

A Appendix: Tables & Figures

Table A.1: Derivation of main measures

Variable	Definition
Dependent employees	All employees reportable to the Federal Employment Agency. This includes full-time and part-time employees subject to social security contributions, atypical employment (“mini jobber”), apprentices and interns.
Qualified employee	Employees with vocational training or a university degree as their highest skill level
Qualified career entrant	Career entrants with a vocational qualification or a university degree as their highest qualification. Employees are classified as career entrants in their first reported employment spell after achieving their highest qualification. To safeguard against measurement errors due to career entry in a foreign country or as a self-employed person (neither of which would be registered by the German Federal Employment Agency) we use age restrictions dependent on the highest qualification. To be classified as a qualified career entrant employees must be - aged 30 or younger if their highest qualification is a vocational training qualification. - aged 35 or younger if their highest qualification is a university degree.
Founded during crisis	Firm founded between April 2008 and March 2009
Founder with higher education	The founder or at least one founder in the team holds a university degree
Industry experience in years	The years of self-reported industry experience of the founder (or the founder with the longest experience in the team).
Founder self-employed before	The founder was self-employed before founding the present business.
Founder transitioned from private-sector employment	The founder worked as dependent employee in the private sector before founding the present business.

Table A.2: Summary statistics of main variables

Variable	Unit	All firms					Firms founded outside 2008/09 crisis					Firms founded during 2008/09 crisis				
		N	Mean	S.D.	Min	Max	N	Mean	S.D.	Min	Max	N	Mean	S.D.	Min	Max
Employees after one year in business	(y/n)	6963	0.47	0.50	0.00	1.00	5816	0.47	0.50	0.00	1.00	1147	0.51	0.50	0.00	1.00
No. employees after one year in business ¹⁾	Count	6934	1.76	3.27	0.00	29.00	5793	1.75	3.27	0.00	29.00	1141	1.84	3.23	0.00	27.00
Qualified employee after one year in busin.	(y/n)	6963	0.44	0.50	0.00	1.00	5816	0.44	0.50	0.00	1.00	1147	0.47	0.50	0.00	1.00
Qual. job starter empl. after one year in busin.	(y/n)	6963	0.08	0.27	0.00	1.00	5816	0.07	0.26	0.00	1.00	1147	0.10	0.30	0.00	1.00
Qual. job starter aft. one year (only hiring firms)	(y/n)	3290	0.17	0.37	0.00	1.00	2710	0.16	0.37	0.00	1.00	580	0.20	0.40	0.00	1.00
Founded during crisis (y/n)	(y/n)	6963	0.16	0.37	0.00	1.00	5816	0.00	0.00	0.00	0.00	1147	1.00	0.00	1.00	1.00
GDP in quarter of foundation	Index	6963	100.78	2.86	95.45	104.48	5816	101.00	2.78	95.52	104.48	1147	99.70	3.03	95.45	102.27
One founder with higher education	(y/n)	6963	0.40	0.49	0.00	1.00	5816	0.40	0.49	0.00	1.00	1147	0.41	0.49	0.00	1.00
Age of oldest founder in team in years	Years	6963	40.75	10.28	17.00	84.00	5816	40.67	10.27	17.00	84.00	1147	41.15	10.33	18.00	72.00
Industry experience in years	Years	6963	13.82	9.64	1.00	52.00	5816	13.84	9.62	1.00	52.00	1147	13.70	9.74	1.00	50.00
Founder was self-employed before	(y/n)	6963	0.37	0.48	0.00	1.00	5816	0.37	0.48	0.00	1.00	1147	0.36	0.48	0.00	1.00
Founder trans. from empl. in priv. sect.	(y/n)	6963	0.57	0.50	0.00	1.00	5816	0.56	0.50	0.00	1.00	1147	0.61	0.49	0.00	1.00
High-technology manufacturing	(y/n)	6963	0.08	0.27	0.00	1.00	5816	0.08	0.27	0.00	1.00	1147	0.08	0.28	0.00	1.00
Technology-intensive services	(y/n)	6963	0.22	0.41	0.00	1.00	5816	0.22	0.41	0.00	1.00	1147	0.23	0.42	0.00	1.00
Software supply and consultancy	(y/n)	6963	0.08	0.27	0.00	1.00	5816	0.08	0.27	0.00	1.00	1147	0.07	0.26	0.00	1.00
Non-high-tech manufacturing	(y/n)	6963	0.10	0.30	0.00	1.00	5816	0.10	0.30	0.00	1.00	1147	0.10	0.29	0.00	1.00
Skill-intensive services	(y/n)	6963	0.06	0.24	0.00	1.00	5816	0.06	0.24	0.00	1.00	1147	0.06	0.24	0.00	1.00
Other business-oriented services	(y/n)	6963	0.06	0.24	0.00	1.00	5816	0.06	0.24	0.00	1.00	1147	0.05	0.21	0.00	1.00
Consumer-oriented services	(y/n)	6963	0.13	0.33	0.00	1.00	5816	0.13	0.33	0.00	1.00	1147	0.13	0.33	0.00	1.00
Construction	(y/n)	6963	0.11	0.31	0.00	1.00	5816	0.11	0.32	0.00	1.00	1147	0.10	0.30	0.00	1.00
Retail & wholesale	(y/n)	6963	0.16	0.37	0.00	1.00	5816	0.16	0.36	0.00	1.00	1147	0.19	0.39	0.00	1.00
Limited liability (GmbH)	(y/n)	6963	0.35	0.48	0.00	1.00	5816	0.35	0.48	0.00	1.00	1147	0.38	0.49	0.00	1.00
Limited liability (UG)	(y/n)	6963	0.06	0.24	0.00	1.00	5816	0.06	0.25	0.00	1.00	1147	0.04	0.19	0.00	1.00
Founded in January	(y/n)	6963	0.14	0.35	0.00	1.00	5816	0.15	0.35	0.00	1.00	1147	0.12	0.33	0.00	1.00
Founded in February	(y/n)	6963	0.09	0.29	0.00	1.00	5816	0.09	0.29	0.00	1.00	1147	0.09	0.29	0.00	1.00
Founded in March	(y/n)	6963	0.11	0.31	0.00	1.00	5816	0.11	0.31	0.00	1.00	1147	0.11	0.32	0.00	1.00
Founded in April	(y/n)	6963	0.12	0.32	0.00	1.00	5816	0.11	0.32	0.00	1.00	1147	0.14	0.34	0.00	1.00
Founded in May	(y/n)	6963	0.10	0.30	0.00	1.00	5816	0.10	0.30	0.00	1.00	1147	0.12	0.32	0.00	1.00
Founded in June	(y/n)	6963	0.08	0.28	0.00	1.00	5816	0.09	0.28	0.00	1.00	1147	0.07	0.26	0.00	1.00
Founded in July	(y/n)	6963	0.09	0.28	0.00	1.00	5816	0.08	0.28	0.00	1.00	1147	0.10	0.31	0.00	1.00
Founded in August	(y/n)	6963	0.08	0.26	0.00	1.00	5816	0.08	0.27	0.00	1.00	1147	0.07	0.25	0.00	1.00
Founded in September	(y/n)	6963	0.07	0.25	0.00	1.00	5816	0.07	0.26	0.00	1.00	1147	0.06	0.24	0.00	1.00
Founded in October	(y/n)	6963	0.07	0.25	0.00	1.00	5816	0.07	0.26	0.00	1.00	1147	0.05	0.23	0.00	1.00
Founded in November	(y/n)	6963	0.04	0.19	0.00	1.00	5816	0.04	0.19	0.00	1.00	1147	0.04	0.19	0.00	1.00
Founded in December	(y/n)	6963	0.02	0.13	0.00	1.00	5816	0.02	0.13	0.00	1.00	1147	0.02	0.14	0.00	1.00
Highly qualified population (share)	Share	6963	5.64	4.29	0.60	35.70	5816	5.70	4.35	0.60	35.70	1147	5.34	3.94	0.60	28.30
Demographic potential of region	Log	6963	6.15	0.82	3.95	7.85	5816	6.15	0.82	3.95	7.85	1147	6.16	0.81	4.00	7.83

Notes: ¹⁾ Without observations above the 99th percentile. Additional control variable in all regressions: funding by KfW bank.

