment, they would have experienced more or less the same change in risk attitudes as the others did, conditional on the individual covariates. Given a common trend, any differences in the development of individual risk attitudes can be interpreted as an effect of the treatment. In section 5, we offer some indirect evidence in favour of the common trend assumption. We use the SOEP waves of 2010, 2011, and 2012 to define a new treatment group containing those individuals who did not enter self-employment between 2004 and 2009, but did enter self-employment after 2010. We compare the changes in the risk

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<sup>7</sup> An alternative identification design could make use of a matching approach.



attitudes that these individuals report in 2004 and 2009 to the changes in the risk attitudes of the others, i.e. the individuals that never enter self-employment or were self-employed from the outset. As we find no differences in the way that the risk attitudes of the new treatment group members vary from those of the others, we assume a common trend overall.

The underlying equation of our basic DiD approach can be specified as follows:

$$Y_i = \beta_0 + \beta_1 T_i + \beta_2 t_i + \beta_3 (T_i \cdot t_i) + \beta_4 X_i + \varepsilon_i,$$

where  $T = 0,1$  indicates whether an individual received treatment ( $T = 1$ ) or not ( $T = 0$ ), i.e. belongs to the future self-employed or to the others, correspondingly. We elicit the individuals' risk attitudes and covariates in two periods,  $t = 0,1$ , where 0 indicates the period before treatment (2004) and 1 indicates the period after treatment (2009). Covariates are denoted by  $X$ . The coefficient  $\beta_3$  captures the treatment effect.

## 5. ESTIMATION RESULTS

### 5.1. Covariates of reported risk attitudes

Before we apply DiD estimations, we directly estimate the effect of self-employment on risk attitudes in 2009, while controlling for risk attitudes before the transition into self-employment in 2004. This is equivalent to estimating the effect of self-employment on the *change* in risk attitudes after the transition and including the risk attitude measure of 2004 as covariate. We estimate linear regression models, where self-employment is either specified by the income proxy *inc\_selfemp* (table 3, columns 2 and 3) or the main occupation proxy *selfemp* (table 3, columns 4 and 5).

The results in table 3 show that on average a transition into self-employment is highly correlated to an increase in risk attitudes. Coefficients for the covariates “female”, “age”, and “unemployment experience” are all negative and highly significant. Coefficients on the covariate “education”, “German origin”, and “father self-employment” are positive and significant. The reported risk attitudes in 2004 are also positively correlated to the reported risk attitudes in 2009.

TABLE 3  
OLS, future self-employed and others in 2004

Dependent variable	Risk attitudes 2009			
	<i>(inc selfemp)</i>		<i>(selfemp)</i>	
	(2)	(3)	(4)	(5)
inc_selfemp	1.239*** (0.134)	1.104*** (0.137)		
selfemp			1.350*** (0.151)	1.234*** (0.171)
Risk 2004	0.405*** (0.011)	0.357*** (0.012)	0.407*** (0.011)	0.357*** (0.012)
Sex (female =1)		-0.417*** (0.083)		-0.424*** (0.083)
East		0.042 (0.063)		0.045 (0.063)
Education		0.136*** (0.020)		0.141*** (0.020)
Age		-0.068*** (0.024)		-0.067*** (0.024)
Age_sq		0.000 (0.000)		0.000 (0.000)
Work experience		-0.002 (0.004)		-0.001 (0.004)
Unemployment experience		-0.059*** (0.015)		-0.059*** (0.015)
Disable		-0.168 (0.117)		-0.166 (0.117)
German		0.145 (0.124)		0.147 (0.124)
Married		-0.041 (0.067)		-0.040 (0.067)
Income finance		0.000 (0.000)		0.000 (0.000)
Kids		-0.003 (0.034)		-0.003 (0.034)
Height		0.001 (0.004)		0.001 (0.004)
Father entrepreneur		0.189** (0.092)		0.186** (0.092)
Constant	1.697*** (0.051)	3.560*** (0.859)	1.698*** (0.051)	3.539*** (0.858)
N	7353	7119	7353	7119
R <sup>2</sup>	0.173	0.212	0.174	0.213

Source: Authors own calculations from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Notes: \*\*\* indicate significance at the 1% level, \*\* significance at the 5% level, \* significance at the 10% level. Coefficients in all columns are OLS estimates. Robust standard errors are in brackets. Covariates refer to the year 2004.

