APPENDICES

A1. Further details regarding the underlying components of our main realized high-impact entrepreneurship measure

The descriptive statistics of the components underlying our latent measure of realized high-impact entrepreneurship are presented in Appendix Table 1. Appendix Table 2 presents the corresponding correlation matrix. Appendix Table 3 presents the country-level descriptives of our main measures.

Appendix Table 1. Descriptive statistics components of realized high-impact entrepreneurship

	N	Mean	SD	Min	Max
Components of realized high-impact entrepreneurship – counts					
Venture capital funded initial public offerings	62	19.81	88.60	0.00	685.00
Unicorns	62	4.87	21.12	0.00	131.00
Global top young entrepreneurial firms	62	2.06	8.33	0.00	60.00
Billionaire entrepreneurs	62	20.66	65.40	0.00	424.00
Components of realized high-impact entrepreneurship – per million inhabitants					
Venture capital funded initial public offerings per million inhabitants	62	0.31	0.60	0.00	2.21
Unicorns per million inhabitants	62	0.05	0.14	0.00	0.76
Global top young entrepreneurial firms per million inhabitants	62	0.02	0.05	0.00	0.25
Billionaire entrepreneurs per million inhabitants	62	0.28	0.37	0.00	1.72
Main measures					
High-growth expectations entrepreneurship	62	21.11	9.52	1.22	45.20
Realized high-impact entrepreneurship	62	13.87	21.41	0.00	100.00

Note. We present the descriptive statistics of the unstandardized counts of the underlying components of realized high-impact entrepreneurship as well as of the population-standardized (per million inhabitants) measures. All variables are averaged over the period 2010–2017. The purpose of this is to allow for complementary insights into the underlying data. High-growth expectations entrepreneurship and realized high-impact entrepreneurship are presented for completeness. Complementing the descriptive statistics presented in the main manuscript, we present the unscaled raw version of high-growth expectations entrepreneurship here.

Appendix Table 2. Correlations between the components of realized high-impact entrepreneurship

		1	2	3	4	5	6	7	8	9	10
	Components of realized high-impact entrepreneurship – counts										
1	Venture capital funded initial public offerings	1.00									
2	Unicorns	0.75*	1.00								
3	Global top young entrepreneurial firms	0.96*	0.89*	1.00							
4	Billionaire entrepreneurs	0.70*	0.98*	0.86*	1.00						
	Components of realized high-impact entrepreneurship – per million inhabitants										
5	Venture capital funded initial public offerings per million inhabitants	0.46*	0.24	0.37*	0.22	1.00					
6	Unicorns per million inhabitants	0.29*	0.23	0.26*	0.19	0.48*	1.00				
7	Global top young entrepreneurial firms per million inhabitants	0.51*	0.32*	0.49*	0.32*	0.62*	0.37*	1.00			
8	Billionaire entrepreneurs per million inhabitants	0.29*	0.18	0.25*	0.20	0.80*	0.39*	0.67*	1.00		
	Main measures										
9	High-growth expectations entrepreneurship	0.15	0.11	0.15	0.09	0.05	0.09	0.16	0.07	1.00	
10	Realized high-impact entrepreneurship	0.48*	0.29*	0.42*	0.28*	0.90*	0.64*	0.82*	0.89*	0.11	1.00

Note. * denotes correlations that are statistically significant at the 5% level or lower.