Table A.3: Pairwise correlations of main variables (N=6,963)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Employees after one year in business	1											
(2) Founded during crisis (y/n)	0.0472*	1										
(3) GDP in quarter of foundation	-0.0580*	-0.0898*	1									
(4) One founder with higher education	0.0358*	0.0151*	0.0130*	1								
(5) Age of oldest founder in team in years	0.0601*	0.0400*	-0.0007	0.2335*	1							
(6) Age of oldest founder in team squared	0.0503*	0.0394*	0.0024	0.2239*	0.9887*	1						
(7) Industry experience in years (log)	0.0892*	0.0084	-0.0163*	-0.0188*	0.4257*	0.3989*	1					
(8) Founder was self-employed before	0.0524*	-0.0124*	-0.0111*	0.2427*	0.2781*	0.2731*	0.0570*	1				
(9) Founder trans. from empl. in priv. sect.	0.0818*	0.0401*	0.0114*	-0.0672*	-0.0204*	-0.0304*	0.1165*	-0.2522*	1			
(10) Limited liability (GmbH)	0.2070*	0.0448*	0.0183*	0.4054*	0.2736*	0.2651*	0.1097*	0.3109*	-0.0400*	1		
(11) Limited liability (UG)	-0.0551*	-0.0379*	-0.0712*	0.0684*	0.0205*	0.0227*	-0.0526*	0.1072*	-0.0625*	-0.1733*	1	
(12) Highly qualified population (share)	-0.0271*	-0.0022	0.0433*	0.2299*	0.0356*	0.0323*	-0.0271*	0.1161*	-0.0568*	0.1744*	0.0460*	1
(13) Demographic potential of region	0.0018	0.0191*	0.0152*	0.2013*	0.0507*	0.0511*	-0.0394*	0.0881*	-0.0506*	0.1726*	0.0490*	0.4660*

Notes: * denotes significance of a pairwise correlation at the 10% level.

Table A.4: Estimation results: Employment after one year in business (yes/no) - detailed

Dependent Variable	A - Probit (EB) Empl. (y/n) ME (SE)	B - Probit Empl. (y/n) ME (SE)
Founded during crisis (y/n)	0.047 (0.015)***	
GDP in quarter of foundation		-0.005 (0.002)**
One founder with higher education	-0.017 (0.018)	-0.016 (0.013)
Age of oldest founder in team in years	0.008 (0.005)*	0.006 (0.004)*
Age of oldest founder in team squared	-0.000 (0.000)*	-0.000 (0.000)*
Industry experience in years (log)	0.033 (0.008)***	0.033 (0.006)***
Founder was self-employed before	0.035 (0.017)**	0.045 (0.013)***
Founder trans. from empl. in priv. sect.	0.078 (0.016)***	0.074 (0.012)***
Technology-intensive services	-0.167 (0.031)***	-0.171 (0.023)***
Software supply and consultancy	-0.224 (0.038)***	-0.215 (0.028)***
Non-high-tech manufacturing	-0.004 (0.036)	-0.028 (0.027)
Skill-intensive services	-0.145 (0.039)***	-0.129 (0.030)***
Other business-oriented services	-0.046 (0.042)	-0.044 (0.031)
Consumer-oriented services	0.014 (0.036)	0.030 (0.026)
Construction	-0.038 (0.036)	-0.033 (0.027)
Retail & wholesale	-0.070 (0.034)**	-0.072 (0.025)***
Limited liability (GmbH)	0.314 (0.016)***	0.311 (0.013)***
Limited liability (UG)	0.117 (0.038)***	0.067 (0.025)***
Highly qualified population (share)	0.001 (0.002)	0.000 (0.001)
Demographic potential of region	-0.007 (0.010)	-0.010 (0.008)
Month of foundation fixed effects	Yes	Yes
Constant	Yes	Yes
N / Pseudo R-sq.	6963 / 0.132	6963 / 0.122

Notes: Marginal effects (M.E.); heteroskedasticity-robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. Baseline category for industries: high-tech manufacturing. Additional control variable in all regressions: funding by KfW bank. "EB" indicates weighted regressions with weights derived by entropy balancing.

Table A.5: Selection effects during Global Financial Crisis: Human capital and prior employment status of founders

Dependent Variable	A - OLS Age of Founder ME (SE)	B - OLS Industry experience ME (SE)	C - Probit Highly qual. Founder ME (SE)	D - Probit Transit fr. unempl. ME (SE)	E - Probit Transit fr. dep. Emp. ME (SE)
Founded during crisis	0.007 (0.008)	-0.023 (0.032)	0.007 (0.014)	-0.039 (0.012)***	0.061 (0.016)***
Technology-intensive services	-0.099 (0.012)***	-0.205 (0.045)***	0.045 (0.021)**	0.033 (0.018)*	-0.020 (0.024)
Software supply and consultancy	-0.190 (0.015)***	-0.494 (0.056)***	0.034 (0.026)	-0.020 (0.024)	-0.113 (0.029)***
Non-high-tech manufacturing	-0.102 (0.014)***	-0.244 (0.054)***	-0.204 (0.025)***	0.066 (0.020)***	0.029 (0.028)
Skill-intensive services	-0.054 (0.015)***	-0.142 (0.056)**	0.081 (0.027)***	0.014 (0.024)	0.001 (0.031)
Other business-oriented services	-0.149 (0.016)***	-0.562 (0.064)***	-0.177 (0.028)***	0.059 (0.023)***	0.035 (0.032)
Consumer-oriented services	-0.143 (0.013)***	-0.614 (0.054)***	-0.194 (0.023)***	0.044 (0.020)**	-0.033 (0.027)
Construction	-0.172 (0.013)***	-0.036 (0.048)	-0.354 (0.026)***	0.097 (0.020)***	0.024 (0.028)
Retail & wholesale	-0.138 (0.013)***	-0.603 (0.052)***	-0.231 (0.022)***	0.067 (0.019)***	0.004 (0.026)
Highly qualified population (share)	-0.000 (0.001)	-0.007 (0.003)**	0.015 (0.001)***	-0.003 (0.001)**	-0.002 (0.002)
Demographic potential of region	0.013 (0.004)***	-0.024 (0.016)	0.043 (0.007)***	-0.003 (0.006)	-0.014 (0.008)*
Month of foundation fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes
N / (Pseudo) R-sq.	6963 / 0.045	6963 / 0.064	6963 / 0.133	6963 / 0.026	6963 / 0.013

Notes: Marginal effects (M.E.); heteroskedasticity-robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. Baseline category for industries: high-tech manufacturing. Additional control variable in all regressions: funding by KfW bank.

Table A.6: Selection effects over business cycle: Human capital and prior employment status of founders

Dependent Variable	A - OLS Age of Founder ME (SE)	B - OLS Industry experience ME (SE)	C - Probit Highly qual. Founder ME (SE)	D - Probit Transit fr. unempl. ME (SE)	E - Probit Transit fr. dep. Emp. ME (SE)
GDP in quarter of foundation	0.001 (0.001)	0.007 (0.004)	-0.000 (0.002)	-0.001 (0.001)	0.003 (0.002)
Technology-intensive services	-0.098 (0.012)***	-0.201 (0.045)***	0.045 (0.021)**	0.032 (0.018)*	-0.018 (0.024)
Software supply and consultancy	-0.190 (0.015)***	-0.491 (0.056)***	0.034 (0.026)	-0.020 (0.024)	-0.113 (0.029)***
Non-high-tech manufacturing	-0.100 (0.014)***	-0.239 (0.054)***	-0.204 (0.025)***	0.066 (0.021)***	0.032 (0.028)
Skill-intensive services	-0.053 (0.015)***	-0.140 (0.056)**	0.081 (0.027)***	0.014 (0.024)	0.002 (0.031)
Other business-oriented services	-0.149 (0.016)***	-0.559 (0.064)***	-0.177 (0.028)***	0.060 (0.023)***	0.034 (0.032)
Consumer-oriented services	-0.142 (0.013)***	-0.613 (0.054)***	-0.194 (0.023)***	0.043 (0.020)**	-0.031 (0.027)
Construction	-0.171 (0.013)***	-0.031 (0.048)	-0.355 (0.026)***	0.097 (0.020)***	0.026 (0.028)
Retail & wholesale	-0.137 (0.013)***	-0.600 (0.052)***	-0.231 (0.022)***	0.065 (0.019)***	0.009 (0.026)
Highly qualified population (share)	-0.000 (0.001)	-0.007 (0.003)**	0.015 (0.001)***	-0.003 (0.001)**	-0.003 (0.002)*
Demographic potential of region	0.014 (0.004)***	-0.023 (0.016)	0.043 (0.007)***	-0.003 (0.006)	-0.013 (0.008)
Month of foundation fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes
N / (Pseudo) R-sq.	6963 / 0.045	6963 / 0.064	6963 / 0.133	6963 / 0.024	6963 / 0.012

Notes: Marginal effects (M.E.); heteroskedasticity-robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. Baseline category for industries: high-tech manufacturing. Additional control variable in all regressions: funding by KfW bank.