## 5.2. Main difference in differences analysis

In table 4, we present a basic DiD design. Here, we use only individual information about risk attitudes from the years 2004 and 2009 without any additional covariates. “Treated” refers to the individuals who enter self-employment between 2005 and 2009 and “control” refers to the others. Columns 2 and 3 of table 4 present the pre-treatment risk attitudes and columns 5 and 6 show the corresponding post-treatment risk attitudes. Columns 4 and 7 show the differences between the risk attitudes of the treatment and control groups. Finally, column 8 (DiD) contains the difference in the

differences, i.e. the average treatment effect. Comparing the average risk attitude measures for the future self-employed and the others in 2004, we find that the future self-employed report greater values for their risk attitudes than the others. This difference is 0.96 when using the income proxy (*inc\_selfemp*) and 0.91 when using the main occupation proxy (*selfemp*). The difference in both cases is highly significant and in line with prior research showing that more risky individuals are more likely to enter self-employment (Barsky et al. 1997; Cramer et al. 2002; Caliendo, Fossen and Kritikos 2009, 2010, 2014). With regard to the post-treatment period 2009, we find that this difference increases from 0.96 to 1.63 with *inc\_selfemp* and from 0.91 to 1.72 with *selfemp*. Both comparisons imply a large and significant increase in the difference between the risk attitudes of the future self-employed and the others. As column 8 shows, the difference in differences by 0.67 with *inc\_selfemp* and by 0.81 with *selfemp* is highly significant, providing support for two of our main findings, i.e. that risk attitudes change over time and that entry into self-employment increases the individual risk attitude.

TABLE 4  
DiD approach, future self-employed and others in 2004 and 2009, without covariates

Outcome variable	2004			2009			DiD (8)
	Control (2)	Treated (3)	Diff(Before) (4)	Control (5)	Treated (6)	Diff(After) (7)	
<b>Panel A: emp. &amp; unemp.; <i>inc_selfemp</i>; no covariates</b>							
Risk	3.914	4.877	0.963	3.284	4.914	1.629	0.666
Std. error	0.029	0.148	0.151	0.030	0.139	0.142	0.207
t	132.73	10.44	6.40	-17.01	9.04	5.65	3.22
P>t	0.000	0.000	0.000***	0.000	0.000	0.000***	0.001***
N	7029	324		7029	324		
<b>Panel B: emp. &amp; unemp.; <i>selfemp</i>; no covariates</b>							
Risk	3.923	4.835	0.912	3.294	5.015	1.721	0.809
Std. error	0.029	0.165	0.168	0.030	0.159	0.162	0.233
t	133.48	9.45	5.44	-17.1	9.29	5.91	3.47
P>t	0.000	0.000	0.000***	0.000	0.000	0.000***	0.001***
N	7086	267		7086	267		

Source: Authors own calculations from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Notes: \*\*\* indicate significance at the 1% level, \*\* significance at the 5% level, \* significance at the 10% level. Robust standard errors are reported.

Table 5 presents the results for the DiD approach with the covariates, extending our analysis presented in table 4. In line with the regression estimates depicted in table 3, the set of covariates consists of individual information from the year 2004 and includes variables on gender, origin (East or West Germany, German or foreigner), education (using the ISCED classification), age, work experience, unemployment experience, nationality, disability, marital status, income from finance (differentiated by rents and interest), the number of children, body height, duration of actual employment, and whether the individual's father was an entrepreneur when the individual was 15 years of age. Our previous results remain robust with this specification. While the coefficients for the DiD remain almost constant (0.71 with *inc\_selfemp* and 0.83 with *selfemp*), the insertion of covariates reduces the pre-treatment differences in the risk attitudes between future self-employed and others to 0.67 and 0.69 with *inc\_selfemp* and *selfemp*, correspondingly.

