

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.²

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 are 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 activities 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, 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 71 of the most important countries in the world. Furthermore, it captures the contextual feature of entrepreneurship by measuring entrepreneurial attitudes, entrepreneurial activity 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.³

In this chapter, we present the GEDI results. 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, activity 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.⁴ 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 activities, 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 activity (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.⁵ 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.⁶ MARKETSIZE 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.⁷ 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 were 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 (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.⁸ 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.⁹ 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/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.¹⁰ 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.¹¹ 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.¹²

The pillars of entrepreneurial activity

- **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 (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 (FREEDOM),¹³ 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 technology (ICT) plays a crucial role in economic development. Not all sectors provide the same chances for businesses to survive and/or their potential for growth.¹⁴ The TECHSECT variable is a measure of the businesses that are in technology sectors. The institutional variable is a measure of a country's capacity for firm-level technology absorption (TECHABSORP), 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.¹⁵
- **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.¹⁶ 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 is a country's level of investment in business training and employee development (STAFFTRAIN). 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's product or market uniqueness, combined with the market power of existing businesses and business groups.¹⁷ 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 aspirations

- **Pillar 10: New product** 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 (NEWP) 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 research and development (R&D) seems to be relevant. 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, new product development – and therefore future growth – will be inhibited.¹⁸
- **Pillar 11: New technology** 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, 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 INNOV, which is a complex measure of whether a business environment allows cutting-edge innovations.
- **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).¹⁹ 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.²⁰ 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 (GLOB). 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.²¹ 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, 2010 rankings

In this section, we report the ranks of the 71 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. Nordic and Anglo-Saxon countries in the innovation-driven stage of development are in the front ranks. Two Scandinavian countries, Denmark and Sweden, lead the ranking. New Zealand, an outlier with about \$26,000 GDP per capita, is in fifth place, due to its excellent performance on attitudes, which counterbalances its relatively weak performance on aspirations. Four of the five Nordic countries, Denmark, Sweden, Iceland and Norway, are in the top 10, and Finland is 13th – still a good performance.

The United States is in third place; it trails Canada (2nd place) because of its weaknesses in attitude measures.²² Australia, Ireland 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 14th, Germany is 16th, France is 18th, Italy is 27th, followed by Spain in 28th 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 29th place. Factor-driven countries with a low GDP, such as Jamaica, Bosnia and Herzegovina, the Philippines, Iran, Bolivia, Ecuador and Uganda, are on the bottom of the entrepreneurship ranking, as expected. However, two former socialist countries, Hungary 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 among 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 activity and entrepreneurial aspirations.

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

Table 1.1 The GEDI rank of the countries

| Rank | Country | GDP* | GEDI | Rank | Country | GDP* | GEDI |
|------|----------------------|--------|------|------|------------------------|--------|------|
| 1 | Denmark | 35,890 | 0.76 | 37 | Poland | 14,095 | 0.29 |
| 2 | Canada | 34,926 | 0.74 | 38 | Croatia | 15,599 | 0.28 |
| 3 | United States | 44,474 | 0.72 | 39 | Peru | 7,558 | 0.28 |
| 4 | Sweden | 36,358 | 0.68 | 40 | China | 5,087 | 0.28 |
| 5 | New Zealand | 26,773 | 0.68 | 41 | Colombia | 8,336 | 0.28 |
| 6 | Ireland | 44,402 | 0.63 | 42 | South Africa | 9,565 | 0.28 |
| 7 | Switzerland | 40,183 | 0.63 | 43 | Turkey | 12,747 | 0.27 |
| 8 | Norway | 49,014 | 0.62 | 44 | Mexico | 14,135 | 0.27 |
| 9 | Iceland | 35,490 | 0.62 | 45 | Dominican Republic | 7,709 | 0.26 |
| 10 | Netherlands | 38,083 | 0.62 | 46 | Indonesia | 3,459 | 0.26 |
| 11 | Australia | 34,073 | 0.60 | 47 | Hungary | 18,639 | 0.25 |
| 12 | Belgium | 34,584 | 0.58 | 48 | Romania | 13,217 | 0.25 |
| 13 | Finland | 33,869 | 0.56 | 49 | Macedonia | 9,632 | 0.24 |
| 14 | United Kingdom | 34,726 | 0.56 | 50 | Egypt | 5,383 | 0.24 |
| 15 | Singapore | 39,508 | 0.56 | 51 | Jordan | 5,092 | 0.23 |
| 16 | Germany | 34,512 | 0.54 | 52 | Panama | 11,947 | 0.23 |
| 17 | Puerto Rico | 20,223 | 0.54 | 53 | India | 2,656 | 0.23 |
| 18 | France | 33,412 | 0.50 | 54 | Brazil | 9,376 | 0.23 |
| 19 | Slovenia | 24,913 | 0.49 | 55 | Venezuela | 11,333 | 0.22 |
| 20 | Korea | 25,481 | 0.49 | 56 | Thailand | 7,974 | 0.22 |
| 21 | Israel | 25,868 | 0.47 | 57 | Russia | 14,121 | 0.22 |
| 22 | Austria | 36,836 | 0.45 | 58 | Tunisia | 7,758 | 0.22 |
| 23 | Hong Kong | 39,089 | 0.45 | 59 | Morocco | 4,248 | 0.22 |
| 24 | United Arab Emirates | 39,900 | 0.42 | 60 | Jamaica | 6,848 | 0.21 |
| 25 | Czech Republic | 22,110 | 0.42 | 61 | Algeria | 7,887 | 0.19 |
| 26 | Chile | 13,609 | 0.41 | 62 | Serbia | 10,853 | 0.18 |
| 27 | Italy | 30,248 | 0.41 | 63 | Kazakhstan | 10,477 | 0.18 |
| 28 | Spain | 31,241 | 0.40 | 64 | Bosnia and Herzegovina | 8,077 | 0.18 |
| 29 | Japan | 33,288 | 0.40 | 65 | Iran | 10,625 | 0.17 |
| 30 | Saudi Arabia | 23,428 | 0.38 | 66 | Ecuador | 7,597 | 0.17 |
| 31 | Malaysia | 12,681 | 0.36 | 67 | Bolivia | 4,242 | 0.16 |
| 32 | Latvia | 15,574 | 0.36 | 68 | Syria | 4,476 | 0.16 |
| 33 | Portugal | 22,595 | 0.35 | 69 | Guatemala | 4,661 | 0.15 |
| 34 | Greece | 28,024 | 0.32 | 70 | Philippines | 3,186 | 0.13 |
| 35 | Uruguay | 10,844 | 0.30 | 71 | Uganda | 918 | 0.10 |
| 36 | Argentina | 12,769 | 0.30 | | | | |

Note: * Per capita GDP average in PPP, 2006–07, World Bank. Poland, New Zealand, Jordan, Uganda and the United Arab Emirates are from 2004–05 average. Egypt, Korea, Iran, Bosnia and Herzegovina, Macedonia, Bolivia and Ecuador are from 2007–08 average.

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 (that is, have a network or role models); and who can generate future entrepreneurial activity. Moreover, these people can provide the cultural support, financial resources and networking potential to those who are already

Table 1.2 The correlation coefficients between the GEDI and other major indexes

| | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|------|------|------|------|------|------|
| 1 | Global Entrepreneurship and Development Index | 1.00 | 0.70 | 0.81 | 0.88 | 0.92 | 0.89 |
| 2 | Index of Economic Freedom | | 1.00 | 0.76 | 0.70 | 0.77 | 0.66 |
| 3 | Ease of Doing Business Index (normalized) | | | 1.00 | 0.84 | 0.82 | 0.76 |
| 4 | Global Competitiveness Index | | | | 1.00 | 0.88 | 0.84 |
| 5 | Corruption Perceptions Index | | | | | 1.00 | 0.87 |
| 6 | Per capita GDP | | | | | | 1.00 |

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

entrepreneurs or want to start a business. Entrepreneurial attitudes are important because they express the general feeling of the population toward entrepreneurs and entrepreneurship. Countries need people who can recognize valuable business opportunities, and who perceive that they have the required skills to exploit these opportunities. Moreover, if national attitudes toward entrepreneurship are positive, this will generate cultural support, financial support and networking benefits to those who want to start a business.

Entrepreneurial activity is what entrepreneurs do and it can take many different forms. One important aspect is to what extent people are creating new businesses. Within the realm of new business activity, different types of entrepreneurial activity can be distinguished. Business creation may vary by industry sector, the legal form of organization, and demographics – age, gender, education. We define entrepreneurial activity as startup activity 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 TEA Opportunity Index. TEA (Total Early-stage Entrepreneurship Activity) 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 activity. Differences in the quality of startups are quantified by the education level of the entrepreneur – that is, if the entrepreneur 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 activity. 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 influence the other two. For example, entrepreneurial attitudes influence entrepreneurial activity and entrepreneurial aspirations. However, entrepreneurial aspirations and activity also influence entrepreneurial aspirations.

