



GLOBAL ENTREPRENEURSHIP MONITOR

2008 Executive Report

Niels Bosma • Zoltan J. Acs • Erkki Autio • Alicia Coduras • Jonathan Levie





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**Niels Bosma, Zoltan J. Acs, Erkki Autio,
Alicia Coduras, Jonathan Levie**

Founding and Sponsoring Institutions

Babson College, Babson Park, MA, US
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Executive Summary

Since its inception in 1997 by scholars at Babson College and London Business School, GEM has developed into one of the world's leading research consortia concerned with improving our understanding of the relationships between entrepreneurship and national development. This is the 10th annual GEM Global Report. Over the past decade, harmonized data on entrepreneurial attitudes, activity and aspirations have been collected to provide annual assessments of the entrepreneurial sector for a wide range of countries.

PARTICIPATING COUNTRIES IN 2008

In this report a distinction is made between factor-driven countries, efficiency-driven countries and innovation-driven countries. This classification follows the 2008 Global Competitiveness Report and is relevant to entrepreneurship in relation to economic development. As previous GEM research has shown, the relationship between entrepreneurship and economic development differs along phases of economic development. In 2008, the following 43 countries participated in the GEM project.

Factor-Driven Economies

Angola, Bolivia, Bosnia and Herzegovina*, Colombia*, Ecuador*, Egypt, India, Iran*

Efficiency-Driven Economies

Argentina, Brazil, Chile, Croatia**, Dominican Republic, Hungary**, Jamaica, Latvia, Macedonia, Mexico, Peru, Romania, Russia, Serbia, South Africa, Turkey, Uruguay

Innovation-Driven economies

Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Republic of Korea, Netherlands, Norway, Slovenia, Spain, United Kingdom, United States

* Transition country: from factor-driven to efficiency-driven

** Transition country: from efficiency-driven to innovation-driven

GEM DATA COLLECTION

GEM Adult Population Survey: Measuring Attitudes, Activity and Aspirations

GEM takes a broad view of entrepreneurship and focuses on the role played by individuals in the entrepreneurial process. The GEM Adult Population Surveys ask a representative sample of at least 2,000 adults in each country about their attitudes to and their involvement in, entrepreneurship. For many individuals the entrepreneurial process often starts with personal assessments dealing with attitudes and perceptions to entrepreneurship. GEM therefore collects data on attitudes and perceptions such as perceived opportunities to start businesses, perceived skills and knowledge to start businesses, and national support for starting a business as a good career choice. Also, GEM asks adults about intentions to start a business in the near future.

Unlike most entrepreneurship data sets that measure newer and smaller firms, GEM studies *individuals'* activities with respect to starting and managing a business. Furthermore, GEM views entrepreneurship as a process and considers people in entrepreneurial activity in different phases from the very early phase when the business is in gestation to the established phase and possibly discontinuation of the business.

Within this context, GEM provides a means by which a wide variety of important entrepreneurial aspirations such as innovativeness, competitiveness and high-growth aspirations can be systematically and rigorously studied.

GEM National Expert Survey: Measuring Entrepreneurial Framework Conditions

To see how conditions for entrepreneurship differ across countries, GEM countries survey experts in several fields that are important for entrepreneurship. Examples of such Entrepreneurial Framework Conditions (EFCs) are national policies for entrepreneurship, entrepreneurial finance and the extent to which entrepreneurship is reflected in education and training.

KEY FINDINGS IN 2008

Entrepreneurial Attitudes

The GEM 2008 surveys were conducted mostly during May and June, when the start of the credit crisis loomed but before the true impact of the current economic crisis became apparent. Nevertheless, an overall decline in perceived opportunities to start a business in 2008 was observed. Countries showing the severest declines in the rate of perceived opportunities (between 50 and 30 percent) include Iceland, Chile, Ireland, Latvia and Hungary.

Perceived skills and knowledge to start a business were not affected by the business cycle. Also intentions to start a business within three years do not appear to have declined as much in 2008 as perceived opportunities. There are several possible explanations for this. First, the crisis may actually cause individuals to seriously consider becoming entrepreneurs in the near future because they fear they might lose their jobs. Second, the group of (potential) future entrepreneurs may be less pessimistic than the total adult population and may not perceive the financial crisis as a substantial burden for getting their *own* business started – they might for instance draw more heavily on their own (perceived) capabilities to start a business. Thirdly, they may have decided to defer the startup to near the end of the three year period, with the expectation that the recession will be over within three years.

Entrepreneurial Activity

In factor-driven economies, with many small-scaled and local business activities, the rate of involvement is high for both early-stage entrepreneurial activity and established business activity. For Angola, however, the rate of established business activity is very small compared to the other factor-driven economies, while the rate of discontinued business is very high. These findings may reflect Angola's recent emergence from prolonged civil war and unrest. For efficiency-driven

economies a clear distinction can be made between Latin American countries with relatively high early-stage entrepreneurial activity and Eastern European countries with relatively low rates of early-stage entrepreneurial activity.

In the United States there is more early-stage entrepreneurial activity than in EU countries and Japan. The rate of early-stage entrepreneurship in Japan has gradually increased in recent years and is now around the EU average. Some European countries – most notably Belgium, Germany and France – consistently have the lowest rates of entrepreneurial activity levels. This possibly reflects the relative risk aversion of European inhabitants and their declared relative preference for employment over self-employment. But it also indicates that there are good income alternatives available, through jobs or social security.

The overall development of early-stage entrepreneurial activity in innovation-driven economies has been quite stable over time. A slight and gradual rise is observed, from 5.7% in 2002 to 6.4% in 2008. For efficiency-driven economies the pattern is more sensitive to the business cycle. Argentina in particular has shown a significant reaction to its national economic crisis; in 2001-2003 the Argentinean rate of necessity early-stage entrepreneurs rose from 3.9 to 7.4 percent.