Appendix Table 3. Country descriptive statistics

| Country code	Country	Realized high-impact entrepreneurship	High-growth expectations entrepreneurship	Entrepreneurial projection bias
AE	United Arab Emirates	25	69	44
AR	Argentina	2	43	41
AT	Austria	12	24	12
AU	Australia	45	59	14
BE	Belgium	10	33	23
BG	Bulgaria	2	20	18
BR	Brazil	2	17	15
CA	Canada	46	49	4
CH	Switzerland	86	37	-49
CL	Chile	1	73	72
CN	China	14	53	39
CO	Colombia	5	100	95
CR	Costa Rica	0	34	34
CZ	Czech Republic	7	65	58
DE	Germany	17	44	27
DK	Denmark	24	46	22
EE	Estonia	28	58	29
EG	Egypt	0	67	67
ES	Spain	6	23	17
FI	Finland	23	33	10
FR	France	20	50	30
GB	United Kingdom	42	49	7
GH	Ghana	0	25	25
GR	Greece	4	17	13
GT	Guatemala	0	18	18
HR	Croatia	0	65	65
HU	Hungary	4	65	62
ID	Indonesia	2	4	2
IE	Ireland	36	68	32
IL	Israel	100	47	-53
IN	India	2	12	9
IT	Italy	9	25	16
JP	Japan	11	66	56
KR	South Korea	16	41	24
KZ	Kazakhstan	2	66	64
LT	Lithuania	7	74	68
LV	Latvia	0	79	79
MA	Morocco	1	31	30
MW	Malawi	0	0	0
MX	Mexico	2	29	27
MY	Malaysia	13	17	5
NG	Nigeria	2	50	48
NL	Netherlands	13	34	21
NO	Norway	30	33	3
PE	Peru	3	39	36
PH	Philippines	3	13	10
PK	Pakistan	0	29	29
PL	Poland	2	60	58
PT	Portugal	0	37	37
RO	Romania	11	87	75
RU	Russia	15	49	34
SE	Sweden	48	32	-16
SI	Slovenia	9	53	44
SK	Slovakia	0	58	58
SN	Senegal	0	49	49
SV	El Salvador	0	34	34
TH	Thailand	5	28	24
TN	Tunisia	0	52	52
TR	Turkey	7	90	83
US	United States	83	69	-14
UY	Uruguay	0	53	53
ZA	South Africa	4	59	55

Note. Realized high-impact entrepreneurship and high-growth expectations entrepreneurship have been rescaled from 0 to 100 for comparability, because our (reflective) measure of realized high-impact entrepreneurship does not have a natural underlying scale and because this allows us to obtain the entrepreneurial projection bias measure in a straightforward way, via subtraction.

A2. Alternative operationalizations of high-growth expectations entrepreneurship

Our measure of high-growth expectations entrepreneurship follows the Global Entrepreneurship Monitor definition (GEM, 2022b): We operationalize it as the share of individuals involved in Total early-stage Entrepreneurial Activity (TEA) who expect to create six or more jobs in the coming five years, over individuals involved in TEA.

