

The Global Entrepreneurship and Development Index

1.1 Introduction

Over 100 years ago Joseph Schumpeter in the *Theory of Economic Development* pointed out that entrepreneurs are important for development. Not only are they important, they are the key drivers of economic development. 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 better understand 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 was 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 actions and entrepreneurial aspirations. Economic development rests on these pillars and the building blocks that they support. The pillars need to be of 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, and to fill a gap in the ability to measure it. The GEDI offers a measure of the *quality* and *scale* of the entrepreneurship process in 79 of the most important countries in the world. Furthermore, it captures the contextual feature of entrepreneurship by measuring entrepreneurial attitudes, entrepreneurial action and entrepreneurial aspirations. These data and their contribution to the business formation process are supported by three decades of research into entrepreneurship across a host of 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 of support. We next present the three sub-indexes of attitudes, actions and aspirations. Finally, we analyze and compare the different countries and country groups included in the Index.

1.2 The 14 pillars of entrepreneurship

The characteristics of entrepreneurship are many and complex. While a widely accepted definition of entrepreneurship is lacking, there is general agreement that the concept has numerous dimensions.² We take this into account in creating our entrepreneurship index. Some businesses have a larger impact on markets, create more new jobs, and grow faster and larger than others. We also take into account the fact that entrepreneurship plays a different role at different stages of development. Considering all of these possibilities and limitations, we define entrepreneurship as ‘a dynamic interaction of entrepreneurial attitudes, entrepreneurial actions, and entrepreneurial aspirations that vary across stages of economic development.’

The GEDI is composed of three building blocks or sub-indexes – the 3As: entrepreneurial attitudes (ATT), entrepreneurial actions (ACT) 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 the potential ‘opportunity perception’ of a population by considering the size of its country’s domestic market and level of urbanization. A population’s opportunity perception potential is an essential ingredient of entrepreneurial startups.³ Within this pillar is the individual variable, OPPORTUNITY, which measures the percentage of the population that can 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 MARKETAGGLOM institutional variable consists of two smaller variables: the size of the domestic market and the urbanization variable. The urbanization variable is intended to capture which opportunities have better prospects in more developed urban areas than they do in poorer rural areas.⁴ MARKETAGGLOM 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.⁵ SKILL 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 usually were 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 (EDUCPOSTSEC), 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.⁶ 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.⁷ Aversion to high-risk enterprises can retard nascent entrepreneurship. NONFEAR 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 (KNOWENT) with his or her ability to use the Internet for business purposes (INTERNETUSAGE). 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.⁸ 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. However, connecting through cyberspace with the rest of the world adds another dimension to networking and opens up much greater opportunities than before.
- 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.⁹ CARSTAT 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.¹⁰

The pillars of entrepreneurial actions

- 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. TEAOPPORT is defined as the percentage of the total entrepreneurial activity 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 (FREEDOM),¹¹ one sub-index of the Index of Economic Freedom. The 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, 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.¹² The TECHSECT variable is a measure of the businesses that are in technology sectors. The institutional variable (TECHABSORB) 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.¹³
- 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.¹⁴ The HIGHEDUC 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 (STAFFTRAIN) 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.¹⁵ COMPET 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 MARKDOM, a variable reported by the World Economic Forum.

The pillars of entrepreneurial aspirations¹⁶

- 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. The new product variable (NEWP) is a measure of a country's potential to generate new variable (NEWP) 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. TECHTRANSFER 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. NEWT 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 indicator: 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 (BUSS 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. BUSS 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 (GLOBAL). The internationalization indicator 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 (INFINV) and institutional venture capital (VENTCAP). INFINV 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 VENTCAP, which is a measure of available national venture capital, as reported by the World Economic Forum.

1.3 The Global Entrepreneurship and Development Index, 2012 rankings

In this chapter, we report the ranks of the 79 countries on the GEDI and the three sub-indexes. The applicability and validity of the GEDI are compared to other important,

widely used indexes. The pillar values of the three sub-indexes are presented later.

We present the GEDI in terms of country development, as measured by the GDP per capita. The overall rank of the countries on the GEDI is shown in Table 1.1. Anglo-Saxon, European and Nordic countries in the innovation-driven stage of development are in the front ranks. The United States and Sweden lead the ranking. Four of the five Nordic countries, Denmark, Sweden, Iceland, and Norway, are in the top ten, and Finland is 17th – still a good performance.

The United States is in first place. Australia, Iceland, 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: the UK is 13th, Germany is 16th, France is 18th, and Spain is 29th followed by Italy in 33rd place. 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 28th place. Factor-driven countries with low GDPs, such as Jamaica, Bosnia and Herzegovina, the Philippines, Iran, Bolivia, Ecuador, Zambia, Ghana and Uganda, are at the bottom of the entrepreneurship ranking, as expected. However, two former socialist countries, Serbia and Russia, should have a higher level of entrepreneurship, as implied by the trend line.

It is also worthwhile to examine the connection between the GEDI and other widely applied major indexes. In Table 1.2 we report the correlation coefficients between the GEDI, the Global Competitiveness Index, the Ease of Doing Business Index, the Index of Economic Freedom, the Corruption Perceptions Index, and per capita GDP.

In all cases, the indexes show significantly high correlations with one another and with the GDP. While measures of competitiveness, red tape, economic freedom and corruption are available, one vital aspect of wealth creation and development has been missing from the picture – entrepreneurship. It seems that the GEDI fits into the picture and may be able to provide valuable insights into entrepreneurship and its components, and their role in economic development. In Chapter 2, we present a detailed analysis of the role of entrepreneurship and its components in development.

1.4 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 actions and entrepreneurial aspirations.

Entrepreneurial attitudes are societies’ attitudes towards entrepreneurship – defined as a population’s general feelings about recognizing opportunities, knowing