TABLE 5  
DiD approach, future self-employed and others in 2004 and 2009

Outcome variable	2004			2009			DiD (8)
	Control (2)	Treated (3)	Diff(Before) (4)	Control (5)	Treated (6)	Diff(After) (7)	
<b>Panel A: emp. &amp; unemp.; <i>inc_selfemp</i></b>							
Risk	2.861	3.529	0.668	2.22	3.597	1.377	0.709
Std. error	0.648	0.668	0.149	0.648	0.661	0.144	0.206
T	4.41	3.86	4.48	1.87	3.96	5.59	3.44
P>t	0.000	0.000	0.000***	0.001	0.000	0.000***	0.001***
N	6811	308		6811	308		
<b>Panel B: emp. &amp; unemp.; <i>selfemp</i></b>							
Risk	2.842	3.534	0.692	2.202	3.727	1.525	0.833
Std. error	0.648	0.671	0.166	0.648	0.665	0.164	0.232
t	4.39	3.87	4.16	1.85	4.15	5.78	3.59
P>t	0.000	0.000	0.000***	0.001	0.000	0.000***	0.000***
N	6865	254		6865	254		

Source: Authors own calculations from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Notes: emp = employed in 2004, unemp = unemployed in 2004. \*\*\* indicate significance at the 1% level, \*\* significance at the 5% level, \* significance at the 10% level. Robust standard errors are reported. See table 2 for a full list of included covariates. Covariates refer to the year 2004.

Our results also remain robust when we exclude those who were self-employed only for a short time, entering self-employment after 2004, but exiting self-employment by 2009. Table 6 shows the results of this robustness check in both specifications (panel A and panel B). The DiD values are 0.93 and 0.89 and the pre-treatment levels of differences in reported risk attitudes are 0.62 and 0.75 with *inc\_selfemp* and *selfemp*, correspondingly.

TABLE 6  
DiD approach, future self-employed remaining self-employed until 2009 and others in 2004 and 2009

Outcome variable	2004			2009			DiD (8)
	Control (2)	Treated (3)	Diff(Before) (4)	Control (5)	Treated (6)	Diff(After) (7)	
<b>Panel A: emp. &amp; unemp.; <i>inc_selfemp</i>; <i>selfemp</i>. continuous to 2009</b>							
Risk	2.971	3.596	0.624	2.338	3.889	1.552	0.927
Std. error	0.649	0.684	0.199	0.649	0.676	0.188	0.272
T	4.58	3.88	3.15	1.99	4.33	5.56	3.40
P>t	0.000	0.000	0.002***	0.000	0.000	0.000***	0.001***
N	6942	177		6942	177		
<b>Panel B: emp. &amp; unemp.; <i>selfemp</i>; <i>selfemp</i>. continuous to 2009</b>							
Risk	2.997	3.744	0.747	2.367	3.999	1.632	0.885
Std. error	0.649	0.691	0.217	0.649	0.681	0.199	0.293
t	4.62	4.08	3.45	2.03	4.41	5.19	3.01
P>t	0.000	0.000	0.001***	0.000	0.000	0.000***	0.003***
N	6962	157		6962	157		

Source: Authors own calculations from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Notes: emp = employed in 2004, unemp = unemployed in 2004. \*\*\* indicate significance at the 1% level, \*\* significance at the 5% level, \* significance at the 10% level. Robust standard errors are reported. See table 2 for a full list of included covariates. Covariates refer to the year 2004.

