CHAPTER 4

The Global Entrepreneurship and Development Index

4.1 Introduction

Over 100 years ago Joseph Schumpeter in the *Theory of Economic Development* pointed out that entrepreneurs are not only important for economic development. Rather, they are the key drivers of economic development, the primus motor of change in economic systems. While Schumpeter was describing countries at a similar level of development, in a globalized world we are interested in countries at different levels of development as well. Over the years, the importance of institutions in economic development has become increasingly clear to economists and policymakers alike.[1] A half-century later we understand better why institutions are important for development and what role they play. Recently, we have learned that institutions are also important because they create the incentive structure that determines the behavior of entrepreneurs. Without positive incentives in society, entrepreneurs will not engage in productive activities.

The modern temple of economic development is like many other temples of the ancient world. It is held up by pillars. The pillars of economic development, like the pillars of ancient temples, are made of durable materials – sand and limestone held together by strong cement. The pillars of modern development are made of individuals and institutions. The cement that holds the pillars together is incentives that are created by institutions that influence the behavior of people. The incentives are created by good institutions. And good institutions need good government. The pillars of development hold up three large building blocks comprising entrepreneurial attitudes, entrepreneurial abilities and entrepreneurial aspirations. Economic development rests on these pillars and the building blocks that they support. The pillars need to be of a similar height and strength for a fully developed economy to flourish. They need constant attention, continuous improvement and careful maintenance.

We developed the Global Entrepreneurship and Development Index (GEDI) to contribute to an understanding of economic development by capturing the essence of entrepreneurship in countries, and to fill a gap in the ability to measure it. The GEDI provides not one, but three distinctive breakthroughs. Theoretically, it advances the concept of National Systems of Entrepreneurship, which in itself represents a radical advance in thinking about entrepreneurship in countries (more about this in Chapter 2). Methodologically, GEDI represents a radical advance in the way indexes are created to

capture dynamics of complex systems (more about this in Chapter 6). Empirically, GEDI provides a harmonized look into the entrepreneurial profiles of 118 nations, thereby offering a new set of data to explore links between national entrepreneurship and economic development. This is what we elaborate on in this chapter.

Empirically, the GEDI offers a new measure of the *quality* and *scale* of the entrepreneurial dynamic in 118 countries. This represents a breakthrough in profiling National Systems of Entrepreneurship. The GEDI captures the contextual feature of entrepreneurship by measuring entrepreneurial attitudes, entrepreneurial abilities and entrepreneurial aspirations. These data and their contribution to the business formation process are supported by three decades of research into entrepreneurship across countries.

In this chapter, we present the Global Entrepreneurship and Development Index. We start by discussing the 14 pillars of entrepreneurship. The country rankings and values are reported in terms of the GEDI and the 14 pillars that support it. We next present the three sub-indexes of attitudes, abilities, and aspirations. Finally, we analyze and compare the different countries and country groups included in the index.

4.2 The 14 pillars of entrepreneurship

Country-level entrepreneurship is a very complex phenomenon. Even at the individual level, the concept remains elusive, although there is general agreement that the concept has multiple dimensions.[2] We take this complexity into account in creating the GEDI. Some businesses have a larger impact on markets, create more new jobs, and grow faster and larger than others. We also recognize that entrepreneurship plays a different role at different stages of economic development. Considering all of these possibilities and limitations, we define entrepreneurship as 'the dynamic, institutionally embedded interaction between entrepreneurial attitudes, entrepreneurial abilities, and entrepreneurial aspirations by individuals, which drives the allocation of resources through the creation and operation of new ventures.'[3]

The GEDI is composed of three building blocks or sub-indexes – the 3As: entrepreneurial attitudes (ATT), entrepreneurial abilities (ABT) and entrepreneurial aspirations (ASP). These three sub-indexes stand on 14 pillars, each of which contains an individual and an institutional variable that corresponds to the micro- and the macro-level aspects of entrepreneurship. Unlike other indexes that incorporate only institutional or individual variables, the pillars of the GEDI include both individual *and* institutional variables. These pillars are an attempt to capture the open-ended nature of entrepreneurship; analyzing them can provide an in-depth view of the strengths and weaknesses of those listed in the Index. We now describe the 14 pillars of entrepreneurship.

The pillars of entrepreneurial attitudes

- Pillar 1: Opportunity Perception This pillar captures 'opportunity perception' levels of a population by considering the size of its country's domestic market and its level of urbanization. A population's opportunity perception potential is an essential ingredient of entrepreneurial startups.[4] Within this pillar is the individual variable Opportunity Recognition, which measures the percentage of the population that identify good opportunities to start a business in the area where they live. However, the value of these opportunities also depends on the size of the market. The Market Agglomeration institutional variable consists of two smaller variables: the size of the domestic market (Domestic Market) and the urbanization (Urbanization) variable. The Urbanization variable captures the notion that opportunities tend to offer better prospects in more developed urban areas than they do in poorer rural areas.[5] Market Agglomeration is determined by multiplying the size of the domestic market by the percentage of the population living in urban areas.
- Pillar 2: Startup Skills Launching a successful venture requires the potential entrepreneur to have the necessary startup skills.[6] Skill Perception measures the percentage of the population who believe they have adequate startup skills. Most people in developing countries think they have the necessary skills to start a business, but their skills are usually acquired through workplace trial and error in relatively simple business activities. In developed countries, business formation, operation, management, and so on, require skills that are acquired through formal education and training. Hence, education, especially postsecondary education (Tertiary Education), plays a vital role in teaching and developing entrepreneurial skills. Today there are 150 million students

enrolled in some kind of education beyond high school, a 53 percent increase in less than a decade.[7] People all over the world see education as a pathway out of poverty.

- Pillar 3: Nonfear of Failure Of the personal entrepreneurial traits, fear of failure is one of the most important obstacles to a startup.[8] Aversion to high-risk enterprises can retard nascent entrepreneurship. Risk Acceptance is defined as the percentage of the population who do not believe that fear of failure would prevent them from starting a business. Business Risk reflects the availability and reliability of corporate financial information, the protection of creditors by law, and the institutional support of inter-company transactions.
- Pillar 4: Networking Networking combines an entrepreneur's personal knowledge with their ability to use the Internet for business purposes. This combination serves as a proxy for networking, which is also an important ingredient of successful venture creation and entrepreneurship. Entrepreneurs who have better networks are more successful, can identify more viable opportunities, and can access more and better resources.[9] We define the basic networking possibility of a potential entrepreneur by the percentage of the population who personally know an entrepreneur who started a business within two years (Know Entrepreneurs). However, connecting through cyberspace with the rest of the world adds another dimension to networking and opens up much greater opportunities than before (Internet Usage).
- Pillar 5: Cultural Support This pillar is a combined measure of how a country's inhabitants view entrepreneurs in terms of status and career choice, and how the level of corruption in that country affects this view. Without strong cultural support, the best and brightest do not want to be responsible entrepreneurs, and they decide to enter a traditional profession.[10] Career Status is the average of the percentage of the population aged 18–64 who say that entrepreneurship is a good career choice and enjoys high status. The associated institutional variable measures the level of Corruption. High levels of corruption can undermine the high status and steady career paths of legitimate entrepreneurs.[11]

The pillars of entrepreneurial abilities

- Pillar 6: Opportunity Startup This is a measure of startups by people who are motivated by opportunity but face regulatory constraints. An entrepreneur's motivation for starting a business is an important signal of quality. Opportunity entrepreneurs are believed to be better prepared, to have superior skills, and to earn more than what we call 'necessity' entrepreneurs. Opportunity Motivation is defined as the percentage of the Total Early-Stage Entrepreneurial Activity (TEA) businesses started to exploit a good opportunity, to increase income, or to fulfill personal aims, in contrast to those started by people who have no other options for work. The institutional variable applied here is business freedom (Economic Freedom),[12] one sub-index of the Index of Economic Freedom. The Economic Freedom variable is appropriate for capturing the overall burden of regulation, as well as the regulatory efficiency of the government in influencing startups and operating businesses.
- Pillar 7: Tech Sector In the modern knowledge economy the information and communication technologies (ICT) play a crucial role in economic development. Not all sectors provide the same chances for businesses to survive and/or their potential for growth.[13] The Technology Level variable is a measure of the businesses that are in technology sectors. The institutional variable, Tech Absorption, is a measure of a country's capacity for firm-level technology absorption, as reported by the World Economic Forum. The diffusion of new technology, as well as the capability to absorb it, is vital for innovative firms with high growth potential.[14]
- Pillar 8: Quality of Human Resources The prevalence of high-quality human capital is vitally important for ventures that are highly innovative and require an educated, experienced and healthy workforce to continue to grow. An important feature of a venture with high growth potential is the entrepreneur's level of education.[15] The Educational Level variable captures the quality of entrepreneurs; it is widely held that entrepreneurs with higher education degrees are more capable and willing to start and manage high-growth businesses. The quality of employees also has an impact on

business development, innovation and growth potential. The institutional variable, Staff Training, is a country's level of investment in business training and employee development. It can be expected that heavy investment in employees pays off and that training increases the quality of the employees.

- Pillar 9: Competition Competition is a measure of the level of a business' product or market uniqueness, combined with the market power of existing businesses and business groups.[16] The variable Competitors is defined as the percentage of TEA businesses that have only a few competitors that offer the same product or service. However, market entry can be prevented or made more difficult if there are powerful business groups dominating the market. The extent of market dominance by a few business groups is measured by the variable Market Dominance, a variable reported by the World Economic Forum.

The pillars of entrepreneurial aspirations

- Pillar 10: Product Innovation New products play a crucial role in the economy of all countries. While for years rich countries were the source of most new products today developing countries are producing products that are dramatically cheaper than their Western equivalents. New Product is a measure of a country's potential to generate new products and to adopt or imitate existing products. In order to quantify the potential for new product innovation, an institutional variable related to technology and innovation transfer seems to be relevant. Technology Transfer is a complex measure of whether a business environment allows the application of innovations for developing new products.
- Pillar 11: Process Innovation Applying and/or creating new technology is another important feature of businesses with high growth potential. New Tech is defined as the percentage of businesses whose principal underlying technology is less than five years old. However, the most entrepreneurial businesses do not just apply new technology, they create it. The problem is similar to the New Product variable: whereas many developing country businesses may apply the latest technology, they tend to buy or copy it. An appropriate institutional variable applied here is research and development (R&D). Gross domestic expenditure on research and development (GERD) is the R&D percentage of gross domestic product (GDP) as reported by the OECD. While R&D alone does not guarantee successful growth, it is clear that without systematic research activity, the development and the implementation of new technologies – and therefore future growth – will be inhibited.[17]
- Pillar 12: High Growth This is a combined measure of the percentage of high-growth businesses that intend to employ at least 10 people and plan to grow more than 50 percent in five years (Gazelle) with business strategy sophistication (Business Strategy).[18] It might be argued that a shortcoming of the Gazelle variable is that growth is not an actual but an expected rate. However, a measure of expected growth is in fact a more appropriate measure of aspiration than a measure of realized growth. Business Strategy refers to 'the ability of companies to pursue distinctive strategies, which involves differentiated positioning and innovative means of production and service delivery'. High growth combines high growth potential with a sophisticated strategy.
- Pillar 13: Internationalization Internationalization is believed to be a major determinant of growth.[19] A widely applied proxy for internationalization is exporting (Export). Exporting demands capabilities beyond those needed by businesses that produce only for domestic markets. However, the institutional dimension is also important: a country's openness to international entrepreneurs – that is, the potential for internationalization – can be estimated by its degree of globalization (Globalization). The internationalization pillar is designed to capture the degree to which a country's entrepreneurs are internationalized, as measured by businesses' exporting potential, controlling for the extent to which the country is economically globalized.
- Pillar 14: Risk Capital The availability of risk finance, particularly equity rather than debt, is an essential precondition for fulfilling entrepreneurial aspirations that are beyond an individual entrepreneur's personal financial resources.[20] Here we combine two kinds of finance, informal investment (Informal Investment) and institutional venture capital (Venture

Capital). Informal Investment is defined as the percentage of informal investors in the population aged 18–64, multiplied by the average size of individuals' investment in other people's new businesses. While the rate of informal investment is high in factor-driven economies, the amount of informal investment is considerably larger in efficiency- and innovation-driven countries; combining them balances these two effects. Our institutional variable here is Venture Capital, which is a measure of available national venture capital, as reported by the World Economic Forum.