Table A.7: Selection effects during Global Financial Crisis and over business cycle: Firm survival

Dependent Variable	A - Probit Exit within 2 years ME (SE)	B - Probit Exit within 3 years ME (SE)	C - Probit Exit within 4 years ME (SE)	D - Probit Exit within 2 years ME (SE)	E - Probit Exit within 3 years ME (SE)	F - Probit Exit within 4 years ME (SE)
Founded during crisis	-0.006 (0.008)	0.001 (0.011)	0.010 (0.013)			
GDP in quarter of foundation				-0.000 (0.001)	-0.001 (0.002)	-0.000 (0.002)
One founder with higher education	-0.009 (0.007)	-0.006 (0.010)	-0.010 (0.013)	-0.009 (0.007)	-0.006 (0.010)	-0.010 (0.013)
Age of oldest founder in team in years	-0.003 (0.002)	-0.005 (0.003)*	-0.005 (0.003)	-0.003 (0.002)	-0.005 (0.003)*	-0.005 (0.003)
Age of oldest founder in team squared	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.000)**
Industry experience in years (log)	-0.011 (0.003)***	-0.023 (0.005)***	-0.027 (0.006)***	-0.011 (0.003)***	-0.023 (0.005)***	-0.027 (0.006)***
Founder was self-employed before	0.004 (0.007)	0.011 (0.010)	0.029 (0.013)**	0.004 (0.007)	0.011 (0.010)	0.029 (0.013)**
Founder trans. from empl. in priv. sect.	-0.015 (0.006)***	-0.013 (0.009)	-0.028 (0.011)**	-0.015 (0.006)***	-0.013 (0.009)	-0.027 (0.011)**
Technology-intensive services	-0.002 (0.012)	-0.000 (0.018)	-0.019 (0.024)	-0.002 (0.012)	-0.001 (0.018)	-0.019 (0.024)
Software supply and consultancy	0.011 (0.014)	0.022 (0.022)	0.042 (0.028)	0.011 (0.014)	0.022 (0.022)	0.041 (0.028)
Non-high-tech manufacturing	-0.004 (0.014)	0.002 (0.021)	0.014 (0.027)	-0.004 (0.014)	0.001 (0.021)	0.014 (0.027)
Skill-intensive services	0.003 (0.015)	-0.003 (0.024)	0.003 (0.031)	0.002 (0.015)	-0.003 (0.024)	0.003 (0.031)
Other business-oriented services	0.019 (0.015)	0.022 (0.023)	0.054 (0.030)*	0.019 (0.015)	0.022 (0.023)	0.054 (0.030)*
Consumer-oriented services	0.017 (0.013)	0.032 (0.020)	0.052 (0.026)**	0.017 (0.013)	0.032 (0.020)	0.052 (0.026)**
Construction	-0.016 (0.015)	-0.024 (0.022)	-0.019 (0.027)	-0.016 (0.015)	-0.025 (0.022)	-0.019 (0.027)
Retail & wholesale	0.011 (0.013)	0.025 (0.019)	0.047 (0.025)*	0.011 (0.013)	0.025 (0.019)	0.047 (0.025)*
Highly qualified population (share)	0.001 (0.001)	-0.001 (0.001)	-0.003 (0.002)*	0.001 (0.001)	-0.001 (0.001)	-0.003 (0.002)
Demographic potential of region	0.004 (0.004)	0.005 (0.006)	0.016 (0.007)**	0.004 (0.004)	0.006 (0.006)	0.016 (0.007)**
Legal form	Yes	Yes	Yes	Yes	Yes	Yes
Month of foundation fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
N / (Pseudo) R-sq.	6963 / 0.047	5893 / 0.029	4909 / 0.034	6963 / 0.046	5893 / 0.029	4909 / 0.033

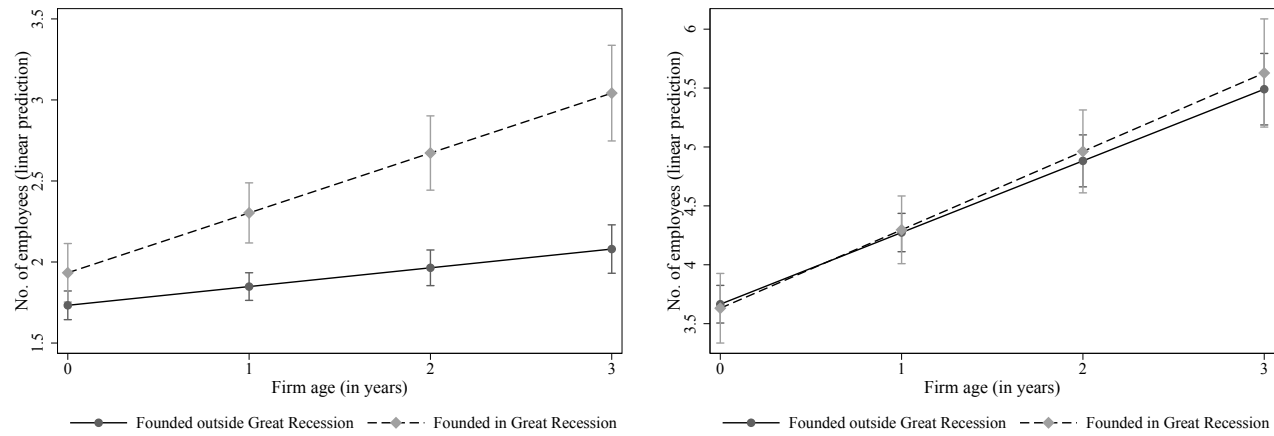
Notes: Marginal effects (M.E.); heteroskedasticity-robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. Baseline category for industries: high-tech manufacturing. Additional control variable in all regressions: funding by KfW bank.

Table A.8: Estimation results: Employment after one year in business (yes/no)
- without selection control

Dependent Variable	A - Probit Employees (y/n) ME (SE)	B - Probit Employees (y/n) ME (SE)
Founded during crisis (y/n)	0.038 (0.016)**	
Current GDP		-0.003 (0.002)
Highly qualified population (share)	0.001 (0.002)	0.001 (0.002)
Demographic potential of region	-0.003 (0.008)	-0.003 (0.008)
Month of foundation fixed effects	Yes	Yes
N / Pseudo R-sq	6963 / 0.002	6963 / 0.002

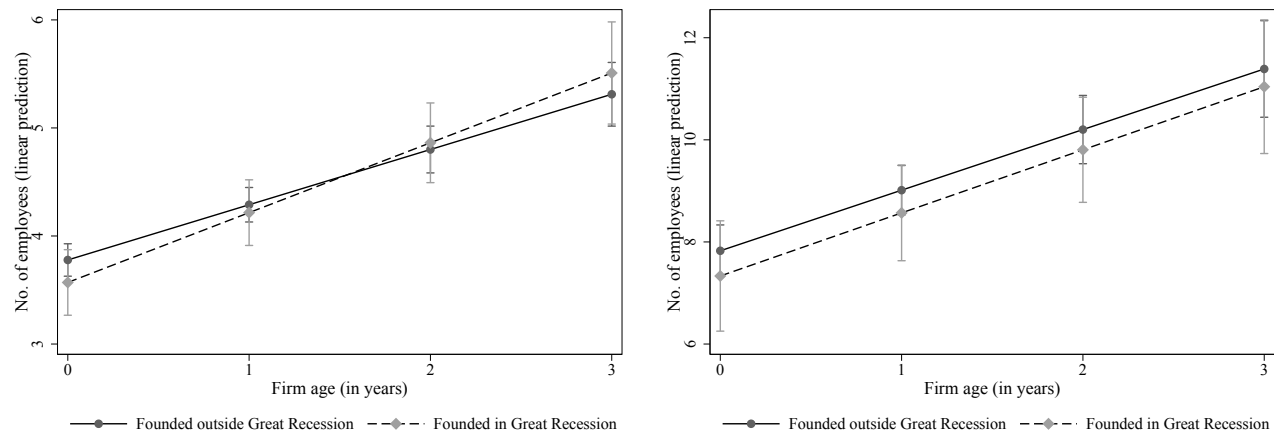
Notes: Marginal effects (M.E.); heteroskedasticity-robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%.