### 5.3. Transition from unemployment and employment to self-employment

To gain a deeper insight in the transition process, we differentiate between the future self-employed who entered self-employment either from a previous employment or from unemployment in 2004. The results in Table 7 show that the future self-employed with a transition from a previous employment

(panel A and panel B) exhibit significantly greater increases in their reported risk attitudes than others. The DiD values 0.64 and 0.75 with *inc\_selfemp* and *selfemp*, correspondingly, are very similar to those calculated for the entire sample in the previous subsections.<sup>8</sup> Pre-treatment differences in risk attitudes are also robustly greater for the future self-employed than for the others, with slightly lower difference than in the previous subsections, 0.53 and 0.54 with *inc\_selfemp* and *selfemp*, correspondingly. For transitions from unemployment to self-employment (panel C and panel D) we find substantially larger differences in risk attitudes, but also more noise due to the smaller number of observations. Nevertheless, the DiD values 1.21 and 1.35 with *inc\_selfemp* and *selfemp*, correspondingly, are both significant at a 5% level.

TABLE 7  
DiD approach, future self-employed and others in 2004 and 2009  
stratified by previous employed and unemployed in 2004

Outcome variable	2004			2009			DiD (8)
	Control (2)	Treated (3)	Diff(Before) (4)	Control (5)	Treated (6)	Diff(After) (7)	
<b>Panel A: previously employed; <i>inc_selfemp</i></b>							
Risk	2.691	3.218	0.527	2.077	3.241	1.164	0.637
Std. error	0.693	0.711	0.152	0.693	0.708	0.153	0.215
t	3.88	3.43	3.47	1.80	3.50	4.69	2.97
P>t	0.000	0.000	0.001***	0.003	0.000	0.000***	0.003***
N	6128	259		6128	259		
<b>Panel B: previously employed; <i>selfemp</i></b>							
Risk	2.660	3.196	0.536	2.048	3.332	1.284	0.748
Std. error	0.692	0.715	0.172	0.693	0.711	0.176	0.245
t	3.84	3.41	3.12	1.78	3.64	4.78	3.05
P>t	0.000	0.000	0.002***	0.003	0.000	0.000***	0.002***
N	6181	206		6181	206		
<b>Panel C: previously unemployed; <i>inc_selfemp</i></b>							
Risk	3.409	4.266	0.858	2.512	4.579	2.067	1.209
Std. error	2.015	2.098	0.474	2.014	2.053	0.403	0.607
t	1.69	3.82	1.81	2.96	3.96	3.86	1.99
P>t	0.091	0.042	0.071*	0.212	0.026	0.000***	0.046**
N	679	48		679	48		
<b>Panel D: previously unemployed; <i>selfemp</i></b>							
Risk	3.540	4.345	0.805	2.636	4.792	2.156	1.351
Std. error	2.014	2.100	0.474	2.013	2.061	0.425	0.622
t	1.76	3.92	1.70	3.09	4.10	3.98	2.17
P>t	0.079	0.039	0.090*	0.191	0.020	0.000***	0.030**
N	680	47		680	47		

Source: Authors own calculations from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Notes: emp = employed in 2004, unemp = unemployed in 2004. \*\*\* indicate significance at the 1% level, \*\* significance at the 5% level, \* significance at the 10% level. Robust standard errors are reported. See table 2 for a full list of included covariates. Covariates refer to the year 2004.

<sup>8</sup> If not stated otherwise, all regressions include the entire set of control variables (see table 2) with the exception of regressions restricted to the sample of employed individuals, which also controls for the time span individuals are employed at their current employer.

#### 5.4. Robustness Check I: Exogeneity of pre-treatment outcomes and covariates

The DiD design relies on several critical assumptions. Individuals may anticipate becoming an entrepreneur, which entails changes in risk attitudes or pre-treatment adaptation in other covariates. Thus, our measurement of risk attitudes in 2004 may already be an outcome from previous plans to enter self-employment. We use a question from the SOEP wave in 2003 to provide a robustness check on the pre-treatment intention to enter self-employment. In the SOEP 2003 wave, individuals were asked to estimate the probability that they would make a change in their career within the next two years on a 100-point scale, where 0 meant that a change would definitely not occur. One part of the question involves the probability of entering self-employment. In the following DiD analysis, we restrict the sample to those individuals who reported zero probability for self-employment.