Table 1.3 shows the rank of each country in the GEDI and the rank of the sub-index for all 71 countries. For example, Algeria ranks 61st in the overall index, 59th in attitudes, 63rd in activity and 52nd in aspirations. The United States ranks 3rd in the overall index, 6th in attitudes, 8th in activity and 1st in aspirations. The United States is more interested in high-impact entrepreneurship than in replicative activity. Japan represents a more unbalanced case, ranking 29th in the overall index, 47th in attitudes, 23rd in activity and 22nd in aspirations.

Figure 1.1 shows the relationship between the GEDI, the three sub-indicators 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 $R^2 = 0.79$, which implies a close, strong relationship between 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 an ‘S’-shaped relationship.

The relationship between the ATT sub-index and development is shown in the upper-right figure. The relationship is almost linear, implying that the overall entrepreneurship attitude increases as the country develops. The explanatory power, based on $R^2 = 0.62$,

Table 1.3 The GEDI and sub-index ranks of the countries

| Country | GEDI | GEDI rank | ATTINDEX | ATT rank | ACTINDEX | ACT rank | ASPINDEX | ASP rank |
|----------------------|------|-----------|----------|----------|----------|----------|----------|----------|
| Denmark | 0.76 | 1 | 0.75 | 5 | 0.97 | 1 | 0.57 | 6 |
| Canada | 0.74 | 2 | 0.77 | 3 | 0.89 | 2 | 0.55 | 9 |
| United States | 0.72 | 3 | 0.75 | 6 | 0.71 | 8 | 0.69 | 1 |
| Sweden | 0.68 | 4 | 0.77 | 4 | 0.71 | 7 | 0.57 | 5 |
| New Zealand | 0.68 | 5 | 0.86 | 1 | 0.69 | 11 | 0.49 | 14 |
| Ireland | 0.63 | 6 | 0.52 | 14 | 0.83 | 4 | 0.54 | 10 |
| Switzerland | 0.63 | 7 | 0.60 | 12 | 0.73 | 6 | 0.56 | 8 |
| Norway | 0.62 | 8 | 0.70 | 8 | 0.74 | 5 | 0.43 | 20 |
| Iceland | 0.62 | 9 | 0.65 | 10 | 0.56 | 18 | 0.64 | 2 |
| Netherlands | 0.62 | 10 | 0.70 | 7 | 0.67 | 12 | 0.48 | 16 |
| Australia | 0.60 | 11 | 0.80 | 2 | 0.56 | 16 | 0.43 | 19 |
| Belgium | 0.58 | 12 | 0.51 | 18 | 0.69 | 10 | 0.52 | 13 |
| Finland | 0.56 | 13 | 0.69 | 9 | 0.62 | 14 | 0.39 | 24 |
| United Kingdom | 0.56 | 14 | 0.60 | 11 | 0.66 | 13 | 0.42 | 21 |
| Singapore | 0.56 | 15 | 0.38 | 35 | 0.71 | 9 | 0.58 | 3 |
| Germany | 0.54 | 16 | 0.45 | 24 | 0.62 | 15 | 0.56 | 7 |
| Puerto Rico | 0.54 | 17 | 0.46 | 22 | 0.83 | 3 | 0.33 | 31 |
| France | 0.50 | 18 | 0.45 | 23 | 0.56 | 19 | 0.49 | 15 |
| Slovenia | 0.49 | 19 | 0.52 | 15 | 0.56 | 17 | 0.39 | 25 |
| Korea | 0.49 | 20 | 0.48 | 21 | 0.51 | 20 | 0.48 | 17 |
| Israel | 0.47 | 21 | 0.37 | 38 | 0.47 | 21 | 0.58 | 4 |
| Austria | 0.45 | 22 | 0.55 | 13 | 0.47 | 22 | 0.34 | 30 |
| Hong Kong | 0.45 | 23 | 0.44 | 27 | 0.37 | 29 | 0.53 | 11 |
| United Arab Emirates | 0.42 | 24 | 0.45 | 25 | 0.34 | 35 | 0.47 | 18 |
| Czech Republic | 0.42 | 25 | 0.39 | 33 | 0.34 | 36 | 0.53 | 12 |
| Chile | 0.41 | 26 | 0.52 | 16 | 0.33 | 37 | 0.39 | 23 |
| Italy | 0.41 | 27 | 0.50 | 19 | 0.36 | 30 | 0.36 | 27 |
| Spain | 0.40 | 28 | 0.52 | 17 | 0.45 | 25 | 0.24 | 38 |
| Japan | 0.40 | 29 | 0.31 | 47 | 0.47 | 23 | 0.42 | 22 |
| Saudi Arabia | 0.38 | 30 | 0.42 | 29 | 0.37 | 28 | 0.35 | 28 |
| Malaysia | 0.36 | 31 | 0.49 | 20 | 0.45 | 26 | 0.16 | 51 |
| Latvia | 0.36 | 32 | 0.40 | 31 | 0.43 | 27 | 0.25 | 37 |
| Portugal | 0.35 | 33 | 0.45 | 26 | 0.32 | 40 | 0.29 | 33 |
| Greece | 0.32 | 34 | 0.37 | 37 | 0.33 | 39 | 0.26 | 36 |
| Uruguay | 0.30 | 35 | 0.40 | 30 | 0.35 | 31 | 0.15 | 54 |
| Argentina | 0.30 | 36 | 0.38 | 36 | 0.31 | 41 | 0.22 | 41 |
| Poland | 0.29 | 37 | 0.31 | 45 | 0.21 | 55 | 0.34 | 29 |
| Croatia | 0.28 | 38 | 0.32 | 44 | 0.22 | 52 | 0.31 | 32 |
| Peru | 0.28 | 39 | 0.43 | 28 | 0.28 | 47 | 0.14 | 56 |
| China | 0.28 | 40 | 0.26 | 54 | 0.21 | 53 | 0.37 | 26 |
| Colombia | 0.28 | 41 | 0.38 | 34 | 0.28 | 45 | 0.17 | 49 |
| South Africa | 0.28 | 42 | 0.22 | 60 | 0.34 | 33 | 0.26 | 35 |
| Turkey | 0.27 | 43 | 0.31 | 46 | 0.28 | 46 | 0.23 | 39 |

Table 1.3 (continued)

| Country | GED I | GED I rank | ATTINDEX | ATT rank | ACTINDEX | ACT rank | ASPINDEX | ASP rank |
|------------------------|-------|------------|----------|----------|----------|----------|----------|----------|
| Mexico | 0.27 | 44 | 0.33 | 43 | 0.34 | 32 | 0.13 | 59 |
| Dominican Republic | 0.26 | 45 | 0.39 | 32 | 0.26 | 50 | 0.13 | 58 |
| Indonesia | 0.26 | 46 | 0.17 | 68 | 0.46 | 24 | 0.14 | 57 |
| Hungary | 0.25 | 47 | 0.30 | 49 | 0.27 | 49 | 0.19 | 44 |
| Romania | 0.25 | 48 | 0.27 | 53 | 0.29 | 44 | 0.18 | 47 |
| Macedonia | 0.24 | 49 | 0.25 | 56 | 0.21 | 54 | 0.27 | 34 |
| Egypt | 0.24 | 50 | 0.23 | 58 | 0.30 | 43 | 0.18 | 48 |
| Jordan | 0.23 | 51 | 0.35 | 39 | 0.16 | 64 | 0.18 | 45 |
| Panama | 0.23 | 52 | 0.30 | 50 | 0.27 | 48 | 0.11 | 65 |
| India | 0.23 | 53 | 0.22 | 62 | 0.23 | 51 | 0.23 | 40 |
| Brazil | 0.23 | 54 | 0.33 | 42 | 0.19 | 60 | 0.16 | 53 |
| Venezuela | 0.22 | 55 | 0.35 | 40 | 0.19 | 59 | 0.13 | 60 |
| Thailand | 0.22 | 56 | 0.21 | 66 | 0.33 | 38 | 0.13 | 61 |
| Russia | 0.22 | 57 | 0.14 | 70 | 0.30 | 42 | 0.21 | 43 |
| Tunisia | 0.22 | 58 | 0.21 | 64 | 0.34 | 34 | 0.10 | 66 |
| Morocco | 0.22 | 59 | 0.34 | 41 | 0.14 | 67 | 0.17 | 50 |
| Jamaica | 0.21 | 60 | 0.30 | 48 | 0.21 | 56 | 0.12 | 64 |
| Algeria | 0.19 | 61 | 0.23 | 59 | 0.18 | 63 | 0.16 | 52 |
| Serbia | 0.18 | 62 | 0.29 | 51 | 0.13 | 68 | 0.12 | 63 |
| Kazakhstan | 0.18 | 63 | 0.25 | 55 | 0.19 | 61 | 0.10 | 67 |
| Bosnia and Herzegovina | 0.18 | 64 | 0.21 | 63 | 0.11 | 69 | 0.22 | 42 |
| Iran | 0.17 | 65 | 0.24 | 57 | 0.18 | 62 | 0.09 | 68 |
| Ecuador | 0.17 | 66 | 0.21 | 65 | 0.16 | 65 | 0.13 | 62 |
| Bolivia | 0.16 | 67 | 0.22 | 61 | 0.20 | 58 | 0.07 | 69 |
| Syria | 0.16 | 68 | 0.15 | 69 | 0.16 | 66 | 0.18 | 46 |
| Guatemala | 0.15 | 69 | 0.20 | 67 | 0.20 | 57 | 0.05 | 71 |
| Philippines | 0.13 | 70 | 0.27 | 52 | 0.05 | 71 | 0.06 | 70 |
| Uganda | 0.10 | 71 | 0.08 | 71 | 0.07 | 70 | 0.15 | 55 |

shows a significant, moderately strong correlation between ATT and per capita GDP.