Table 1.1 The GEDI rank of the countries, 2012

Rank	Country	GDP*	GEDI	Rank	Country	GDP*	GEDI
1	United States	46,436	0.60	41	Peru	8,647	0.26
2	Sweden	37,905	0.57	42	Lebanon	12,962	0.26
3	Australia	39,231	0.56	43	Mexico	14,337	0.25
4	Iceland	37,595	0.55	44	Malaysia	13,982	0.25
5	Denmark	36,762	0.55	45	South Africa	10,291	0.25
6	Canada	37,946	0.54	46	Argentina	14,599	0.24
7	Switzerland	36,954	0.54	47	Tunisia	8,284	0.24
8	Belgium	36,048	0.50	48	Romania	14,198	0.23
9	Norway	55,672	0.49	49	Macedonia	10,822	0.23
10	Netherlands	40,715	0.48	50	Jamaica	7,620	0.22
11	Taiwan	31,834	0.48	51	Trinidad and Tobago	25,705	0.21
12	Singapore	50,705	0.47	52	Jordan	5,691	0.21
13	United Kingdom	36,496	0.46	53	Costa Rica	11,122	0.21
14	Austria	38,748	0.46	54	Dominican Republic	8,445	0.21
15	Ireland	41,278	0.46	55	Panama	13,091	0.21
16	Germany	36,449	0.46	56	Brazil	10,427	0.20
17	Finland	34,650	0.45	57	Venezuela	12,341	0.20
18	France	33,655	0.45	58	China	6,838	0.20
19	Puerto Rico	16,300	0.45	59	Algeria	8,184	0.20
20	United Arab Emirates	57,827	0.45	60	Indonesia	4,205	0.20
21	Israel	27,674	0.45	61	Morocco	4,503	0.19
22	Chile	14,331	0.42	62	Russia	18,945	0.18
23	Slovenia	27,004	0.42	63	Serbia	11,612	0.18
24	Czech Republic	25,232	0.40	64	Kazakhstan	11,526	0.18
25	Saudi Arabia	23,429	0.36	65	Thailand	8,004	0.18
26	Korea	27,168	0.35	66	Syria	4,737	0.18
27	Uruguay	13,208	0.34	67	Iran	11,575	0.17
28	Japan	32,443	0.34	68	Egypt	5,680	0.17
29	Spain	32,545	0.33	69	Bolivia ¹⁰	4,426	0.16
30	Hong Kong	45,227	0.32	70	Bosnia and Herzegovina	8,529	0.16
31	Poland	19,059	0.31	71	Ecuador	8,282	0.15
32	Latvia	15,442	0.31	72	Philippines	3,546	0.15
33	Italy	31,909	0.29	73	Pakistan	2,625	0.14
34	Hungary	19,764	0.29	74	India	3,275	0.14
35	Portugal	24,021	0.29	75	Guatemala	4,749	0.13
36	Turkey	13,905	0.29	76	Zambia	1,431	0.13
37	Croatia	19,803	0.29	77	Ghana	1,511	0.13
38	Greece	29,663	0.29	78	Angola	5,789	0.13
39	Colombia	8,870	0.27	79	Uganda	1,219	0.08
40	Montenegro	13,113	0.27				

Note: *Per capita GDP in PPP, international dollar, World Bank (Hong Kong is from IMF and Puerto Rico is from CIA).

Table 1.2 The correlation coefficients between GEDI and other major indexes

	1	2	3	4	5	6
1 Global Entrepreneurship and Development Index	1.00	0.87	0.84	0.75	0.75	0.90
2 Per capita GDP 2010 (in international US\$, PPP)		1.00	0.80	0.70	0.69	0.84
3 Global Competitiveness Index 2010–2011			1.00	0.76	0.78	0.86
4 Index of Economic Freedom 2010				1.00	0.81	0.84
5 Ease of Doing Business Index 2011 (normalized)					1.00	0.76
6 Corruption Perceptions Index 2010						1.00

Note: All coefficients are significant at a level better than 0.001.

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 action. 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.

Entrepreneurial actions are what entrepreneurs do and they can take many different forms. One important aspect is to what extent people are creating new businesses. Within the realm of new business effort, different types of entrepreneurial action can be distinguished. Business creation may vary by industry sector, the legal form of organization, and demographics – age, gender, education. We define entrepreneurial actions as startup efforts 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 Early-Stage Entrepreneurship 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 reflect the quality of the entrepreneurial action. Some people just hate their boss and want to be their own boss, while others want to create the next Microsoft. 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 actions and entrepreneurial aspirations. However, entrepreneurial aspirations and actions also influence entrepreneurial attitudes.

Table 1.3 shows the rank of each country in the GEDI and the rank of the sub-index for all 79 countries. For example, the United States ranks 1st in the overall index, 2nd in attitudes, 2nd in actions, and 3rd in aspirations. The United States is more interested in high-impact entrepreneurship than in replicative action. However, it was surpassed in aspirations by Israel (1st) and Taiwan (2nd). Japan represents a more unbalanced case, ranking 28th in the overall index, 58th in attitudes, 21st in actions, and 24th in aspirations. Ghana and Uganda, although at the bottom of the rankings in all three sub-indexes, are balanced performers.

Figure 1.1 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

Table 1.3 The GEDI sub-index ranks of the countries, 2012

Country	GEDI	GEDI rank	ATTINDEX	ATT rank	ACTINDEX	ACT rank	ASPINDEX	ASP rank
United States	0.60	1	0.64	2	0.63	2	0.51	3
Sweden	0.57	2	0.68	1	0.55	12	0.48	9
Australia	0.56	3	0.60	3	0.68	1	0.40	15
Iceland	0.55	4	0.59	6	0.55	11	0.51	5
Denmark	0.55	5	0.60	5	0.60	7	0.45	10
Canada	0.54	6	0.60	4	0.63	3	0.40	14
Switzerland	0.54	7	0.54	11	0.58	8	0.51	4
Belgium	0.50	8	0.46	14	0.60	6	0.44	11
Norway	0.49	9	0.56	9	0.49	14	0.41	13
Netherlands	0.48	10	0.59	7	0.49	15	0.37	19
Taiwan	0.48	11	0.44	20	0.46	19	0.53	2
Singapore	0.47	12	0.38	27	0.55	9	0.49	8
United Kingdom	0.46	13	0.49	13	0.61	5	0.29	30
Austria	0.46	14	0.53	12	0.47	18	0.38	17
Ireland	0.46	15	0.43	23	0.55	10	0.38	16
Germany	0.46	16	0.46	15	0.54	13	0.36	21
Finland	0.45	17	0.57	8	0.49	17	0.30	28
France	0.45	18	0.46	17	0.49	16	0.42	12
Puerto Rico	0.45	19	0.37	28	0.62	4	0.36	20
United Arab Emirates	0.45	20	0.44	21	0.41	22	0.50	6
Israel	0.45	21	0.43	22	0.35	26	0.55	1
Chile	0.42	22	0.55	10	0.36	25	0.36	22
Slovenia	0.42	23	0.45	18	0.46	20	0.35	23
Czech Republic	0.40	24	0.35	33	0.35	27	0.49	7
Saudi Arabia	0.36	25	0.39	25	0.38	24	0.32	25
Korea	0.35	26	0.45	19	0.30	36	0.31	26
Uruguay	0.34	27	0.46	16	0.30	37	0.25	34
Japan	0.34	28	0.25	58	0.43	21	0.34	24
Spain	0.33	29	0.39	26	0.41	23	0.20	44
Hong Kong	0.32	30	0.31	45	0.26	42	0.38	18
Poland	0.31	31	0.39	24	0.32	31	0.21	40
Latvia	0.31	32	0.34	36	0.32	32	0.26	33
Italy	0.29	33	0.33	39	0.35	29	0.21	42
Hungary	0.29	34	0.32	41	0.35	28	0.21	41
Portugal	0.29	35	0.35	34	0.31	35	0.23	37
Turkey	0.29	36	0.32	42	0.24	50	0.31	27
Croatia	0.29	37	0.31	44	0.30	38	0.27	31
Greece	0.29	38	0.34	37	0.29	39	0.23	36
Colombia	0.27	39	0.36	30	0.25	46	0.20	43
Montenegro	0.27	40	0.29	51	0.23	54	0.29	29
Peru	0.26	41	0.36	31	0.26	43	0.18	46

Table 1.3 (continued)