Entrepreneurial Aspirations

Most of the nascent and new entrepreneurs identified in GEM show either no or only limited job creation expectations. High-growth expectation entrepreneurial activity (HEA) varies widely between countries, as does the relative prevalence of this activity within early-stage entrepreneurial activity as a whole. For example, among innovation-driven economies, there is a 15-fold difference between the adult-population prevalence rate of high-expectation early-stage entrepreneurship of the United States and Greece. The difference is over five-fold between the two largest emerging economies in the world, China and India.

Colombia, China, Peru and Chile exhibit the highest prevalence rates of high-expectation entrepreneurship of the factor- and efficiency-driven GEM countries. The United States, New Zealand, Iceland, and Canada have the highest levels of high-growth expectation entrepreneurial activity in innovation-driven economies. The HEA rate for these countries is well over 1%. The lowest levels of HEA, at under 0.5%, occur in Belgium, France, Spain, Japan, Finland and Greece.

Entrepreneurship: a Complex Relationship with Institutions and Economic Development

The broad nexus between entrepreneurship, economic development and institutions is a critical area of inquiry for understanding entrepreneurship within or across countries. Not just quantitative measures of entrepreneurship, but also qualitative measures of institutional differences are required to estimate the impact of entrepreneurship on the economic development of countries.

Chapter 3 introduces a newly constructed complex index of entrepreneurship that combines GEM measures on attitudes, activity and aspirations with other economic indicators that concentrate more on the institutional characteristics. The relationship between this Global Entrepreneurship Index (GEI) and economic development is S-shaped: when factor-driven economies progress in economic development beyond a certain threshold, the GEI tends to increase. The shape of the S-curve broadly matches the three phases of economic development. The GEI is also positively related to three other facets of the “development diamond:” economic freedom, competitiveness and the ease of doing business.

The insights resulting from such an index could help policymakers understand how different aspects of policy can affect productive entrepreneurship through the major phases of economic development.

GEM Special Topic 2008: Education and Training

GEM expert surveys in most countries consistently report that entrepreneurship education and training is poor or inadequate. This is why entrepreneurship education and training was chosen as a special topic for GEM 2008. Thirty nine out of 43 GEM nations included additional questions in their adult population surveys and 31 included additional questions in their expert surveys.

The relationship between training in starting a business and entrepreneurial attitudes, aspirations and activity is generally positive, but varies by phase of economic development. Around one-fifth of respondents had received some form of training in starting a business, but this proportion varied widely by country. For example, among factor-driven countries, the proportion of individuals who had received any training in starting a business, either in school or after school, varied from 40% in Colombia to 8% in Egypt. In efficiency-driven countries, it varied from 43% in Chile to 6% in Turkey. In innovation-driven countries, it varied from 48% in Finland to 13% in Israel.

Almost 10% of the respondents had engaged in self-directed learning, such as reading or observing or working in other people’s businesses, but this too varied widely by country. The next most frequent overall training choice was voluntary formal education, followed by voluntary training provided by a college or university but outside the formal education system. Other sources, such as business or trade organizations, government agencies, or employers, typically were used by 3% or less of individuals. Colombia, Chile, Peru and Finland had higher than usual usage of all sources.

In factor-driven economies, quality and quantity of training is associated with higher levels of necessity-based entrepreneurial activity, while in efficiency-driven countries, it is associated with higher levels of market-expansion entrepreneurial activity. In innovation-driven countries, training levels are negatively associated with some attitudinal and activity measures.

Rates of early-stage entrepreneurial activity among those who had received compulsory training were around three-quarters of the rate of those who had received voluntary training, while the “yield” to training varied from 1.5 times the untrained rate for compulsory training in factor-driven countries to 2.5 times the untrained rate for voluntary training in innovation-driven countries.

Introduction

1.1 ABOUT GEM

Although it is widely acknowledged that entrepreneurship is an important force shaping the changes in the economic landscape, our understanding of the relationship between entrepreneurship and development is still far from complete. The quest to unravel the complex relationship has been particularly hampered by a lack of cross-national harmonized data sets on entrepreneurship. Since 1997, the GEM research program has sought to address this by collecting relevant harmonized data on an annual basis. GEM focuses on three main objectives:

- To measure differences in the level of entrepreneurial activity among countries
- To uncover factors determining national levels of entrepreneurial activity
- To identify policies that may enhance the national level of entrepreneurial activity

Traditional analyses of economic growth and competitiveness have tended to neglect the role played by new and small firms in the economy. GEM takes a comprehensive approach and considers the degree of involvement in entrepreneurial activity within a country, identifying different *types* and *phases* of entrepreneurship.

The Global Entrepreneurship Monitor (GEM) was conceived in 1997 by Michael Hay and Bill Bygrave and a prototype study was funded by the London Business School and Babson College. The first GEM Global study was conducted by a group of 10 nations in 1999 with Paul Reynolds as the Principal Investigator. Since then GEM has grown into a consortium of 64 national teams. In 2004, the London Business School and Babson College transferred GEM's intellectual capital to the Global Entrepreneurship Research Association (GERA), which is a not-for-profit organization governed by representatives of the national teams, the two founding institutions, and sponsoring institutions.

In this 10th annual report, we present a revised conceptual model that will be used to further explore the role of entrepreneurial activity in the economy. The model has been updated in accordance with recent insights on entrepreneurship and economic

growth. In this revised model, different phases of the economic development of nations are recognized and the role and nature of entrepreneurship is considered to differ along these major phases. Three major phases are recognized: factor-driven economies, which are primarily extractive in nature, efficiency-driven economies in which scale-intensity is a major driver of development, and innovation-driven economies¹. As countries develop economically, they tend to shift from one phase to the next.

1.2 THE REVISED GEM MODEL

There is wide agreement on the importance of entrepreneurship for economic development². Entrepreneurs drive innovation, they speed up structural changes in the economy and they force old incumbent companies to shape up, thereby making an indirect contribution to productivity. It is widely accepted that high-impact entrepreneurs in particular make an outsized contribution to job creation, sometimes providing for the totality of new net job creation in the economy³.