The lower-left figure contains the ACT sub-index values in terms of economic development. Its shape is very similar to the ATT sub-index, almost linear. The explanatory power, $R^2 = 0.66$, is significant and moderately strong.

The mild inverse S-shape trend (lower-right figure) of the ASP sub-index is probably no surprise, and the variance of the data points is much lower in terms of economic development than in the ACT sub-index case. The explanatory power of $R^2 = 0.75$ is the highest, implying a close and strong relationship between entrepreneurial aspirations and development.

Tables 1.4–1.6 list the rankings for 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 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) can attach high status and respect to entrepreneurs, (iv) can handle startup risk, and (v) know entrepreneurs personally (that is, have a network or role models). Moreover, these people can provide the cultural support, financial resources and networking potential to those who are

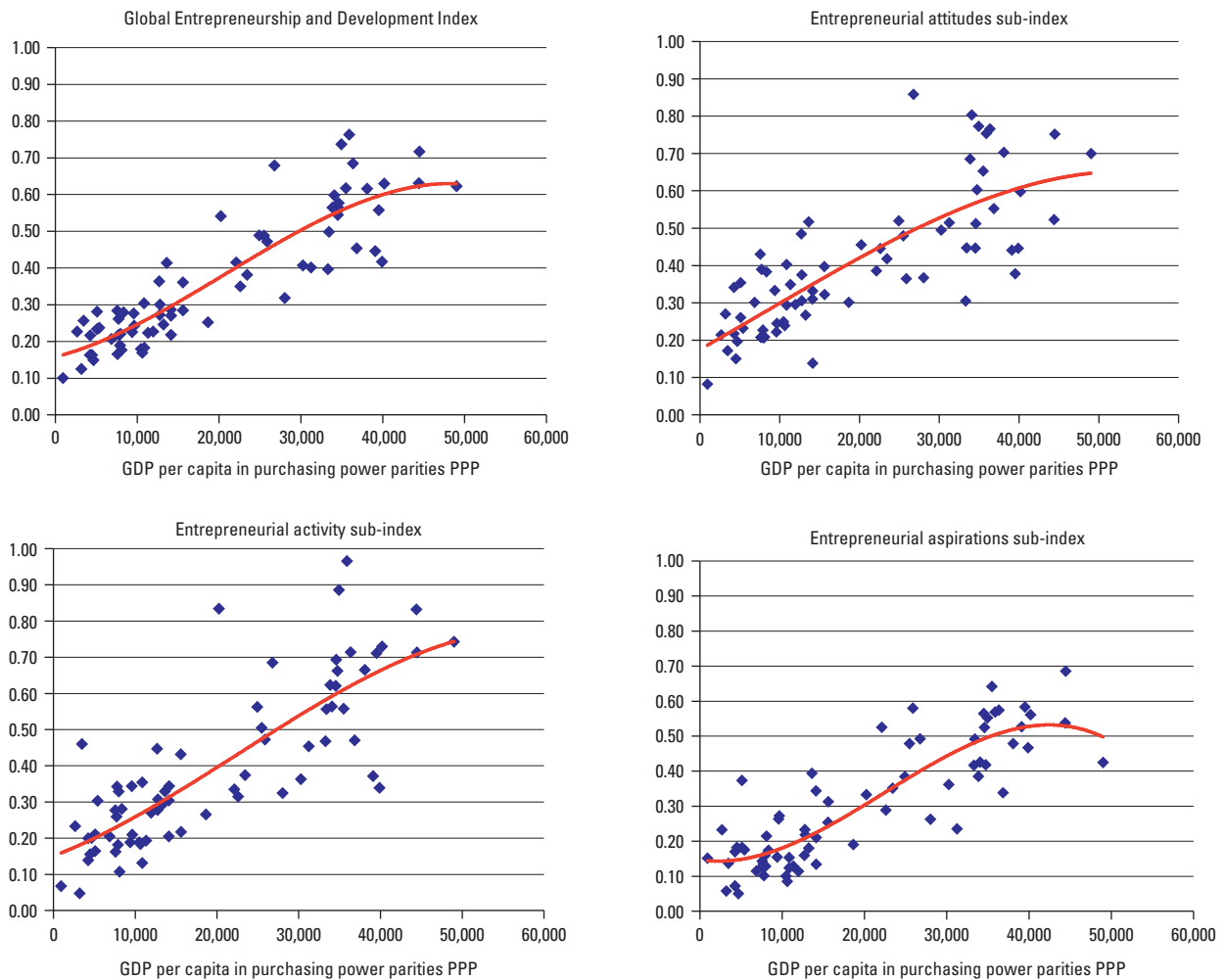


Figure 1.1 The three subindexes in terms of per capita real GDP

already entrepreneurs or want to start a business. New Zealand leads the entrepreneurial attitudes sub-index (Table 1.4), followed by Australia, Canada, Sweden, Denmark, the United States, the Netherlands, Norway, Finland and Iceland. Syria, Russia and Uganda are at the bottom.

Entrepreneurial activity is defined as the startup activity 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 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'.

Denmark ranks number one on the ACT sub-index (Table 1.5) and has a very strong showing in all four of the pillars, including opportunity startup, tech sector, quality of human resources and competition. It is followed by Canada, Puerto Rico, Ireland and Norway.

The United States is ranked ninth, with 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, (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.

The United States leads in the ASP sub-index (Table 1.6). While showing some weakness in new products and high-growth firms, it is very strong in new