Country	GEDI	GEDI rank	ATTINDEX	ATT rank	ACTINDEX	ACT rank	ASPINDEX	ASP rank
Lebanon	0.26	42	0.33	38	0.25	48	0.18	45
Mexico	0.25	43	0.33	40	0.29	40	0.14	53
Malaysia	0.25	44	0.31	46	0.31	34	0.12	61
South Africa	0.25	45	0.22	65	0.26	44	0.26	32
Argentina	0.24	46	0.37	29	0.21	56	0.16	48
Tunisia	0.24	47	0.29	49	0.32	33	0.12	64
Romania	0.23	48	0.22	64	0.25	45	0.21	39
Macedonia	0.23	49	0.26	55	0.20	57	0.23	38
Jamaica	0.22	50	0.29	50	0.24	53	0.12	65
Trinidad and Tobago	0.21	51	0.23	60	0.33	30	0.07	73
Jordan	0.21	52	0.31	47	0.17	65	0.16	51
Costa Rica	0.21	53	0.31	43	0.18	60	0.13	56
Dominican Republic	0.21	54	0.29	48	0.20	58	0.14	55
Panama	0.21	55	0.29	52	0.24	51	0.10	67
Brazil	0.20	56	0.36	32	0.18	62	0.07	75
Venezuela	0.20	57	0.34	35	0.15	69	0.11	66
China	0.20	58	0.23	61	0.13	75	0.24	35
Algeria	0.20	59	0.22	62	0.22	55	0.16	50
Indonesia	0.20	60	0.16	75	0.29	41	0.14	52
Morocco	0.19	61	0.28	53	0.16	66	0.13	57
Russia	0.18	62	0.18	74	0.25	47	0.12	63
Serbia	0.18	63	0.28	54	0.14	70	0.12	60
Kazakhstan	0.18	64	0.21	66	0.24	49	0.08	71
Thailand	0.18	65	0.19	71	0.24	52	0.09	69
Syria	0.18	66	0.21	68	0.16	67	0.16	49
Iran	0.17	67	0.20	70	0.18	61	0.12	59
Egypt	0.17	68	0.23	59	0.14	71	0.13	58
Bolivia	0.16	69	0.22	63	0.18	63	0.08	70
Bosnia and Herzegovina	0.16	70	0.21	67	0.14	72	0.12	62
Ecuador	0.15	71	0.25	56	0.13	76	0.07	74
Philippines	0.15	72	0.25	57	0.14	73	0.05	77
Pakistan	0.14	73	0.12	76	0.17	64	0.14	54
India	0.14	74	0.21	69	0.11	77	0.09	68
Guatemala	0.13	75	0.19	73	0.15	68	0.05	76
Zambia	0.13	76	0.12	77	0.20	59	0.07	72
Ghana	0.13	77	0.19	72	0.13	74	0.05	78
Angola	0.13	78	0.11	78	0.10	78	0.17	47
Uganda	0.08	79	0.10	79	0.09	79	0.05	79

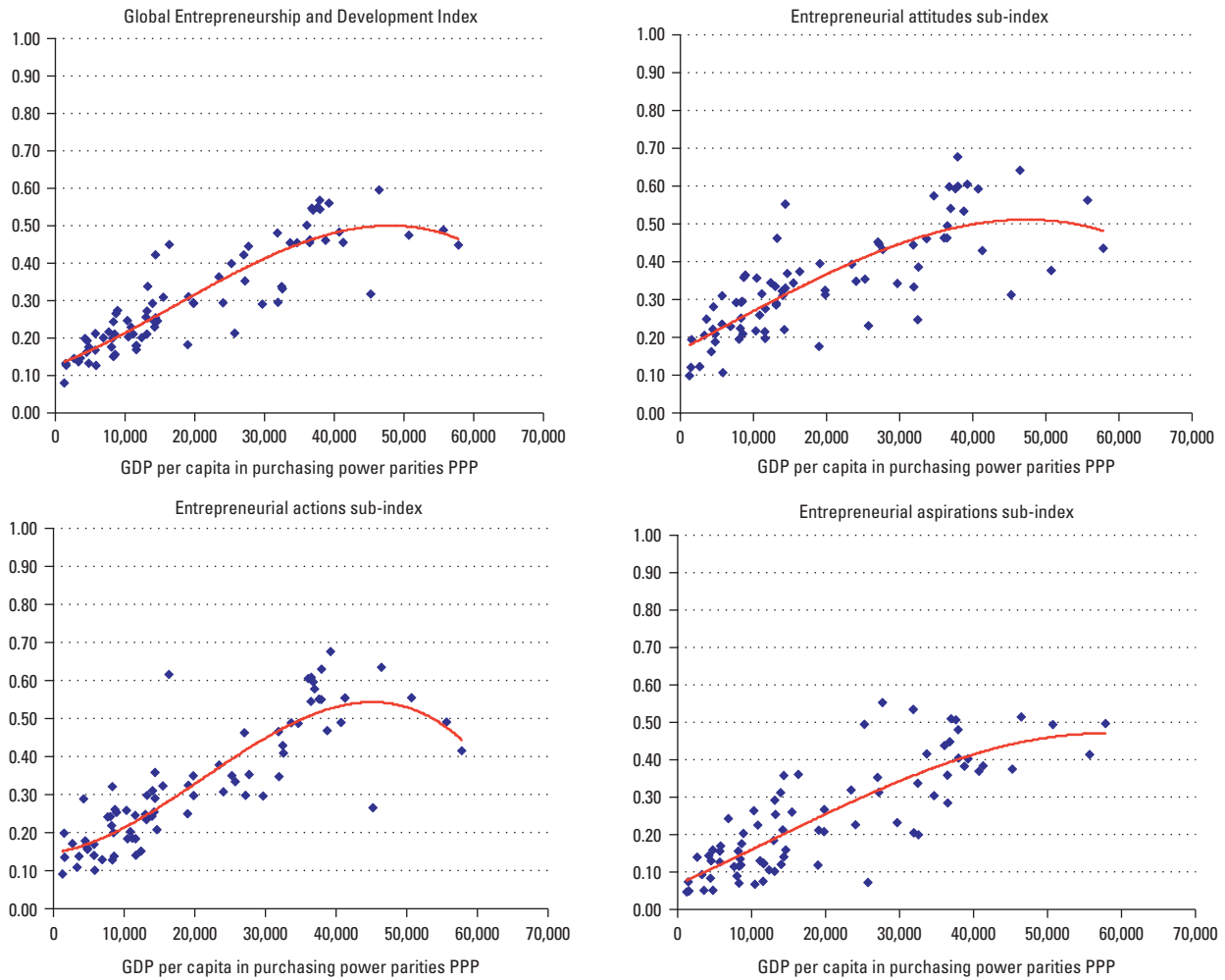


Figure 1.1 The three sub-indices in terms of per capita real GDP, 2012

entrepreneurship. The two move in the same direction, with $R^2 = 0.79$, which implies a close, strong relationship between entrepreneurship and economic development. Unlike other entrepreneurship measures that find an 'L'-shaped (self-employment rate) or a 'U'-shaped (TEA Index) relationship between entrepreneurship and development, we find an 'S'-shaped relationship.

The relationship between the ATT sub-index and development is shown in the upper right-hand figure. The relationship is almost linear, implying that the overall entrepreneurship attitude increases as the country develops. The explanatory power, based on $R^2 = 0.63$, shows a significant, moderately strong correlation between ATT and per capita GDP.

The mild inverse S-shape trend of the ACT sub-index in the lower-left figure is probably no surprise. The explanatory power, $R^2 = 0.76$, is the highest, implying a close and strong relationship between entrepreneurial actions and development.

The lower-right figure contains the ASP sub-index values in terms of economic development. Its shape is very

similar to the ATT sub-index, almost linear. The explanatory power of $R^2 = 0.70$ is significant and strong.