While important, the contribution of entrepreneurs to an economy also varies according to its phase of economic development⁴. According to “received wisdom,” the level of necessity-driven self-employment activity is high particularly at low levels of economic development, as the economy may not be able to sustain a high enough number of jobs in high-productivity sectors. As an economy develops, the level of necessity-driven entrepreneurial activity gradually declines as productive sectors grow and supply more employment opportunities. At the same time, opportunity-driven entrepreneurial activity tends to pick up, introducing a qualitative change in overall entrepreneurial activity. This decline in necessity entrepreneurship followed by an increase in opportunity entrepreneurship is known as the “U-curve” hypothesis.

While there is much anecdotal support for the U-curve hypothesis, it only demonstrates an association and does not fully reflect the complexity of the *causal relationship* between entrepreneurship and economic growth. In this year's GEM report, we introduce a more nuanced distinction among phases of economic development, in line with Porter's typology of “factor-driven economies,” “efficiency-driven economies” and “innovation-driven economies” (2002).

Entrepreneurship in Factor-Driven Economies

Economic development consists of changes in the quantity and character of economic value added (Lewis, 1954). These changes result in greater productivity and rising per capita incomes, and they often coincide with migration of labor across different economic sectors in society, for example from primary and extractive sectors to the manufacturing sector, and eventually, services (Gries & Naude, 2008). Countries with low levels of economic development typically have a large agricultural sector, which provides subsistence for the majority of the population who mostly still live in the countryside. This situation changes as industrial activity starts to develop, often around the extraction of natural resources. As extractive industry starts to develop, this triggers economic growth, prompting surplus population from agriculture to migrate toward extractive and emergent scale-intensive sectors, which are often located in specific regions. The resulting oversupply of labor feeds subsistence entrepreneurship in regional agglomerations, as surplus workers seek to create self-employment opportunities in order to make a living.

Entrepreneurship in Efficiency-Driven Economies

As the industrial sector develops further, institutions start to emerge to support further industrialization and the build-up of scale in the pursuit of higher productivity through economies of scale. Typically, national economic policies in scale-intensive economies shape their emerging economic and financial institutions to favor large national businesses. As increasing economic productivity contributes to financial capital formation, niches may open in industrial supply chains that service these national incumbents. This, combined with the opening up of independent supply of financial capital from the emerging banking sector, would expand opportunities for the development of small-scale and medium-sized manufacturing sectors. Thus, in a scale-intensive economy, one would expect necessity-driven industrial activity to gradually fall and give way to an emerging small-scale manufacturing sector.

Entrepreneurship in Innovation-Driven Economies

As an economy matures and its wealth increases, one may expect the emphasis in industrial activity to gradually shift toward an expanding service sector that caters to the needs of an increasingly affluent population and supplies the services normally expected of a high-income society. The industrial sector evolves and experiences improvements in variety and sophistication. Such a development would be typically associated with increasing research and development and knowledge intensity,

as knowledge-generating institutions in the economy gain momentum. This development opens the way for the development of innovative, opportunity-seeking entrepreneurial activity that is not afraid to challenge established incumbents in the economy. Often, small and innovative entrepreneurial firms enjoy an innovation productivity advantage over large incumbents, enabling them to operate as ‘agents of creative destruction.’ To the extent that the economic and financial institutions created during the scale-intensive phase of the economy are able to accommodate and support opportunity-seeking entrepreneurial activity, innovative entrepreneurial firms may emerge as significant drivers of economic growth and wealth creation (Henrekson, 2005).

Entrepreneurship: Attitudes, Activity and Aspirations

Different opinions on, and therefore different definitions of, entrepreneurship can be observed in the recent literature, as well as over time. These historical views of entrepreneurship are interesting in that they reflect the roles of entrepreneurship in each of the three economic phases we have just outlined. Cantillon (1755) is believed to be the first scholar to define entrepreneurship. He qualified entrepreneurship as “as someone who identified the willingness to bear the personal financial risk of a business venture.” This definition reflects the role of entrepreneurship in Europe in the 18th century. It relates more to the static notion of entrepreneurship as being a ‘business owner’ than the more dynamic notion that has to do with starting new ventures. At the end of the 19th century, Marshall’s view centered on the class of entrepreneurs and their importance for the market economy (Marshall, 1890). He described how industrial entrepreneurs exploited economies of skill and economies of scale, and likened the most successful of them akin to large trees in a forest, towering above their neighbors, depriving them of light and air. The “Marshallian” view relates well to the economic view of scale-intensive entrepreneurship as a reflection of the efficiency-driven stage. Schumpeter (1934;1942) was a pioneer in linking the dynamic aspect of entrepreneurship to innovations and economic development. His concept of “creative destruction” can be directly linked to the role of entrepreneurship in innovation-driven countries. Entrepreneurs introducing product-market combinations move the technology frontier forward and destroy economic activity based on older technology.

Current views on entrepreneurship vary, and this underlines the multi-faceted nature of entrepreneurship. Davidsson (2004) lists seven phenomena associated with entrepreneurship, while Wennekers and Thurik (1999) provide thirteen different concepts of entrepreneurship.

In a recent study, Godin and colleagues (2008) identify six common elements of entrepreneurship. Looking at the proposed constructs in some detail, three main components may be identified: entrepreneurial attitudes, entrepreneurial activity and entrepreneurial aspiration (Acs and Szerb, 2008). These are interlinked in a complex set of feed-forward and feedback loops. For example, positive attitudes towards entrepreneurship may increase entrepreneurial activity and aspiration, which in turn positively affect attitudes as more positive role models appear. Positive aspirations may change the nature of activity, and in turn, change attitudes.