4.3 The Global Entrepreneurship and Development Index, 2013 edition rankings

We present the rankings of the 2013 edition of GEDI in terms of country development, as measured by the GDP per capita. We also report the average bottleneck efficiency (ABE) country values. Average bottleneck efficiency is a kind of efficiency indicator measuring how close a country's pillars, to a country's best performing pillar, on average. Higher ABE values imply more balanced performance while lower ABE values mean substantial imbalances over the 14 pillars of the GEDI.[21]

The overall rank of the countries on the GEDI is shown in Table 4.1. Similar to previous years, Anglo-Saxon, European and Nordic countries in the innovation-driven stage of development are in the front ranks. The United States, Sweden, and Denmark lead the ranking. Four of the five Nordic countries, Denmark, Sweden, Iceland and Norway, are in the top 10, and Finland is 16th–17th – still a good performance. Taiwan, the best Asian country is 9th–10th place and Singapore is 11th–13th, a respectable position. Besides their high entrepreneurial performances these countries also represent high efficiency according to their over 60 percent ABE values. The only exception is Taiwan, its 13 GEDI pillars, on average, only 55 percent of the value of its best performing pillar (Product Innovation).

The United States is in the first place. Australia, Canada, Netherlands and Switzerland are all good performers, but they have weaknesses in at least one of the sub-indexes. The most populous EU countries are in the middle ranks: France is 11th–13th, the UK is 14th, Germany is 15th and Spain is 27th, followed by Italy in 37th–43rd place. While France and Germany are relatively well balanced over the 14 pillars, according to their high ABE values, the UK, Spain and Italy are entrepreneurially less efficient. A likely explanation for the EU countries' relatively weak economic performance over the last decade is low levels of entrepreneurship; the same applies to Japan, which took 34th–36th place. Factor-driven countries with low GDPs, such as Philippines, Pakistan, Uganda, most poor African countries and Bangladesh, are on the bottom of the entrepreneurship ranking, as expected. At the same time, these countries' entrepreneurial performance is the least unbalanced implying a low efficiency with about 20–30 percent of ABE values. However, some countries, like two former socialist countries, Serbia, Russia, and two South American countries, Trinidad and Tobago as well as Brazil, should have higher level of entrepreneurship, as implied by their development trend line.

4.4 The ranking of the 3As

By definition, the GEDI is a three-component index that takes into account the different aspects of entrepreneurship. However, all three components, called sub-indexes, are complex measures themselves that include various characteristics of entrepreneurial attitudes, entrepreneurial abilities and entrepreneurial aspirations.

Entrepreneurial attitudes are societies' attitudes towards entrepreneurship – defined as a population's general feelings about recognizing opportunities, knowing entrepreneurs personally, endowing entrepreneurs with high status, accepting the risks associated with business startups and having the skills to launch businesses successfully. The benchmark individuals are those who can recognize valuable business opportunities and have the skills to exploit them; who attach high status to entrepreneurs; who can bear and handle startup risks; who know those entrepreneurs personally (i.e., have a network or role models); and who can generate future entrepreneurial activities. Moreover, these people can provide the cultural support, financial resources and networking potential to those who are already entrepreneurs or want to start a business. Entrepreneurial attitudes are important because they express the general feeling of the population towards entrepreneurs and entrepreneurship. Countries need people who can recognize valuable business opportunities, and who perceive they have the required skills to exploit these opportunities. Moreover, if national attitudes towards entrepreneurship are positive, this will generate cultural support, financial support and networking benefits to those who want to start a business.

Table 4.1 The Global Entrepreneurship and Development Index rank and the average bottleneck efficiency of the countries, 2013 edition

Rank	Country	GDP*	GEDI	ABE**	Rank	Country	GDP*	GEDI	ABE**
1	United States	47,184	0.67	66.96	58–63	Panama	13,877	0.26	46.59
2–3	Sweden	38,947	0.63	70.68	58–63	Botswana	13,786	0.26	40.48
2–3	Denmark	39,558	0.63	65.36	58–63	Mexico	14,566	0.26	38.31
4	Australia	39,407	0.62	73.00	58–63	Brunei	49,494	0.26	41.96
5	Canada	38,915	0.59	62.44	64–65	Thailand	8,490	0.24	44.92
6	Netherlands	42,475	0.58	60.87	64–65	Jordan	5,706	0.24	51.98
7	Iceland	34,949	0.57	63.05	66–69	Costa Rica	11,351	0.23	41.42
8	Switzerland	46,215	0.56	64.89	66–69	Namibia	6,426	0.23	44.95
9–10	Taiwan	37,931	0.55	55.05	66–69	Dominican Republic	9,280	0.23	51.70
9–10	Norway	56,894	0.55	62.80	66–69	Russia	19,840	0.23	27.82
11–13	France	33,820	0.53	65.75	70–74	Trinidad and Tobago	25,539	0.22	37.95
11–13	Belgium	37,448	0.53	69.18	70–74	Albania	8,817	0.22	53.13
11–13	Singapore	57,505	0.53	63.81	70–74	Brazil	11,127	0.22	29.20
14	United Kingdom	35,860	0.52	56.02	70–74	Moldova	3,087	0.22	41.83
15	Germany	37,591	0.51	68.27	70–74	Morocco	4,668	0.22	40.90
16–17	Finland	36,660	0.50	60.02	75–79	Jamaica	7,839	0.21	50.55
16–17	Ireland	39,727	0.50	66.44	75–79	Indonesia	4,293	0.21	44.51
18–19	Puerto Rico	16,300	0.49	58.16	75–79	Kazakhstan	12,050	0.21	40.36
18–19	Austria	39,698	0.49	60.63	75–79	Nigeria	2,363	0.21	32.54
20	Israel	28,546	0.47	53.12	75–79	Ukraine	6,658	0.21	35.82
21–22	Chile	15,044	0.45	63.09	80–81	Serbia	11,488	0.20	30.85
21–22	Qatar	80,229	0.45	54.64	80–81	Syria	5,248	0.20	35.89
23	Slovenia	27,556	0.43	57.14	82–84	Paraguay	5,152	0.19	37.55
24	United Arab Emirates	38,089	0.42	54.43	82–84	Egypt	6,281	0.19	59.50
25	Estonia	20,033	0.41	63.44	82–84	Bolivia	4,816	0.19	34.10
26	Czech Republic	25,299	0.40	61.77	85–90	Ecuador	8,105	0.18	30.11
27	Spain	32,070	0.39	58.33	85–90	Iran	11,467	0.18	40.58
28–29	Bahrain	25,799	0.38	62.35	85–90	Venezuela	11,956	0.18	17.75
28–29	Saudi Arabia	22,545	0.38	43.76	85–90	Bosnia and Herzegovina	8,750	0.18	54.99
30–32	Oman	26,554	0.37	60.06	85–90	India	3,586	0.18	44.71
30–32	Lithuania	18,184	0.37	49.63	85–90	Algeria	8,322	0.18	36.00
30–32	Poland	19,747	0.37	58.14	91–92	Philippines	3,940	0.17	30.50
33	Slovakia	23,897	0.36	43.80	91–92	El Salvador	6,692	0.17	44.99
34–36	Hungary	20,307	0.35	67.26	93–95	Ghana	1,625	0.16	36.02
34–36	Japan	33,994	0.35	47.49	93–95	Swaziland	5,033	0.16	41.66
34–36	Latvia	16,312	0.35	57.14	93–95	Senegal	1,917	0.16	36.48
37–43	Italy	31,555	0.34	49.79	96–98	Zambia	1,550	0.15	43.28
37–43	Hong Kong	46,157	0.34	47.63	96–98	Honduras	3,890	0.15	37.86
37–43	Uruguay	14,277	0.34	46.20	96–98	Kenya	1,635	0.15	38.53
37–43	Portugal	25,573	0.34	53.40	99–104	Cameroon	2,264	0.14	29.27
37–43	Croatia	19,516	0.34	55.71	99–104	Angola	6,035	0.14	28.65
37–43	Cyprus	30,728	0.34	45.43	99–104	Guatemala	4,740	0.14	24.40

Table 4.1 (continued)

Rank	Country	GDP*	GEDI	ABE**	Rank	Country	GDP*	GEDI	ABE**
37–43	Korea	29,004	0.34	54.29	99–104	Benin	1,576	0.14	29.22
44	Kuwait	52,657	0.33	39.96	99–104	Rwanda	1,155	0.14	32.45
45–46	Turkey	15,340	0.32	49.89	99–104	Pakistan	2,674	0.14	36.49
45–46	Montenegro	12,676	0.32	41.41	105–106	Gambia	1,400	0.13	29.66
47–49	Greece	28,154	0.31	37.61	105–106	Tanzania	1,423	0.13	37.37
47–49	Colombia	9,392	0.31	40.55	107–110	Uganda	1,263	0.12	40.76
47–49	Bulgaria	13,780	0.31	46.77	107–110	Madagascar	961	0.12	29.95
50–51	Romania	14,287	0.30	48.13	107–110	Mali	1,057	0.12	37.01
50–51	Barbados	19,252	0.30	35.98	107–110	Côte d'Ivoire	1,885	0.12	30.77
52–53	Peru	9,470	0.29	43.45	111–113	Malawi	876	0.11	35.29
52–53	South Africa	10,486	0.29	47.80	111–113	Belize	6,566	0.11	22.58
54	Lebanon	13,948	0.28	37.85	111–113	Burkina Faso	1,247	0.11	34.08
55–57	Tunisia	8,524	0.27	46.96	114–115	Ethiopia	1,033	0.10	28.40
55–57	Malaysia	14,591	0.27	39.77	114–115	Mauritania	1,930	0.10	43.17
55–57	Macedonia	11,072	0.27	58.23	116	Bangladesh	1,643	0.09	14.19
58–63	Argentina	15,893	0.26	33.70	117	Burundi	405	0.08	18.14
58–63	China	7,536	0.26	41.95	118	Chad	1,360	0.07	22.32

Notes: * Per capita GDP in PPP, international dollar, World Bank (Hong Kong is from IMF and Puerto Rico is from CIA).
**ABE = the average bottleneck efficiency measures the average percentage deviation between the country's best pillar and the other 13 pillars.

Entrepreneurial abilities refers to the entrepreneurs' and their businesses' characteristics. Within the realm of new business effort, different types of entrepreneurial abilities can be distinguished. Business creation may vary by industry sector, the legal form of organization, and demographics – age, gender, education. We define entrepreneurial abilities as startups in the medium- or high-technology sector, initiated by educated entrepreneurs, and launched because of opportunity motivation in an environment that is not overly competitive. In order to calculate the opportunity startup rate, we use the GEM Total Entrepreneurial Activity Opportunity Index. The TEA captures new startups not only as the creation of new ventures, but also as startups within existing businesses, such as a spin-off or other entrepreneurial efforts. Differences in the quality of startups are quantified by the education level of the entrepreneur – that is, if he or she has a postsecondary education – and the uniqueness of the product or service as measured by the level of competition. Moreover, it is generally maintained that opportunity motivation is a sign of better planning, a more sophisticated strategy, and higher growth expectations than 'necessity startups'.