Tables 1.4–1.6 list the rankings for the 14 pillar values for the three sub-indices. Each table gives the pillar values for each of the pillars that make up the respective index.

As stated earlier, *entrepreneurial attitudes* are defined as the general attitudes 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 they express the general feelings of the population toward entrepreneurs and entrepreneurship.

The benchmark individuals are those who (i) can recognize valuable business opportunities, (ii) have the necessary skills to exploit these opportunities, (iii) attach high status and respect to entrepreneurs, (iv) can handle startup risk, and (v) know entrepreneurs personally (i.e., have a network or role models). Moreover, these people can provide the cultural support, financial resources and

Table 1.4 Entrepreneurial attitudes sub-index and pillar values, 2012

Country	ATTINDEX	Opportunity perception	Startup skills	Nonfear of failure	Networking	Cultural support
Sweden	0.68	0.93	0.59	0.69	0.92	0.86
United States	0.64	0.68	0.96	0.36	0.82	0.70
Australia	0.60	0.78	0.81	0.35	0.73	0.78
Canada	0.60	0.72	0.65	0.36	0.95	0.93
Denmark	0.60	0.50	0.60	0.52	0.82	0.82
Iceland	0.59	0.29	0.73	0.71	0.93	0.66
Netherlands	0.59	0.59	0.55	0.43	1.00	1.00
Finland	0.57	0.40	0.69	0.59	0.87	0.90
Norway	0.56	0.57	0.60	0.49	1.00	0.80
Chile	0.55	0.81	0.71	0.53	0.45	0.82
Switzerland	0.54	0.38	0.44	0.45	0.85	0.93
Austria	0.53	0.55	0.56	0.52	0.73	0.56
United Kingdom	0.49	0.49	0.55	0.33	0.81	0.65
Belgium	0.46	0.41	0.49	0.30	0.83	0.46
Germany	0.46	0.36	0.35	0.36	0.67	0.72
Uruguay	0.46	0.49	0.90	0.27	0.43	0.62
France	0.46	0.45	0.33	0.52	0.58	0.62
Slovenia	0.45	0.09	0.94	0.56	0.65	0.55
Korea	0.45	0.14	0.79	0.42	0.83	0.45
Taiwan	0.44	0.40	0.42	0.40	0.63	0.46
United Arab Emirates	0.44	0.51	0.32	0.40	0.80	0.62
Israel	0.43	0.42	0.46	0.38	0.55	0.54
Ireland	0.43	0.13	0.56	0.41	0.63	0.76
Poland	0.39	0.36	0.66	0.42	0.51	0.39
Saudi Arabia	0.39	1.00	0.45	0.18	0.33	0.54
Spain	0.39	0.21	0.68	0.37	0.48	0.48
Singapore	0.38	0.17	0.28	0.29	0.69	0.65
Puerto Rico	0.37	0.41	0.61	0.38	0.26	0.53
Argentina	0.37	0.79	0.86	0.15	0.33	0.18
Colombia	0.36	0.77	0.46	0.15	0.51	0.32
Peru	0.36	0.75	0.50	0.30	0.30	0.31
Brazil	0.36	0.88	0.36	0.26	0.38	0.33
Czech Republic	0.35	0.25	0.42	0.32	0.64	0.27
Portugal	0.35	0.12	0.58	0.33	0.44	0.55
Venezuela	0.34	0.77	0.93	0.10	0.33	0.07
Latvia	0.34	0.09	0.68	0.36	0.62	0.28
Greece	0.34	0.15	1.00	0.43	0.28	0.23
Lebanon	0.33	0.57	0.81	0.20	0.26	0.18
Italy	0.33	0.30	0.54	0.29	0.39	0.30
Mexico	0.33	0.90	0.33	0.37	0.26	0.18
Hungary	0.32	0.12	0.53	0.31	0.54	0.32
Turkey	0.32	0.45	0.39	0.22	0.37	0.39

Table 1.4 (continued)

Country	ATTINDEX	Opportunity perception	Startup skills	Nonfear of failure	Networking	Cultural support
Costa Rica	0.31	0.30	0.32	0.51	0.32	0.41
Croatia	0.31	0.16	0.53	0.32	0.44	0.24
Hong Kong	0.31	0.17	0.19	0.27	0.75	0.56
Malaysia	0.31	0.46	0.16	0.48	0.43	0.31
Jordan	0.31	0.36	0.44	0.27	0.23	0.50
Dominican Republic	0.29	0.42	0.50	0.24	0.26	0.29
Tunisia	0.29	0.17	0.29	0.30	0.39	0.50
Jamaica	0.29	0.22	0.36	0.24	0.62	0.28
Montenegro	0.29	0.08	0.73	0.16	0.40	0.30
Panama	0.29	0.31	0.54	0.23	0.32	0.26
Morocco	0.28	0.38	0.16	0.30	0.47	0.33
Serbia	0.28	0.13	0.71	0.13	0.45	0.20
Macedonia	0.26	0.16	0.46	0.09	0.50	0.31
Ecuador	0.25	0.40	0.62	0.08	0.23	0.15
Philippines	0.25	0.62	0.39	0.23	0.06	0.17
Japan	0.25	0.02	0.13	0.20	0.79	0.36
Egypt	0.23	0.23	0.34	0.20	0.23	0.27
Trinidad and Tobago	0.23	0.00	0.16	0.29	0.59	0.33
China	0.23	0.29	0.15	0.28	0.29	0.26
Algeria	0.22	0.45	0.30	0.28	0.13	0.11
Bolivia	0.22	0.36	0.56	0.13	0.10	0.13
Romania	0.22	0.06	0.41	0.22	0.28	0.23
South Africa	0.22	0.37	0.09	0.32	0.08	0.38
Kazakhstan	0.21	0.42	0.30	0.02	0.24	0.25
Bosnia and Herzegovina	0.21	0.12	0.42	0.09	0.37	0.19
Syria	0.21	0.36	0.31	0.05	0.23	0.21
India	0.21	0.36	0.13	0.41	0.02	0.25
Iran	0.20	0.44	0.42	0.10	0.09	0.09
Thailand	0.19	0.03	0.36	0.20	0.17	0.34
Ghana	0.19	0.42	0.06	0.14	0.05	0.47
Guatemala	0.19	0.33	0.21	0.14	0.16	0.21
Russia	0.18	0.24	0.33	0.12	0.24	0.05
Indonesia	0.16	0.39	0.21	0.13	0.06	0.10
Pakistan	0.12	0.28	0.03	0.12	0.10	0.13
Zambia	0.12	0.20	0.00	0.21	0.06	0.19
Angola	0.11	0.47	0.01	0.06	0.01	0.07
Uganda	0.10	0.03	0.03	0.19	0.09	0.18

networking potential to those who are already entrepreneurs or want to start a business. Sweden leads the entrepreneurial attitudes sub-index in Table 1.4, followed by the United States, Australia, Canada, Denmark, Iceland, Netherlands, Finland, Norway and Chile. This is a very

strong showing for a South American country. Syria, Russia, and Uganda are at the bottom. Russia's position is a great disappointment for such an important country.