Table 1.4 Entrepreneurial attitudes sub-index and pillar values

| Country | ATTINDEX | Opportunity perception | Startup skills | Nonfear of failure | Networking | Cultural support |
|----------------------|----------|------------------------|----------------|--------------------|------------|------------------|
| New Zealand | 0.86 | 0.66 | 1.00 | 0.92 | 0.95 | 0.91 |
| Australia | 0.80 | 0.84 | 0.81 | 0.84 | 0.77 | 0.76 |
| Canada | 0.77 | 0.76 | 0.69 | 0.95 | 0.64 | 0.90 |
| Sweden | 0.77 | 0.62 | 0.74 | 0.84 | 0.95 | 0.76 |
| Denmark | 0.75 | 0.92 | 0.58 | 0.81 | 0.70 | 0.87 |
| United States | 0.75 | 0.76 | 0.95 | 0.87 | 0.67 | 0.60 |
| Netherlands | 0.70 | 0.65 | 0.44 | 0.97 | 0.73 | 1.00 |
| Norway | 0.70 | 0.55 | 0.67 | 1.00 | 0.63 | 0.77 |
| Finland | 0.68 | 0.48 | 0.72 | 0.85 | 0.66 | 0.88 |
| Iceland | 0.65 | 0.41 | 0.64 | 0.54 | 1.00 | 0.92 |
| United Kingdom | 0.60 | 0.76 | 0.61 | 0.71 | 0.36 | 0.76 |
| Switzerland | 0.60 | 0.42 | 0.45 | 0.85 | 0.63 | 0.79 |
| Austria | 0.55 | 0.42 | 0.51 | 0.75 | 0.56 | 0.60 |
| Ireland | 0.52 | 0.34 | 0.60 | 0.69 | 0.35 | 0.79 |
| Slovenia | 0.52 | 0.16 | 0.74 | 0.91 | 0.76 | 0.54 |
| Chile | 0.52 | 0.54 | 0.56 | 0.71 | 0.27 | 0.72 |
| Spain | 0.51 | 0.54 | 0.63 | 0.54 | 0.36 | 0.58 |
| Belgium | 0.51 | 0.39 | 0.48 | 0.93 | 0.34 | 0.57 |
| Italy | 0.49 | 0.44 | 0.52 | 0.67 | 0.44 | 0.43 |
| Malaysia | 0.48 | 0.53 | 0.29 | 0.56 | 0.69 | 0.48 |
| Korea | 0.48 | 0.14 | 0.52 | 0.83 | 0.85 | 0.50 |
| Puerto Rico | 0.46 | 0.44 | 0.50 | 0.80 | 0.23 | 0.53 |
| France | 0.45 | 0.26 | 0.34 | 0.68 | 0.49 | 0.62 |
| Germany | 0.45 | 0.26 | 0.34 | 0.63 | 0.43 | 0.72 |
| United Arab Emirates | 0.45 | 0.53 | 0.21 | 0.78 | 0.32 | 0.62 |
| Portugal | 0.45 | 0.22 | 0.66 | 0.69 | 0.28 | 0.58 |
| Hong Kong | 0.44 | 0.57 | 0.12 | 0.80 | 0.38 | 0.75 |
| Peru | 0.43 | 0.75 | 0.54 | 0.36 | 0.30 | 0.31 |
| Saudi Arabia | 0.42 | 1.00 | 0.47 | 0.23 | 0.27 | 0.35 |
| Uruguay | 0.40 | 0.50 | 0.54 | 0.32 | 0.18 | 0.67 |
| Latvia | 0.40 | 0.24 | 0.49 | 0.40 | 0.54 | 0.40 |
| Dominican Republic | 0.39 | 0.46 | 0.55 | 0.36 | 0.32 | 0.30 |
| Czech Republic | 0.39 | 0.30 | 0.37 | 0.72 | 0.29 | 0.33 |
| Colombia | 0.38 | 0.85 | 0.40 | 0.48 | 0.12 | 0.37 |
| Singapore | 0.38 | 0.19 | 0.21 | 0.80 | 0.25 | 0.68 |
| Argentina | 0.38 | 0.88 | 0.82 | 0.17 | 0.16 | 0.18 |
| Greece | 0.37 | 0.21 | 0.94 | 0.46 | 0.13 | 0.39 |
| Israel | 0.36 | 0.37 | 0.47 | 0.37 | 0.22 | 0.47 |
| Jordan | 0.35 | 0.42 | 0.51 | 0.15 | 0.29 | 0.57 |
| Venezuela | 0.35 | 0.95 | 0.74 | 0.20 | 0.17 | 0.09 |
| Morocco | 0.34 | 0.42 | 0.15 | 0.53 | 0.39 | 0.34 |
| Brazil | 0.33 | 0.82 | 0.21 | 0.41 | 0.14 | 0.28 |

Table 1.4 (continued)

| Country | ATTINDEX | Opportunity perception | Startup skills | Nonfear of failure | Networking | Cultural support |
|------------------------|----------|------------------------|----------------|--------------------|------------|------------------|
| Mexico | 0.33 | 0.63 | 0.23 | 0.67 | 0.15 | 0.17 |
| Croatia | 0.32 | 0.17 | 0.43 | 0.43 | 0.41 | 0.26 |
| Poland | 0.31 | 0.15 | 0.41 | 0.60 | 0.24 | 0.28 |
| Turkey | 0.31 | 0.51 | 0.32 | 0.33 | 0.11 | 0.39 |
| Japan | 0.31 | 0.06 | 0.11 | 0.98 | 0.39 | 0.34 |
| Jamaica | 0.30 | 0.22 | 0.26 | 0.21 | 0.60 | 0.28 |
| Hungary | 0.30 | 0.06 | 0.48 | 0.66 | 0.24 | 0.31 |
| Panama | 0.30 | 0.39 | 0.65 | 0.11 | 0.24 | 0.24 |
| Serbia | 0.29 | 0.31 | 0.57 | 0.21 | 0.21 | 0.23 |
| Philippines | 0.27 | 0.65 | 0.43 | 0.29 | 0.04 | 0.18 |
| Romania | 0.27 | 0.17 | 0.22 | 0.45 | 0.31 | 0.23 |
| China | 0.26 | 0.28 | 0.10 | 0.73 | 0.11 | 0.26 |
| Kazakhstan | 0.25 | 0.49 | 0.47 | 0.22 | 0.08 | 0.13 |
| Macedonia | 0.24 | 0.27 | 0.38 | 0.18 | 0.14 | 0.30 |
| Iran | 0.24 | 0.40 | 0.32 | 0.08 | 0.38 | 0.12 |
| Egypt | 0.23 | 0.22 | 0.44 | 0.35 | 0.06 | 0.21 |
| Algeria | 0.23 | 0.53 | 0.25 | 0.15 | 0.14 | 0.13 |
| South Africa | 0.22 | 0.19 | 0.06 | 0.67 | 0.04 | 0.33 |
| Bolivia | 0.22 | 0.39 | 0.65 | 0.04 | 0.04 | 0.16 |
| India | 0.21 | 0.28 | 0.08 | 0.59 | 0.02 | 0.27 |
| Bosnia and Herzegovina | 0.21 | 0.19 | 0.37 | 0.07 | 0.24 | 0.25 |
| Tunisia | 0.21 | 0.05 | 0.24 | 0.11 | 0.23 | 0.52 |
| Ecuador | 0.21 | 0.36 | 0.40 | 0.17 | 0.10 | 0.09 |
| Thailand | 0.21 | 0.04 | 0.35 | 0.39 | 0.07 | 0.30 |
| Guatemala | 0.20 | 0.38 | 0.23 | 0.13 | 0.12 | 0.16 |
| Indonesia | 0.17 | 0.36 | 0.16 | 0.31 | 0.06 | 0.05 |
| Syria | 0.15 | 0.44 | 0.15 | 0.00 | 0.11 | 0.15 |
| Russia | 0.14 | 0.20 | 0.17 | 0.30 | 0.10 | 0.00 |
| Uganda | 0.08 | 0.00 | 0.00 | 0.21 | 0.00 | 0.25 |

technology and risk capital. It is followed by Iceland, which has a very strong showing in risk capital, internationalization and new product. Singapore, Israel, Sweden, Denmark, Germany, Switzerland, Canada and Ireland round out the top 10. The aspirations list includes several countries that were not leaders in either attitudes or activity.

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 world is flatter than one might think; the smallest differences are in the technology sectors, where the three entities almost converge. The greatest differences appear to be in new technology, startup skills

Table 1.5 Entrepreneurial activity sub-index and pillar values

| Country | ACTINDEX | Opportunity startup | Tech sector | Quality of human resources | Competition |
|----------------------|----------|---------------------|-------------|----------------------------|-------------|
| Denmark | 0.97 | 1.00 | 0.95 | 1.00 | 0.92 |
| Canada | 0.89 | 0.81 | 1.00 | 0.90 | 0.85 |
| Puerto Rico | 0.83 | 0.68 | 0.82 | 0.95 | 0.96 |
| Ireland | 0.83 | 0.77 | 0.90 | 0.76 | 0.93 |
| Norway | 0.74 | 0.78 | 0.83 | 0.66 | 0.73 |
| Switzerland | 0.73 | 0.66 | 0.84 | 0.64 | 0.80 |
| Sweden | 0.71 | 0.89 | 0.82 | 0.49 | 0.82 |
| United States | 0.71 | 0.76 | 0.46 | 0.84 | 1.00 |
| Singapore | 0.71 | 0.87 | 0.85 | 0.85 | 0.46 |
| Belgium | 0.69 | 0.82 | 0.61 | 0.75 | 0.62 |
| New Zealand | 0.69 | 0.91 | 0.80 | 0.48 | 0.69 |
| Netherlands | 0.66 | 0.74 | 0.76 | 0.43 | 0.89 |
| United Kingdom | 0.66 | 0.73 | 0.54 | 0.58 | 0.87 |
| Finland | 0.62 | 0.76 | 0.61 | 0.56 | 0.59 |
| Germany | 0.62 | 0.58 | 0.85 | 0.41 | 0.79 |
| Australia | 0.56 | 0.75 | 0.85 | 0.19 | 0.91 |
| Slovenia | 0.56 | 0.56 | 0.69 | 0.45 | 0.58 |
| Iceland | 0.56 | 0.82 | 0.67 | 0.41 | 0.43 |
| France | 0.56 | 0.55 | 0.43 | 0.62 | 0.67 |
| Korea | 0.51 | 0.34 | 0.68 | 0.80 | 0.33 |
| Israel | 0.47 | 0.34 | 0.89 | 0.58 | 0.27 |
| Austria | 0.47 | 0.61 | 0.46 | 0.21 | 0.83 |
| Japan | 0.47 | 0.60 | 0.68 | 0.40 | 0.29 |
| Indonesia | 0.46 | 0.24 | 0.49 | 0.70 | 0.57 |
| Spain | 0.45 | 0.57 | 0.42 | 0.38 | 0.47 |
| Malaysia | 0.45 | 0.56 | 0.38 | 0.37 | 0.50 |
| Latvia | 0.43 | 0.50 | 0.38 | 0.69 | 0.26 |
| Saudi Arabia | 0.37 | 0.64 | 0.04 | 0.50 | 0.68 |
| Hong Kong | 0.37 | 0.51 | 0.32 | 0.41 | 0.28 |
| Italy | 0.36 | 0.46 | 0.36 | 0.27 | 0.38 |
| Uruguay | 0.35 | 0.19 | 0.50 | 0.28 | 0.56 |
| Mexico | 0.34 | 0.51 | 0.27 | 0.40 | 0.24 |
| South Africa | 0.34 | 0.25 | 0.31 | 0.21 | 0.70 |
| Tunisia | 0.34 | 0.47 | 0.23 | 0.29 | 0.43 |
| United Arab Emirates | 0.34 | 0.17 | 0.20 | 0.81 | 0.34 |
| Czech Republic | 0.33 | 0.27 | 0.58 | 0.17 | 0.41 |
| Chile | 0.33 | 0.30 | 0.44 | 0.13 | 0.56 |
| Thailand | 0.33 | 0.36 | 0.13 | 0.69 | 0.29 |
| Greece | 0.32 | 0.35 | 0.29 | 0.36 | 0.31 |
| Portugal | 0.31 | 0.65 | 0.10 | 0.30 | 0.36 |
| Argentina | 0.31 | 0.19 | 0.38 | 0.33 | 0.37 |
| Russia | 0.30 | 0.18 | 0.37 | 0.57 | 0.17 |