Entrepreneurial aspirations reflects the quality aspects of startups and new businesses. Some people just hate their boss and want to be their own boss, while others want to create the next Microsoft. Entrepreneurial aspirations are defined as the early-stage entrepreneur's effort to introduce new products and/or services, develop new production processes, penetrate foreign markets, substantially increase their company's number of employees, and finance the business with formal and/or informal venture capital. Product and process innovation, internationalization and high growth are considered the key characteristics of entrepreneurship. Here we added a finance variable to capture the informal and formal venture capital potential that is vital for innovative startups and high-growth firms.

These three building blocks of entrepreneurship influence one another and each one influences the other two. For example, entrepreneurial attitudes influence entrepreneurial abilities and entrepreneurial aspirations. However, entrepreneurial aspirations and entrepreneurial abilities also influence entrepreneurial attitudes.

Table 4.2 shows the rank of each country in the GEDI and the rank of the sub-index for all 118 countries. For example, the United States ranks 1st in the overall index, 2nd in attitudes, 3rd in abilities and 32nd in aspirations. The United States

Table 4.2 The Global Entrepreneurship and Development sub-index rank of the countries, 2013 edition

Country	GEDI	GEDI Rank	ATTINDEX	ATT Rank	ABTINDEX	ABT Rank	ASPINDEX	ASP Rank
United States	0.67	1	0.70	2	0.71	3	0.59	2
Sweden	0.63	2–3	0.73	1	0.64	6	0.53	5–7
Denmark	0.63	2–3	0.63	7–8	0.73	1	0.53	5–7
Australia	0.62	4	0.64	5–6	0.72	2	0.49	9–10
Canada	0.59	5	0.66	3–4	0.66	4	0.44	16–17
Netherlands	0.58	6	0.66	3–4	0.60	10	0.47	12–14
Iceland	0.57	7	0.60	9	0.59	11	0.51	8
Switzerland	0.56	8	0.58	10	0.58	12–14	0.53	5–7
Taiwan	0.55	9–10	0.49	17	0.54	17	0.63	1
Norway	0.55	9–10	0.64	5–6	0.56	16	0.47	12–14
France	0.53	11–13	0.56	12–13	0.57	15	0.47	12–14
Belgium	0.53	11–13	0.53	15	0.61	8–9	0.44	16–17
Singapore	0.53	11–13	0.43	27–29	0.58	12–14	0.56	3
United Kingdom	0.52	14	0.54	14	0.65	5	0.35	32
Germany	0.51	15	0.50	16	0.61	8–9	0.41	20–23
Finland	0.50	16–17	0.63	7–8	0.49	18	0.37	27–30
Ireland	0.50	16–17	0.48	18–20	0.58	12–14	0.43	18
Puerto Rico	0.49	18–19	0.47	21	0.62	7	0.37	27–30
Austria	0.49	18–19	0.57	11	0.47	20–21	0.42	19
Israel	0.47	20	0.48	18–20	0.40	27–30	0.54	4
Chile	0.45	21–22	0.56	12–13	0.39	31	0.41	20–23
Qatar	0.45	21–22	0.48	18–20	0.38	32–34	0.48	11
Slovenia	0.43	23	0.46	22–24	0.47	20–21	0.36	31
United Arab Emirates	0.42	24	0.39	33–37	0.40	27–30	0.46	15
Estonia	0.41	25	0.39	33–37	0.43	23	0.39	24–25
Czech Republic	0.40	26	0.35	46–54	0.35	38–39	0.49	9–10
Spain	0.39	27	0.46	22–24	0.48	19	0.23	55
Bahrain	0.38	28–29	0.40	31–32	0.38	32–34	0.38	26
Saudi Arabia	0.38	28–29	0.44	25–26	0.37	35–36	0.34	33–35
Oman	0.37	30–32	0.39	33–37	0.33	41–42	0.39	24–25
Lithuania	0.37	30–32	0.35	46–54	0.41	25–26	0.33	36–38
Poland	0.37	30–32	0.43	27–29	0.30	46–55	0.37	27–30
Slovakia	0.36	33	0.41	30	0.27	59–63	0.41	20–23
Hungary	0.35	34–36	0.35	46–54	0.42	24	0.29	43–47
Japan	0.35	34–36	0.27	71–75	0.45	22	0.33	36–38
Latvia	0.35	34–36	0.35	46–54	0.37	35–36	0.33	36–38
Italy	0.34	37–43	0.37	40–41	0.40	27–30	0.26	49–52
Hong Kong	0.34	37–43	0.35	46–54	0.27	59–63	0.41	20–23
Uruguay	0.34	37–43	0.46	22–24	0.30	46–55	0.26	49–52
Portugal	0.34	37–43	0.38	38–39	0.36	37	0.29	43–47
Croatia	0.34	37–43	0.31	60–63	0.40	27–30	0.31	39–41
Cyprus	0.34	37–43	0.31	60–63	0.41	25–26	0.29	43–47
Korea	0.34	37–43	0.39	33–37	0.27	59–63	0.34	33–35

Table 4.2 (continued)

Country	GEDI	GEDI Rank	ATTINDEX	ATT Rank	ABTINDEX	ABT Rank	ASPINDEX	ASP Rank
Kuwait	0.33	44	0.43	27–29	0.27	59–63	0.29	43–47
Turkey	0.32	45–46	0.35	46–54	0.28	56–58	0.34	33–35
Montenegro	0.32	45–46	0.33	55–57	0.26	64–67	0.37	27–30
Greece	0.31	47–49	0.31	60–63	0.38	32–34	0.26	49–52
Colombia	0.31	47–49	0.39	33–37	0.31	44–45	0.24	53–54
Bulgaria	0.31	47–49	0.35	46–54	0.26	64–67	0.31	39–41
Romania	0.30	50–51	0.29	64–66	0.33	41–42	0.29	43–47
Barbados	0.30	50–51	0.44	25–26	0.32	43	0.13	80–83
Peru	0.29	52–53	0.38	38–39	0.30	46–55	0.19	59–60
South Africa	0.29	52–53	0.28	67–70	0.28	56–58	0.30	42
Lebanon	0.28	54	0.36	42–45	0.27	59–63	0.20	56–58
Tunisia	0.27	55–57	0.36	42–45	0.30	46–55	0.15	69–72
Malaysia	0.27	55–57	0.32	58–59	0.35	38–39	0.14	73–79
Macedonia	0.27	55–57	0.28	67–70	0.26	64–67	0.26	49–52
Argentina	0.26	58–63	0.40	31–32	0.24	69	0.16	66–68
China	0.26	58–63	0.31	60–63	0.17	92–99	0.31	39–41
Panama	0.26	58–63	0.36	42–45	0.30	46–55	0.13	80–83
Botswana	0.26	58–63	0.28	67–70	0.23	70–71	0.27	48
Mexico	0.26	58–63	0.33	55–57	0.30	46–55	0.14	73–79
Brunei	0.26	58–63	0.26	76–80	0.34	40	0.18	61–64
Thailand	0.24	64–65	0.24	83–84	0.31	44–45	0.18	61–64
Jordan	0.24	64–65	0.35	46–54	0.19	82–86	0.18	61–64
Costa Rica	0.23	66–69	0.35	46–54	0.20	78–81	0.14	73–79
Namibia	0.23	66–69	0.21	90	0.23	70–71	0.24	53–54
Dominican Republic	0.23	66–69	0.33	55–57	0.19	82–86	0.15	69–72
Russia	0.23	66–69	0.24	83–84	0.30	46–55	0.13	80–83
Trinidad and Tobago	0.22	70–74	0.27	71–75	0.30	46–55	0.10	91–94
Albania	0.22	70–74	0.19	92–94	0.28	56–58	0.20	56–58
Brazil	0.22	70–74	0.37	40–41	0.22	72–74	0.07	104–109
Moldova	0.22	70–74	0.17	97–98	0.30	46–55	0.19	59–60
Morocco	0.22	70–74	0.32	58–59	0.18	87–91	0.15	69–72
Jamaica	0.21	75–79	0.27	71–75	0.25	68	0.12	84–87
Indonesia	0.21	75–79	0.18	95–96	0.30	46–55	0.15	69–72
Kazakhstan	0.21	75–79	0.27	71–75	0.26	64–67	0.10	91–94
Nigeria	0.21	75–79	0.26	76–80	0.22	72–74	0.14	73–79
Ukraine	0.21	75–79	0.27	71–75	0.22	72–74	0.12	84–87
Serbia	0.20	80–81	0.29	64–66	0.16	100–103	0.16	66–68
Syria	0.20	80–81	0.22	87–89	0.18	87–91	0.18	61–64
Paraguay	0.19	82–84	0.23	85–86	0.21	75–77	0.12	84–87
Egypt	0.19	82–84	0.26	76–80	0.15	104–108	0.14	73–79
Bolivia	0.19	82–84	0.25	81–82	0.20	78–81	0.11	88–90
Ecuador	0.18	85–90	0.28	67–70	0.16	100–103	0.11	88–90
Iran	0.18	85–90	0.22	87–89	0.18	87–91	0.14	73–79

Table 4.2 (continued)

Country	GEDI	GEDI Rank	ATTINDEX	ATT Rank	ABTINDEX	ABT Rank	ASPINDEX	ASP Rank
Venezuela	0.18	85–90	0.36	42–45	0.13	110–115	0.05	115–117
Bosnia and Herzegovina	0.18	85–90	0.20	91	0.18	87–91	0.16	66–68
India	0.18	85–90	0.22	87–89	0.21	75–77	0.10	91–94
Algeria	0.18	85–90	0.26	76–80	0.13	110–115	0.14	73–79
Philippines	0.17	91–92	0.29	64–66	0.17	92–99	0.06	110–114
El Salvador	0.17	91–92	0.25	81–82	0.19	82–86	0.08	100–103
Ghana	0.16	93–95	0.26	76–80	0.16	100–103	0.07	104–109
Swaziland	0.16	93–95	0.09	112–116	0.20	78–81	0.20	56–58
Senegal	0.16	93–95	0.23	85–86	0.17	92–99	0.09	95–99
Zambia	0.15	96–98	0.15	100–103	0.21	75–77	0.10	91–94
Honduras	0.15	96–98	0.17	97–98	0.20	78–81	0.09	95–99
Kenya	0.15	96–98	0.18	95–96	0.18	87–91	0.09	95–99
Cameroon	0.14	99–104	0.19	92–94	0.16	100–103	0.09	95–99
Angola	0.14	99–104	0.14	104–107	0.11	116–117	0.17	65
Guatemala	0.14	99–104	0.19	92–94	0.15	104–108	0.07	104–109
Benin	0.14	99–104	0.15	100–103	0.17	92–99	0.09	95–99
Rwanda	0.14	99–104	0.15	100–103	0.19	82–86	0.07	104–109
Pakistan	0.14	99–104	0.11	110–111	0.17	92–99	0.13	80–83
Gambia	0.13	105–106	0.14	104–107	0.19	82–86	0.08	100–103
Tanzania	0.13	105–106	0.15	100–103	0.14	109	0.08	100–103
Uganda	0.12	107–110	0.14	104–107	0.13	110–115	0.11	88–90
Madagascar	0.12	107–110	0.13	108	0.17	92–99	0.07	104–109
Mali	0.12	107–110	0.14	104–107	0.15	104–108	0.07	104–109
Côte d'Ivoire	0.12	107–110	0.16	99	0.13	110–115	0.06	110–114
Malawi	0.11	111–113	0.09	112–116	0.13	110–115	0.12	84–87
Belize	0.11	111–113	0.11	110–111	0.17	92–99	0.05	115–117
Burkina Faso	0.11	111–113	0.12	109	0.15	104–108	0.06	110–114
Ethiopia	0.10	114–115	0.09	112–116	0.15	104–108	0.06	110–114
Mauritania	0.10	114–115	0.09	112–116	0.11	116–117	0.08	100–103
Bangladesh	0.09	116	0.09	112–116	0.17	92–99	0.02	118
Burundi	0.08	117	0.04	118	0.13	110–115	0.05	115–117
Chad	0.07	118	0.06	117	0.09	118	0.06	110–114

is more interested in high-impact entrepreneurship than in replicative activities. However, it was surpassed in attitudes by Sweden, in abilities by Denmark and Australia and in aspirations by Taiwan. Japan represents a more unbalanced case, ranking 34th–36th in the overall index, 71st–75th in attitude, 22nd in abilities and 36th–38th in aspiration. Generally, countries at the bottom rank in also in the bottom with respect to all the three sub-indexes. Note that a small difference at the end may contribute to big differences in ranking.