Entrepreneurial attitudes are attitudes toward entrepreneurship. For example, the extent to which people think there are good opportunities for starting a business, or the degree to which they attach high status to entrepreneurs, might be termed entrepreneurial attitudes. Other relevant attitudes might include the level of risk that individuals might be willing to bear and individuals' perception of their own skills, knowledge and experience in business creation.

Entrepreneurial attitudes can influence entrepreneurial activity but can also be influenced by entrepreneurial activity. For example, the legitimacy of entrepreneurship in a society, as expressed in positive entrepreneurial attitudes, can be influenced by whether people know anyone who has started a business recently. This can be a function of both levels of entrepreneurial activity and social networking activity in the society. Individuals who know other individuals who recently started a business may, through familiarity with the process, be more likely to see it as legitimate.

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

Entrepreneurial activity is multi-faceted, but one important aspect is the extent to which people in a population are creating new business activity, both in absolute terms and relative to other economic activities, such as business closure. Within the realm of new business activity, different types of entrepreneurial activity can be distinguished. For example, business creation may vary by industry sector, by the size of the founding team, and by whether the new venture is legally independent

of other businesses, and in terms of founder demographics, such as gender, age, or education.

Entrepreneurial activity is best seen as a process rather than an event⁵. That is why GEM measures entrepreneurial intentions, and nascent, new, and established business activity. Examining multiple components of entrepreneurial activity also allows us to explore differences among the entrepreneurial processes across the three major phases of national economic development. For example, nascent and new business activity is expected to be high in factor-driven economies mainly because much of it is motivated by economic necessity. In innovation-driven economies, the proportion of opportunity-driven entrepreneurship is expected to be higher than in factor- and efficiency-driven economies.

Entrepreneurial aspiration reflects the qualitative nature of entrepreneurial activity. For example, entrepreneurs differ in their aspirations to introduce new products, new production processes, to engage with foreign markets, to develop a significant organization, and to fund growth with external capital. These aspirations, if they are realized, can significantly affect the economic impact of these entrepreneurial activities. Product and process innovation, internationalization, and ambition for high growth are regarded as hallmarks of ambitious or high-aspiration entrepreneurship. GEM has created measures that capture such aspirations.

Entrepreneurial Framework Conditions

The 2007 GEM Global Report discussed the relevance of Entrepreneurial Framework Conditions (EFCs) as indicators of a country's potential to foster entrepreneurship (Bosma, *et al.*, 2008). EFCs reflect major features of a country's socio-economic milieu that are expected to have a significant impact on the entrepreneurial sector. Like the original GEM model, the revised GEM model maintains that, at the national level, different framework conditions apply to established business activity and to new business activity⁶. What is new about the revised model is that we have related these conditions to a country's phase of economic development. The relevant national conditions for factor-driven economic activity and efficiency-driven economic activity are adopted from the *Global Competitiveness Report (GCR) 2008* (Porter and Schwab, 2008). With respect to innovation-driven economic activity, the revised GEM model makes a contribution to the GCR perspective on economic development by identifying framework conditions that are specific to innovation and entrepreneurship. As Acs and colleagues (2003) propose, it is the entrepreneurial mechanism that turns innovation into economic output. A lack of entrepreneurship can therefore be seen as a bottleneck for innovation-driven countries in achieving their growth ambitions.

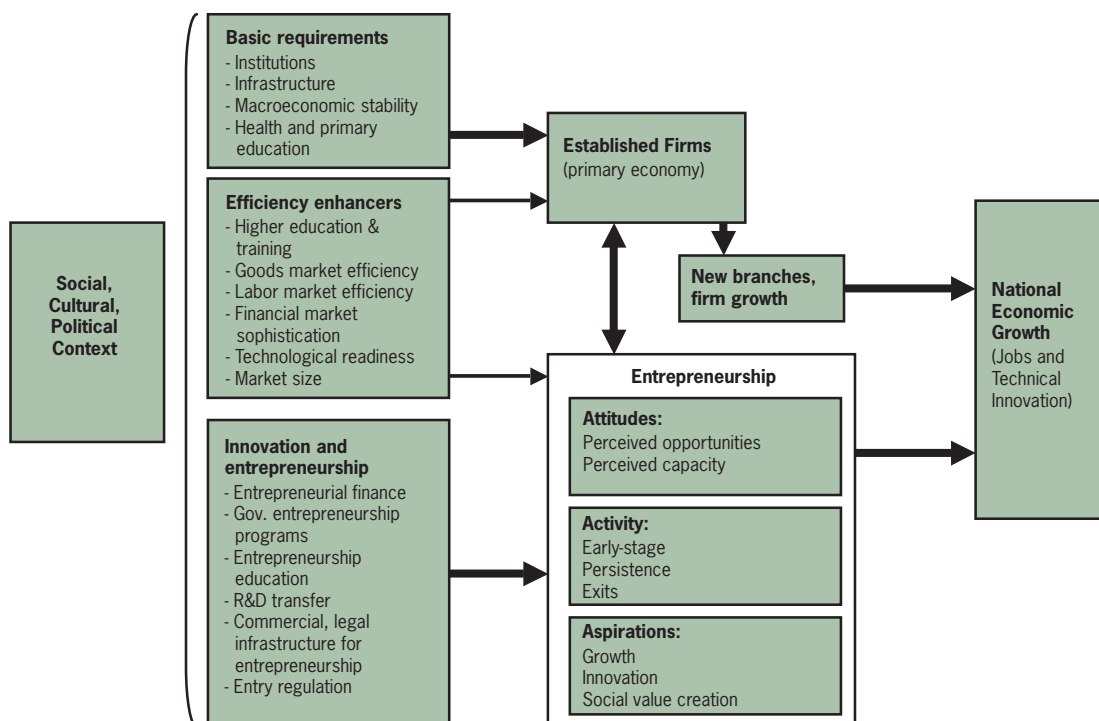
It is important to recognize that all three principal types of economic activity: factor-driven, efficiency-driven, and innovation-driven, are present in all national economies. But their relative prevalence—and their contribution to economic development—varies. The GCR proposition is that each phase of economic development has a different optimal combination of these three activities. The three phases are labeled according to the activity that is most significant for that phase. Thus, the relative importance of entrepreneurial framework conditions to a country may vary by phase of economic development. As the 2004 GEM global report noted, one size does not fit all (Acs, *et al.*, 2005).