Table 1.5 (continued)

| Country | ACTINDEX | Opportunity startup | Tech sector | Quality of human resources | Competition |
|------------------------|----------|---------------------|-------------|----------------------------|-------------|
| Egypt | 0.30 | 0.33 | 0.43 | 0.45 | 0.11 |
| Romania | 0.29 | 0.27 | 0.13 | 0.69 | 0.19 |
| Colombia | 0.28 | 0.23 | 0.26 | 0.45 | 0.21 |
| Turkey | 0.28 | 0.21 | 0.40 | 0.39 | 0.17 |
| Peru | 0.28 | 0.28 | 0.24 | 0.28 | 0.31 |
| Panama | 0.27 | 0.46 | 0.16 | 0.24 | 0.27 |
| Hungary | 0.27 | 0.36 | 0.30 | 0.32 | 0.13 |
| Dominican Republic | 0.26 | 0.25 | 0.30 | 0.21 | 0.28 |
| India | 0.23 | 0.11 | 0.19 | 0.26 | 0.42 |
| Croatia | 0.22 | 0.10 | 0.33 | 0.16 | 0.33 |
| China | 0.21 | 0.00 | 0.36 | 0.58 | 0.08 |
| Macedonia | 0.21 | 0.09 | 0.24 | 0.30 | 0.25 |
| Poland | 0.20 | 0.13 | 0.26 | 0.24 | 0.21 |
| Jamaica | 0.20 | 0.34 | 0.11 | 0.06 | 0.39 |
| Guatemala | 0.20 | 0.20 | 0.22 | 0.00 | 0.53 |
| Bolivia | 0.20 | 0.23 | 0.20 | 0.21 | 0.16 |
| Venezuela | 0.19 | 0.07 | 0.56 | 0.17 | 0.07 |
| Brazil | 0.19 | 0.02 | 0.26 | 0.22 | 0.33 |
| Kazakhstan | 0.19 | 0.20 | 0.10 | 0.53 | 0.04 |
| Iran | 0.18 | 0.13 | 0.26 | 0.22 | 0.13 |
| Algeria | 0.18 | 0.40 | 0.02 | 0.17 | 0.23 |
| Jordan | 0.16 | 0.21 | 0.03 | 0.21 | 0.25 |
| Ecuador | 0.16 | 0.20 | 0.28 | 0.14 | 0.06 |
| Syria | 0.16 | 0.15 | 0.03 | 0.17 | 0.32 |
| Morocco | 0.14 | 0.46 | 0.00 | 0.01 | 0.19 |
| Serbia | 0.13 | 0.04 | 0.19 | 0.13 | 0.19 |
| Bosnia and Herzegovina | 0.11 | 0.06 | 0.09 | 0.10 | 0.18 |
| Uganda | 0.07 | 0.05 | 0.01 | 0.04 | 0.18 |
| Philippines | 0.05 | 0.02 | 0.09 | 0.09 | 0.00 |

and competition, where the United States outperforms both developed and developing countries. However, scores for the US show the highest variance, with pillars such as new technology and startup skills having a very high score, while those like tech sector and new product lag considerably. For the Rest of the World, new product, risk capital and networking are the laggard pillars; scores on the rest of the pillars roughly converge.

The United States shows some weaknesses, especially in the areas of internationalization, cultural support and technology. As a result, within the developed world, the gap between the European Union and the United States is considerably narrower on pillars such as internationalization, nonfear of failure and cultural support. The differences between the developed and

developing countries also seems to be narrowing in the aspirations pillars, with high growth, new technology and new product 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.

To examine the two leading economies in the world more closely, Figure 1.3 compares the United States with the Nordic countries. The spider diagram reveals that both of these economies do extremely well in terms of entrepreneurial development; however, both also have strengths and weaknesses. The United States clearly has a better performance in entrepreneurial aspirations (risk capital, high growth, new technology and competition). The Scandinavian countries do better in entrepreneurial

Table 1.6 Entrepreneurial aspirations sub-index and pillar values

| Country | ASPINDEX | New product | New technology | High growth | Internationalization | Risk capital |
|------------------------|----------|-------------|----------------|-------------|----------------------|--------------|
| United States | 0.69 | 0.59 | 0.95 | 0.56 | 0.65 | 0.76 |
| Iceland | 0.64 | 0.70 | 0.48 | 0.44 | 0.80 | 0.95 |
| Singapore | 0.58 | 0.53 | 0.58 | 0.57 | 0.95 | 0.42 |
| Israel | 0.58 | 0.95 | 0.93 | 0.51 | 0.80 | 0.22 |
| Sweden | 0.57 | 0.75 | 1.00 | 0.36 | 0.46 | 0.52 |
| Denmark | 0.57 | 0.75 | 0.39 | 0.47 | 0.53 | 0.88 |
| Germany | 0.56 | 0.56 | 0.82 | 0.47 | 0.81 | 0.35 |
| Switzerland | 0.56 | 0.71 | 0.55 | 0.34 | 0.65 | 0.72 |
| Canada | 0.55 | 0.52 | 0.55 | 0.50 | 0.84 | 0.43 |
| Ireland | 0.54 | 0.30 | 0.48 | 0.43 | 0.78 | 0.99 |
| Hong Kong | 0.53 | 0.23 | 0.59 | 0.64 | 0.93 | 0.57 |
| Czech Republic | 0.53 | 0.47 | 0.39 | 0.58 | 1.00 | 0.36 |
| Belgium | 0.52 | 0.43 | 0.77 | 0.28 | 0.86 | 0.55 |
| New Zealand | 0.49 | 0.18 | 0.81 | 0.34 | 0.86 | 0.69 |
| France | 0.49 | 0.57 | 0.52 | 0.25 | 0.76 | 0.55 |
| Netherlands | 0.48 | 0.32 | 0.53 | 0.28 | 0.63 | 0.83 |
| Korea | 0.48 | 1.00 | 0.71 | 0.37 | 0.55 | 0.17 |
| United Arab Emirates | 0.47 | 0.08 | 0.32 | 0.90 | 0.66 | 1.00 |
| Australia | 0.43 | 0.35 | 0.67 | 0.25 | 0.48 | 0.51 |
| Norway | 0.42 | 0.32 | 0.58 | 0.29 | 0.65 | 0.37 |
| United Kingdom | 0.42 | 0.38 | 0.47 | 0.46 | 0.49 | 0.32 |
| Japan | 0.42 | 0.90 | 0.51 | 0.51 | 0.34 | 0.14 |
| Chile | 0.39 | 0.26 | 0.45 | 0.59 | 0.59 | 0.22 |
| Finland | 0.39 | 0.86 | 0.42 | 0.26 | 0.46 | 0.16 |
| Slovenia | 0.38 | 0.46 | 0.27 | 0.41 | 0.71 | 0.21 |
| China | 0.37 | 0.37 | 0.38 | 0.45 | 0.40 | 0.29 |
| Italy | 0.36 | 0.28 | 0.35 | 0.35 | 0.62 | 0.27 |
| Saudi Arabia | 0.35 | 0.05 | 0.60 | 1.00 | 0.34 | 0.21 |
| Poland | 0.34 | 0.11 | 0.84 | 0.23 | 0.73 | 0.13 |
| Austria | 0.34 | 0.61 | 0.05 | 0.32 | 0.70 | 0.34 |
| Puerto Rico | 0.33 | 0.15 | 0.17 | 0.99 | 0.55 | 0.12 |
| Croatia | 0.31 | 0.12 | 0.36 | 0.37 | 0.70 | 0.19 |
| Portugal | 0.29 | 0.16 | 0.28 | 0.25 | 0.66 | 0.21 |
| Macedonia | 0.27 | 0.03 | 0.19 | 0.28 | 0.48 | 0.64 |
| South Africa | 0.26 | 0.32 | 0.25 | 0.26 | 0.54 | 0.08 |
| Greece | 0.26 | 0.10 | 0.37 | 0.13 | 0.42 | 0.40 |
| Latvia | 0.25 | 0.16 | 0.05 | 0.50 | 0.62 | 0.14 |
| Spain | 0.24 | 0.31 | 0.18 | 0.13 | 0.37 | 0.24 |
| Turkey | 0.23 | 0.30 | 0.03 | 0.56 | 0.36 | 0.09 |
| India | 0.23 | 0.11 | 0.64 | 0.11 | 0.37 | 0.09 |
| Argentina | 0.22 | 0.15 | 0.38 | 0.33 | 0.30 | 0.04 |
| Bosnia and Herzegovina | 0.21 | 0.00 | 0.09 | 0.21 | 0.51 | 0.47 |
| Russia | 0.21 | 0.20 | 0.18 | 0.60 | 0.25 | 0.01 |