Figure A.1: Development of predicted number of employees - Linear predictions for crisis vs. non-crisis cohorts



(a) Full sample; with selection control

(b) W/o solo entrepreneurs; with selection control

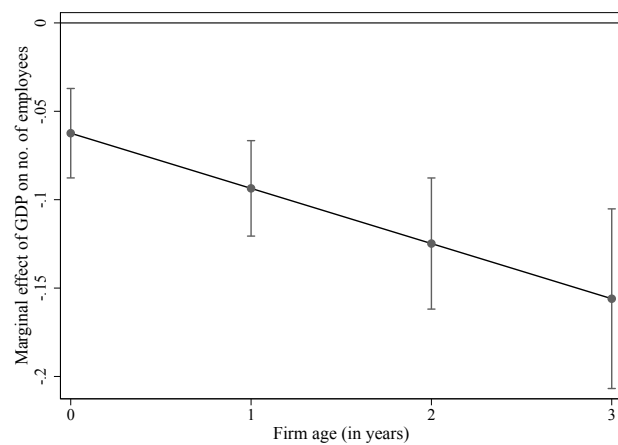


(c) W/o solo entrepreneurs; w/o selection control

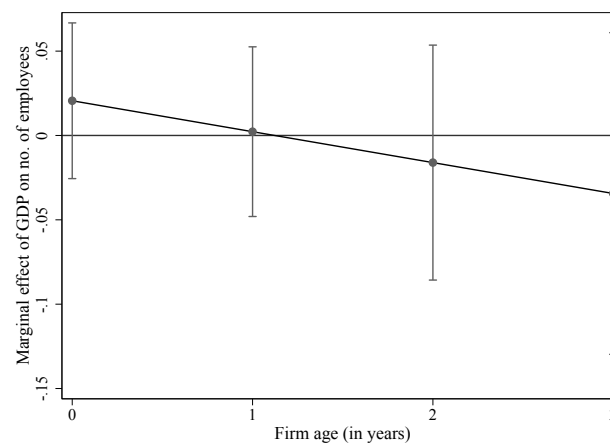
(d) Employment weighted; w/o selection control

Notes: Predicted number of employees including 95% confidence intervals. Values fitted from OLS models

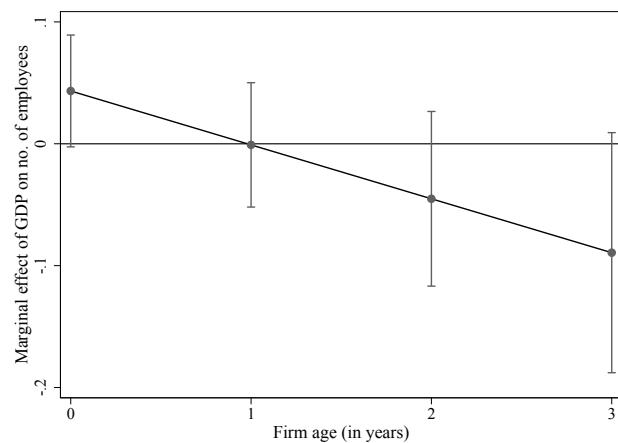
Figure A.2: Development of predicted number of employees - Marginal effect of GDP in quarter of foundation



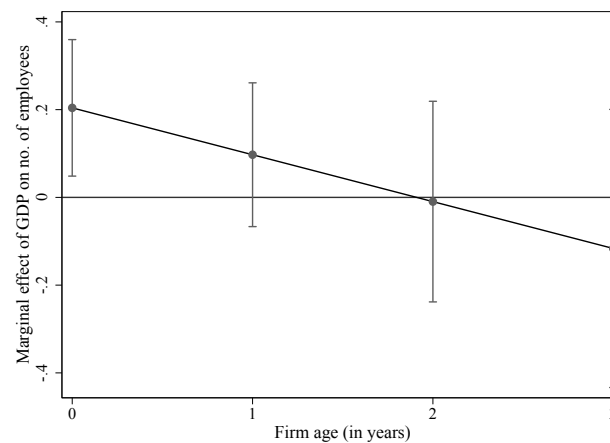
(a) Full sample; with selection control



(b) W/o solo entrepreneurs; with selection control



(c) W/o solo entrepreneurs; w/o selection control



(d) Employment weighted; w/o selection control

Notes: Marginal effect of GDP at time of firm foundation on number of employees including 95% confidence intervals.

Table A.9: Estimation results: Analysis of selection and sample effects

Dependent Variable	A - OLS No. of employees ME (SE)	B - OLS No. of employees ME (SE)	C - OLS No. of employees ME (SE)	D - OLS No. of employees ME (SE)	E - OLS No. of employees ME (SE)	F - OLS No. of employees ME (SE)	G - OLS No. of employees ME (SE)	H - OLS No. of employees ME (SE)
Founded during crisis (y/n)	0.201 (0.102)**	-0.034 (0.173)	-0.188 (0.174)	-0.381 (0.616)				
Founded during crisis * Firm age	0.254 (0.051)***	0.057 (0.089)	0.124 (0.090)	0.044 (0.303)				
GDP in quarter of foundation					-0.062 (0.013)***	0.021 (0.024)	0.033 (0.024)	0.178 (0.083)**
GDP in quarter of foundation * Firm age					-0.031 (0.009)***	-0.018 (0.016)	-0.038 (0.016)**	-0.096 (0.053)*
Age of firm in years	0.116 (0.026)***	0.608 (0.053)***	0.511 (0.049)***	1.152 (0.173)***	3.236 (0.851)***	2.412 (1.576)	4.319 (1.612)***	10.788 (5.307)**
One founder with higher education	-0.056 (0.135)	0.209 (0.218)			-0.025 (0.095)	0.215 (0.176)		
Age of oldest founder in team in years	0.018 (0.031)	-0.028 (0.054)			0.018 (0.023)	-0.021 (0.045)		
Age of oldest founder in team squared	-0.000 (0.000)	0.000 (0.001)			-0.000 (0.000)	0.000 (0.001)		
Industry experience in years (log)	0.162 (0.063)***	0.006 (0.107)			0.170 (0.048)***	0.030 (0.094)		
Founder was self-employed before	0.163 (0.135)	0.157 (0.220)			0.198 (0.095)**	0.206 (0.177)		
Founder trans. from empl. in priv. sect.	0.436 (0.112)***	0.335 (0.195)*			0.490 (0.078)***	0.449 (0.154)***		
Technology-intensive services	-1.279 (0.268)***	-1.621 (0.356)***			-1.189 (0.182)***	-1.494 (0.279)***		
Software supply and consultancy	-1.506 (0.300)***	-1.649 (0.457)***			-1.292 (0.213)***	-1.345 (0.387)***		
Non-high-tech manufacturing	0.394 (0.340)	0.629 (0.448)			0.252 (0.238)	0.658 (0.355)*		
Skill-intensive services	-1.450 (0.291)***	-1.691 (0.417)***			-1.242 (0.216)***	-1.516 (0.362)***		
Other business-oriented services	-0.421 (0.385)	-0.003 (0.588)			-0.458 (0.241)*	-0.203 (0.419)		
Consumer-oriented services	-0.016 (0.312)	0.333 (0.429)			0.127 (0.214)	0.621 (0.330)*		
Construction	-0.448 (0.287)	-0.533 (0.369)			-0.413 (0.206)**	-0.436 (0.306)		
Retail & wholesale	-1.008 (0.265)***	-1.431 (0.349)***			-0.852 (0.189)***	-1.127 (0.286)***		
Limited liability (GmbH)	2.431 (0.147)***	2.461 (0.208)***			2.145 (0.107)***	2.291 (0.173)***		
Limited liability (UG)	0.864 (0.245)***	1.603 (0.423)***			0.365 (0.138)***	1.186 (0.323)***		
Highly qualified population (share)	-0.007 (0.015)	0.014 (0.024)	0.045 (0.021)**	0.091 (0.062)	-0.001 (0.011)	0.035 (0.021)*	0.043 (0.022)**	0.086 (0.062)
Demographic potential of region	-0.028 (0.067)	-0.092 (0.108)	-0.073 (0.098)	0.097 (0.303)	-0.040 (0.052)	-0.141 (0.094)	-0.070 (0.098)	0.097 (0.303)
Month of foundation fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N / R-sq	22870 / 0.138	10046 / 0.118	10046 / 0.023	10046 / 0.046	22870 / 0.119	10046 / 0.106	10046 / 0.024	10046 / 0.048