Figure 4.1 shows the relationship between the GEDI, the three sub-indexes, and national wealth per capita, based on purchasing power parity (PPP) GDP. In all the figures, we provide the associated trend line and R^2 values. All the trend lines are based on third-degree polynomial equations.

For example, the overall index shows a good fit and a positive relationship between development and entrepreneurship. The two move in the same direction, with an $R^2 = 0.79$, which implies a close, strong relationship between

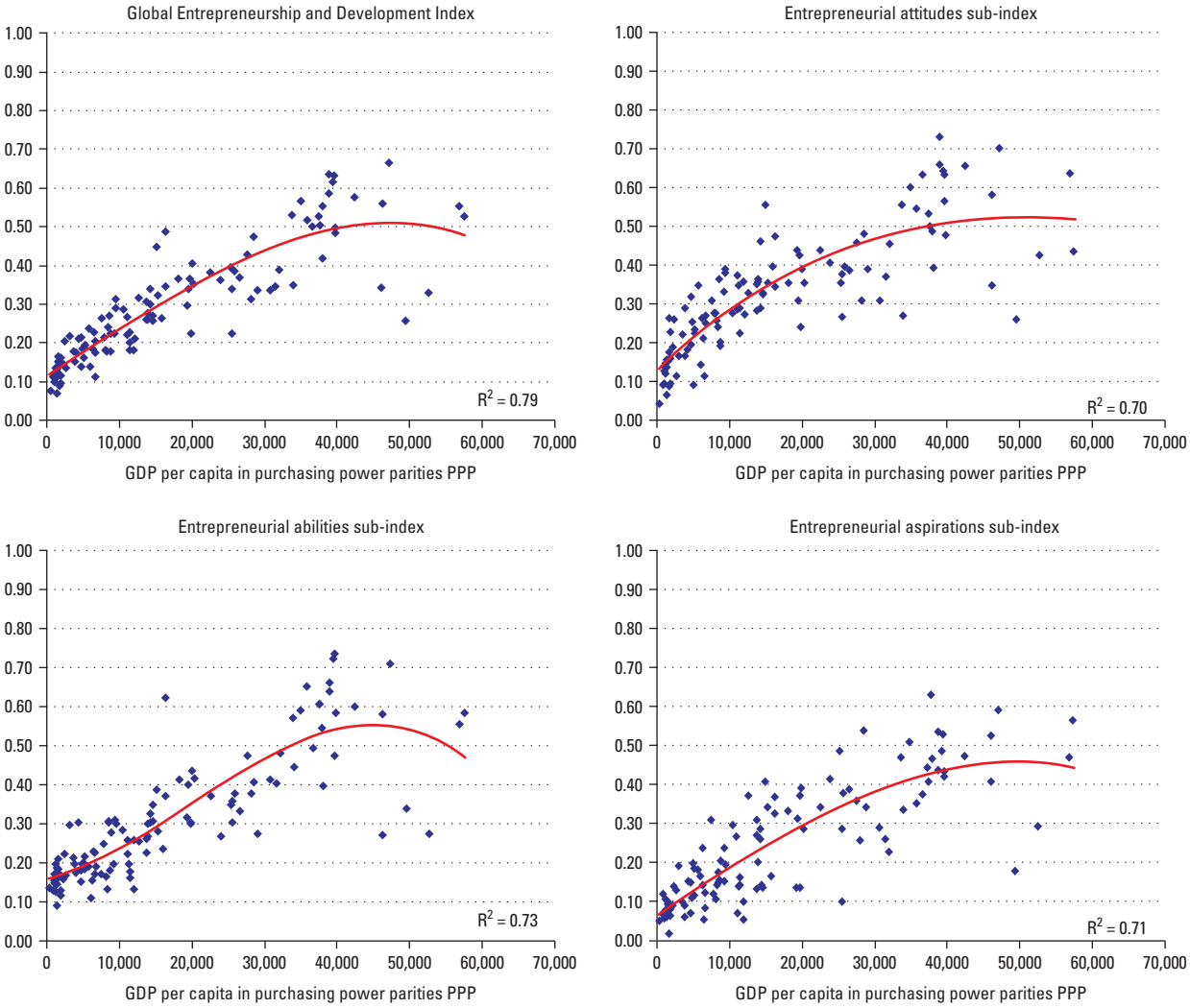


Figure 4.1 The three sub-indexes in terms of per capita real GDP 2013

entrepreneurship and economic development. Unlike other entrepreneurship measures that find an 'L' shape (self-employment rate) or a 'U' shape (TEA Index) relationship between entrepreneurship and development, we find a mild 'S'-shaped relationship.

The relationship between the entrepreneurial attitudes sub-index (ATT) and development is shown in the right-hand figure. The relationship is similar to the logarithmic function, implying that the overall entrepreneurship attitude increases as the country develops. The explanatory power, based on the $R^2 = 0.70$, shows a significant, strong correlation between ATT and per capita GDP.

The lower-left figure contains the entrepreneurial abilities sub-index (ABT) values in terms of economic development. Its shape is almost linear except the upper part that has a downward sloping curve. The reason of this trend is associated with three outliers Brunei, Hong Kong, and Kuwait that are rich Asian countries with relatively low entrepreneurial abilities. The explanatory power, $R^2 = 0.73$, is the highest among the three sub-indexes, implying a close and strong relationship between entrepreneurial abilities and development.

The close to linear trend of the entrepreneurial aspirations sub-index (ASP) is probably no surprise. The explanatory power of $R^2 = 0.71$ is significant and strong.

Tables 4.3–4.5 list the ranks and the 14 pillar values for the three sub-indexes. Each table gives the pillar values for each of the pillars that make up the respective index.

As stated earlier, entrepreneurial attitude is defined as the general attitude of a country's population toward recognizing opportunities, knowing entrepreneurs personally, attaching high status to entrepreneurs, accepting the risk associated with a business startup, and having the skills required to successfully launch businesses. Entrepreneurial attitudes are important because

Table 4.3 Entrepreneurial attitudes index and pillar values, 2013 edition*

Country	ATTINDEX	Opportunity Perception	Startup Skills	Nonfear of Failure	Networking	Cultural Support
Sweden	0.73	0.88	0.53	0.83	0.93	0.84
United States	0.70	0.69	1.00	0.85	0.47	0.70
Canada	0.66	0.64	0.61	1.00	0.57	0.93
Netherlands	0.66	0.62	0.50	0.90	0.75	1.00
Australia	0.64	0.71	0.69	0.78	0.52	0.76
Norway	0.64	0.62	0.49	0.86	0.83	0.81
Denmark	0.63	0.54	0.50	0.80	0.76	0.82
Finland	0.63	0.47	0.64	0.86	0.90	0.88
Iceland	0.60	0.28	0.66	0.84	0.95	0.66
Switzerland	0.58	0.42	0.39	0.88	0.58	0.90
Austria	0.57	0.49	0.57	0.84	0.70	0.56
Chile	0.56	0.77	0.68	0.79	0.45	0.77
France	0.56	0.50	0.37	0.73	0.84	0.62
United Kingdom	0.54	0.53	0.50	0.74	0.65	0.69
Belgium	0.53	0.59	0.54	0.80	0.42	0.53
Germany	0.50	0.45	0.32	0.67	0.52	0.73
Taiwan	0.49	0.38	0.41	0.63	0.59	0.47
Qatar	0.48	0.70	0.11	0.51	0.73	0.91
Israel	0.48	0.43	0.46	0.61	0.55	0.54
Ireland	0.48	0.15	0.52	0.78	0.59	0.74
Puerto Rico	0.47	0.37	0.80	0.79	0.39	0.53
Uruguay	0.46	0.48	0.77	0.46	0.42	0.56
Slovenia	0.46	0.08	0.85	0.70	0.69	0.52
Spain	0.46	0.21	0.67	0.66	0.46	0.51
Saudi Arabia	0.44	1.00	0.46	0.30	0.43	0.56
Barbados	0.44	0.07	0.80	0.90	0.45	0.67
Singapore	0.43	0.27	0.27	0.79	0.26	0.77
Poland	0.43	0.31	0.67	0.48	0.56	0.46
Kuwait	0.43	0.90	0.23	0.56	0.40	0.53
Slovakia	0.41	0.13	0.52	0.60	0.88	0.27
Bahrain	0.40	0.41	0.61	0.39	0.49	0.51
Argentina	0.40	0.80	0.82	0.36	0.31	0.18
United Arab Emirates	0.39	0.46	0.24	0.46	0.56	0.62
Colombia	0.39	0.83	0.44	0.48	0.30	0.33
Estonia	0.39	0.11	0.48	0.59	0.53	0.52
Korea	0.39	0.15	0.49	0.69	0.55	0.45
Oman	0.39	0.46	0.28	0.39	0.55	0.57
Peru	0.38	0.72	0.47	0.30	0.47	0.32
Portugal	0.38	0.13	0.55	0.60	0.33	0.55
Brazil	0.37	0.76	0.35	0.44	0.38	0.35
Italy	0.37	0.29	0.50	0.60	0.37	0.29
Lebanon	0.36	0.54	0.75	0.38	0.32	0.18

Table 4.3 (continued)

Country	ATTINDEX	Opportunity Perception	Startup Skills	Nonfear of Failure	Networking	Cultural Support
Tunisia	0.36	0.28	0.32	0.53	0.48	0.51
Panama	0.36	0.34	0.52	0.61	0.42	0.26
Venezuela	0.36	0.68	0.95	0.24	0.34	0.10
Hungary	0.35	0.18	0.46	0.57	0.46	0.36
Lithuania	0.35	0.14	0.49	0.55	0.40	0.36
Turkey	0.35	0.39	0.40	0.50	0.27	0.39
Czech Republic	0.35	0.22	0.43	0.66	0.37	0.21
Bulgaria	0.35	0.25	0.53	0.39	0.50	0.27
Jordan	0.35	0.33	0.43	0.42	0.36	0.50
Hong Kong	0.35	0.18	0.20	0.77	0.47	0.56
Costa Rica	0.35	0.29	0.32	0.60	0.49	0.41
Latvia	0.35	0.14	0.53	0.51	0.56	0.28
Dominican Republic	0.33	0.40	0.48	0.33	0.46	0.29
Montenegro	0.33	0.10	0.62	0.16	0.72	0.30
Mexico	0.33	0.70	0.30	0.46	0.36	0.15
Malaysia	0.32	0.39	0.19	0.51	0.58	0.26
Morocco	0.32	0.36	0.16	0.53	0.53	0.33
Greece	0.31	0.09	0.83	0.29	0.36	0.23
Croatia	0.31	0.10	0.45	0.51	0.41	0.23
China	0.31	0.42	0.19	0.33	0.50	0.27
Cyprus	0.31	0.04	0.48	0.29	0.43	0.55
Romania	0.29	0.18	0.46	0.37	0.31	0.25
Serbia	0.29	0.15	0.64	0.21	0.47	0.20
Philippines	0.29	0.57	0.37	0.30	0.29	0.17
Macedonia	0.28	0.17	0.43	0.18	0.49	0.31
Botswana	0.28	0.29	0.06	0.66	0.06	0.59
South Africa	0.28	0.38	0.11	0.66	0.09	0.41
Ecuador	0.28	0.40	0.59	0.19	0.27	0.16
Jamaica	0.27	0.23	0.41	0.34	0.30	0.30
Kazakhstan	0.27	0.40	0.30	0.22	0.39	0.25
Japan	0.27	0.05	0.14	0.76	0.28	0.37
Ukraine	0.27	0.37	0.49	0.14	0.44	0.13
Trinidad and Tobago	0.27	0.03	0.17	0.61	0.47	0.33
Ghana	0.26	0.42	0.11	0.46	0.11	0.47
Egypt	0.26	0.24	0.32	0.32	0.28	0.27
Brunei	0.26	0.13	0.07	0.65	0.35	0.37
Nigeria	0.26	0.63	0.14	0.07	0.55	0.16
Algeria	0.26	0.50	0.33	0.30	0.13	0.23
Bolivia	0.25	0.34	0.53	0.21	0.22	0.13
El Salvador	0.25	0.32	0.27	0.40	0.16	0.27
Thailand	0.24	0.19	0.37	0.33	0.14	0.30
Russia	0.24	0.31	0.38	0.28	0.35	0.05