Entrepreneurial actions are the startup effort in the medium- or high-technology sector, initiated by educated

Table 1.5 Entrepreneurial actions sub-index and pillar values, 2012

Country	ACTINDEX	Opportunity startup	Tech sector	Quality of human resources	Competition
Australia	0.68	0.71	0.95	0.80	0.69
United States	0.63	0.60	0.41	0.93	0.83
Canada	0.63	0.89	0.62	0.95	0.58
Puerto Rico	0.62	0.72	0.70	0.95	0.88
United Kingdom	0.61	0.88	0.63	0.59	0.81
Belgium	0.60	0.75	0.52	0.69	0.74
Denmark	0.60	0.84	0.34	0.65	0.79
Switzerland	0.58	0.70	0.52	0.57	0.80
Singapore	0.55	0.91	0.25	0.89	0.60
Ireland	0.55	0.58	0.58	0.86	0.63
Iceland	0.55	0.85	0.57	0.57	0.40
Sweden	0.55	0.86	0.66	0.24	0.75
Germany	0.54	0.53	0.52	0.52	0.78
Norway	0.49	0.78	0.11	0.75	0.79
Netherlands	0.49	0.61	0.42	0.43	0.74
France	0.49	0.62	0.28	0.54	0.72
Finland	0.49	0.73	0.44	0.53	0.51
Austria	0.47	0.50	0.39	0.32	0.83
Taiwan	0.46	0.39	0.46	0.67	0.43
Slovenia	0.46	0.71	0.60	0.38	0.50
Japan	0.43	0.48	0.34	0.68	0.61
United Arab Emirates	0.41	0.43	0.20	0.78	0.60
Spain	0.41	0.53	0.36	0.49	0.49
Saudi Arabia	0.38	0.77	0.07	0.52	0.55
Chile	0.36	0.34	0.29	0.38	0.54
Israel	0.35	0.30	0.18	0.75	0.30
Czech Republic	0.35	0.33	0.49	0.15	0.55
Hungary	0.35	0.52	0.33	0.41	0.28
Italy	0.35	0.63	0.23	0.19	0.50
Trinidad and Tobago	0.33	0.39	0.22	0.74	0.28
Poland	0.32	0.25	0.34	0.33	0.56
Latvia	0.32	0.40	0.19	0.41	0.47
Tunisia	0.32	0.50	0.12	0.48	0.38
Malaysia	0.31	0.50	0.14	0.36	0.47
Portugal	0.31	0.50	0.28	0.30	0.28
Korea	0.30	0.42	0.20	0.54	0.13
Uruguay	0.30	0.33	0.22	0.21	0.51
Croatia	0.30	0.19	0.34	0.28	0.45
Greece	0.29	0.49	0.13	0.32	0.39
Mexico	0.29	0.64	0.06	0.34	0.34
Indonesia	0.29	0.34	0.41	0.09	0.53
Hong Kong	0.26	0.68	0.10	0.55	0.00

Table 1.5 (continued)

Country	ACTINDEX	Opportunity startup	Tech sector	Quality of human resources	Competition
Peru	0.26	0.38	0.16	0.23	0.41
South Africa	0.26	0.33	0.08	0.16	0.67
Romania	0.25	0.31	0.05	0.41	0.36
Colombia	0.25	0.43	0.16	0.28	0.27
Russia	0.25	0.16	0.17	0.78	0.11
Lebanon	0.25	0.30	0.10	0.35	0.34
Kazakhstan	0.24	0.42	0.07	0.53	0.14
Turkey	0.24	0.20	0.15	0.34	0.36
Panama	0.24	0.52	0.00	0.25	0.38
Thailand	0.24	0.35	0.03	0.39	0.33
Jamaica	0.24	0.42	0.09	0.17	0.43
Montenegro	0.23	0.30	0.10	0.24	0.35
Algeria	0.22	0.43	0.01	0.23	0.33
Argentina	0.21	0.17	0.28	0.14	0.31
Macedonia	0.20	0.00	0.16	0.33	0.44
Dominican Republic	0.20	0.26	0.02	0.36	0.26
Zambia	0.20	0.31	0.11	0.21	0.25
Costa Rica	0.18	0.18	0.00	0.10	0.60
Iran	0.18	0.26	0.07	0.25	0.24
Brazil	0.18	0.17	0.21	0.10	0.33
Bolivia	0.18	0.35	0.04	0.14	0.26
Pakistan	0.17	0.24	0.06	0.04	0.42
Jordan	0.17	0.23	0.03	0.18	0.29
Morocco	0.16	0.50	0.00	0.02	0.26
Syria	0.16	0.18	0.02	0.13	0.36
Guatemala	0.15	0.11	0.08	0.00	0.54
Venezuela	0.15	0.15	0.13	0.22	0.14
Serbia	0.14	0.09	0.05	0.19	0.25
Egypt	0.14	0.07	0.06	0.25	0.21
Bosnia and Herzegovina	0.14	0.16	0.07	0.09	0.27
Philippines	0.14	0.03	0.07	0.41	0.12
Ghana	0.13	0.17	0.00	0.01	0.44
China	0.13	0.03	0.02	0.19	0.31
Ecuador	0.13	0.20	0.05	0.08	0.21
India	0.11	0.02	0.05	0.40	0.02
Angola	0.10	0.04	0.06	0.07	0.26
Uganda	0.09	0.09	0.02	0.05	0.22

entrepreneurs and launched because of opportunity motivation in a not too competitive environment. Quality differences in startups are quantified by the education level of the entrepreneur 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.'

Australia ranks number one on the ACT sub-index (Table 1.5) and has a very strong showing in all four of the

Table 1.6 Entrepreneurial aspirations sub-index and pillar values, 2012

Country	ASPINDEX	Product innovation	Process innovation	High growth	Internationalization	Risk capital
Israel	0.55	0.67	0.90	0.35	0.60	0.68
Taiwan	0.53	1.00	0.78	0.45	0.28	0.46
United States	0.51	0.60	0.40	0.41	0.64	0.63
Switzerland	0.51	0.78	0.38	0.24	0.69	0.76
Iceland	0.51	0.68	0.52	0.37	0.72	0.41
United Arab Emirates	0.50	0.69	0.05	1.00	0.54	1.00
Czech Republic	0.49	0.61	0.57	0.43	1.00	0.30
Singapore	0.49	0.68	0.54	0.38	0.87	0.37
Sweden	0.48	0.65	0.49	0.24	0.86	0.41
Denmark	0.45	0.82	0.32	0.31	0.34	0.57
Belgium	0.44	0.52	0.31	0.25	0.79	0.48
France	0.42	0.68	0.46	0.35	0.54	0.21
Norway	0.41	0.53	0.21	0.34	0.56	0.75
Canada	0.40	0.60	0.25	0.17	0.94	0.34
Australia	0.40	0.41	0.24	0.26	0.57	0.66
Ireland	0.38	0.63	0.14	0.35	0.68	0.38
Austria	0.38	0.55	0.33	0.27	0.63	0.24
Hong Kong	0.38	0.85	0.15	0.39	0.56	0.41
Netherlands	0.37	0.50	0.17	0.25	0.54	0.54
Puerto Rico	0.36	0.77	0.05	0.92	0.47	0.09
Germany	0.36	0.52	0.27	0.29	0.48	0.27
Chile	0.36	0.90	0.13	0.34	0.41	0.27
Slovenia	0.35	0.47	0.27	0.28	0.63	0.34
Japan	0.34	0.65	0.64	0.51	0.17	0.10
Saudi Arabia	0.32	0.65	0.01	0.74	0.24	0.35
Korea	0.31	0.55	0.35	0.22	0.25	0.31
Turkey	0.31	0.62	0.06	0.39	0.53	0.22
Finland	0.30	0.62	0.35	0.20	0.32	0.15
Montenegro	0.29	0.29	0.28	0.22	0.43	0.39
United Kingdom	0.29	0.40	0.26	0.27	0.39	0.16
Croatia	0.27	0.13	0.22	0.29	0.65	0.15
South Africa	0.26	0.56	0.26	0.27	0.46	0.01
Latvia	0.26	0.30	0.05	0.28	0.54	0.31
Uruguay	0.25	0.50	0.12	0.25	0.33	0.15
China	0.24	0.70	0.22	0.24	0.07	0.20
Greece	0.23	0.37	0.13	0.05	0.46	0.29
Portugal	0.23	0.24	0.24	0.12	0.60	0.07
Macedonia	0.23	0.27	0.05	0.30	0.50	0.20
Romania	0.21	0.22	0.08	0.22	0.60	0.09
Poland	0.21	0.42	0.05	0.24	0.31	0.16
Hungary	0.21	0.23	0.09	0.24	0.46	0.10
Italy	0.21	0.32	0.17	0.12	0.34	0.11