Notes: Marginal effects (M.E.); (cluster-)robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. Columns A - D are the estimates corresponding to panels (a) - (d) of Figure A.1. Columns E - H are the estimates corresponding to panels (a) - (d) of Figure A.2. "Firm age" is age of firm in years. Baseline category for industries: high-tech manufacturing. Additional control variable in all regressions: funding by KfW bank.

Table A.10: Estimation results: Marginal effect of being founded during Global Financial Crisis by percentile

Percentile	A Conditional quantile regression ME (SE)	B Cond. count data quantile regression ME (SE)	C Unconditional quantile regression ME (SE)
2	0.000 (0.000)	0.004 (352.970)	0.000 (0.000)
4	0.000 (0.000)	0.010 (1065.443)	0.000 (0.000)
6	0.000 (0.000)	0.015 (1433.013)	0.000 (0.000)
8	0.000 (0.000)	0.020 (1635.374)	0.000 (0.000)
10	0.000 (0.000)	0.026 (1863.551)	0.000 (0.000)
12	0.000 (0.000)	0.031 (2358.07)	0.000 (0.000)
14	0.000 (0.000)	0.035 (2024.385)	0.000 (0.000)
16	0.000 (0.000)	0.040 (1589.182)	0.000 (0.000)
18	0.000 (0.000)	0.045 (1487.999)	0.000 (0.000)
20	0.000 (0.000)	0.051 (2180.779)	0.000 (0.000)
22	0.000 (0.000)	0.058 (2644.721)	0.000 (0.000)
24	0.000 (0.000)	0.066 (0.021)***	0.000 (0.000)
26	0.000 (0.000)	0.073 (0.023)***	0.000 (0.000)
28	0.000 (0.000)	0.080 (0.024)***	0.000 (0.000)
30	0.000 (0.000)	0.086 (0.025)***	0.000 (0.000)
32	0.000 (0.489)	0.093 (0.027)***	0.000 (0.000)
34	0.000 (0.477)	0.098 (0.028)***	0.000 (0.000)
36	0.000 (0.465)	0.104 (0.030)***	0.000 (0.000)
38	0.000 (0.346)	0.110 (0.032)***	0.000 (0.000)
40	0.000 (0.855)	0.116 (0.034)***	0.000 (0.000)
42	0.000 (0.843)	0.123 (0.036)***	0.000 (0.000)
44	0.000 (0.833)	0.131 (0.038)***	0.000 (0.000)
46	0.000 (0.600)	0.139 (0.040)***	0.000 (0.000)
48	0.000 (2.049)	0.146 (0.042)***	0.000 (0.000)
50	0.000 (0.544)	0.153 (0.044)***	0.000 (0.000)
52	0.000 (0.545)	0.159 (0.046)***	0.000 (0.000)
54	0.000 (0.328)	0.163 (0.048)***	0.182 (0.056)***
56	0.000 (0.334)	0.165 (0.051)***	0.182 (0.056)***
58	0.000 (0.293)	0.168 (0.055)***	0.182 (0.056)***
60	0.000 (0.375)	0.174 (0.062)***	0.182 (0.056)***
62	0.000 (0.357)	0.187 (0.072)***	0.182 (0.056)***
64	0.000 (0.559)	0.206 (0.082)**	0.182 (0.056)***
66	0.000 (0.520)	0.223 (0.088)**	0.182 (0.056)***
68	0.000 (0.501)	0.230 (0.094)**	0.182 (0.056)***
70	0.000 (0.103)	0.247 (0.107)**	0.203 (0.086)**
72	0.000 (0.064)	0.274 (0.115)**	0.203 (0.086)**
74	0.253 (0.078)***	0.296 (0.125)**	0.203 (0.086)**
76	0.110 (0.111)	0.320 (0.135)**	0.203 (0.086)**
78	0.211 (0.106)**	0.341 (0.147)**	0.203 (0.115)*
80	0.354 (0.143)**	0.350 (0.162)**	0.203 (0.115)*
82	0.311 (0.111)***	0.354 (0.180)**	0.203 (0.115)*
84	0.310 (0.126)**	0.369 (0.193)*	0.347 (0.158)**
86	0.329 (0.149)**	0.409 (0.228)*	0.347 (0.158)**
88	0.211 (0.124)*	0.420 (0.240)*	0.347 (0.158)**
90	0.231 (0.094)**	0.445 (0.285)	0.384 (0.210)*
92	0.123 (0.180)	0.281 (0.342)	0.344 (0.280)
94	-0.307 (0.194)	-0.116 (0.348)	0.282 (0.299)
96	-0.464 (0.239)	-0.542 (0.421)	0.214 (0.404)
98	-0.768 (0.463)	-1.609 (0.920)	-0.227 (0.768)

Notes: Marginal effects (M.E.) of the binary indicator for firms founded during the Global Financial Crisis; heteroskedasticity-robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. All control variables included.