The resulting revised GEM Model is presented in Figure 1. For factor-driven economies, emphasis is put on basic requirements: development of institutions, infrastructure, macroeconomic stability, health, and primary education. These basic requirements will help sustain necessity-based entrepreneurship, but may do little to enable opportunity-based entrepreneurship. As economies progress and scale economies become more and more relevant, other conditions, which ensure a proper functioning of the market and are

called efficiency enhancers, become important. Even though these conditions are not directly related to entrepreneurship in the Schumpeterian sense, they are indirectly related since the development of markets will also attract more entrepreneurship. For countries whose economic development is primarily innovation-driven, EFCs become more important as levers of economic development than basic requirements or efficiency enhancers.

Entrepreneurial attitudes, activity, and aspiration as dynamic interactive components of entrepreneurship are characterized in detail in Chapter 2, using the results of the GEM Adult Population Survey. Chapter 3 focuses on the role of institutions in each of the three phases. Each year, the GEM reports highlights one aspect of the GEM conceptual model. In Chapter 4 we focus on one EFC, entrepreneurship education and training, which was chosen as a special topic for GEM in 2008. Extra questions on this special topic were included in the GEM Adult Population Survey and the standard National Expert Survey (NES) this year, and the answers are summarized and commented on with respect to the revised GEM model.

Figure 1 — The Revised GEM Model



1.3 CAPTURING ENTREPRENEURSHIP IN GEM

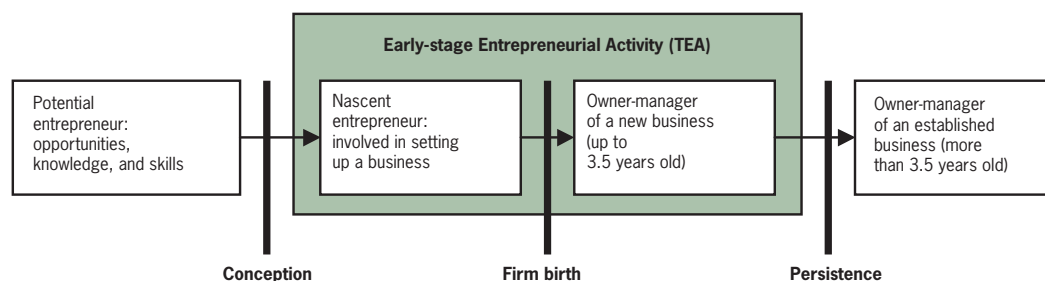
The previous section showed that entrepreneurship is a complex phenomenon which spans a variety of contexts. In line with its objectives, GEM takes a broad view of entrepreneurship and focuses on the role played by individuals in the entrepreneurial process. Unlike most entrepreneurship data sets that measure newer and smaller firms, GEM studies the behavior of *individuals* with respect to starting and managing a business. This differentiates GEM from other data sets, most of which record firm-level data on (new) firm registrations (see Box 1). New firms are, most often, started by *individuals*. Even in established organizations, individuals have different entrepreneurial attitudes, activities, and aspirations.

Another guiding principle of GEM research is that entrepreneurship is a process. Therefore GEM needs to do more than compare entrepreneurial attitudes and aspirations of those who are and are not engaging in entrepreneurship. It also needs to capture attitudes, activities, and aspirations in different phases of entrepreneurship, from general intentions to a more active early or “nascent” phase where businesses are in gestation, to new businesses that can be identified as having commenced operations, to the established phase and possibly discontinuation of the business.

Within this context, the GEM data collection covers the life cycle of the entrepreneurial process and looks at individuals at the point when they commit resources to start a business they expect to own themselves (nascent entrepreneurs); when they currently own and manage a new business that has paid salaries for more than three months but not more than 42 months (new business owners); and when they own and manage an established business that has been in operation for more than 42 months (established business owners). Figure 2 summarizes the entrepreneurial process and GEM’s operational definitions.

For GEM, the payment of any wages for more than three months to anybody, including the owners, is considered to be the “birth event” of actual businesses. Thus, the distinction between nascent entrepreneurs and new business owners depends on the age of the business. Businesses that have paid salaries and wages for more than three months and less than 42 months may be considered *new*. The cut-off point of 42 months has been made on a combination of theoretical and operational grounds⁷. The prevalence rate of nascent entrepreneurs and new business owners taken together may be viewed as an indicator of early-stage entrepreneurial activity in a country. It represents dynamic new firm activity. Even if a fair share of nascent entrepreneurs do not succeed in getting the business started, their actions may have a beneficial effect on the economy since the threat

Figure 2 — The Entrepreneurial Process and GEM Operational Definitions



An individual entrepreneur who has succeeded in creating and sustaining a business has gone through a process. The entrepreneurial process starts *before* the firm is operational. Someone who is just starting a venture and trying to survive in a very competitive market is an entrepreneur in spite of not having high-growth aspirations. On the other hand, a person may be an established business owner who has been in business for quite a number of years and still be innovative, competitive, and growth-minded. This person is also an entrepreneur. GEM provides an umbrella under which a wide variety of entrepreneurial characteristics, such as motivations, innovativeness, competitiveness, and high-growth aspirations, can be systematically and rigorously studied.

of entry and of new competition can put pressure on incumbent firms to perform better.