Table 4.3 (continued)

Country	ATTINDEX	Opportunity Perception	Startup Skills	Nonfear of Failure	Networking	Cultural Support
Paraguay	0.23	0.33	0.50	0.19	0.22	0.10
Senegal	0.23	0.29	0.10	0.44	0.23	0.23
Iran	0.22	0.41	0.43	0.20	0.11	0.09
Syria	0.22	0.34	0.30	0.25	0.14	0.21
India	0.22	0.34	0.16	0.38	0.09	0.25
Namibia	0.21	0.13	0.08	0.52	0.07	0.40
Bosnia and Herzegovina	0.20	0.06	0.31	0.18	0.34	0.25
Guatemala	0.19	0.31	0.22	0.21	0.11	0.22
Albania	0.19	0.08	0.17	0.18	0.36	0.24
Cameroon	0.19	0.46	0.15	0.25	0.05	0.15
Indonesia	0.18	0.37	0.23	0.18	0.11	0.10
Kenya	0.18	0.17	0.04	0.27	0.38	0.12
Honduras	0.17	0.22	0.22	0.24	0.11	0.12
Moldova	0.17	0.04	0.22	0.16	0.32	0.15
Côte d'Ivoire	0.16	0.36	0.11	0.27	0.03	0.13
Tanzania	0.15	0.20	0.01	0.27	0.15	0.21
Zambia	0.15	0.21	0.01	0.27	0.15	0.19
Benin	0.15	0.24	0.07	0.25	0.04	0.24
Rwanda	0.15	0.07	0.06	0.10	0.19	0.39
Angola	0.14	0.47	0.04	0.07	0.15	0.07
Mali	0.14	0.18	0.07	0.27	0.03	0.21
Uganda	0.14	0.07	0.05	0.24	0.19	0.19
Gambia	0.14	0.19	0.05	0.10	0.13	0.28
Madagascar	0.13	0.18	0.04	0.27	0.01	0.19
Burkina Faso	0.12	0.10	0.03	0.27	0.01	0.26
Belize	0.11	0.08	0.26	0.07	0.15	0.05
Pakistan	0.11	0.24	0.03	0.07	0.15	0.12
Mauritania	0.09	0.17	0.04	0.10	0.03	0.15
Ethiopia	0.09	0.14	0.06	0.10	0.00	0.21
Malawi	0.09	0.08	0.00	0.10	0.02	0.31
Swaziland	0.09	0.04	0.03	0.07	0.09	0.24
Bangladesh	0.09	0.24	0.03	0.00	0.02	0.18
Chad	0.06	0.15	0.01	0.10	0.01	0.06
Burundi	0.04	0.00	0.03	0.10	0.02	0.07

Notes: *Pillar values are the normalized pillar scores. Adult-population data was collected in mid-2011.

they express the general feelings of the population toward entrepreneurs and entrepreneurship.

The benchmark individuals are those who can (1) recognize valuable business opportunities, (2) have the necessary skills to exploit these opportunities, (3) attach high status and respect to entrepreneurs, (4) handle startup risk, and (5) know entrepreneurs personally (i.e., have a network or role models). Moreover, these people can provide the cultural support, financial resources, and networking potential to those who are already entrepreneurs or want to start a business. Sweden leads the entrepreneurial attitudes sub-index, (Table 4.3) followed by the United States, Canada, the Netherlands, Australia, Norway, Denmark, Finland, Iceland and

Table 4.4 Entrepreneurial abilities index and pillar values, 2013 edition

Country	ABTINDEX	Opportunity Startup	Tech Sector	Quality of Human Resources	Competition
Denmark	0.73	0.90	0.60	0.79	1.00
Australia	0.72	0.80	0.87	0.83	0.69
United States	0.71	0.67	0.56	0.87	0.89
Canada	0.66	0.90	0.62	0.93	0.56
United Kingdom	0.65	0.82	0.69	0.65	0.98
Sweden	0.64	0.90	0.56	0.58	0.68
Puerto Rico	0.62	0.70	0.69	0.93	0.89
Germany	0.61	0.66	0.75	0.52	0.76
Belgium	0.61	0.79	0.40	0.79	0.76
Netherlands	0.60	0.74	0.57	0.62	0.70
Iceland	0.59	0.91	0.79	0.45	0.47
Ireland	0.58	0.63	0.63	0.83	0.69
Singapore	0.58	0.87	0.45	0.85	0.45
Switzerland	0.58	0.67	0.34	0.63	0.88
France	0.57	0.68	0.73	0.50	0.59
Norway	0.56	0.80	0.26	0.79	0.64
Taiwan	0.54	0.64	0.53	0.68	0.40
Finland	0.49	0.73	0.49	0.46	0.49
Spain	0.48	0.59	0.46	0.50	0.54
Austria	0.47	0.53	0.38	0.33	0.83
Slovenia	0.47	0.68	0.72	0.46	0.42
Japan	0.45	0.56	0.33	0.81	0.50
Estonia	0.43	0.52	0.29	0.64	0.55
Hungary	0.42	0.58	0.57	0.36	0.45
Lithuania	0.41	0.56	0.24	0.76	0.33
Cyprus	0.41	0.60	0.40	0.47	0.48
Israel	0.40	0.36	0.21	0.94	0.30
Italy	0.40	0.70	0.37	0.21	0.54
Croatia	0.40	0.34	0.61	0.39	0.48
United Arab Emirates	0.40	0.56	0.16	0.81	0.42
Chile	0.39	0.45	0.31	0.46	0.53
Qatar	0.38	0.61	0.13	0.68	0.35
Bahrain	0.38	0.69	0.13	0.73	0.36
Greece	0.38	0.55	0.36	0.39	0.39
Latvia	0.37	0.52	0.25	0.46	0.48
Saudi Arabia	0.37	0.86	0.10	0.54	0.34
Portugal	0.36	0.64	0.33	0.34	0.29
Czech Republic	0.35	0.45	0.34	0.19	0.50
Malaysia	0.35	0.71	0.12	0.29	0.61
Brunei	0.34	0.59	0.24	0.43	0.35
Oman	0.33	0.59	0.11	0.62	0.23
Romania	0.33	0.39	0.15	0.41	0.49

Table 4.4 (continued)

Country	ABTINDEX	OpportunityStartup	Tech Sector	Quality of Human Resources	Competition
Barbados	0.32	0.93	0.06	0.25	0.37
Colombia	0.31	0.60	0.17	0.32	0.34
Thailand	0.31	0.54	0.12	0.44	0.31
Mexico	0.30	0.67	0.11	0.37	0.31
Trinidad and Tobago	0.30	0.48	0.15	0.52	0.31
Uruguay	0.30	0.32	0.25	0.25	0.50
Russia	0.30	0.39	0.15	0.78	0.17
Indonesia	0.30	0.44	0.41	0.09	0.47
Tunisia	0.30	0.60	0.05	0.61	0.19
Peru	0.30	0.53	0.17	0.28	0.41
Panama	0.30	0.48	0.26	0.16	0.50
Poland	0.30	0.22	0.30	0.31	0.48
Moldova	0.30	0.41	0.15	0.51	0.29
South Africa	0.28	0.43	0.09	0.18	0.66
Turkey	0.28	0.33	0.16	0.33	0.38
Albania	0.28	0.20	0.27	0.35	0.43
Korea	0.27	0.53	0.17	0.53	0.05
Kuwait	0.27	0.55	0.09	0.41	0.20
Hong Kong	0.27	0.72	0.10	0.55	0.00
Lebanon	0.27	0.36	0.10	0.37	0.37
Slovakia	0.27	0.49	0.17	0.14	0.36
Bulgaria	0.26	0.41	0.12	0.26	0.32
Kazakhstan	0.26	0.49	0.07	0.53	0.14
Macedonia	0.26	0.21	0.16	0.32	0.44
Montenegro	0.26	0.38	0.10	0.25	0.37
Jamaica	0.25	0.45	0.07	0.23	0.41
Argentina	0.24	0.33	0.24	0.17	0.29
Namibia	0.23	0.39	0.08	0.12	0.44
Botswana	0.23	0.38	0.07	0.12	0.44
Ukraine	0.22	0.23	0.13	0.58	0.11
Brazil	0.22	0.29	0.21	0.12	0.37
Nigeria	0.22	0.31	0.09	0.28	0.32
Paraguay	0.21	0.42	0.08	0.16	0.32
India	0.21	0.13	0.05	0.40	0.37
Zambia	0.21	0.35	0.11	0.21	0.27
Swaziland	0.20	0.36	0.06	0.10	0.38
Honduras	0.20	0.30	0.13	0.08	0.39
Costa Rica	0.20	0.27	0.00	0.11	0.57
Bolivia	0.20	0.42	0.04	0.15	0.27
Dominican Republic	0.19	0.29	0.02	0.36	0.21
Rwanda	0.19	0.39	0.05	0.12	0.32
El Salvador	0.19	0.32	0.12	0.08	0.34

Table 4.4 (continued)

Country	ABTINDEX	OpportunityStartup	Tech Sector	Quality of Human Resources	Competition
Jordan	0.19	0.36	0.03	0.18	0.27
Gambia	0.19	0.25	0.05	0.13	0.41
Kenya	0.18	0.29	0.05	0.12	0.37
Syria	0.18	0.29	0.03	0.14	0.36
Bosnia and Herzegovina	0.18	0.08	0.31	0.14	0.28
Morocco	0.18	0.57	0.00	0.03	0.26
Iran	0.18	0.22	0.13	0.21	0.19
Philippines	0.17	0.20	0.07	0.42	0.11
Benin	0.17	0.17	0.04	0.12	0.44
Madagascar	0.17	0.37	0.04	0.09	0.27
China	0.17	0.16	0.09	0.28	0.17
Belize	0.17	0.35	0.02	0.00	0.43
Bangladesh	0.17	0.47	0.05	0.06	0.19
Senegal	0.17	0.27	0.06	0.10	0.32
Pakistan	0.17	0.27	0.04	0.08	0.35
Ecuador	0.16	0.33	0.07	0.08	0.24
Ghana	0.16	0.32	0.00	0.02	0.41
Serbia	0.16	0.19	0.05	0.19	0.25
Cameroon	0.16	0.21	0.04	0.13	0.31
Egypt	0.15	0.18	0.05	0.23	0.18
Ethiopia	0.15	0.32	0.04	0.08	0.25
Guatemala	0.15	0.16	0.02	0.01	0.52
Mali	0.15	0.21	0.04	0.09	0.31
Burkina Faso	0.15	0.30	0.04	0.07	0.22
Tanzania	0.14	0.16	0.04	0.10	0.32
Burundi	0.13	0.17	0.03	0.07	0.32
Algeria	0.13	0.28	0.07	0.01	0.22
Venezuela	0.13	0.25	0.06	0.17	0.09
Malawi	0.13	0.14	0.04	0.11	0.27
Côte d'Ivoire	0.13	0.14	0.05	0.12	0.24
Uganda	0.13	0.13	0.03	0.09	0.30
Mauritania	0.11	0.21	0.04	0.06	0.18
Angola	0.11	0.18	0.06	0.06	0.16
Chad	0.09	0.00	0.04	0.09	0.27

Notes: *Pillar values are the normalized pillar scores. Adult-population data was collected in mid-2011.