Table 1.6 (continued)

| Country | ASPINDEX | New product | New technology | High growth | Internationalization | Risk capital |
|--------------------|----------|-------------|----------------|-------------|----------------------|--------------|
| Hungary | 0.19 | 0.12 | 0.29 | 0.17 | 0.50 | 0.01 |
| Jordan | 0.18 | 0.08 | 0.42 | 0.20 | 0.22 | 0.07 |
| Syria | 0.18 | 0.04 | 0.21 | 0.41 | 0.21 | 0.13 |
| Romania | 0.18 | 0.08 | 0.00 | 0.32 | 0.69 | 0.02 |
| Egypt | 0.18 | 0.02 | 0.20 | 0.20 | 0.26 | 0.27 |
| Colombia | 0.17 | 0.04 | 0.14 | 0.49 | 0.26 | 0.05 |
| Morocco | 0.17 | 0.05 | 0.32 | 0.13 | 0.48 | 0.00 |
| Malaysia | 0.16 | 0.16 | 0.10 | 0.07 | 0.40 | 0.11 |
| Algeria | 0.16 | 0.01 | 0.33 | 0.17 | 0.19 | 0.17 |
| Brazil | 0.15 | 0.08 | 0.49 | 0.16 | 0.16 | 0.00 |
| Uruguay | 0.15 | 0.08 | 0.07 | 0.30 | 0.25 | 0.10 |
| Uganda | 0.15 | 0.02 | 0.71 | 0.09 | 0.11 | 0.00 |
| Indonesia | 0.14 | 0.00 | 0.31 | 0.08 | 0.15 | 0.21 |
| Dominican Republic | 0.13 | 0.03 | 0.04 | 0.28 | 0.33 | 0.06 |
| Mexico | 0.13 | 0.14 | 0.19 | 0.07 | 0.30 | 0.02 |
| Venezuela | 0.13 | 0.02 | 0.30 | 0.25 | 0.12 | 0.01 |
| Thailand | 0.13 | 0.07 | 0.25 | 0.14 | 0.16 | 0.06 |
| Ecuador | 0.13 | 0.01 | 0.33 | 0.12 | 0.23 | 0.01 |
| Serbia | 0.12 | 0.03 | 0.11 | 0.24 | 0.15 | 0.12 |
| Jamaica | 0.12 | 0.00 | 0.15 | 0.06 | 0.40 | 0.04 |
| Panama | 0.11 | 0.03 | 0.16 | 0.21 | 0.16 | 0.04 |
| Tunisia | 0.10 | 0.14 | 0.16 | 0.12 | 0.05 | 0.06 |
| Kazakhstan | 0.10 | 0.01 | 0.03 | 0.26 | 0.23 | 0.02 |
| Iran | 0.09 | 0.07 | 0.00 | 0.29 | 0.01 | 0.09 |
| Bolivia | 0.07 | 0.05 | 0.03 | 0.11 | 0.14 | 0.05 |
| Philippines | 0.06 | 0.01 | 0.16 | 0.05 | 0.08 | 0.00 |
| Guatemala | 0.05 | 0.00 | 0.26 | 0.00 | 0.00 | 0.02 |

attitudes (networking, cultural support, opportunity startup and tech sector). Both do equally well in entrepreneurial activity. The poor performance of the United States in the tech sector is again reflected by the relatively large gap between the Nordic countries and the United States on this pillar. On the other hand, in terms of new technology, startup skills and competition, the United States outstrips the Nordic countries by a fair margin.

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. Figure 1.4

compares the United States to China and India. It is clear that the United States has a dominant advantage in almost all aspects of entrepreneurship over these two countries.

However, two trends stand out. First, India's prowess in technology is clear, as is China's emergence in the tech sector. Both of these emerging economies are fast closing the technology gap. They also are culturally able and willing to engage in entrepreneurial activities without a fear of failure. China has the lead over India in the quality of human resources. Overall, China performs relatively weakly on attitudes and activity, 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 aspirations and attitudes pillars, such as new product, high growth and risk capital. It does better on the activity pillars, despite a low score on networking. Both countries have highly divergent pillar scores. Each has built up strength in particular areas, such

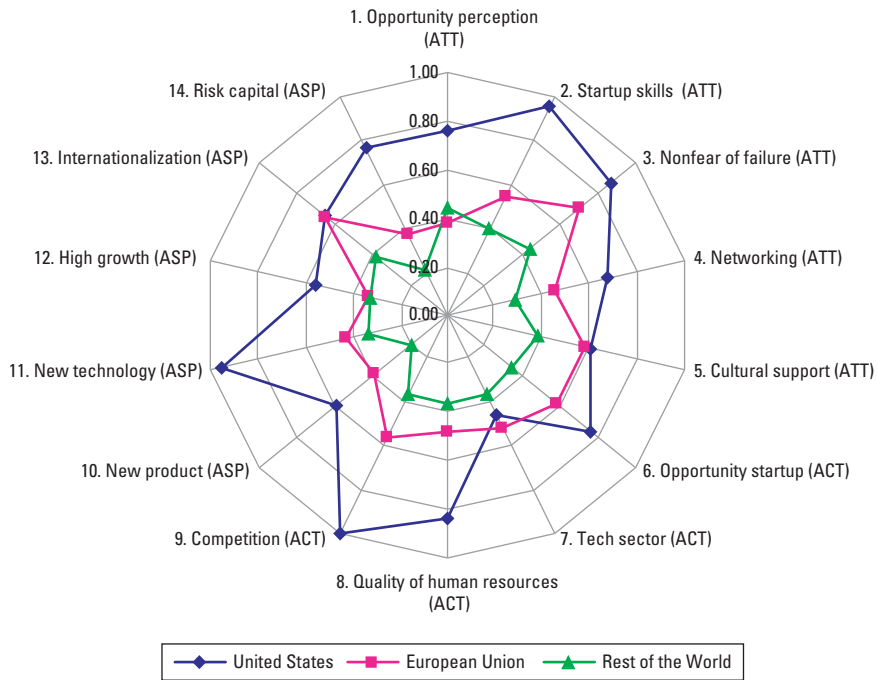


Figure 1.2 Comparison of the European Union, the United States and the Rest of the World

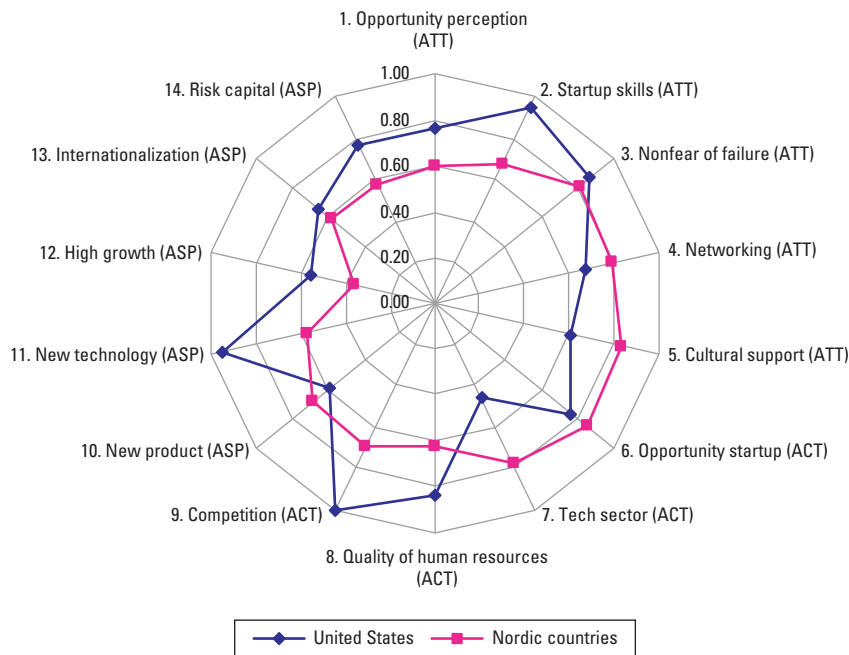


Figure 1.3 Comparison of the United States and the Nordic countries (Denmark, Finland, Iceland, Norway, Sweden)

as technology or quality of human resources, where they are at levels comparable to developed countries. However, both lag significantly behind in other areas, which tends 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 to Latin America (Figure 1.5). The largest differences appear to lie in attitudes, with fear of failure, networking and cultural support 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.