The results are shown in table 8. Restricting the sample to only those individuals who reported zero probability for self-employment, leads to comparable and robust results. The reported risk attitudes of the future self-employed increase significantly more than the risk attitudes of others with DiD values of 0.95 and 1.12 with *inc\_selfemp* and *selfemp*, correspondingly. Both values are highly significant at the 1% level. Notably, in this specification – for the first time in the course of our analysis – we find no significant difference between the reported risk attitudes of the future self-employed and others in the pre-treatment period. This finding that is based on a large sample size, actually excluding those individuals who were contemplating self-employment in 2003, is in contrast to the assumption that self-employment follows from high risk attitudes. Instead, the robustness check in this subsection provides even more support for the reverse causality (i.e. self-employed drives up the risk attitudes).

TABLE 8  
DiD approach, individuals with no intention to enter self-employment in 2003

Outcome variable	2004			2009			DiD (8)
	Control (2)	Treated (3)	Diff(Before) (4)	Control (5)	Treated (6)	Diff(After) (7)	
<b>Panel A: emp. &amp; unemp.; <i>inc_selfemp</i>; no intent becoming selfemp. in 2004</b>							
Risk	3.003	3.127	0.125	2.361	3.493	1.131	1.007
Std. error	0.654	0.689	0.211	0.654	0.681	0.201	0.290
t	4.59	3.18	0.59	2.02	3.96	5.14	3.47
P>t	0.000	0.000	0.553	0.000	0.000	0.000***	0.001***
N	6811	156		6811	156		
<b>Panel B: emp. &amp; unemp.; <i>selfemp</i>; no intent becoming selfemp. in 2004</b>							
Risk	3.018	3.222	0.204	2.378	3.692	1.314	1.110
Std. error	0.653	0.692	0.230	0.653	0.683	0.221	0.318
t	4.62	3.31	0.89	2.04	4.21	5.22	3.49
P>t	0.000	0.000	0.375	0.000	0.000	0.000***	0.000***
N	6865	132		6865	132		

Source: Authors own calculations from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Notes: emp = employed in 2004, unemp = unemployed in 2004. \*\*\* indicate significance at the 1% level, \*\* significance at the 5% level, \* significance at the 10% level. Robust standard errors are reported. See table 2 for a full list of included covariates. Covariates refer to the year 2004.

### 5.5. Robustness check II: Exogeneity of pre-treatment outcomes and covariates

Another way to deal with the issue of the exogeneity of pre-treatment outcomes and covariates is to restrict the data to those cases in which entry to self-employment followed a long time after the risk attitudes were elicited. If the time span between the elicitation of the risk attitudes and the entry to self-employment is long enough, we can assume that risk attitudes have not yet been affected by mental processes that precede the act of entry. The longest time span that we can achieve with a sensible number of observations in our sample is four years. Hence, for this second robustness check we restrict our sample to those future self-employed, who entered into self-employment not before 2007 or 2008, i.e. 3 or 4 years after the elicitation of the risk attitudes in 2004. Table 9 shows the results of our DiD analyses. In all regressions, the increase in the reported risk attitudes (as usual, we compare the 2004 to the 2009 wave) is significantly greater for the future self-employed than for the others. The DiD values range from 0.77 to 1.40, depending on the empirical specification. The pre-treatment risk attitudes of the future self-employed are significantly greater than those of others, ranging between 0.70 and 0.72. This is in contrast to our previous robustness check, perhaps indicating that using the self-employment intention question of the SOEP 2003 wave was even more successful in dealing with the self-selection bias.

TABLE 9  
DiD approach, future self-employed and others in 2004 and 2009, restricted to 2007 or 2008 entry