Business owners who have paid salaries and wages for more than 42 months are classified as “established business owners.” Their businesses have survived the liability of newness. High rates of established business ownership may indicate positive conditions for firm survival. However, this is not necessarily the case. If a country exhibits a high degree of established entrepreneurship combined with a low degree of early-stage entrepreneurial activity, this indicates a low level of dynamism in entrepreneurial activity⁸.

This year's GEM report includes 43 countries across the globe. In each of these 43 countries, a survey was held among a representative sample of at least 2,000 adults. More than 150,000 adults were interviewed between May and October (outside holiday seasons) and answered questions on their attitudes toward and involvement in entrepreneurial activity.

Box 1. Main Distinctions between GEM Adult Population Survey Data and Business Registration Data

GEM is a social survey directed at individuals. In GEM's research perspective, it is individuals who are primary agents in setting up, starting, and maintaining new and entrepreneurial businesses. The main distinctions between GEM data and business registrations data are as follows:

- GEM data are obtained using a research design that is harmonized over all participating countries. Despite recent initiatives by Eurostat, OECD, and the World Bank, the harmonization of national business registrations has not yet been achieved. GEM data uniquely enables reliable comparisons across countries. The robustness of the GEM method is demonstrated by the stability of year-on-year comparisons at the country level.
- GEM's research design implies statistical uncertainties in the aggregate (country-level) results. This is acknowledged by publishing confidence intervals for the obtained entrepreneurship indices. Business registration data are "count data" and as such do not require confidence intervals. However, the accuracy of registration data as a measure of new business activity is unclear for several countries. For example, in the UK, most businesses are not (and are not required to be) registered at all, while in Spain registration is compulsory before trading can commence. In some countries, businesses may be registered purely for tax reasons without entrepreneurial activity taking place, while in other countries businesses are deliberately not registered to avoid paying taxes.
- GEM tracks people who are in the process of setting up a business (nascent entrepreneurs), as well as people who own and manage running businesses. These also include freelancers, or other entrepreneurs who in

some jurisdictions need not register. GEM also measures attitudes and self-perceptions regarding entrepreneurship. Insight about the earliest phase of the start-up process and the entrepreneurial spirit is very relevant for policy makers.

- The primary purpose of GEM is *not* to count the number of new businesses in different countries. It is about measuring entrepreneurial spirit and entrepreneurial activity through different phases of the entrepreneurial process. Therefore, GEM data may *not* be the best source for some basic firm-level characteristics, particularly in countries that tightly regulate new business activity and whose citizens have high respect for the rule of law. For example, to determine sector distribution of existing firms, registration data are mostly preferable over GEM data (with the possible exception of GEM countries with a large number of respondents, such as Spain and the UK).
- GEM generates more than measures of entrepreneurial activity; it also generates measures of entrepreneurial attitudes and aspirations. Examples are motivations for being self-employed, the degree of innovative activities, and growth expectation. However, these characteristics should always be derived from an adequate sample; to achieve this, one may need to merge the GEM samples over several years.

In the Appendix of the GEM Global Report 2005, measures were derived from GEM data based on definitions of self-employment rates and start-up rates as published by the OECD and Eurostat. The rates based on GEM data appeared to match the rates on registrations data fairly well. Nevertheless, one should be aware that the GEM data are distinctive, and designed to measure entrepreneurial activity across a wide range of countries, including those where government business registration data may not provide a true and fair reflection of actual business activity.

1.4 GEM WEBSITE AND DATA AVAILABILITY

GEM is a consortium of national teams, participating in the Global Entrepreneurship Research Association (GERA—the umbrella organization that hosts the GEM project). Thanks to the effort and dedication of hundreds of entrepreneurship scholars as well as policy advisors across the globe, the GEM consortium consists of a unique network building a unique data set. Contact details, GEM 2008 National Summary Sheets, and national teams' micro-sites can be found on www.gemconsortium.org. A selection of GEM data is also made available on this website. The GEM website provides an updated list of the growing number of peer-reviewed scientific articles based on GEM data.

Glossary of Main Measures and Terminology

MEASURE	DESCRIPTION
Entrepreneurial Attitudes and Perceptions	
Perceived opportunities	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who see good opportunities to start a firm in the area where they live
Perceived capabilities	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who believe they have the required skills and knowledge to start a business
Entrepreneurial intention	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who intend to start a business within three years
Fear of failure rate	Percentage of 18-64 population with positive perceived opportunities (individuals involved in any stage of entrepreneurial activity excluded) who indicate that fear of failure would prevent them from setting up a business
Entrepreneurship as desirable career choice	Percentage of 18-64 population who agree with the statement that in their country, most people consider starting a business as a desirable career choice
Media attention for entrepreneurship	Percentage of 18-64 population who agree with the statement that in their country, they will often see stories in the public media about successful new businesses
Entrepreneurial Activity	
Nascent entrepreneurship rate	Percentage of 18-64 population who are currently a nascent entrepreneur, i.e., actively involved in setting up a business they will own or co-own; this business has not paid salaries, wages, or any other payments to the owners for more than three months
New business ownership rate	Percentage of 18-64 population who are currently a owner-manager of a new business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than three months, but not more than 42 months
Early-stage entrepreneurial activity (TEA)	Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business (as defined above)
Established business ownership rate	Percentage of 18-64 population who are currently owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months
Overall entrepreneurial activity rate	Percentage of 18-64 population who are either involved in early-stage entrepreneurial activity or owner-manager of an established business (as defined above)
Business discontinuation rate	Percentage of 18-64 population who have, in the past 12 months, discontinued a business, either by selling, shutting down, or otherwise discontinuing an owner/management relationship with the business. Note: This is NOT a measure of business failure rates.
Improvement-driven opportunity entrepreneurial activity: relative prevalence	Percentage of those involved in early-stage entrepreneurial activity (as defined above) who (i) claim to be driven by opportunity as opposed to finding no other option for work; and (ii) who indicate the main driver for being involved in this opportunity is being independent or increasing their income, rather than just maintaining their income
Entrepreneurial Aspirations	
High-growth expectation early-stage entrepreneurial activity (HEA)	Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business (as defined above) and expect to employ at least 20 employees five years from now
High-growth expectation early-stage entrepreneurial activity: relative prevalence	Percentage of early-stage entrepreneurs (as defined above) who expect to employ at least 20 employees five years from now
New product-market oriented early-stage entrepreneurial activity: relative prevalence	Percentage of early-stage entrepreneurs (as defined above) who indicate that their product or service is new to at least some customers and indicate that not many businesses offer the same product or service
Early-stage entrepreneurial activity in technology sectors: relative prevalence	Percentage of early-stage entrepreneurs (as defined above) who are active in the 'high technology' or 'medium high' technology sector, as classified by OECD (2003)