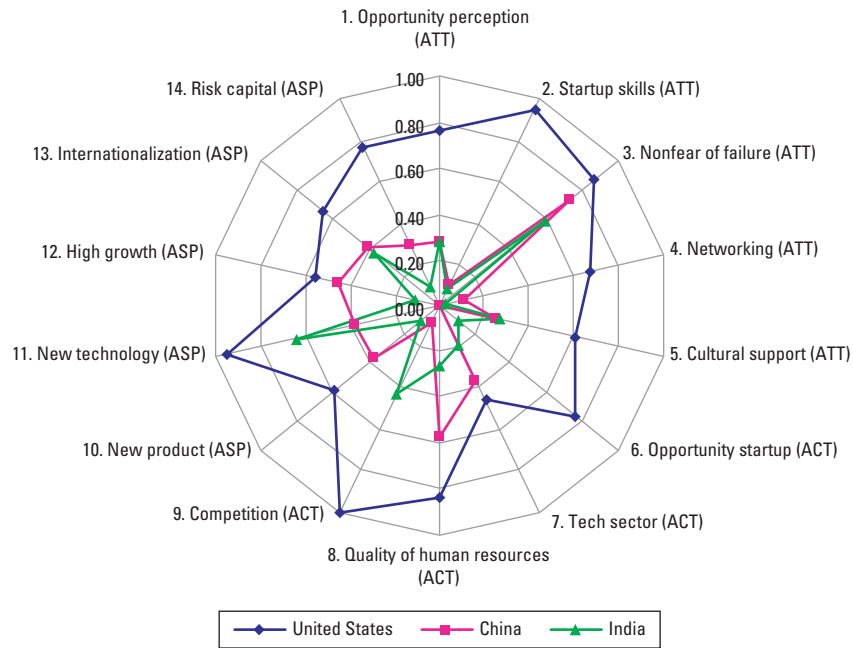


Figure 1.4 Comparison of the United States, China and India

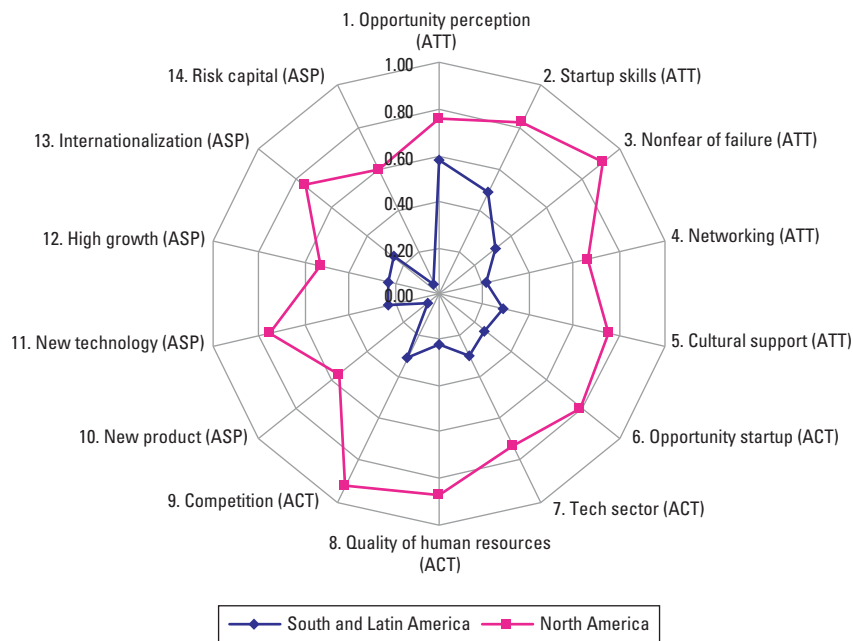


Figure 1.5 Comparison of Latin America and North America (USA, Canada)

Of course, some of the Latin American countries perform much better than the average. Chile ranks 26th on the GEDI, 16th in attitudes, 37th in activity and 23rd in aspirations. Argentina ranks 36th and Mexico is 44th 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

R&D, as is evident in the low new product score. Latin America appears to have a relatively strong level of opportunity perception, 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 activity pillars.

Moving now to a broader focus on the less developed economies, we compare Latin America to the Middle East and North Africa (MENA) countries and the developing

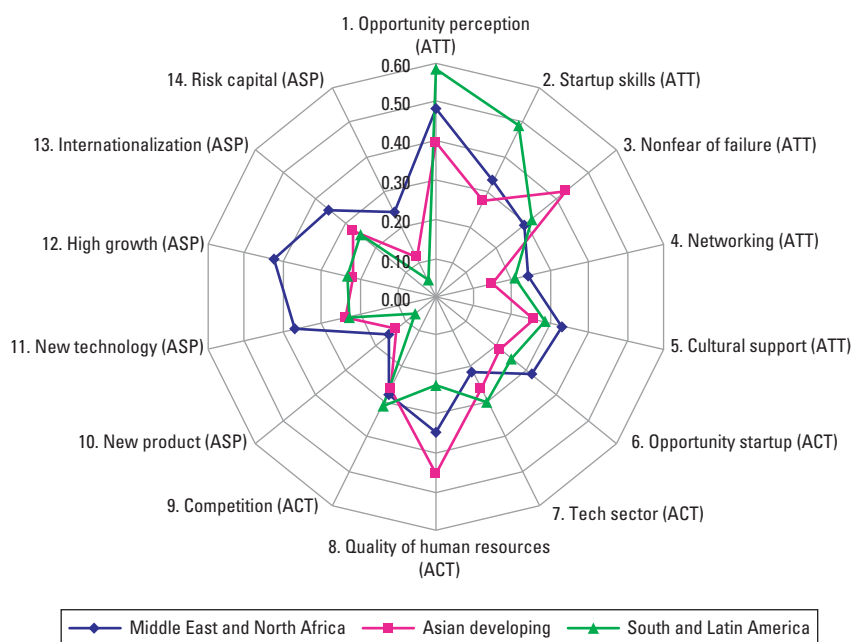


Figure 1.6 Comparison of Middle East and North Africa (MENA) countries and Asian developing countries

Asian countries. Figure 1.6 shows that these countries are in some sense very similar, yet they also differ significantly. First, these countries have similar weaknesses in risk capital, competition, new product, cultural support, the tech sector and networking.

In fact, they all exhibit weaknesses in the three sub-indexes. Latin America performs somewhat better on certain aspects of the ASP sub-index, with high scores for opportunity perception and startup skills, but lags behind in networking and cultural support. Its scores on most pillars remain relative low, particularly in risk capital and new product. The MENA countries clearly stand out from the other two groups in terms of being stronger in high growth, internationalization and new technology. Latin America's and Asia's performances are roughly similar on the ASP sub-index, with low scores on all the pillars. The MENA countries outstrip them on this sub-index, despite low scores on risk capital and new product. The MENA countries also perform well in opportunity perception.

There are clear differences in the quality of human resources, with Asia leading. Asia also scores high on nonfear of failure. However, its performance on other pillars of the ACT sub-index converges with that of Latin America, with average or low scores on most pillars. Cultural support and networking are weak for all three groups. Overall, developing countries in Asia and Latin America have far more similar scores on the pillars than the MENA countries, which perform comparatively better.

Figure 1.7 takes a deeper look at three of the most important countries in the Middle East, Saudi Arabia, the United Arab Emirates (UAE) and Iran. Each of these countries plays a key role in the Middle East, due to their

oil resources, wealth or size. Two things are clear from Figure 1.7. First, Iran's economy is radically different from that of either Saudi Arabia or the UAE, and it is less developed on almost every pillar. However, both Saudi Arabia and the UAE represent very unbalanced pictures of development, with large holes in their economies. All three have gaping holes in new products, the tech sector, startup skills and networking. In fact, none of these economies produces much that the world buys, other than oil.