Outcome variable	2004			2009			DiD (8)
	Control (2)	Treated (3)	Diff(Before) (4)	Control (5)	Treated (6)	Diff(After) (7)	
<b>Panel A: emp. &amp; unemp.; inc_selfemp; self-employed not before 2007</b>							
Risk	2.929	3.632	0.703	2.288	3.756	1.468	0.765
Std. error	0.655	0.685	0.190	0.655	0.680	0.192	0.269
T	4.47	3.96	3.71	1.95	4.12	4.69	2.84
P>t	0.000	0.000	0.000***	0.000	0.000	0.000***	0.004***
N	6800	170		6800	170		
<b>Panel B: emp. &amp; unemp.; inc_selfemp; self-employed not before 2008</b>							
Risk	3.013	3.735	0.721	2.371	3.982	1.611	0.889
Std. error	0.658	0.712	0.259	0.658	0.704	0.252	0.360
T	4.58	4.03	2.79	2.04	4.36	4.25	2.47
P>t	0.000	0.000	0.005***	0.000	0.000	0.000***	0.014**
N	6797	97		6797	97		
<b>Panel C: emp. &amp; unemp.; selfemp; self-employed not before 2007</b>							
Risk	2.873	3.583	0.710	2.232	4.057	1.825	1.115
Std. error	0.655	0.698	0.241	0.655	0.692	0.239	0.339
T	4.39	3.89	2.95	1.89	4.55	5.38	3.29
P>t	0.000	0.000	0.003***	0.001	0.000	0.000***	0.001***
N	6854	116		6854	116		
<b>Panel D: emp. &amp; unemp.; selfemp; self-employed not before 2008</b>							
Risk	2.956	3.675	0.720	2.315	4.439	2.124	1.404
Std. error	0.658	0.755	0.371	0.658	0.743	0.357	0.514
T	4.49	3.91	1.94	1.98	4.93	4.65	2.73
P>t	0.000	0.000	0.052*	0.000	0.000	0.000***	0.006***
N	6839	55		6839	55		

Source: Authors own calculations from Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi:10.5684/soep.v27.

Notes: emp = employed in 2004, unemp = unemployed in 2004. \*\*\* indicate significance at the 1% level, \*\* significance at the 5% level, \* significance at the 10% level. Robust standard errors are reported. See table 2 for a full list of included covariates. Covariates refer to the year 2004.

### 5.6. Robustness check III: Common trend assumption

The DiD design only offers reliable estimates if both sub-populations (future self-employed and others) experience the same time trend in risk attitudes, conditional on the covariates (Lechner 2011). As it is not possible to test this assumption directly, we use an indirect robustness check, by comparing the changes in the risk attitudes of those who do not enter self-employment at all and those who enter self-employment *after* 2009 (i.e. after the both risk attitude elicitation waves are over). If we find the risk attitudes of these two groups to be different, we have reason to doubt the common trend assumption also in all of our main analyses. However, if we find no difference in the development of risk attitudes in the two groups mentioned above, we have good reasons to believe that the common trend assumption also holds for all of our main analyses.

FIGURE 2

Design for testing the common trend of risk attitude development *before* entry into self-employment

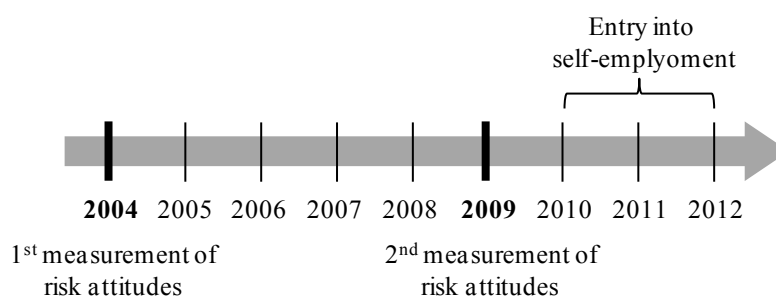


Figure 2 describes the entry pattern for this robustness check in detail. We compare changes in reported risk attitudes of individuals who were all regularly employed or unemployed before 2010. Our new treatment group is a sub-group of the individuals above, namely those individuals who entered self-employment *after* 2009. The control group consists of those individuals from the above, who did not enter self-employment until the end of the panel time span (2012). Both groups should have experienced similar in changes in their risk attitudes between 2004 and 2009, because none of them was subject to entry into self-employment.