We recognize that scholars have used different variants of this measure (see review by Hermans et al., 2015). Specifically, prior research has used different thresholds regarding how many jobs early-stage entrepreneurs expect to create. To probe whether our main findings reported in Figure 1 and Figure 2 are robust to alternative operationalizations, in Appendix Figure 1, we measure high-growth expectations entrepreneurship as the share of early-stage entrepreneurs that expect to create 5 or more jobs (Panel A), 10 or more jobs (Panel B), and 19 or more jobs (Panel C). We clearly see that shifting the threshold for high-growth expectations entrepreneurship does not materially improve the association between high-growth expectations entrepreneurship and realized high-impact entrepreneurship.
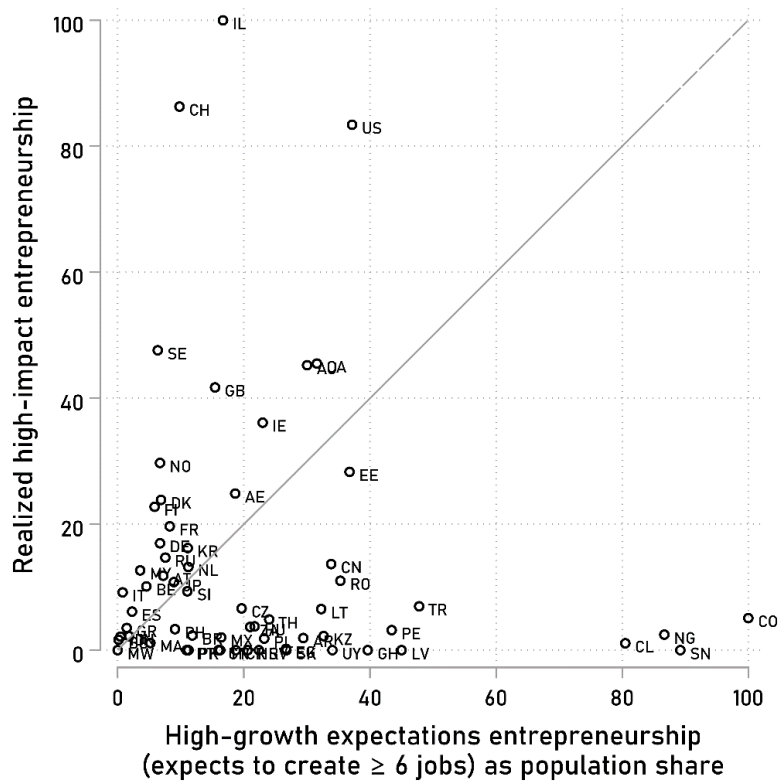
Appendix Figure 1. Using different thresholds for high-growth expectations entrepreneurship
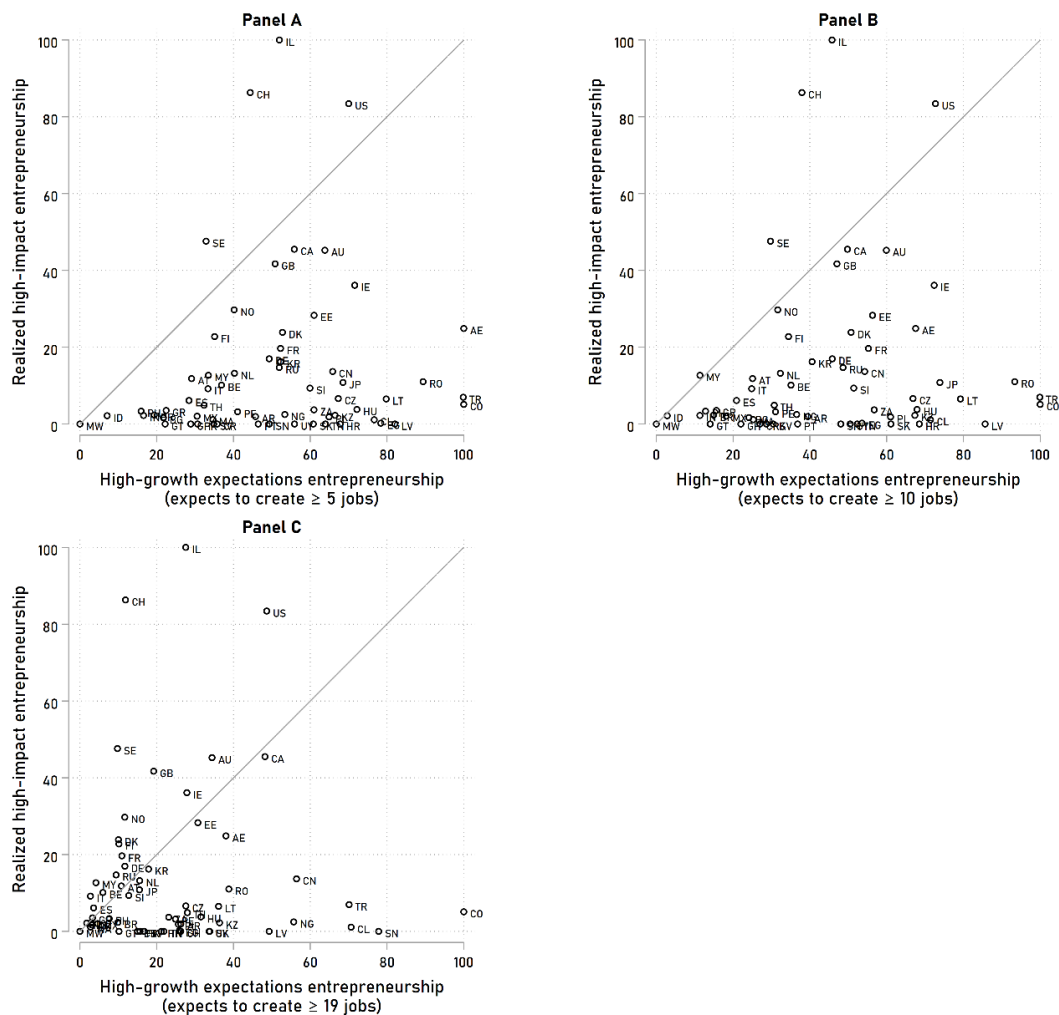
Note. Plotted are realized high-impact entrepreneurship –operationalized as a reflective based on the (per million capita) number of venture capital funded initial public offerings, unicorns, global young entrepreneurial firms, and self-made billionaire entrepreneurs– and high-growth expectations entrepreneurship (Autio, 2007; Henrekson and Sanandaji, 2020; Reynolds et al., 2005). We use three different thresholds to define high-growth expectations entrepreneurship: 5 or more jobs (Panel A), 10 or more jobs (Panel B), and 19 or more jobs (Panel C). For comparability, we rescale all measures from 0 to 100 and plot the isoline. Country names are abbreviated as ISO country codes.