Table A.11: Estimation results: Monthly growth - detailed

Dependent Variable	A - OLS Empl. Growth ME (SE)	B - OLS Empl. Growth ME (SE)	C - FE Empl. Growth ME (SE)	D - FE Empl. Growth ME (SE)	E - OLS Empl. Growth ME (SE)	F - OLS Empl. Growth ME (SE)	G - OLS Empl. Growth ME (SE)	H - OLS Empl. Growth ME (SE)	I - OLS Empl. Growth ME (SE)	J - OLS Empl. Growth ME (SE)
Current GDP GDP * Firm age	0.020 (0.044)	-0.801 (0.089)*** 0.482 (0.040)***	0.289 (0.071)***	-0.306 (0.121)** 0.333 (0.050)***						
Current GDP in industry GDP in industry * Firm age					0.023 (0.014)*	-0.083 (0.022)*** 0.058 (0.008)***				
IFO bus. sit. index in industry IFP index in industry * Firm age							0.150 (0.091)*	-0.648 (0.169)*** 0.450 (0.070)***		
Share short-time work in RoR Share s.-t. work in RoR * Firm age									-0.875 (0.256)***	1.764 (0.542)*** -1.669 (0.273)***
Employment at end of last period Age of firm in years	-0.002 (0.001)** -0.017 (0.001)***	-0.002 (0.001)** -0.517 (0.042)***	-0.072 (0.004)*** 0.003 (0.002)*	-0.072 (0.004)*** -0.342 (0.052)***	-0.002 (0.001)** -0.017 (0.001)***	-0.002 (0.001)** -0.080 (0.009)***	-0.002 (0.001)** -0.017 (0.001)***	-0.002 (0.001)** -0.027 (0.002)***	-0.002 (0.001)** -0.017 (0.001)***	-0.002 (0.001)** -0.014 (0.001)***
One founder with higher education Age of oldest founder in team in years Age of oldest founder in team squared Industry experience in years (log) Founder was self-employed before Founder trans. from empl. in priv. sect.	0.004 (0.003) 0.001 (0.001) -0.000 (0.000)** 0.006 (0.002)*** 0.002 (0.003) 0.010 (0.003)***	0.005 (0.003) 0.001 (0.001) -0.000 (0.000)** 0.006 (0.002)*** 0.002 (0.003) 0.009 (0.003)***			0.004 (0.003) 0.001 (0.001) -0.000 (0.000)** 0.006 (0.002)*** 0.002 (0.003) 0.010 (0.003)***	0.004 (0.003) 0.001 (0.001) -0.000 (0.000)** 0.006 (0.002)*** 0.002 (0.003) 0.010 (0.003)***	0.004 (0.003) 0.001 (0.001) -0.000 (0.000)** 0.006 (0.002)*** 0.002 (0.003) 0.010 (0.003)***	0.004 (0.003) 0.001 (0.001) -0.000 (0.000)** 0.005 (0.002)*** 0.002 (0.003) 0.010 (0.003)***	0.004 (0.003) 0.001 (0.001) -0.000 (0.000)** 0.006 (0.002)*** 0.002 (0.003) 0.010 (0.003)***	0.005 (0.003) 0.001 (0.001) -0.000 (0.000)** 0.006 (0.002)*** 0.002 (0.003) 0.010 (0.003)***
Technology-intensive services Software supply and consultancy Non-high-tech manufacturing Skill-intensive services Other business-oriented services Consumer-oriented services Construction Retail & wholesale	-0.022 (0.006)*** -0.028 (0.007)*** 0.001 (0.007) -0.031 (0.007)*** -0.000 (0.008) -0.012 (0.007)* -0.007 (0.006) -0.022 (0.006)***	-0.022 (0.006)*** -0.027 (0.007)*** 0.001 (0.007) -0.030 (0.007)*** -0.000 (0.008) -0.011 (0.007)* -0.008 (0.006) -0.023 (0.006)***			-0.023 (0.006)*** -0.028 (0.007)*** 0.001 (0.007) -0.033 (0.007)*** -0.001 (0.008) -0.012 (0.007)* -0.007 (0.006) -0.022 (0.006)***	-0.026 (0.006)*** -0.029 (0.007)*** 0.001 (0.007) -0.037 (0.007)*** -0.001 (0.008) -0.010 (0.007) -0.010 (0.006) -0.022 (0.006)***	-0.024 (0.006)*** -0.030 (0.007)*** 0.001 (0.007) -0.033 (0.007)*** -0.003 (0.008) -0.014 (0.007)** -0.007 (0.006) -0.024 (0.006)***	-0.030 (0.006)*** -0.035 (0.007)*** 0.002 (0.007) -0.038 (0.007)*** -0.008 (0.008) -0.020 (0.007)*** -0.008 (0.006) -0.031 (0.006)***	-0.022 (0.006)*** -0.028 (0.007)*** 0.002 (0.007) -0.031 (0.007)*** -0.001 (0.008) -0.012 (0.007)* -0.007 (0.006) -0.022 (0.006)***	-0.022 (0.006)*** -0.027 (0.007)*** 0.002 (0.007) -0.031 (0.007)*** -0.001 (0.008) -0.012 (0.006)* -0.007 (0.006) -0.022 (0.006)***
Limited liability (GmbH) Limited liability (UG)	0.062 (0.004)*** 0.005 (0.005)	0.061 (0.004)*** 0.002 (0.005)			0.062 (0.004)*** 0.005 (0.005)	0.061 (0.004)*** 0.004 (0.005)	0.062 (0.004)*** 0.005 (0.005)	0.061 (0.004)*** 0.005 (0.005)	0.062 (0.004)*** 0.004 (0.005)	0.061 (0.004)*** 0.003 (0.005)
Highly qualified population (share) Demographic potential of region	0.000 (0.000) -0.000 (0.002)	0.000 (0.000) -0.000 (0.002)			0.000 (0.000) -0.000 (0.002)	0.000 (0.000) -0.000 (0.002)	0.000 (0.000) -0.000 (0.002)	0.000 (0.000) -0.000 (0.002)	0.000 (0.000) -0.001 (0.002)	0.000 (0.000) -0.001 (0.002)
Month of foundation fixed effects Month fixed effects Constant	Yes Yes Yes	Yes Yes Yes			Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes
N / R-sq.	309198/0,006	309198/0,006	309198/0,045	309198/0,045	309198/0,006	309198/0,006	309198/0,006	309198/0,006	309198/0,006	309198/0,006

Notes: Marginal effects (M.E.); (cluster-)robust standard errors in parentheses. Significance levels: *** 1%, ** 5%, * 10%. “Firm age” is age of firm in days divided by 365.25 and reaches from two month to seven years. The index series for GDP and the IFO business situation index are divided by 100 in the month-to-month growth models for a better presentability of the results. Baseline category for industries: high-tech manufacturing. Additional control variable in all regressions: funding by KfW bank.

B Appendix: Cyclicality and the Global Financial Crisis in Germany

Although the Global Financial Crisis began as a crisis of the subprime mortgage market in the US, it very rapidly spread around the globe and in Europe led to a crisis of the Euro currency. In fact, the drop in GDP hit European countries harder than the US (Ball, 2014). In Germany, the decrease in GDP in percentage points was double that in the US (Brenke et al., 2013). In contrast to the development in the US (Farber, 2011), however, in Germany the crisis turned out to be unexpectedly short. The rapid recovery began as early as one year after the first quarter with negative growth (see Figure B.1). As such, there are parallels with the sharp economic downturn of the US economy in 1982/83.

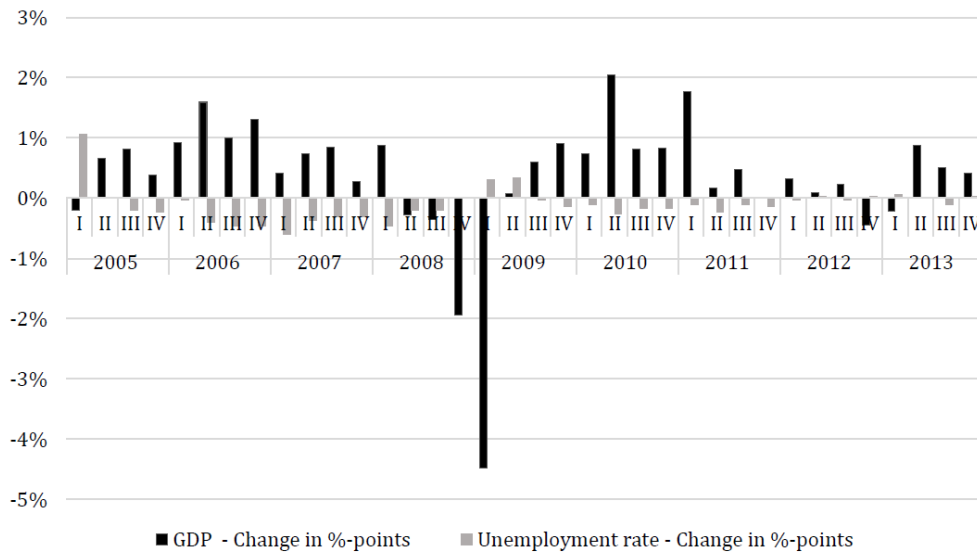
The Global Financial Crisis in Germany covered a period of four quarters, beginning in the second quarter of 2008 and ending with the first quarter of 2009 (see Figure B.1).¹² What is remarkable is that the German economy entered the Global Financial Crisis after having been on a stable growth path during the year before and that the last quarter was the one with the steepest decline: the crisis in Germany exhibited a rather fast and unexpected beginning and end. As Figure B.1 additionally shows, the development of unemployment is not a suitable indicator for the Global Financial Crisis in Germany, since the unemployment figures were scarcely affected.

Having previously experienced a severe shortage of skilled workers, employers were reluctant to shed workers and tried to hoard staff (Balleer et al., 2016). This response was supported by the government via the expansion of short-time work subsidies (Krause and Uhlig, 2012). These are granted to establishments facing a temporary unavoidable loss of work for a minimum of one third of the staff. Because of the crisis, the conditions for entitlement to this subsidy were eased and the maximum entitlement periods were extended.¹³ As Figure B.2 shows, this scheme was widely used and, as the development of the labor market lags behind that of GDP, its use peaked in May 2009 with

¹²There are several ways to measure cyclical developments. The most common method is to use the development of GDP (measured e.g. as periods of positive or negative growth or as deviations from the trend). See, e.g., OECD (2010) for a usage of the term “recession” that is consistent with ours.