Switzerland. Chile's twelfth place is a very strong showing for a South American country. Factor-driven African and Asian countries, Pakistan, Mauritania, Ethiopia, Malawi, Swaziland, Bangladesh, Chad and Burundi are at the bottom.

High entrepreneurial abilities are associated with the startups in the medium- or high-technology sector, initiated by educated entrepreneurs and launched because of opportunity motivation in a not too competitive environment. Quality differences in startups are quantified by the motivation and the education level of the entrepreneur and the uniqueness of the product or service, as measured by the level of competition.

Table 4.5 Entrepreneurial aspirations index and pillar values, 2013 edition

Country	ASPINDEX	Product Innovation	Process Innovation	High Growth	International-ization	Risk Capital
Taiwan	0.63	1.00	0.56	0.90	0.44	0.52
United States	0.59	0.62	0.47	0.74	0.64	0.53
Singapore	0.56	0.57	0.69	0.65	0.81	0.40
Israel	0.54	0.59	0.66	0.44	0.50	0.80
Sweden	0.53	0.64	0.44	0.40	0.74	0.54
Denmark	0.53	0.89	0.39	0.58	0.36	0.57
Switzerland	0.53	0.75	0.34	0.32	0.68	0.72
Iceland	0.51	0.62	0.49	0.56	0.72	0.34
Australia	0.49	0.44	0.35	0.57	0.59	0.55
Czech Republic	0.49	0.59	0.40	0.70	0.89	0.20
Qatar	0.48	0.64	0.12	0.86	0.40	0.95
Netherlands	0.47	0.59	0.27	0.49	0.53	0.62
France	0.47	0.65	0.48	0.56	0.53	0.27
Norway	0.47	0.41	0.26	0.45	0.48	0.94
United Arab Emirates	0.46	0.60	0.04	0.81	0.66	0.90
Belgium	0.44	0.46	0.35	0.26	0.79	0.51
Canada	0.44	0.60	0.28	0.28	0.87	0.32
Ireland	0.43	0.59	0.24	0.71	0.66	0.27
Austria	0.42	0.56	0.36	0.45	0.62	0.24
Slovakia	0.41	0.29	0.11	0.48	0.68	0.90
Hong Kong	0.41	0.86	0.15	0.65	0.55	0.40
Germany	0.41	0.51	0.31	0.45	0.57	0.27
Chile	0.41	0.83	0.09	0.61	0.54	0.36
Estonia	0.39	0.41	0.23	0.70	0.69	0.23
Oman	0.39	0.45	0.06	0.70	0.44	0.69
Bahrain	0.38	0.41	0.01	0.73	0.52	0.74
Finland	0.37	0.60	0.55	0.30	0.34	0.20
Poland	0.37	0.65	0.09	0.70	0.66	0.14
Montenegro	0.37	0.27	0.31	0.36	0.80	0.37
Puerto Rico	0.37	0.74	0.09	0.98	0.41	0.07
Slovenia	0.36	0.44	0.30	0.48	0.62	0.21
United Kingdom	0.35	0.53	0.28	0.39	0.49	0.18
Korea	0.34	0.49	0.36	0.39	0.32	0.41
Saudi Arabia	0.34	0.48	0.04	0.82	0.24	0.53
Turkey	0.34	0.58	0.10	0.68	0.36	0.22
Japan	0.33	0.52	0.50	0.72	0.21	0.06
Lithuania	0.33	0.30	0.16	0.67	0.59	0.14
Latvia	0.33	0.39	0.06	0.67	0.61	0.21
Croatia	0.31	0.21	0.20	0.53	0.64	0.16
China	0.31	0.65	0.21	0.55	0.08	0.29
Bulgaria	0.31	0.23	0.12	0.49	0.67	0.21
South Africa	0.30	0.51	0.31	0.47	0.47	0.02

Table 4.5 (continued)

Country	ASPINDEX	Product Innovation	Process Innovation	High Growth	International-ization	Risk Capital
Kuwait	0.29	0.32	0.05	0.64	0.25	0.43
Cyprus	0.29	0.38	0.11	0.13	0.53	0.53
Portugal	0.29	0.26	0.30	0.26	0.67	0.11
Romania	0.29	0.23	0.09	0.64	0.54	0.13
Hungary	0.29	0.32	0.14	0.53	0.57	0.07
Botswana	0.27	0.32	0.13	0.25	0.36	0.43
Macedonia	0.26	0.25	0.06	0.49	0.49	0.20
Uruguay	0.26	0.32	0.10	0.43	0.35	0.19
Italy	0.26	0.34	0.19	0.30	0.41	0.12
Greece	0.26	0.31	0.14	0.12	0.45	0.37
Colombia	0.24	0.48	0.03	0.64	0.22	0.05
Namibia	0.24	0.31	0.05	0.25	0.34	0.37
Spain	0.23	0.27	0.22	0.20	0.21	0.23
Albania	0.20	0.17	0.04	0.43	0.37	0.13
Lebanon	0.20	0.22	0.05	0.33	0.46	0.05
Swaziland	0.20	0.21	0.05	0.22	0.29	0.31
Peru	0.19	0.57	0.03	0.29	0.21	0.03
Moldova	0.19	0.17	0.08	0.47	0.29	0.05
Syria	0.18	0.25	0.02	0.55	0.14	0.10
Jordan	0.18	0.33	0.08	0.33	0.20	0.05
Brunei	0.18	0.23	0.01	0.29	0.34	0.13
Thailand	0.18	0.50	0.05	0.28	0.06	0.09
Angola	0.17	0.12	0.02	0.07	0.30	0.43
Argentina	0.16	0.38	0.09	0.32	0.09	0.03
Serbia	0.16	0.29	0.24	0.19	0.10	0.04
Bosnia and Herzegovina	0.16	0.13	0.00	0.30	0.35	0.10
Dominican Republic	0.15	0.22	0.01	0.31	0.29	0.01
Indonesia	0.15	0.35	0.03	0.11	0.14	0.19
Morocco	0.15	0.07	0.11	0.24	0.43	0.00
Tunisia	0.15	0.32	0.10	0.23	0.10	0.04
Algeria	0.14	0.23	0.05	0.31	0.08	0.12
Mexico	0.14	0.32	0.03	0.17	0.25	0.02
Egypt	0.14	0.22	0.05	0.30	0.10	0.09
Iran	0.14	0.18	0.09	0.23	0.06	0.18
Nigeria	0.14	0.23	0.05	0.35	0.12	0.02
Costa Rica	0.14	0.34	0.03	0.17	0.15	0.08
Malaysia	0.14	0.25	0.12	0.15	0.20	0.01
Russia	0.13	0.23	0.14	0.34	0.02	0.01
Barbados	0.13	0.17	0.01	0.20	0.38	0.00
Panama	0.13	0.45	0.04	0.04	0.21	0.01
Pakistan	0.13	0.36	0.10	0.12	0.13	0.00
Ukraine	0.12	0.13	0.09	0.34	0.11	0.01

Table 4.5 (continued)

Country	ASPINDEX	Product Innovation	Process Innovation	High Growth	International-ization	Risk Capital
Jamaica	0.12	0.13	0.04	0.10	0.40	0.01
Malawi	0.12	0.17	0.29	0.11	0.07	0.00
Paraguay	0.12	0.28	0.00	0.18	0.15	0.03
Bolivia	0.11	0.22	0.02	0.17	0.12	0.05
Uganda	0.11	0.17	0.20	0.09	0.10	0.00
Ecuador	0.11	0.24	0.02	0.12	0.16	0.02
Kazakhstan	0.10	0.01	0.02	0.31	0.19	0.01
India	0.10	0.17	0.21	0.07	0.03	0.04
Zambia	0.10	0.17	0.07	0.07	0.21	0.00
Trinidad and Tobago	0.10	0.03	0.00	0.21	0.28	0.03
Benin	0.09	0.19	0.01	0.24	0.04	0.01
Kenya	0.09	0.18	0.08	0.13	0.07	0.01
Cameroon	0.09	0.18	0.01	0.23	0.05	0.01
Honduras	0.09	0.34	0.00	0.05	0.09	0.01
Senegal	0.09	0.18	0.08	0.12	0.08	0.00
El Salvador	0.08	0.28	0.01	0.05	0.09	0.01
Tanzania	0.08	0.16	0.08	0.11	0.06	0.01
Mauritania	0.08	0.11	0.08	0.09	0.12	0.00
Gambia	0.08	0.17	0.00	0.13	0.10	0.01
Mali	0.07	0.15	0.05	0.10	0.09	0.00
Guatemala	0.07	0.29	0.00	0.09	0.00	0.01
Brazil	0.07	0.07	0.07	0.21	0.02	0.00
Rwanda	0.07	0.17	0.01	0.12	0.05	0.01
Ghana	0.07	0.12	0.04	0.17	0.03	0.01
Madagascar	0.07	0.14	0.02	0.10	0.09	0.01
Burkina Faso	0.06	0.14	0.03	0.09	0.07	0.00
Côte d'Ivoire	0.06	0.12	0.01	0.10	0.10	0.00
Philippines	0.06	0.15	0.02	0.07	0.08	0.00
Chad	0.06	0.13	0.01	0.09	0.07	0.00
Ethiopia	0.06	0.14	0.03	0.10	0.04	0.00
Venezuela	0.05	0.14	0.01	0.12	0.02	0.00
Belize	0.05	0.21	0.00	0.07	0.00	0.01
Burundi	0.05	0.09	0.05	0.08	0.04	0.00
Bangladesh	0.02	0.00	0.00	0.09	0.00	0.00

Notes: *Pillar values are the normalized pillar scores. Adult-population data was collected in mid-2011.

Denmark ranks number one on the entrepreneurial abilities index (Table 4.4) and has a very strong showing in three four of the pillars, including Opportunity Startups, Quality of Human Resources and Competition. Denmark is relatively weak in Tech Sector. Denmark is followed by Australia which is weaker than Denmark in three pillars but stronger in Tech Sector. The United States ranks third with marginally lower entrepreneurial abilities scores than Denmark and Australia. The United States is relatively strong in Competition implying the fresh entrepreneurs are mainly looking for market niches that do not have many competitors. However, relatively less startups are initiated in the medium- and high- technology sectors. They are

followed by Canada, the United Kingdom, Sweden, Puerto Rico, Germany and Belgium. With more highly educated startup entrepreneurs, Germany could have achieved an even higher rank.

Entrepreneurial aspirations are the efforts of the early-stage entrepreneur to introduce new products and/or services, develop new production processes, penetrate foreign markets, substantially increase the firm's number of employees, and finance a business with formal and/or informal venture capital. Product and process innovation, internationalization and high growth are considered characteristics of entrepreneurship. The benchmark entrepreneurs are those whose businesses (i) produce and sell products/services considered to be new to at least some customers, (ii) use a technology less than five years old, (iii) have sales from foreign markets, and (iv) plan to employ at least 10 people, and (v) have greater than 50 percent growth over the next five years. The finance variable captures the informal and formal venture capital potential, which is vital for innovative startups and high-growth firms.