In table 10, we present DiD analyses for both self-employment proxies and a number of different empirical specifications. Panels A and C display the result based on the proxy using the self-employment income of the years 2010 and 2011. Panels B and D display results for the proxy based on the main occupation for the years 2010 to 2012. In the last two panels (C and D), we report the results of the DiD analyses, when the observations are restricted to only those individuals who in 2009 reported zero probability of entering self-employment. This parallels our first robustness check, but now for this new group of future self-employed.



The findings in all four panels of table 10 support the assumption of common trends in reported risk attitudes. The estimated DiD values are all insignificant, ranging from 0.28 to 0.51. When we restrict the sample to the individuals who reported zero probability of entering into self-employment in 2009, both pre-treatment differences and the DiD values strongly decrease (panels C and D). These results are clearly in line with the common trend assumption and, thus, support our main finding. They additionally provide more support for the notion that risk attitudes start to adapt towards more risk-taking well before the actual entry into self-employment has been carried out. Again, as in the first robustness check, we find that without an intention to enter self-employment the risk attitudes of future self-employed and other individuals are completely indistinguishable from each other. It seems that risk attitudes start to slowly change as the intent to enter self-employment evolves.

TABLE 10  
DiD approach, all not self-employed in 2004 to 2009,  
split in those who enter self-employment in 2010, 2011, or 2012 and the others

Outcome variable	2004			2009			DiD (8)
	Control (2)	Treated (3)	Diff(Before) (4)	Control (5)	Treated (6)	Diff(After) (7)	
<b>Panel A: emp. &amp; unemp.; <i>inc_selfemp</i>; selfemp. in 2010 &amp; 2011</b>							
Risk	3.090	3.578	0.488	2.442	3.214	0.772	0.284
Std. error	0.664	0.712	0.255	0.664	0.718	0.270	0.371
t	4.65	3.78	1.91	2.11	3.33	1.54	0.77
P>t	0.000	0.000	0.056*	0.000	0.000	0.004***	0.443
N	6700	88		6700	88		
<b>Panel B: emp. &amp; unemp.; <i>selfemp</i>; selfemp. in 2010 to 2012</b>							
Risk	3.092	3.432	0.339	2.442	3.352	0.910	0.571
Std. error	0.664	0.724	0.296	0.664	0.732	0.308	0.427
t	4.66	3.56	1.15	2.11	3.56	2.19	1.34
P>t	0.000	0.000	0.251	0.000	0.000	0.003***	0.181
N	6713	75		6713	75		
<b>Panel C: emp. &amp; unemp.; <i>inc_selfemp</i>; self-emp. in 2010 &amp; 2011, no intent becoming selfemp. in 2009</b>							
Risk	2.978	3.223	0.245	2.329	2.648	0.318	0.073
Std. Error	0.666	0.769	0.390	0.666	0.806	0.451	0.596
t	4.47	3.30	0.63	2.00	2.67	0.41	0.12
P>t	0.000	0.000	0.530	0.000	0.001	0.480	0.902
N	6700	40		6700	40		
<b>Panel D: emp. &amp; unemp.; <i>selfemp</i>; self-emp. in 2010 to 2012, no intent becoming selfemp. in 2009</b>							
Risk	3.062	3.249	0.187	2.411	2.582	0.171	-0.016
Std. error	0.665	0.776	0.411	0.665	0.809	0.465	0.620
t	4.61	3.30	0.45	2.08	2.58	0.15	-0.03
P>t	0.000	0.000	0.650	0.000	0.001	0.714	0.979
N	6713	39		6713	39		

Source: Authors own calculations from Socio-Economic Panel (SOEP), data for years 1984-2012, version 29, SOEP, 2013, doi:10.5684/soep.v29.

Notes: emp = employed in 2004, unemp = unemployed in 2004. \*\*\* indicate significance at the 1% level, \*\* significance at the 5% level, \* significance at the 10% level. Robust standard errors are reported. See table 2 for a full list of included covariates. Covariates refer to the year 2004.