¹³“Cyclical Short-Time Working Assistance” is usually granted for up to six months. But in cases of exceptionally poor conditions on the labor market (§109 SGB III) the Federal Ministry of Labor is authorized to prolong this period up to 24 months. This leads to different maximum entitlement periods during the time analyzed in this paper. From 1 January until 30 June 2007, short-time working assistance could be claimed for up to 15 months. From 1 July to 31 December 2008 the time frame was reduced to 12 months, but from 1 January to 31 December 2009 the maximum period was extended again, this time to 24 months (Brenke et al., 2013).

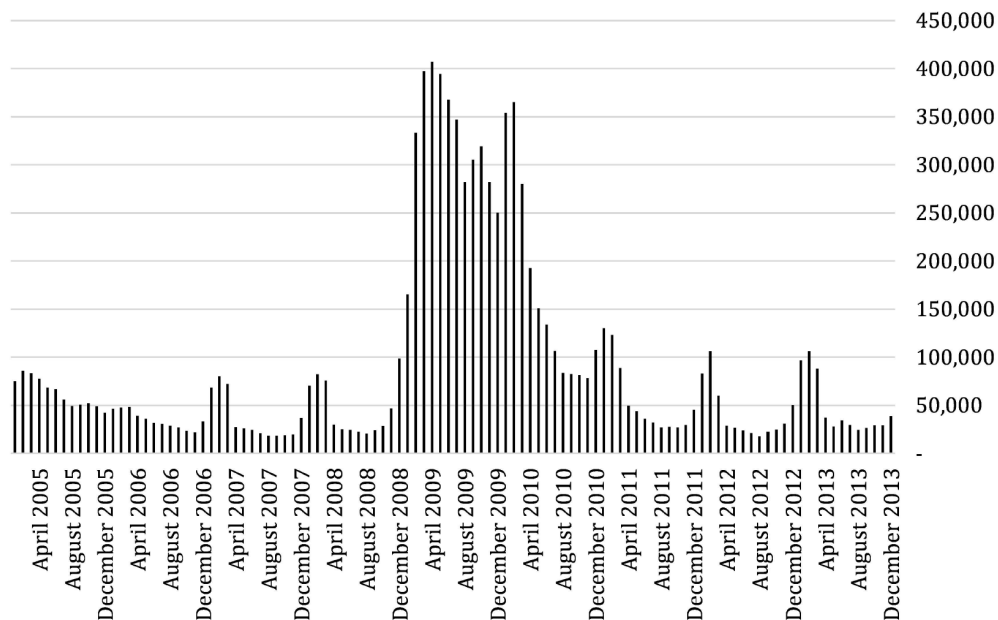
Figure B.1: Development of GDP and unemployment in Germany 2005-2013 in quarters



Notes: GDP and unemployment are seasonally adjusted. The figure shows that German GDP decreased progressively over four consecutive quarters, beginning with the second quarter of 2008. In the second quarter of 2008 GDP only decreased by about -0.2%. In the first quarter of 2009 it decreased by about -4.5%. As early as the subsequent second quarter of 2009, GDP started to grow again by about 0.2%. What is noteworthy is that of the four recession quarters unemployment only increased in the first quarter of 2009.

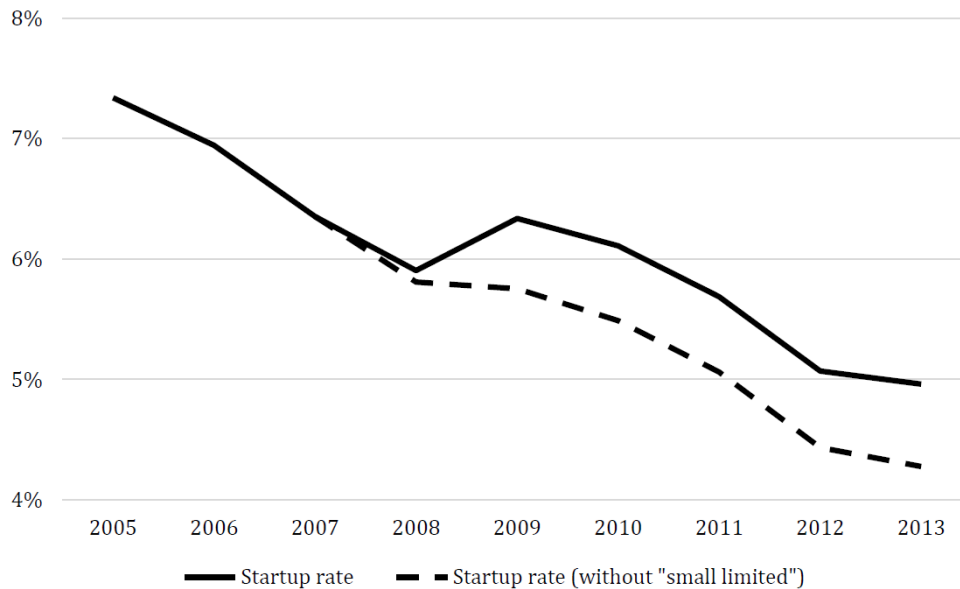
Sources: GDP: German Federal Statistical Office, Unemployment: German Federal Employment Agency

Figure B.2: Development of full-time equivalent short-time work in Germany 2005-2013



Notes: Until the end of 2008 full-time equivalent short-time work in Germany was consistently below 100,000 full-time equivalent employees. From the beginning of 2009 onwards however, short-time work increased sharply, peaking above 400,000 full-time equivalent jobs in the spring of 2009 and not falling below 100,000 again until towards the end of 2010.
Source: Federal Employment Agency

Figure B.3: Development of the startup rate in Germany 2005-2013



Notes: Number of new firms divided by the number of incumbent firms. Startup rates fell in Germany throughout the entire period, from about 7.3% in 2005 to below 5% in 2013. During the crisis the startup rate seemingly increased from about 5.8% in 2008 to about 6.3% in 2009. However, this increase is explained almost entirely by the introduction of the new legal form of “small limited companies” in the last quarter of 2008.

Source: Mannheim Enterprise Panel (ZEW)

some 1.5 million employees (400,000 full-time equivalent jobs), when the scheme involved significantly more firms than in previous crises (Brenke et al., 2013).

To allow first insights into the correlation between the business cycle and entrepreneurial activity, Figure B.3 depicts the startup rate of new businesses in Germany from 2003 to 2013. There is no apparent co-movement between the number of startups and the business cycle—at the very most an interruption in the overall declining trend in 2009 when the Global Financial Crisis peaked. However, the marked increase visible at first glance is almost entirely explained by a change in the law. The change in the law came into force in October 2008 and introduced a new legal form of especially small limited companies (the “Unternehmergeellschaft” - UG).

The main reason for the change in the law was that in previous years increasing numbers of new firms based in Germany were registering as limited companies (Ltd.) in the UK due to more favorable conditions there with respect to limitations of liability. Hence, the Global Financial Crisis might have led to a small increase in firm foundations in Germany but most of the additional firms registered as UGs from 2009 onwards can be assumed to be a “registration effect” rather than an actual increase in the number of firm foundations in Germany.

C Appendix: Technical Details

C.1 Details on business cycle measures

The first measure we use is a binary variable that identifies the quarters with a negative development of overall GDP in Germany (i.e. from April 2008 until March 2009) to quantify the effects on firms founded during the Global Financial Crisis of 2008/09.¹⁴

As our second indicator we use a time series of a quarterly GDP index (in constant prices) for Germany to control for economic development in more detail. We do not use changes in GDP since we expect different adjustment processes for similar changes from high and low levels of GDP. We also use industry-specific quarterly GDP index series as an extension of this measure.

Since GDP series are not available on a more detailed monthly basis, we additionally use a monthly time series of the Ifo Business Situation Indicator as the third measure of the business cycle. The Ifo Business Situation Indicator is one of two components of the Ifo Business Climate Index, a highly-regarded early indicator of economic developments in Germany.¹⁵ It is published on a monthly basis and thus constitutes an interesting alternative to the official statistics. Moreover, in contrast to GDP, the Ifo Business Situation Indicator is stationary by definition, which therefore enables us to test the robustness of results derived for GDP with regard to several aspects. Again, we also use industry-specific series as an extension.