Taiwan leads in the entrepreneurial aspiration index (Table 4.5). While showing some weakness in Internationalization it is very strong in Product Innovation and High Growth. The United States is a close second, with a strong showing in High Growth and Product Innovation, but surprisingly, Risk Capital, a traditional strength of the United States aspirations, is relatively low. This is followed by Singapore, Israel, Sweden, Denmark, Switzerland and Iceland comprising most of the top 10. The surprise is the Czech Republic with a very strong showing in Internationalization but a weak performance in Risk Capital. The top aspirations rank includes several countries that were not leaders in either attitudes or abilities.

4.5 Country and country groups' performance

How well some countries perform against others in entrepreneurship is a question of some importance. In this section, we try to answer this question for several country groupings. While the general trend between GEDI and development is increasing with a mild S-shape, substantial variations exist even among similarly developed countries. To present the various component configurations in entrepreneurship across different countries and country groups, we conduct a pillar-level analysis.

Figure 4.2 shows a spider diagram for the 14 pillar values that compares the United States, the European Union and the rest of the world. As expected, the outer ring, which represents the United States, has higher values for all but one of the pillar values than the European Union. At the same time the European Union outperforms the rest of the world with all the pillars except Opportunity Perception.

As the number of countries has increased significantly from the previous year, the differences become more significant. The dominant entrepreneurial position of the United States seems to be unquestionable. The United States shows real strength in the areas of Startup Skills, Nonfear of Failure, Quality of Human Resources and Competition. As a result, within the developed world, the gap between the European Union and the United States is considerably greater on pillars like these. The United States pillar values are more than 50 percent higher than the European Union in half of the 14 pillars: Opportunity Perception, Startup Skills, Quality of Human Resources, Competition, Process Innovation, High Growth and Risk Capital. The difference is between 10 and 50 percent in five cases: Nonfear of Failure, Cultural Support, Tech Sector, Product Innovation, and Internationalization. Less than 10 percent difference can be noticed in the case of Opportunity Startup, and the European Union is better than the United States in Networking by 17 percent.

The differences between the European Union and the Rest of the world are also considerable, but smaller in magnitude than the differences between the United States and the European Union. The European Union outperforms the rest of the world by more than 50 percent in three cases: Tech Sector, Process Innovation and Internationalization. The European Union is better than the rest of the world by more than 30 percent in all but one of the remaining pillars. The exception is Opportunity Perception implying that the European Union lags behind the rest of the world in recognizing good business opportunities.

Nothing has engendered as much discussion as the role of China and India in the new globalization. From the time people argued that the world is flat to today's tales of software expertise in India, the world has been fixated on the emergence onto the world stage of two giant economies, India and China, each of which has a population of about one billion people. Perhaps even more interesting is how entrepreneurial these two countries are, despite having emerged from socialism and communism a relatively short time ago. Or are they?

Figure 4.3 compares the two leading economies of the world, the United States and the European

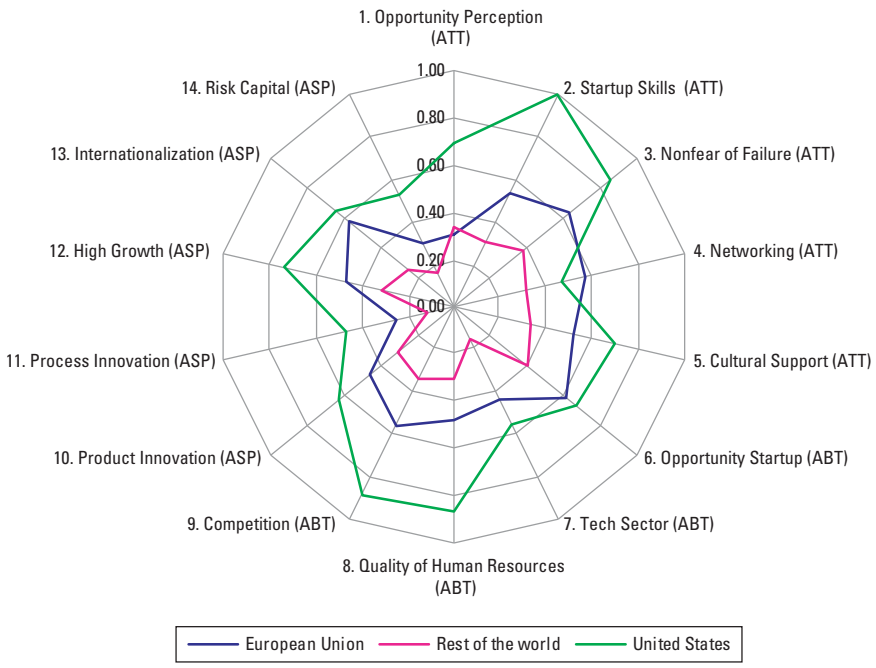


Figure 4.2 Comparison of the European Union, the United States and the rest of the world

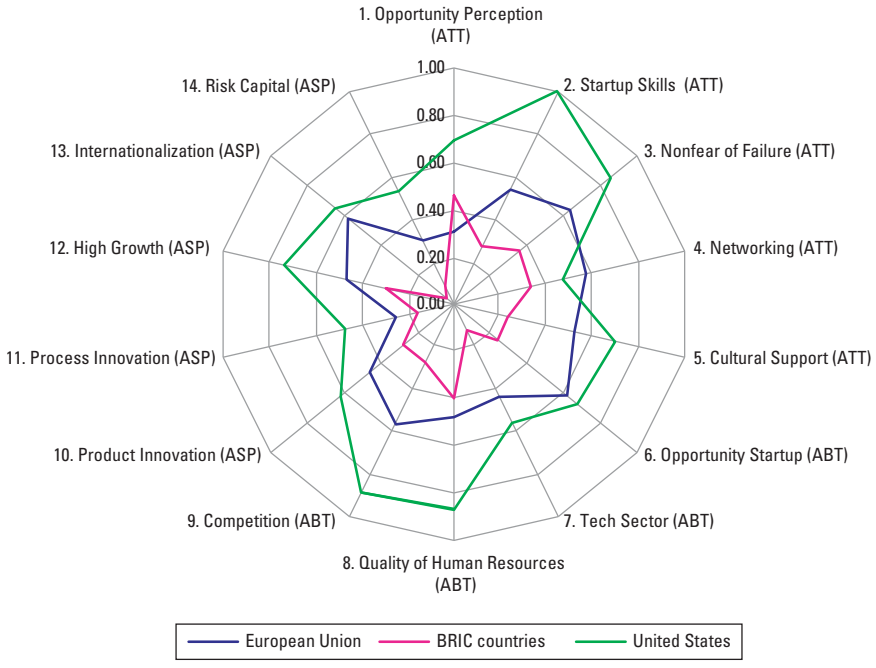


Figure 4.3 Comparison of the European Union, United States and the BRIC countries (Brazil, Russia, India, China)

Union with the BRIC countries. The BRIC countries perform rather as expected or perhaps worse depending on one's perspective on this issue. The BRIC countries never outperform the United States on any pillar but show some unexpected strength relative to the European Union. On the Opportunity Perception pillar the BRIC countries are better than the European Union. On all other measures they perform as developing countries, more or less. The United States has a dominant advantage in almost all aspects of entrepreneurship over these two country groups. However, overall the BRIC countries are neither as innovative nor entrepreneurial as some would expect from the views expressed in the literature.

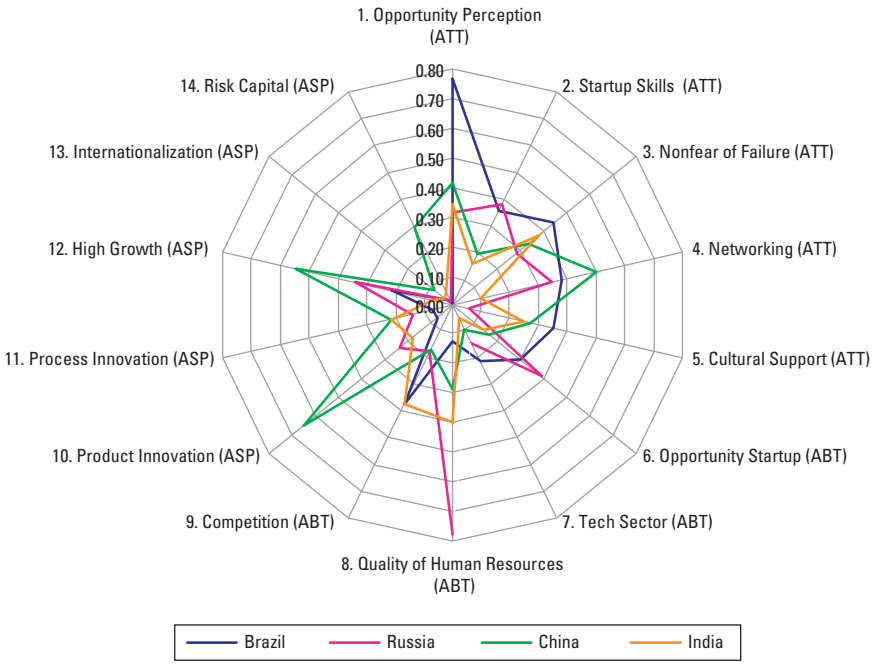


Figure 4.4 Comparison of the BRIC countries (Brazil, Russia, India, China)

Figure 4.4 looks a little closer at the BRIC countries. These countries are not well balanced in any respect. They are rather spiky with one or perhaps two strong points and the rest rather weak. Three trends stand out. First, China's prowess in Product Innovation is clear. Second, Brazil has huge advantages in Opportunity Perception. Finally, Russia has impressive Quality of Human Resources. None of these emerging economies is fast closing the technology gap with the West. Russia has the lead over India in the Quality of Human Resources. Overall, China performs relatively weakly on attitudes and abilities, with very low scores on Internationalization, Tech Sector, Competition, Opportunity Startup and Startup Skills. It does much better on the aspirations pillars particularly in Product Innovation and High Growth. India scores extremely low on at least one case of the three sub-indexes, such as Networking (aspirations), Tech Sector (abilities), High Growth, Internationalization and Risk Capital (aspirations). It does better on most of the attitudes pillars, despite a low score on Networking. Both countries have highly divergent pillar scores. Each has built up strength in particular areas, such as Tech Sector or Quality of Human Resources, where they are at levels comparable to developed countries. However, both lag significantly behind in other areas, which tend to drag down their overall performance on the indexes.

The Americas present an interesting contrast between developed and developing countries. North America is clearly superior in all aspects of entrepreneurship when compared with Latin America (Figure 4.5). The largest differences appear to lie in aspirations, with Process Innovation, Venture Capital and Internationalization showing the greatest differences between the hemispheres. In fact, the differences suggest that Latin America lags so far behind the United States that it might take decades to bridge even the smallest gaps.

Of course, some of the Latin American countries perform much better than the average. Chile ranks 21st–22nd on the GEDI, 12th–13th in attitudes, 31st in abilities and 20th–23rd in aspirations. Uruguay ranks 37th–43rd on the GEDI, 22nd–24th in attitudes, 46th–55th in abilities and 49th–52nd in aspirations. Argentina and Mexico are 58th–63rd on the GEDI. In the past decade, Latin America has made significant progress toward a more entrepreneurial economy. However, finances present a problem, as clearly evidenced by the very low score on Risk Capital. The Latin American nations also perform poorly on innovation and Research and Development, as is evident in the low Process Innovation score. Latin America appears to have a relatively strong level of Opportunity Perception and Startup Skills but it falls short in capitalizing on this and turning it into a source of innovation and high-growth ventures, and the Southern Hemisphere is crippled by poor performances on the aspirations and abilities pillars.