In the Global Entrepreneurship Monitor definition (GEM, 2022b), the denominator used in deriving the high-growth expectations entrepreneurship measure is individuals involved in Total early-stage Entrepreneurial Activity (TEA). An alternative approach to the GEM definition is to use countries' populations as the denominator instead (e.g., Decker et al., 2020). In Appendix Figure 2, we operationalize high-growth expectations entrepreneurship as the share of individuals who expect to create six or more jobs in the coming five years in the total population. We clearly see using this alternative denominator does not strengthen the association between high-growth expectations entrepreneurship and realized high-impact entrepreneurship.

Appendix Figure 2. Using a different denominator when measuring high-growth expectations entrepreneurship
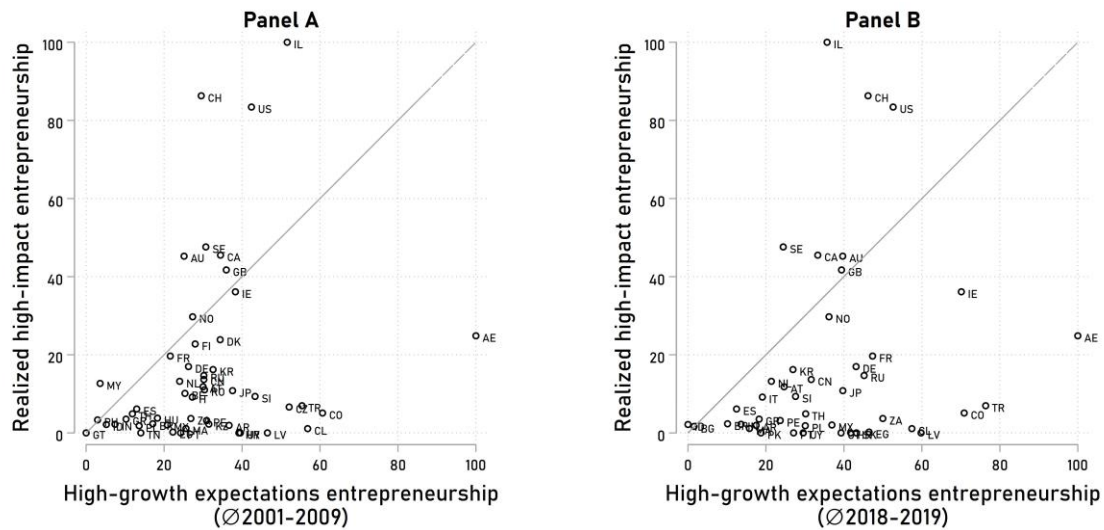

Note. Plotted are realized high-impact entrepreneurship –operationalized as a reflective measure based on the (per million capita) number of venture capital funded initial public offerings, unicorns, global young entrepreneurial firms, and self-made billionaire entrepreneurs– and high-growth expectations entrepreneurship –operationalized as the population share of individuals who expect to create six or more jobs in the coming five years–. For comparability, we rescale both measures from 0 to 100 and plot the isoline. Country names are abbreviated as ISO country codes.

For our main comparison of realized high-impact entrepreneurship and high-growth expectations entrepreneurship, we use a consistent time period over which we take mid-run averages, i.e., the period 2010–2017. To probe the robustness of our findings, we also measure high-growth expectations entrepreneurship over the preceding and subsequent periods. Specifically, we measure high-growth expectations entrepreneurship over the period 2001-2009 (see Appendix Figure 3 Panel A) and over the period 2018-2019 (see Appendix Figure 3 Panel B).[1] These alternative measures support our main findings as well.

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[1] We end the sampling period for the high-growth expectations entrepreneurship measure used in Panel B to ensure that it is not influenced by the COVID-19 pandemic. We note that we obtain similar results when we end the observation period in 2021 instead.