To measure cyclically driven changes in the supply of labor for young firms more directly, we use data on the use of short-time working schemes that are provided by the German Federal Employment Agency as a fourth business-cycle indicator. As shown above, the main adjustments on the German labor market over the cycle occur in terms of short-time work. We take the ratio of the number of full-time-equivalent short-time workers and the number of employees in a region as an indicator of a lack of demand for new hires by incumbent firms. We do not make use of short-time work in specific industries since we expect workers to be able to switch between industries.

¹⁴According to a definition used by the OECD (2010) to compare the effects of the 2008/09 crisis, a negative development of GDP in at least two consecutive quarters is a sufficient requirement to define a recession. According to the NBER, a recession is a period of “significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales. A recession begins just after the economy reaches a peak of activity and ends as the economy reaches its trough. Between trough and peak, the economy is in an expansion.” Our definition of the Global Financial Crisis in Germany is consistent with both definitions.

¹⁵Detailed information is available under: <https://www.ifo.de/en/survey/ifo-business-climate-index>

C.2 Entropy balancing

In contrast to other related methods, for instance propensity score weighting, entropy balancing induces covariate balance directly, and not as the result of a propensity score matching procedure, which requires iterated re-specifications of the propensity score estimation to achieve covariate balance. The sampling weights are chosen as the solution to the minimization problem

$$\min_{w_i} H(w) = \sum_{\{i|D=0\}} h(w_i)$$

Under the constraints that

$$\Sigma_{(i|D=0)} w_i c_{ri}(X_i) = m_r \text{ with } r \in 1, \dots, R \text{ and}$$

$$\Sigma_{(i|D=0)} w_i = 1 \text{ and}$$

$$w_i \geq 0 \text{ for all } i \text{ such that } D = 0$$

w_i denotes the weights for each observation from the control group. $h(w_i)$ is a distance measure which measures the distance between the chosen weights and a set of base weights. $w_i c_{ri}(X_i) = m_r$ denotes the balance constraints for the R moments to balance for each covariate (for further details we refer to Hainmueller, 2011). Entropy balancing therefore induces covariance balance directly and explicitly minimizes the weight given to each observation from the control group.

C.3 Details on estimated models

Models for the effect of aggregate conditions at the time of foundation on new firm employment growth)

Based on or balancing and control strategy, we first analyze the impact of the aggregate economic conditions *at the time of firm foundation* and take a detailed look at the growth and skill structure of firms that entered the market during the Global Financial Crisis of 2008/09. More than half of the young firms in our sample do not yet have any personnel around the time of foundation. Therefore, we turn to the question whether new firm hire at all first and use Probit models to test whether the Global Financial Crisis affected the probability of a new firm having at least one employee after one year in business. This would not be feasible with a database that is restricted to employer businesses.

We then extend the view to the startup size and growth in absolute numbers and also expand our analyses to cover later business years in order to assess whether the longer-term growth potential of startups is affected by the cyclical conditions at the time of foundation. For this, we predict the number of employees conditional on the human capital of the firms' founders from weighted OLS models. We estimate Poisson and Tobit models as robustness checks. We run Poisson models because the workforce size is measured as the number of employees. We report results of Tobit models as a second robustness check since a sizeable number of firms do not hire and we assume that the group of non-hiring firms includes firms which have demand for labor but cannot afford to hire an employee. Hence, the latent variable in the Tobit model refers to firms' labor demand, while the observed dependent variables measure their actual hiring behavior. In addition, we estimate conditional (count data) and unconditional quantile regressions for firm size after one year to analyze differing effects of the crisis over the firm-size distribution.

We consider it important to note that we strive to assess whether our results are consistent with earlier findings. For this, we demonstrate the impacts of the control for founder human capital and of using a complete sample of new firms (including both employer and nonemployer businesses). We run a series of robustness checks in which we manipulate our sample to mimic samples without nonemployer businesses and/or do not control for founder human capital.

More technically, we correlate the aggregate conditions at the time of firm foundation with different For this, we estimate models of the type

$$y_i = \alpha + \gamma * Crisis_{start-up,i} + X_i\beta + \epsilon_i$$

where y_i denotes dependent variables that measure the employment and workforce structure after one year in business, in an extension we also consider employment at the end of later business years. $Crisis_{start-up,i}$ is the binary indicator that has the value of one for firms founded during the Global Financial Crisis of 2008/09. As robustness checks, we repeat the main analyses and investigate whether the effects hold for a more detailed measure of cyclicity, namely the value of a GDP index in the quarter of firm foundation, as well. X_i is a set of firm- and founder-specific control variables and ϵ_i is a firm-specific error component. We use heteroskedasticity-robust standard errors in all models.

Models for the effect of contemporary aggregate conditions on month-by-month employment growth)

In the final step of our empirical analysis, we aim to overcome the problem of modeling cyclical effects either on a very rough yearly level, or only once at a fixed point in time in the firm’s life (e.g. the time of start-up). This enables us to understand the mechanisms underlying the cyclical effects much more precisely. For this, we explore cyclical influences on firm growth in more detail by using a fine-grained monthly growth model in which we correlate business-cycle measures with the *simultaneous* growth of new ventures and interact the business-cycle measures with firm age to test for differing impacts of aggregate conditions for firms of different ages. In particular, modeling month-by-month growth allows us to address a major limitation of models that concentrate on the aggregate conditions at the time of start-up, namely that the conditions during the first years in business might differ substantially for firms founded at the beginning of a crisis (and into the decline of GDP) compared to firms founded at the end of a crisis (and into new GDP growth).

We estimate growth models of the form

$$\Delta_{EMP_{i,t}-EMP_{i,t-1}} = \gamma * \text{Business Cycle}_t + \delta * EMP_{i,t-1} + X_{i,t}\beta + \alpha_i + \epsilon_{i,t}$$

$EMP_{i,t-1}$ denotes employment in firm i in month $t - 1$. $\Delta_{EMP_{i,t}-EMP_{i,t-1}}$ denotes the absolute growth (decline) of firm i between month $t - 1$ and month t . $X_{i,t}$ contains firm- and founder-specific control variables, $\epsilon_{i,t}$ is an individual and time-specific error term. We subsequently measure the state of the business cycle using the above introduced GDP index series, the Ifo indicator series for the current business situations, as well as the relative shares of short-time workers in each spatial planning region.¹⁶

Estimates are derived from pooled OLS models and from fixed effects models. Including firm fixed effects in the specification can introduce bias due to a correlation between $EMP_{i,t-1}$ and the error term $\epsilon_{i,t}$ (Nickell, 1981). Such potential bias is stronger the smaller the longitudinal dimension of a panel dataset is. Since the average longitudinal dimension of our monthly panel is rather large (above 40), we follow recommendations by Judson and Owen (1999) and estimate standard fixed effects models. We use cluster-robust (at the firm level) standard errors in all panel data models.

¹⁶Spatial planning regions (German: "Raumordnungsregionen") are defined as large-scale functionally commuter-minimizing regions. Germany is divided into 96 such regions.

C.4 Details on the linked employer-employee dataset and the matching procedure

The employment statistics contain information on all reportable employees subject to social security contributions in Germany. This includes apprentices, interns and people in marginal part-time employment. All notifications on an individual's spells of employment and unemployment can be linked with the aid of a unique person-specific identifier, thereby revealing an employment history for each employee. A further identifier makes it possible to match the employees to establishments. However, there is no unique identifier to match establishments to firms. Therefore, we matched establishments to firms in the IAB/ZEW Start-up Panel using a text search algorithm via firm/establishment names and addresses. The text search algorithm is described in detail in Appendix B of Czarnitzki et al. (2015) and has proved to deliver very reliable results in various settings.

In the matching procedure we were able to find about 90% of the firms in the IAB/ZEW Start-up Panel that reported having employees in the yearly telephone surveys. We removed firms from the sample which reported that they had reportable employees but which we were unable to find during the matching procedure. In addition, to safeguard against false matches, all matches were double-checked manually and we excluded the matches in the 1st and 100th percentile of the difference between self-reported and process-generated firm sizes from the sample. The correlation coefficient between self-reported and process-generated firm sizes in the final firm-year panel dataset is slightly above 0.95.