The UAE and Saudi Arabia have some strengths and aspirations. Both have aspirations for high growth, and the UAE has plenty of risk capital.

The complex situation in Asia is evident in Figure 1.8, which compares China, Japan and Hong Kong. A relatively rich and prosperous country, Hong Kong ranks 23rd on the GEDI, 27th in attitudes, 29th in activity and 11th in aspirations. A high score in internationalization and a relatively high score in risk capital and high growth drive the last. However, it is by no means a well-balanced entrepreneurial economy.

Japan is ranked 29th on the GEDI. Once the envy of the world because of its export and technology prowess, Japan is now a country where entrepreneurial attitudes are very poor (47th), entrepreneurial activity is weak (23rd), and entrepreneurial aspirations low (22nd). China ranked 40th on the GEDI, which is still much weaker than the developed Asian economies. China, Japan and Hong Kong all do very poorly in startup skills and networking.

Figure 1.9 takes a peek at three Central European countries that were freed from communism two decades ago. After the fall of the Berlin Wall, Hungary, Romania and the Czech Republic reoriented their economies from

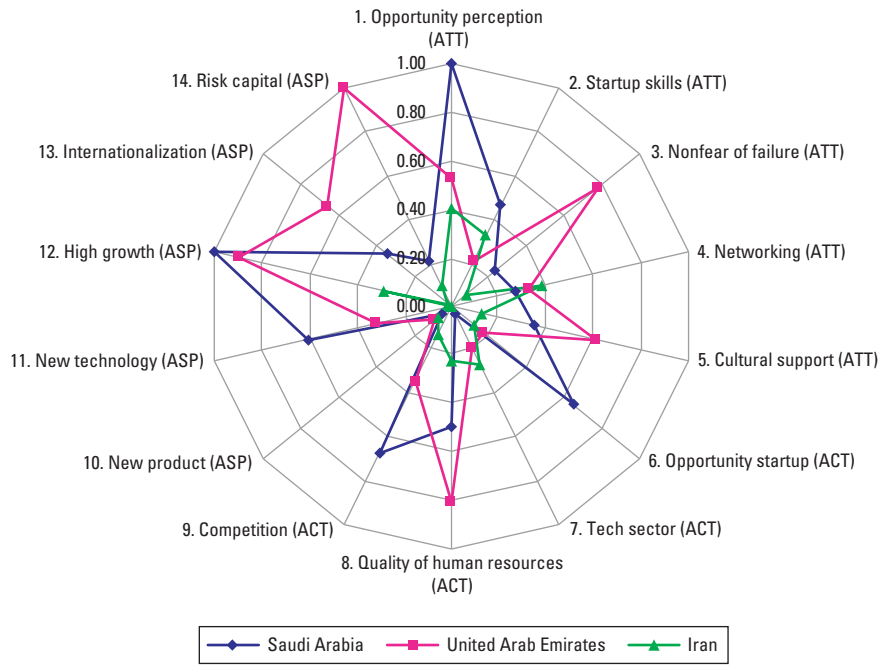


Figure 1.7 Comparison of Middle Eastern countries – Saudi Arabia, UAE and Iran

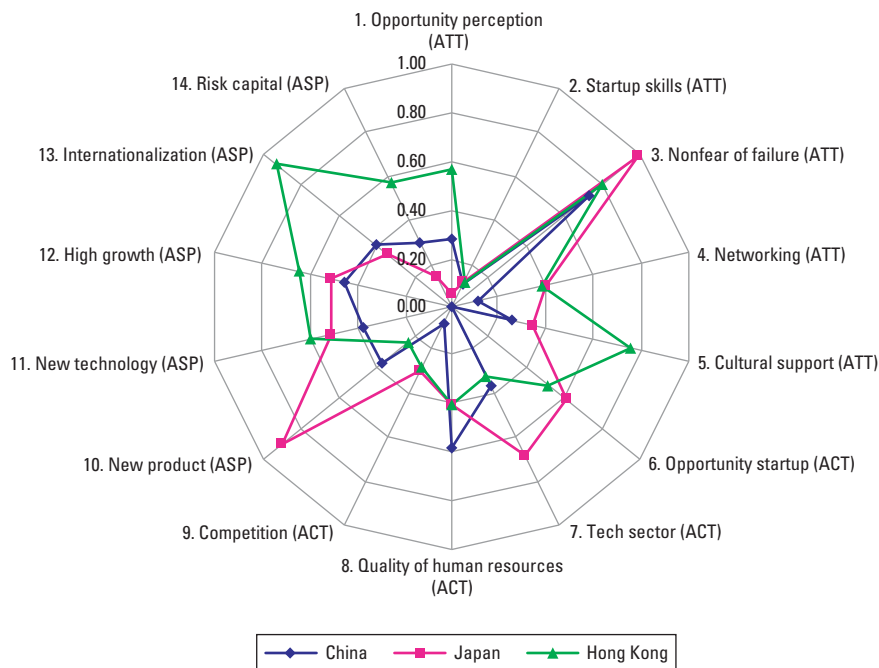


Figure 1.8 Comparison of Asia – China, Japan and Hong Kong

the East to the West. This is evident in the very strong showing in internationalization for all three countries. However, while all three were able to shift the direction of their trade and meet international standards because of foreign direct investment, none has been able to develop the entrepreneurial attitudes needed for a balanced economy.

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

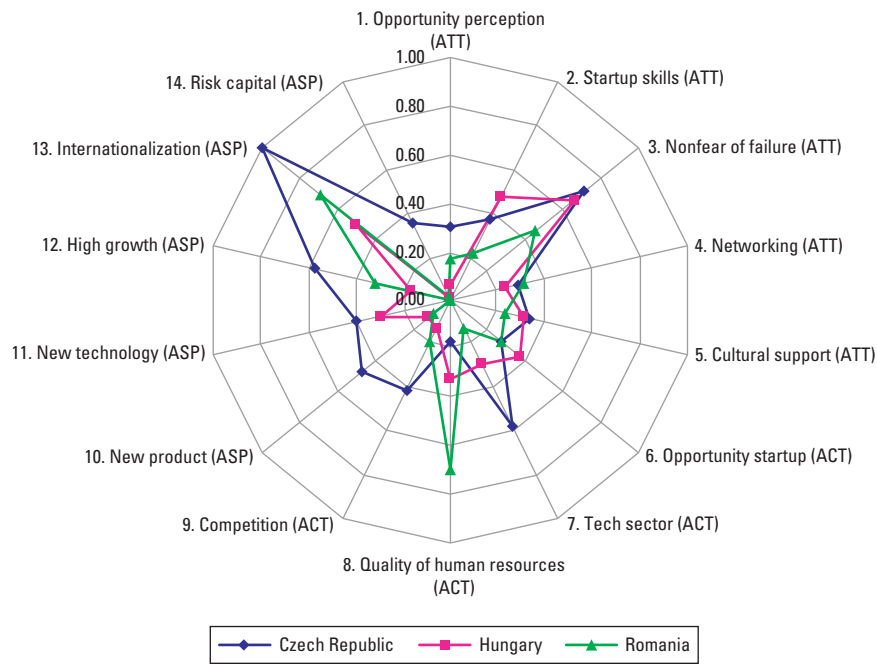


Figure 1.9 Comparison of Central European countries – Hungary, Romania and the Czech Republic

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 71 most important countries of the world. This includes country-level values for the GEDI – entrepreneurial attitudes, entrepreneurial activity 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 activity, has a U- or an 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 section 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. China and India, the two most populous countries, present uneven results on the 14 pillars of entrepreneurship. 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. Desai et al. (2009).
3. Ács and Audretsch (2010).
4. Gartner (1990), Wennekers and Thurik (1999), Davidsson (2004) and Godin et al. (2008) all identify several dimensions of entrepreneurship.
5. Sørensen and Sorenson (2003).
6. Ács and Varga (2005).
7. Papagiannidis and Li (2005).
8. UNESCO (2009).
9. Caliendo et al. (2009).
10. Shane and Cable (2003).
11. Guiso et al. (2006).
12. Baumol (1990).
13. Bholal et al. (2006).
14. Klepper (2001).
15. Coad and Rao (2008).
16. Bates (1990).
17. Baumol et al. (2007).

18. Stam and Wennberg (2009).
19. Ács et al. (2008).
20. De Clercq et al. (2005).
21. Gompers and Lerner (2004).
22. This may be a temporary aberration. Opportunity perception, for example, was much higher in the US in the early 2000s, according to GEM executive reports for those years (Minniti et al., 2005).

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