Appendix Figure 3. Measuring high-growth expectations entrepreneurship prior to or after observing realized high-impact entrepreneurship
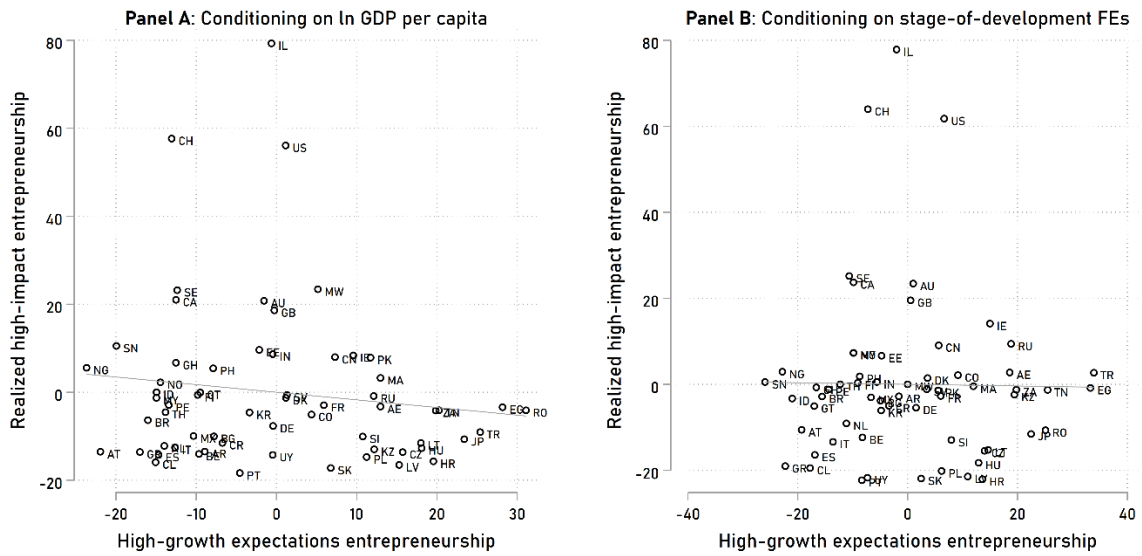

Note. Plotted are realized high-impact entrepreneurship –operationalized as a reflective measure based on the (per million capita) number of venture capital funded initial public offerings, unicorns, global young entrepreneurial firms, and self-made billionaire entrepreneurs– and high-growth expectations entrepreneurship –operationalized as the share of individuals involved in Total early-stage Entrepreneurial Activity who expect to create at least 6 or more jobs in the coming 5 years (Autio, 2007; GEM, 2022b; Reynolds et al., 2005)–. To create a lag between high-growth expectations entrepreneurship and realized high-impact entrepreneurship, we measure high-growth expectations entrepreneurship over the period 2001–2009. For comparability, we rescale both measures from 0 to 100 and plot the isoline. Country names are abbreviated as ISO country codes.

A3. Conditional association realized high-impact entrepreneurship and high-growth expectations entrepreneurship

Figure 1 in the main manuscript documents that high-growth expectations entrepreneurship proxies only imperfectly for realized high-impact entrepreneurship and that the relation between the two may not be a linear one. Given that the critical role of economic development in entrepreneurship has long been highlighted (Wennekers and Thurik, 1999), one may whether wonder the patterns documented in Figure 1 are driven by these well-established stage-of-economic-development effects. To assess this possibility, Appendix Figure 4 presents the conditional associations between high-growth expectations entrepreneurship and realized high-impact entrepreneurship after conditioning on ln GDP per capita (Panel A) or stage-of-development fixed effects –low income, lower-middle income, upper-middle income, high income following the World Bank classification (World Bank, 2022)– (Panel B). We clearly see that the findings reported in Figure 1 are not merely a result of international differences in economic development.

Appendix Figure 4. Realized high-impact entrepreneurship and high-growth expectations entrepreneurship – partial correlations after conditioning on economic development

Note. Shown are *conditional* associations between realized high-impact entrepreneurship and high-growth expectations entrepreneurship. Panel A conditions on ln GDP per capita and Panel B on stage-of-development fixed effects (low income, lower-middle income, upper-middle income, high income); both are obtained from the World Development Indicators (World Bank, 2022). Country names are abbreviated as ISO country codes.

A4. Further details on the control variables used in stylized examples

In this section, we report the descriptive and correlation matrix of the variables used in the stylized examples in Section 2.4 (see Table 3 and Table 4). Appendix Table 4 presents the descriptive statistics and Appendix Table 5 the correlation matrix.