Table 1.6 (continued)

Country	ASPINDEX	Product innovation	Process innovation	High growth	Internationalization	Risk capital
Colombia	0.20	0.40	0.03	0.41	0.29	0.04
Spain	0.20	0.28	0.20	0.09	0.23	0.25
Lebanon	0.18	0.21	0.10	0.20	0.45	0.05
Peru	0.18	0.60	0.02	0.15	0.22	0.03
Angola	0.17	0.14	0.02	0.05	0.25	0.53
Argentina	0.16	0.54	0.08	0.19	0.07	0.03
Syria	0.16	0.25	0.03	0.32	0.17	0.10
Algeria	0.16	0.37	0.01	0.15	0.15	0.18
Jordan	0.16	0.35	0.06	0.20	0.19	0.05
Indonesia	0.14	0.38	0.01	0.07	0.14	0.20
Mexico	0.14	0.28	0.02	0.10	0.38	0.02
Pakistan	0.14	0.41	0.14	0.04	0.21	0.00
Dominican Republic	0.14	0.22	0.02	0.19	0.29	0.02
Costa Rica	0.13	0.36	0.02	0.11	0.16	0.08
Morocco	0.13	0.06	0.10	0.14	0.44	0.00
Egypt	0.13	0.23	0.05	0.19	0.10	0.09
Iran	0.12	0.36	0.10	0.17	0.00	0.06
Serbia	0.12	0.30	0.08	0.12	0.10	0.04
Malaysia	0.12	0.22	0.08	0.04	0.33	0.01
Bosnia and Herzegovina	0.12	0.13	0.00	0.14	0.34	0.05
Russia	0.12	0.31	0.12	0.21	0.02	0.01
Tunisia	0.12	0.29	0.09	0.12	0.07	0.05
Jamaica	0.12	0.09	0.01	0.09	0.47	0.01
Venezuela	0.11	0.15	0.03	0.16	0.12	0.09
Panama	0.10	0.18	0.02	0.17	0.15	0.04
India	0.09	0.17	0.23	0.04	0.02	0.04
Thailand	0.09	0.35	0.06	0.03	0.01	0.04
Bolivia	0.08	0.19	0.02	0.10	0.10	0.04
Kazakhstan	0.08	0.00	0.02	0.19	0.19	0.02
Zambia	0.07	0.15	0.00	0.04	0.20	0.00
Trinidad and Tobago	0.07	0.01	0.00	0.11	0.25	0.03
Ecuador	0.07	0.10	0.01	0.08	0.17	0.01
Brazil	0.07	0.12	0.08	0.12	0.04	0.00
Guatemala	0.05	0.23	0.00	0.03	0.01	0.01
Philippines	0.05	0.14	0.02	0.04	0.07	0.00
Ghana	0.05	0.10	0.03	0.10	0.02	0.01
Uganda	0.05	0.09	0.05	0.06	0.05	0.00

pillars, including opportunity startups, tech sector, quality of human resources and competition. It is followed by the United States, which is weaker in opportunity startups and the tech sector but stronger in the quality of human resources and competition. They are followed by Canada,

Puerto Rico, the United Kingdom and Belgium, while Singapore ranks 9th, with a strong showing in opportunity startups but a weak showing in the tech sector.

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.

Israel leads in the ASP sub-index (Table 1.6). While showing some weakness in high growth it is very strong in product innovation, process innovation and risk capital. Taiwan is a close second, with a very strong showing in product innovation and process innovation. It is followed by the United States, which has a very strong showing in risk capital and internationalization but is weak on process innovation. Switzerland, Iceland, the Czech Republic, Singapore, Sweden and Denmark round out most of the top ten. The surprise is the United Arab Emirates with a very strong showing in high growth and risk capital. The aspirations list includes several countries that were not leaders in either attitudes or actions.

1.5 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 1.2 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 almost all of the pillar values than the European Union, and the European Union outperforms the rest of the world. However, the representation of the rest of the world is spotty and does not give a true picture. More countries are needed here.

However, the world is flatter than one might think; the smallest differences are in the tech sector, where the three entities almost converge. The greatest similarities appear to be in product innovation, process innovation and high growth, where the United States outperforms both developed and developing countries but not by much. However, scores for the USA show the highest variance, with pillars like opportunity startup and the tech sector showing weaknesses. For the rest of the world,

product innovation, risk capital and networking are the laggard pillars; scores on the rest of the pillars roughly converge. What the great recession has brought out is that the fear of failure in the United States is very real.

The United States shows real strength in the areas of quality of human resources, competition, and startup skills. 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 differences between the developed and developing countries also seems to be narrowing in the aspirations pillars, with high growth, product innovation and process innovation showing little difference between the European Union and the rest of the world. The spider diagram shows clear differences between groups of countries at different levels of development.

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 1.3 compares the two leading economies of the world, the United States and the European Union, with the BRIC countries. The BRIC countries perform rather as expected or perhaps worse given 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 two pillars, opportunity perception and quality of human resources, the BRIC countries are on a par with 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 as entrepreneurial as some would expect from the views expressed in the literature.

Figure 1.4 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 is impressive with regard to the quality of human resources. India has less fear of failure than other countries. 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 actions, with extremely low scores on competition, startup skills and networking. It does much better on the aspirations pillars. India scores extremely low on some of the

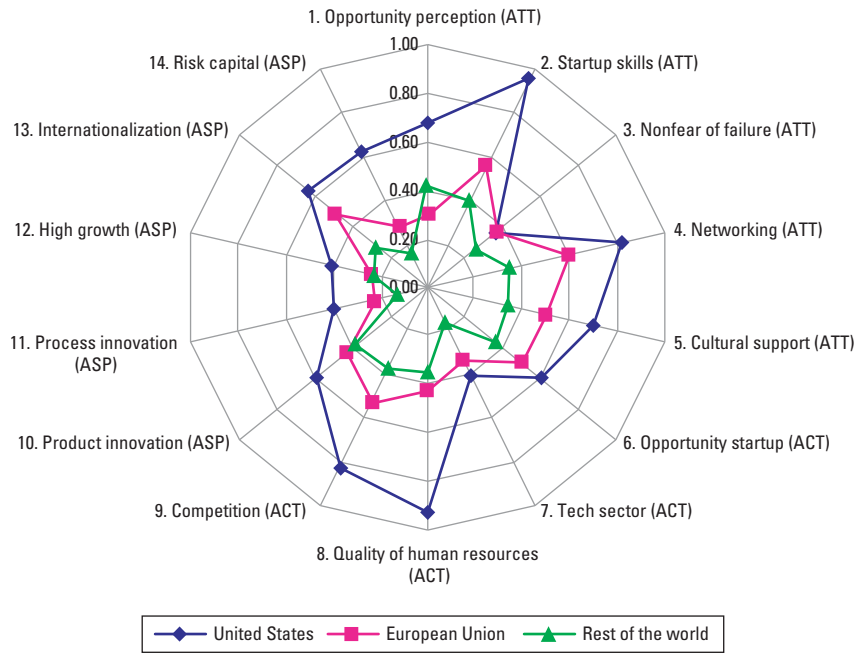


Figure 1.2 Comparison of the European Union, the United States and the rest of the world, 2012