2.0 Entrepreneurial Attitudes, Activity and Aspirations

This chapter provides an assessment of the characteristics of entrepreneurship in the 43 GEM 2008 countries by presenting several indices that measure aspects of Entrepreneurial Attitudes, Activity and Aspirations. The countries included in this assessment are listed in Box 2. The countries are grouped into three phases of economic development as discussed in the Global Competitiveness Report 2008-2009 (Porter and Schwab, 2008). Phases of economic development are decided on the level of GDP per capita and the extent to which countries are factor-driven in terms of the shares of exports of primary goods in total exports.

Box 2. Country Groups Used in this Report for the 43 GEM 2008 Countries

Factor-Driven Economies

Angola, Bolivia, Bosnia and Herzegovina*, Colombia*, Ecuador*, Egypt, India, Iran*

Efficiency-Driven Economies

Argentina, Brazil, Chile, Croatia**, Dominican Republic, Hungary**, Jamaica, Latvia, Macedonia, Mexico, Peru, Romania, Russia, Serbia, South Africa, Turkey, Uruguay

Innovation-Driven Economies

Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Republic of Korea, Netherlands, Norway, Slovenia, Spain, United Kingdom, United States

* Transition country: from factor-driven to efficiency-driven

** Transition country: from efficiency-driven to innovation-driven

2.1 ENTREPRENEURIAL ATTITUDES AND PERCEPTIONS

Perceptions about entrepreneurship may affect the *supply side* and the *demand side* of entrepreneurship. On the supply side, or the “pool” of potential entrepreneurs, important perceptions include both willingness and perceived ability to become an entrepreneur (Davidsson, 1991). Education levels and the availability of entrepreneurship training programs are possible determinants of perceived skills (see Chapter 4).

On the demand side, or “space for” entrepreneurship, there needs to be opportunities for entrepreneurship, but equally important is that entrepreneurs perceive that there are opportunities for starting a business⁹. The quantity and quality of perceived opportunities may be enhanced by national conditions such as economic growth, population growth, culture and national entrepreneurship policy¹⁰.

But there are more factors than these at play. As people see more and more successful entrepreneurs in their direct environment, this may enhance their perception of their own capabilities without enhancing actual capabilities. This effect may be stronger when the economic climate is favorable. Furthermore, there may be demographic differences in (perceived) entrepreneurial capabilities for historical socio-economic or cultural reasons. Policy programs may explicitly target groups exhibiting low shares of perceived capabilities as well as low shares of actual capabilities. Thus, several distinct national conditions may affect perceived capabilities directly and indirectly.

If an individual exhibits positive perceptions toward entrepreneurship, it is by no means certain that he or she will actually get involved in entrepreneurial activity. There are several assessments to be made, which may or may not be conscious. First, there is the *assessment of opportunity costs*, which involves comparing the expected returns of entrepreneurship to the expected returns of an alternative occupation¹¹. The most common alternative is “being employed.”

Then, there is a *risk-reward assessment*: even if the expected returns from entrepreneurship are considerably higher than the best alternative, the (perceived) risks involved may be too high for a person who is thinking about starting a business. An individual’s risk-avoidance preference may be a significant factor in the transition from potential (or latent) entrepreneurship to entrepreneurial activity (Khilstrom and Laffont, 1979). At the same time, the individual may also be influenced by demographic characteristics such as age, gender, origin, or ethnicity

and also by institutions. For instance, older people might include their health and the specifics of the health care system in the risk-reward assessment, while immigrants might perceive fewer alternative options for earning a living.

Intrinsic assessments as described on the previous page, may ultimately lead to a proclaimed intention (and subsequent action) to start a business with opportunity-related entrepreneurship in mind. This holds for the bulk of entrepreneurs, particularly in innovation-driven countries. For some people, however, being involved in entrepreneurial activity is a necessity; there are simply no other options for earning a living and there is no comparative assessment to be made.

Also, there is no general pattern describing the sequence in which assessments and decisions are made and steps are taken. It is also possible that people decide to start a business when a very specific business opportunity comes into view unexpectedly. They may act on this even though, before the business opportunity came their way, they did not see opportunities to start a business in their area. These people had not considered setting up a business until the opportunity was presented to them. Thus, for entrepreneurs, the perception of opportunities may come well in advance, or just before setting up the business, or at the same time¹². Shane (2003) has proposed a model of the world in which opportunities exist¹³ but they need to be discovered. In this view, national governments could consider ways of increasing the likelihood of discovery as a means of enhancing the entrepreneurial climate.

Table 1 lists several GEM indicators concerning individuals' own perceptions toward entrepreneurship for each of the 43 GEM 2008 nations. Some countries have favorable perceptions of entrepreneurship combined with low rates of intentional entrepreneurship. This is the case for many innovation-driven economies in Europe. In other words, although attitudes and perceptions toward entrepreneurship are fairly high, the attractiveness of becoming involved in entrepreneurship appears to be low for many Europeans compared to other possible sources of income.