Appendix Table 4. Descriptive statistics of variables used in stylized examples

	Source	Coverage	Number of observations	Mean	SD	Min	Max
Realized high-impact entrepreneurship	Henrekson and Sanandaji (2020) Database	2010-2017	62	13.87	21.41	0.00	100.00
High-growth expectations entrepreneurship	GEM Adult Population Survey (GEM, 2022a; Reynolds et al., 2005)	2010-2017	62	21.11	9.52	1.22	45.20
Individualism	Hofstede (1980; 2010) and Beugelsdijk et al. (2015)	1967-1973	59	45.29	24.01	6.00	91.00
Innovation	Global Innovation Index (Dutta et al., 2020)	2018	62	31.53	12.96	10.40	62.80
GDP per capita (PPP, in constant 2017 international $)	World Development Indicators (World Bank, 2022)	2010-2017	62	28486	17782	1411	67545
Institutional quality	World Governance Indicators (Kaufmann et al., 2011; World Bank, 2022)	2010-2017	62	0.00	0.99	-1.84	1.62
Venture capital availability	World Economic Forum Global Competitiveness Index (2017)	2010-2017	62	2.96	0.66	1.90	4.37
Human capital	Barro and Lee (2013) Database	2010	62	14.85	9.51	0.02	39.76
Service sector employment	World Development Indicators (World Bank, 2022)	2010-2017	62	62.45	14.02	16.67	81.22
Total population (in millions)	World Development Indicators (World Bank, 2022)	2010-2017	62	89.85	238.01	1.32	1366.99
Population growth (%)	World Development Indicators (World Bank, 2022)	2010-2017	62	0.78	0.89	-1.40	2.79
Unemployment rate	World Development Indicators (World Bank, 2022)	2010-2017	62	7.84	4.58	0.60	22.74
Inequality	World Development Indicators (World Bank, 2022)	2010-2017	62	36.56	7.53	25.21	63.20

Note. For better a representation of their properties, we present the raw data, rather than the transformed or rescaled values, of the variables which are entered as natural logarithms in the regressions or rescaled for comparison purposes.

Appendix Table 5. Correlation matrix of variables used in stylized examples

		Number of observations	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Realized high-impact entrepreneurship	62	1.00												
2	High-growth expectations entrepreneurship	62	0.11	1.00											
3	Individualism	59	0.54*	0.14	1.00										
4	Innovation	62	0.66*	0.06	0.69*	1.00									
5	ln GDP per capita	62	0.52*	0.31*	0.70*	0.74*	1.00								
6	Institutional quality	62	0.56*	0.14	0.75*	0.80*	0.80*	1.00							
7	Venture capital availability	62	0.63*	-0.06	0.38*	0.52*	0.38*	0.48*	1.00						
8	Human capital	62	0.58*	0.22	0.46*	0.58*	0.66*	0.58*	0.21	1.00					
9	Service sector employment	62	0.51*	0.21	0.66*	0.60*	0.84*	0.74*	0.29*	0.64*	1.00				
10	Total population (in millions)	62	-0.03	-0.13	-0.12	0.08	-0.27*	-0.26*	0.21	-0.20	-0.39*	1.00			
11	Population growth (%)	62	0.08	-0.25*	-0.28*	-0.38*	-0.52*	-0.36*	0.12	-0.38*	-0.37*	0.08	1.00		
12	Unemployment rate	62	-0.16	0.15	0.17	-0.01	0.11	0.07	-0.29*	0.09	0.23	-0.12	-0.36*	1.00	
13	Inequality	62	-0.18	-0.11	-0.36*	-0.48*	-0.48*	-0.48*	-0.16	-0.36*	-0.20	0.10	0.32*	0.09	1.00

Note. All variables are averaged over the period 2010–2017 (except for individualism and human capital). Individualism data are available only for a subset of the observations used in the study, for 59 countries (Beugelsdijk et al., 2015; Hofstede et al., 2010). Therefore, row and column 3 are based on 59 observations, while all other rows and columns are based on 62 observations. Human capital data stems from the Barro and Lee (2013) database and refers to the year 2010. * denotes correlations that are statistically significant at the 5% level or lower.

A5. Unconditional regression results of stylized examples

For brevity, in Section 2.4 we present the fully specified models of the stylized examples (see Table 3 and Table 4). To further substantiate these stylized examples, we also present the unconditional associations here. Appendix Table 6 and Appendix Table 7 present the unconditional associations between individualism and entrepreneurship, and entrepreneurship and innovation, respectively, without adjusting for the country-level controls described in Section 2.4. The patterns we observe are in line with the main findings shown in Table 3 and Table 4.