Nothing has captured the imagination of the

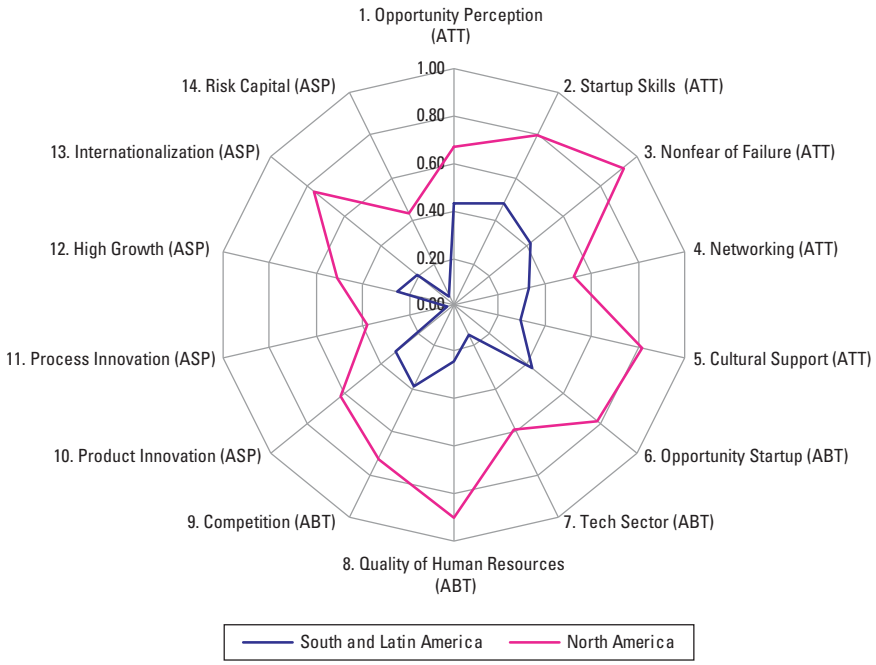


Figure 4.5 Comparison of South and Latin America to North America (USA, Canada)

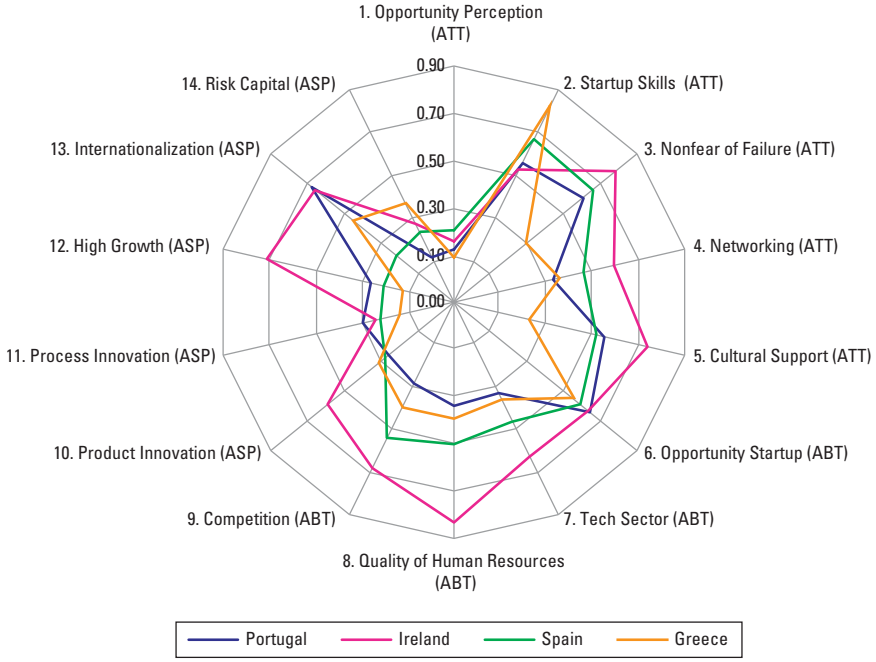
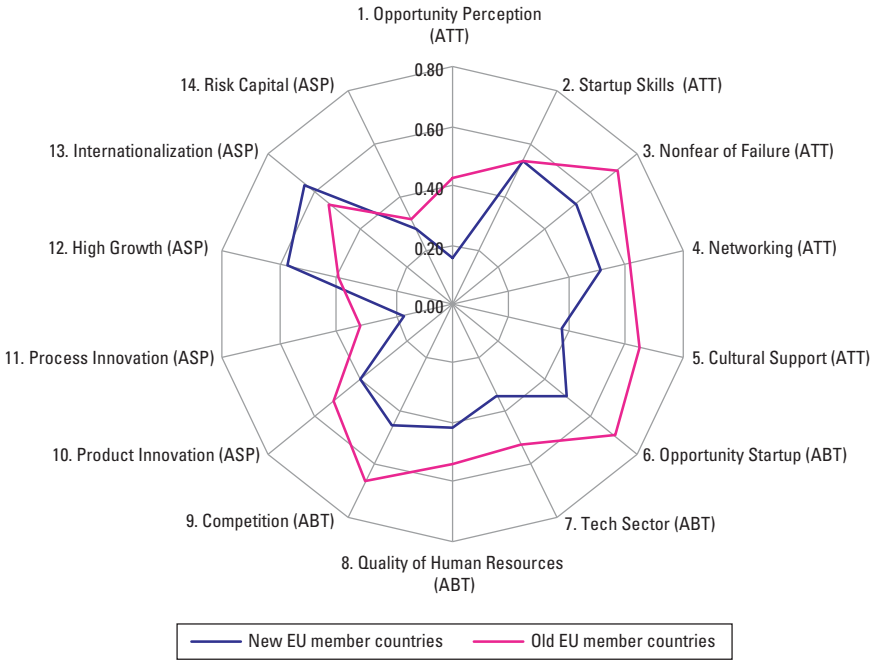


Figure 4.6 Comparison of Portugal, Ireland, Greece and Spain

European Union as the financial fate of Portugal, Italy, Ireland, Greece and Spain (PIIGS). While Ireland seems to have successfully overcome the banking and the debt crisis, the fate of Greece is threatening the monetary union. It is a high fear that Greece's leave of the Eurozone can cause a snowballing effect frightening other countries including Spain, Portugal and maybe even Italy. In Figure 4.6 we compare four of the PIIGS countries. We leave out from the analysis Italy as the least dangerous country. What is most striking is that in all of these economies Opportunity Perception has almost collapsed. The great recession has taken a real toll on entrepreneurial opportunity in the European Union.

Of course, there is a real difference between



Notes:
European Union – 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.
New European Union countries: Bulgaria, Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia.

Figure 4.7 Comparison of the old European Union (EU-15) countries to the new European Union member countries

Ireland and the other three countries. Ireland suffered housing and banking crises but its economy was stronger than the others. This is especially true with respect to human capital (Quality of Human Resources), Product Innovation and Competition. High Growth is also on the upgrade showing Ireland's improving growth potential. The Southern European countries face a much more difficult future with weaker entrepreneurial and innovative economies than Northern Europe. The entrepreneurial performance of these Southern European countries are below the development implied trend-line. With a 0.39 GEDI points Spain is 27th, with 0.34 Portugal ranks 37th–43rd and with 0.31 Greece ranks 47th–49th. The difference between the GEDI values and the development implied trend-line follows the same pattern: Spain is below by 3.5 percent, Portugal by 5 percent and Greece by 17 percent. For over the last three years of the GEDI survey, Greece has been ranked the last in the innovation-driven country group. All three countries are especially weak in Product Innovation, Process Innovation and High Growth firms. This explains a large part of the poor economic performance of southern Europe relative to France, Germany or the United Kingdom.

Figure 4.7 examines old Europe with new Europe to coin a phrase made famous by former Secretary of Defense, Donald H. Rumsfeld. What is perhaps not surprising is that the two spider diagrams are similar in shape, with old Europe outside new Europe on 12 of the 14 pillars. Given that they now have similar institutional frameworks and the weakness of the PIIGS this picture is representative of the situation in the expanded European Union (EU). The two exceptions are the High Growth and the Internationalization pillars. It seems that the new EU member country entrepreneurs consider increasing internationalization as a key to future growth. Old EU member country startups and young businesses focus on finding market niches in the domestic market rather than in foreign markets. There are three points where Europe is weak and should be improved. First, is Opportunity Perception. It is not surprising, but the lack of opportunity for successful entrepreneurship in new as well as in old Europe is reason for concern. It may come from the heritage of the former socialist system where individuals were basically discouraged even to view and exploit business opportunities. The second area of concern is the low level of Process Innovation. Outdated technology and the incapability to absorb new technology could easily undermine future growth perspectives. Process

innovation is particularly low in the new EU countries. It is no surprise that the third problematic factor is finance. While GEDI does not measure the debt market including banking, the equity financing position both in informal and formal venture capital are in a desperate situation. In addition to the three problematic factors, startups in the medium- and high-technology sectors as well as cultural support of entrepreneurship are also weak in the new EU member countries. Given 40 years of communism, the inadequate cultural embedding of entrepreneurship is understandable but public policy needs to address this.

4.6 Summary and conclusions

Entrepreneurship is similar to other social creatures, in that it is a multidimensional phenomenon and it is difficult to identify its exact meaning. There is only one thing more difficult: to measure such a vaguely defined creature. Over the decades, researchers have created several entrepreneurship indicators; however, none of them was able to reflect the complex nature of entrepreneurship and provide a plausible explanation about its role in development. The Global Entrepreneurship and Development Index is the first, and currently the only, complex measure of national-level entrepreneurship that reflects the multifaceted nature of entrepreneurship. In this chapter, we presented the entrepreneurial performances of 118 countries of the world. This includes country-level values for the GEDI – entrepreneurial attitudes, entrepreneurial abilities and entrepreneurial aspirations – and for the 14 pillars. In addition, we have introduced a new measure of entrepreneurship efficiency. The average bottleneck efficiency indicator values for each country are also reported.

While the GEDI represents the contextual features of entrepreneurship, it is also possible to analyze changes in entrepreneurship and its components in terms of development. The relationship between index values and development, measured by GDP per capita, is shown. While previous studies found that entrepreneurship, measured primarily in terms of activities, has a U- or L-shaped relationship with national income per capita, we noticed a linear, mildly S-shaped relationship, which indicates that entrepreneurship is higher among richer countries. This finding fits more accurately with our present knowledge about the nature of economic development than U- or L-shaped relationships between the variables. The final ranking, with Nordic and Anglo-Saxon countries at the top and developing countries at the bottom, also reflects what we expect development trends to look like.

In the final part of the chapter, we presented a comparison among some important countries and country groups. The pillar-level analysis provides a proper tool to show the real differences and variations in entrepreneurship. Entrepreneurship is found to vary substantially, not only across countries with different levels of development but also among countries with similar per capita GDP. While the leading countries have similar entrepreneurial features, European nations, and the European Union lag behind the United States. This is evident in the PIIGS, which lag far behind the larger EU countries and the Nordic fringe. Latin America also requires a substantial increase in entrepreneurship to reach levels comparable to those of North America. Comparing the developing countries shows that the configuration of the 14 pillars is similar in shape but at different levels across the three main parts of the world. A detailed examination of entrepreneurship and the change in its components over the phases of development is the subject of the following chapter.

Notes

1. Acemoglu et al. (2001).
2. Gartner (1990), Davidsson (2004), Wennekers and Thurik (1999), and Godin et al. (2008) all identify several dimensions of entrepreneurship.
3. For an elaboration, see Chapter 2, and Ács et al. (2012), available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2008160.
4. Sørensen and Sorenson (2003).
5. Ács and Varga (2005).
6. Papagiannidis and Li (2005).
7. UNESCO (2009).
8. Caliendo et al. (2009).
9. Shane and Cable (2003).
10. Guiso et al. (2006).
11. Baumol (1990).
12. Bhola et al. (2006).
13. Klepper (2001).
14. Coad and Rao (2008).
15. Bates (1990).
16. Baumol et al. (2007).
17. Stam and Wennberg (2009).
18. Ács et al. (2008).
19. De Clercq et al. (2005).
20. Gompers and Lerner (2004).
21. For a more detailed description see Chapter 6.

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