## 6. CONCLUSION AND IMPLICATIONS

The decision to enter self-employment, a prerequisite of entrepreneurship, has often been closely related to the decision-makers' risk attitudes (Bellante and Link 1981; Barsky et al. 1997; Cramer et al. 2002; Fairlie 2002; Lazear 2005; Caliendo, Fossen and Kritikos 2009, 2014). When assessing the risk attitude of potential entrepreneurs, the usual assumption is that they will exhibit a stable risk attitude that is more risk-seeking than for most others. In fact, a number of studies have shown a clearly positive correlation between self-employment and risk attitudes. However, no other study so far, has examined the direction of causality in the observed correlation. If the assumption of stable risk attitudes is dropped, in the studies so far, there is no telling whether risk-seeking behaviour leads to self-employment decisions or the experience of self-employment shifts the risk attitude of those, who choose to be self-employed.

Using a large panel data set, we show that entering self-employment has a quantitatively large and highly significant feedback effect on individual risk attitudes. As an identification strategy, we compare individuals' risk attitudes before and after self-employment (i.e. at a time, when they were either regularly employed or unemployed, and at a later time, when they were self-employed). Our DiD estimations reveal that individuals who experience a transition to entrepreneurship display a significantly greater willingness to take risks than individuals who remain regularly employed or unemployed during the same period. Our results add to a small but growing literature showing that individuals' attitudes towards risk may vary due to the general economic situation or individual experiences (Bowles 1998; Heaton and Lucas 2000; Guiso and Paiella 2008).

Our results resist several robustness checks. Using pre-treatment information on the intention to enter self-employment, we can control for anticipation effects. We find some evidence hinting towards anticipation, i.e. the risk attitudes of individuals who intend to enter self-employment are less risk averse than of others. But, we also show that the risk attitudes of those individuals who do not intend to enter self-employment do not differ when comparing future self-employed to others. And yet, these individuals' risk attitudes also shift, once they do enter self-employment. Hence, we can establish both the main effect and the anticipation effect of self-employment on risk attitudes.

We also provide evidence in favour of a common trend assumption, which is a key element in the DiD approach. Using an indirect approach, we show that individuals who enter self-employment after we elicit risk attitudes a second time, experience the same changes in their risk attitudes as those who remain employed. Furthermore, we check whether changes in risk attitudes are influenced by the path of entry into self-employment, but find our results to be robust no matter whether self-employment follows unemployment or regular employment.

Our findings suggest that entry into self-employment leads to changes in individuals' risk attitudes. We conjecture that the increased willingness to take risks in self-employment is driven by a change in

the perception of the risky choices and outcomes that individuals experience during their self-employment. Our findings may explain the mixed results in the literature concerning the interplay of risk attitudes and self-employment decisions. Our study contributes to a better knowledge of this interaction, which is crucial for the design of incentive and nudging policies that aim at fostering sustainable entrepreneurship.

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## APPENDIX

Table A1. Detailed description of the calculation of the variables

Label	Description
Risk04	Willingness to take risks in 2004 (11 point scale)
Risk09	Willingness to take risks in 2009 (11 point scale)
Risk0409	Change in willingness to take risks from 2004 to 2009
Inc_selfemp	Dummy = 1 if individual received income from self-employment (after 2004)
Selfemp	Dummy = 1 if individual was self-employment as main activity (after 2004)
Sex	Dummy = 1 if female
Age	Age of the individual in 2004
Age_sq	Age squared
ISCED	Education level in 2004 based on ISCED classification
Work exp.	Years of work experience in 2004
Unemp exp.	Years of unemployment experience in 2004
Duration	Year of current employment relationship in 2004
Married	Dummy = 1 if married or living together in 2004
Kids	Number of children under 17 living in the household in 2004
East	Dummy = 1 if individual lives in Eastern Germany in 2004
German	Dummy= 1 if individual is from Germany
Disable	Dummy = 1 if individuals is handicapped/physically challenged
Inc_Rent	Amount income from rent in 2004 in euro
Inc_Interest	Amount income from interest and dividends in 2004 in euro
Inc. Finance	Sum of income from rents, interest, and dividends in euro
Height	Body height
Father_entrepr	Dummy = 1 if individual's father was an entrepreneur when she/he was 15 years of age

Source: Authors own illustration.