Appendix Table 6. Stylized Example 1

	(1)	(2)	(3)
	Realized high-impact entrepreneurship	High-growth expectations entrepreneurship	High-growth expectations entrepreneurship
Independent variable			
Individualism	0.540***	0.139	0.376***
	(0.000)	(0.276)	(0.000)
Additional adjustment			
Entrepreneurial projection bias			0.778***
			(0.000)
Observations	59	59	59
R-squared	0.292	0.019	0.569

Note. The results are based on OLS regressions and presented as beta-coefficients and exact *p*-values (in parentheses); *** p $< .01$, ** p $< .05$, * p $< .1$; two-tailed tests. The constant was estimated but is not reported for brevity. We tested the equality of the estimated individualism coefficients based on an overarching structural equation model and (partially) rejected the null of no significant differences across outcomes and model specifications [individualism (1) = (2): $p > \chi^2 = .008$, individualism (2) = (3): $p > \chi^2 = .012$, individualism (1) = (3): $p > \chi^2 = .041$].

Appendix Table 7. Stylized Example 2

	(1)	(2)	(3)
	Innovation	Innovation	Innovation
Independent variables			
Realized high-impact entrepreneurship	0.661***		
	(0.000)		
High-growth expectations entrepreneurship		0.058	0.653***
		(0.610)	(0.000)
Additional adjustment			
Entrepreneurial projection bias			-0.887***
			(0.000)
Observations	62	62	62
R-squared	0.436	0.003	0.437

Note. The results are based on OLS regressions and presented as beta-coefficients and exact *p*-values (in parentheses); *** p $< .01$, ** p $< .05$, * p $< .1$; two-tailed tests. The constant was estimated but is not reported for brevity. We tested the equality of the estimated realized high-impact and high-growth expectations entrepreneurship coefficients based on an overarching structural equation model and (partially) rejected the null of no significant differences across outcomes and model specifications [independent variables (1) = (2): $p > \chi^2 < .000$, independent variables (2) = (3): $p > \chi^2 < .000$, independent variables (1) = (3): $p > \chi^2 = .911$].

A6. Country-level descriptive statistics opportunity-motivated entrepreneurship and entrepreneurial opportunity projection bias

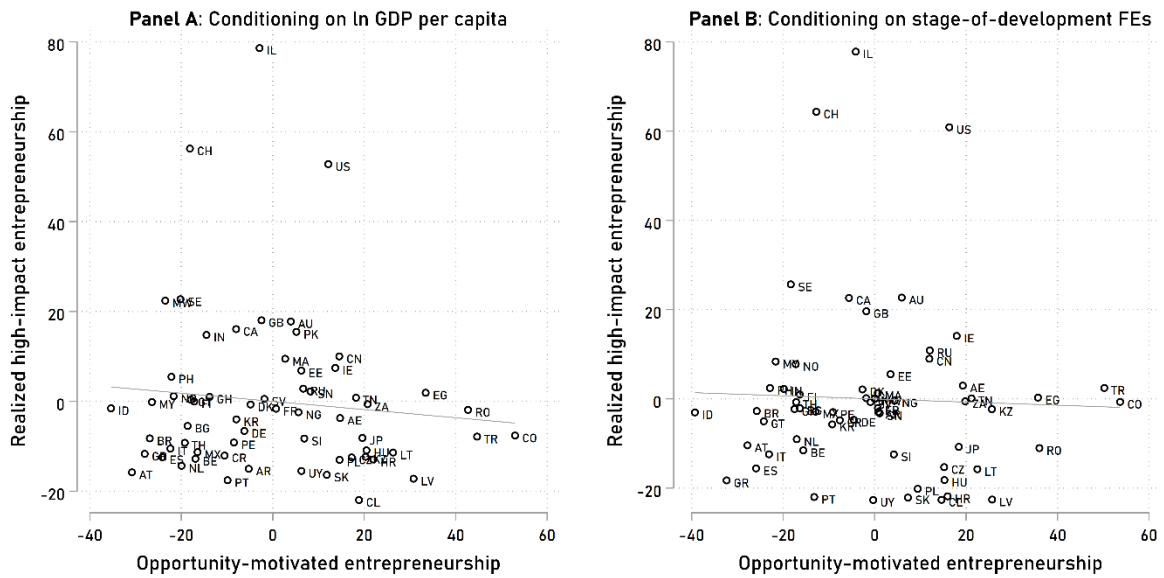*Appendix Table 8. Descriptive statistics opportunity-motivated entrepreneurship*