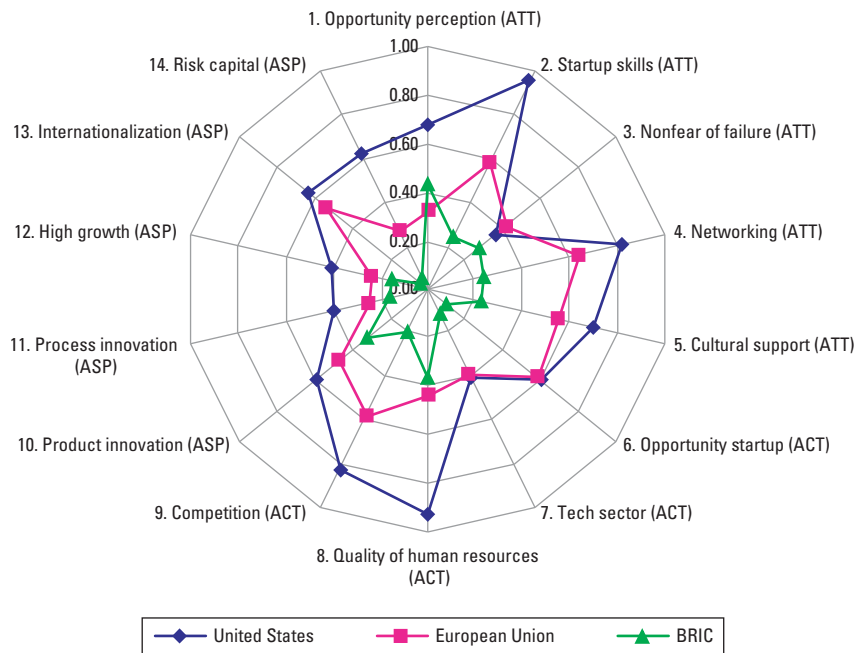


Figure 1.3 Comparison of the European Union, United States and the BRIC countries (Brazil, Russia, India, China)

aspirations and attitudes pillars, such as product, innovation, high growth, and risk capital. It does better on the actions pillars, despite a low score on networking.

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 1.5). The largest differences appear to lie in actions, with quality of human resources showing the greatest difference 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 22nd on the GEDI, 10th in attitudes, 25th in actions, and 22nd in aspirations. Argentina ranks 46th on the GEDI, 29th in attitudes, 56th in actions and 48th in aspirations. Mexico is 43rd 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

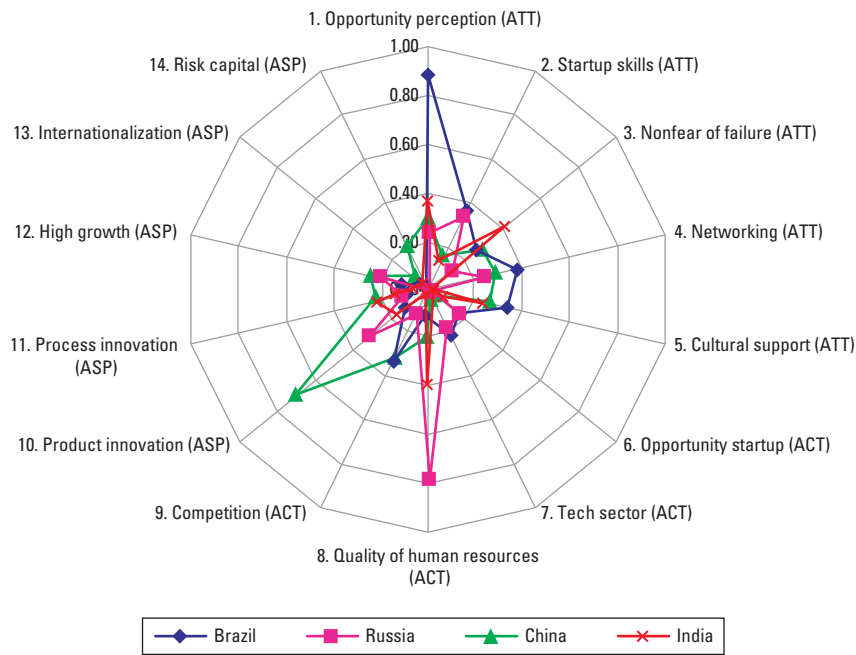


Figure 1.4 Comparison of the BRIC countries (Brazil, Russia, India, China)

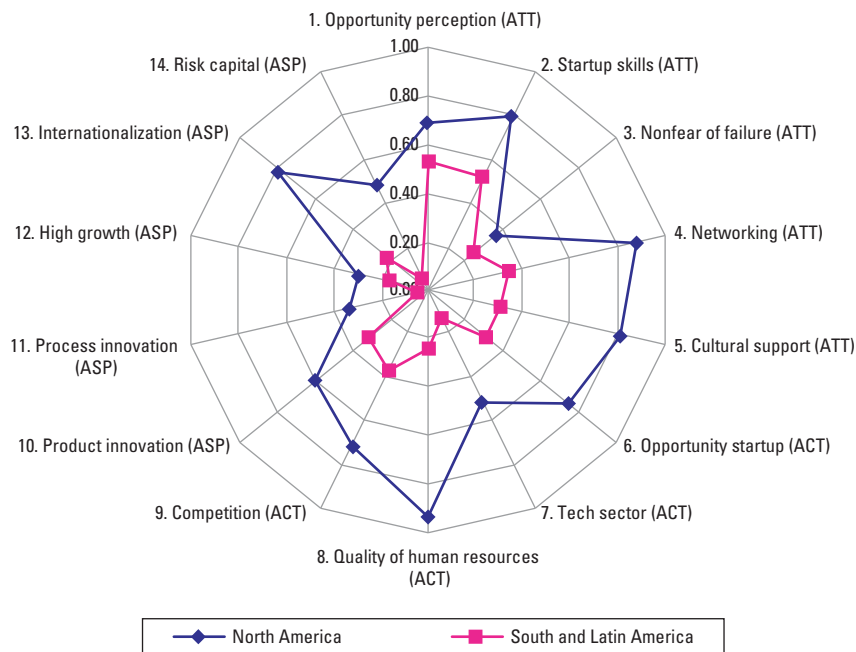


Figure 1.5 Comparison of South and Latin America and North America (USA, Canada)

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 product 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 actions pillars.