Country code	Country	Realized high-impact entrepreneurship	Opportunity-motivated entrepreneurship	Entrepreneurial opportunity projection bias
AE	United Arab Emirates	25	10	-15
AR	Argentina	2	30	28
AT	Austria	12	19	7
AU	Australia	45	28	-17
BE	Belgium	10	3	-7
BG	Bulgaria	2	0	-2
BR	Brazil	2	35	33
CA	Canada	46	37	-8
CH	Switzerland	86	12	-74
CL	Chile	1	59	58
CN	China	14	25	11
CO	Colombia	5	54	49
CR	Costa Rica	0	28	28
CZ	Czech Republic	7	11	4
DE	Germany	17	4	-13
DK	Denmark	24	6	-18
EE	Estonia	28	34	6
EG	Egypt	0	10	10
ES	Spain	6	4	-2
FI	Finland	23	8	-15
FR	France	20	5	-14
GB	United Kingdom	42	15	-27
GH	Ghana	0	74	74
GR	Greece	4	7	3
GT	Guatemala	0	34	34
HR	Croatia	0	8	8
HU	Hungary	4	12	8
ID	Indonesia	2	38	36
IE	Ireland	36	13	-23
IL	Israel	100	18	-82
IN	India	2	12	9
IT	Italy	9	1	-8
JP	Japan	11	1	-10
KR	South Korea	16	11	-5
KZ	Kazakhstan	2	21	19
LT	Lithuania	7	20	14
LV	Latvia	0	28	28
MA	Morocco	1	7	6
MW	Malawi	0	62	62
MX	Mexico	2	30	28
MY	Malaysia	13	14	2
NG	Nigeria	2	90	88
NL	Netherlands	13	19	6
NO	Norway	30	11	-18
PE	Peru	3	65	61
PH	Philippines	3	37	34
PK	Pakistan	0	8	8
PL	Poland	2	13	11
PT	Portugal	0	13	13
RO	Romania	11	14	3
RU	Russia	15	1	-13
SE	Sweden	48	11	-36
SI	Slovenia	9	7	-2
SK	Slovakia	0	17	17
SN	Senegal	0	100	100
SV	El Salvador	0	32	32
TH	Thailand	5	50	45
TN	Tunisia	0	9	9
TR	Turkey	7	20	13
US	United States	83	28	-56
UY	Uruguay	0	31	31
ZA	South Africa	4	13	9

Note. Realized high-impact entrepreneurship and opportunity-motivated entrepreneurship have been rescaled from 0 to 100 for comparability, because our (reflective) measure of realized high-impact entrepreneurship does not have a natural underlying scale, and because this allows us to obtain entrepreneurial opportunity projection bias measure in a straightforward way, via subtraction. Realized high-impact entrepreneurship is operationalized as a reflective measure based on the (per million capita) number of venture capital funded initial public offerings, unicorns, global young entrepreneurial firms, and self-made billionaire entrepreneurs using the Henrekson and Sanandaji (2020) database. Opportunity-motivated entrepreneurship is taken from GEM data (GEM, 2022b, 2022a; Reynolds et al., 2005). The entrepreneurial opportunity projection bias measure would be of value in those instances where opportunity-motivated entrepreneurship is used as a proxy for high-impact entrepreneurship.

A7. Conditional association between realized high-impact entrepreneurship and opportunity-motivated entrepreneurship

Figure 4 in the manuscript documents the imperfect association between opportunity-motivated entrepreneurship and realized high-impact entrepreneurship. We again (cf. Figure 1 and Appendix Figure 4) probe whether this imperfect relation is driven by the international differences in economic development (Wennekers and Thurik, 1999). Appendix Figure 5 plots the conditional associations between opportunity-motivated entrepreneurship and realized high-impact entrepreneurship after conditioning on ln GDP per capita (in Panel A) or stage-of-development fixed effects (low income, lower-middle income, upper-middle income, high income) (in Panel B). We see that the findings reported in Figure 4 are not driven solely by differences in economic development.

Appendix Figure 5. Realized high-impact entrepreneurship and opportunity-motivated entrepreneurship – partial correlations after conditioning on economic development

Note. Shown are *conditional* associations between realized high-impact entrepreneurship and opportunity-motivated entrepreneurship. Panel A conditions on ln GDP per capita and Panel B on stage-of-development fixed effects (low income, lower-middle income, upper-middle income, high income); both are obtained from the World Development Indicators (World Bank, 2022). Country names are abbreviated as ISO country codes.