Nothing has captured the imagination of the European Union as strongly as the financial fate of Greece,

Portugal, Spain and Italy (PIGS). Ever since the financial crisis the fate of especially Greece has threatened the monetary union. In addition Ireland has had to nationalize its banks and the country faces huge debts. This is of course in some sense hard to understand since Ireland, the Celtic Tiger, was the wonder of the European Union for over a decade. While it was the recipient of a large amount of financial assistance from the European Union, it also benefited from foreign direct investment and strong economic development policies. However, a housing bubble bought the economy to the brink of disaster. In

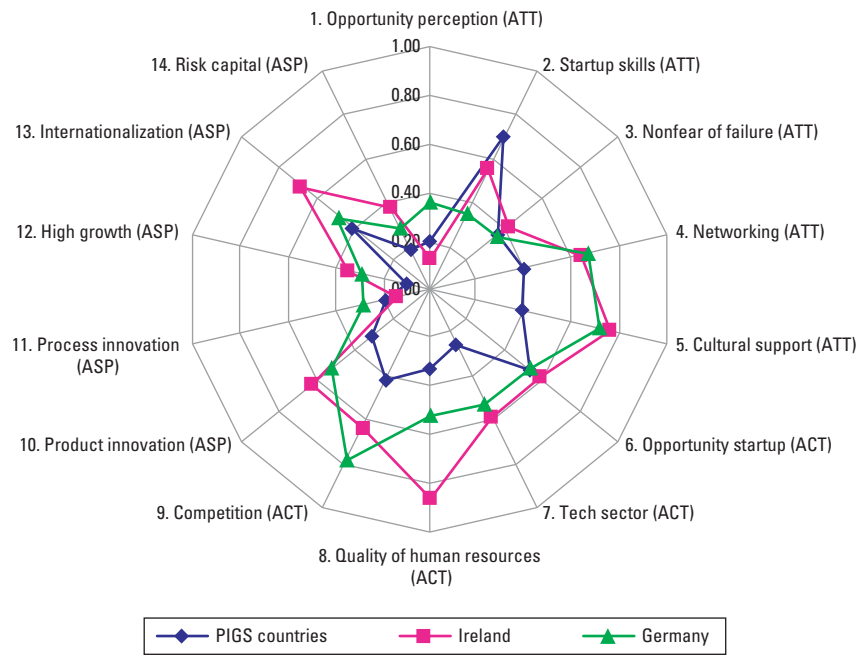


Figure 1.6 Comparison of the PIGS (Portugal, Italy, Greece, and Spain) and Ireland and Germany

Figure 1.6 we compare the PIGS, Ireland and Germany. What is most striking is that in all of these economies opportunity perception has almost collapsed. Even Germany, while above the rest, is rather low in this area. The great recession has taken a real toll on entrepreneurial opportunity in the European Union.

Of course there is a real difference between Ireland and Germany and the PIGS. Ireland suffered a housing and banking crisis but its economy was stronger than the PIGS. This is especially true with respect to the quality of human resources, where it has surpassed even Germany, and it is on a par with Germany in many pillars – networking, cultural support and opportunity startup. The southern European countries face a much more difficult future, with weaker entrepreneurial and innovative economies than northern Europe. They 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 Germany.

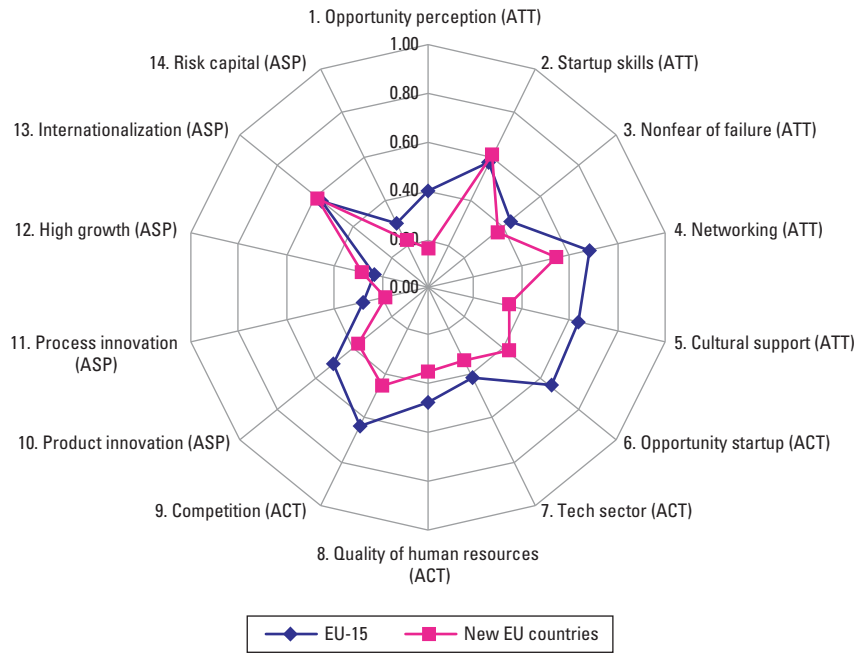
Figure 1.7 compares ‘old Europe’ with ‘new Europe’ to coin a phrase made famous by former Secretary of Defense Donald H. Rumsfeld. While we do not have data on all countries in old Europe, we have close to 100 million people in our six new countries. What is perhaps not surprising is that the two spider diagrams are similar in shape, with old Europe outside new Europe on most of the pillars. Given that they now have similar institutional frameworks and the weakness of the PIGS, this picture is representative of the situation in the expanded EU. There are two points however, where new Europe is rather weak and should be improved. First, is opportunity perception. It is not surprising but the lack of opportunity for successful entrepreneurship in new Europe is a 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 cultural support for entrepreneurship. Given 40 years of communism this is understandable but public policy needs to address this.

1.6 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 presently the only, complex measure of entrepreneurship that reflects the multifaceted nature of entrepreneurship. In this chapter, we presented the entrepreneurial performances of the 79 most important countries of the world. This includes country-level values for the GEDI – entrepreneurial attitudes, entrepreneurial actions and entrepreneurial aspirations – and for the 14 pillars.

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 actions, has a U- or

**Notes:**

European Union-15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, the United Kingdom.

New European Union countries: the Czech Republic, Hungary, Latvia, Poland, Romania, Slovenia.

Figure 1.7 Comparison of the old European Union (EU-15) countries and the new European Union member countries

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 a 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 PIGS, 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 next chapter.

Notes

1. Acemoglu et al. (2001).
2. Davidsson (2004), Gartner (1990), Godin et al. (2008), and Wennekers and Thurik (1999) all identify several dimensions of entrepreneurship.
3. Sørensen and Sorenson (2003).
4. Ács and Varga (2005).
5. Papagiannidis and Li (2005).
6. UNESCO (2009).
7. Caliendo et al. (2009).
8. Shane and Cable (2003).
9. Guiso et al. (2006).
10. Baumol (1990).
11. Bhola et al. (2006).
12. Klepper (2001).
13. Coad and Rao (2008).
14. Bates (1990).
15. Baumol et al. (2007).
16. Note that the product innovation and process innovation pillars have changed as compared with the previous GEDI report. The GERD variable is applied to the process innovation pillar and the TECHTRANSFER variable to the process innovation pillar. For a more detailed description see Chapter 3.
17. Stam and Wennberg (2009).
18. Ács et al. (2008).
19. De Clercq et al. (2005).
20. Gompers and Lerner (2004).

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