A variety of national characteristics could be underlying this phenomenon. It could be that there is a lot of red tape (administrative burdens) attached to starting a business, reducing the attractiveness of entrepreneurship. It could also be the case that employment protection is high. This could discourage employees with positive entrepreneurial perceptions from switching to entrepreneurship. A different effect of stringent employment protection is that potential entrepreneurs may think carefully before hiring employees due to the substantial losses they would

incur if their employees became unfit for work, or if they had to reduce the number of workers.

Fear of failure is often considered an important cultural component that is detrimental to new firm activity. However, so far this asserted effect has not been fully confirmed. Every year, GEM asks a random sample of individuals if fear of failure would prevent them from starting up a business. In order to grasp the "fear of failure" effect, it makes sense to consider this question only for those who are not currently involved in entrepreneurship but do perceive good opportunities for setting up a business. If fear of failure is prevalent among those who in principle see good opportunities to start a business, this may justify intervening to reduce fear of failure.

For many countries with factor-driven and efficiency-driven economies, we see that the difference between entrepreneurial perceptions and entrepreneurial intentions is relatively small, or even negative. This suggests lower opportunity costs for entrepreneurial activity and higher degrees of necessity-driven entrepreneurship.

On the right-hand side of Table 1, we present the results of two indicators measuring national attitudes to entrepreneurship. The first one assesses the percentage of inhabitants who feel that in their country, entrepreneurship is considered a desirable career choice. This indicator varies widely within each of the three phases of economic development. The second indicator relates to the popularity of entrepreneurship and asks for opinions on the media coverage for new businesses in the country, as perceived by the respondents. In countries with primarily factor-driven economies, these attitudes should not be the main concern of government (see Figure 1). In countries with mainly efficiency-driven economies, attention should begin to be paid to attitudes. Table 1 suggests that attitudes in Hungary could be improved, while Latin American countries have in general quite favorable attitudes.

Looking at innovation-driven countries, some anomalies are apparent. These could provide governments with clues as to what they could do to encourage entrepreneurial activity. For example, in Japan most people agree that there is a lot of media attention to entrepreneurship, yet starting a business is still not regarded as a good career choice. For Denmark it is the other way around. The Netherlands shows the highest rates of approval of entrepreneurship as a career, yet only 4% of the Dutch adult population (early-stage entrepreneurs and established business owners excluded) expects to start a business within the next three years. The Netherlands is an example of a country where there is much support for entrepreneurship but where the job market is also favorable.

Entrepreneurial Attitudes, Activity and Aspirations

Table 1 — Entrepreneurial Attitudes and Perceptions in the 43 GEM Countries in 2008, by Phase of Economic Development

	SEES GOOD OPPORTUNITIES FOR STARTING A BUSINESS IN THE NEXT 6 MONTHS ^{A)}	FEAR OF FAILURE WOULD PREVENT STARTING A BUSINESS ^{B)}	PERSONALLY KNOWS SOMEONE WHO STARTED A BUSINESS IN THE PAST 2 YEARS ^{A)}	HAS THE REQUIRED KNOWLEDGE AND SKILLS TO START A BUSINESS ^{A)}	EXPECTS TO START A BUSINESS IN THE NEXT THREE YEARS ^{A)}	COUNTRY ATTITUDES PERCEIVED BY INDIVIDUALS	
						ENTREPRENEURSHIP CONSIDERED AS DESIRABLE CAREER CHOICE ^{C)}	MEDIA ATTENTION FOR ENTREPRENEURSHIP ^{C)}
Factor-Driven Economies	% AGREEING WITH STATEMENT						
Angola	74	45	71	44	27	49	46
Bolivia	52	49	38	67	38	81	60
Bosnia and Herzegovina	50	26	39	62	25	82	60
Colombia	65	41	34	54	60	92	78
Ecuador	50	35	33	66	37	79	57
Egypt	40	25	40	53	35	73	57
India	58	46	56	45	33	67	81
Iran	35	22	45	58	36	57	53
Efficiency-Driven Economies							
Argentina	48	40	30	53	15	69	80
Brazil	44	43	44	49	26	68	78
Chile	30	34	41	54	29	80	44
Croatia	53	36	51	56	10	70	61
Dominican Republic	58	31	54	70	30	92	64
Hungary	26	47	26	43	6	48	19
Jamaica	52	26	46	65	17	81	71
Latvia	37	37	33	23	7	75	71
Macedonia	47	35	46	52	39	80	66
Mexico	59	31	50	55	26	66	52
Peru	60	38	50	66	34	82	71
Romania	45	52	36	21	9	.	56
Russia	39	66	33	14	3	60	50
Serbia	56	28	52	60	31	72	67
South Africa	60	38	41	31	13	65	69
Turkey	47	39	27	44	21	72	63
Uruguay	57	33	40	58	17	71	67
Innovation-Driven Economies							
Belgium	23	30	28	34	6	47	38
Denmark	69	43	43	30	5	57	32
Finland	54	32	46	30	5	46	71
France	34	53	33	25	13	63	48
Germany	35	49	29	30	4	56	50
Greece	35	55	35	46	13	76	55
Iceland	38	36	60	45	12	61	81
Ireland	35	37	33	42	6	55	65
Israel	39	43	35	35	14	58	57
Italy	35	48	30	35	7	68	40
Japan	13	44	21	9	4	26	59
Republic of Korea	20	32	32	23	17	69	67
Netherlands	54	33	32	30	4	85	61
Norway	46	28	34	33	7	61	71
Slovenia	55	33	50	44	7	58	67
Spain	32	52	36	43	5	68	43
United Kingdom	41	38	23	45	5	52	54
United States	44	28	33	48	7	63	73

A) Denominator: non-entrepreneurially active adult population 18-64 years

B) Denominator: non-entrepreneurially active adult population 18-64 years that sees good opportunities to start a business

C) Denominator: adult Population 18-64 years

Source: GEM Adult Population Survey (APS)

Development in Perceptions, Intentions and National Attitudes

Figure 3 displays average annual differences between efficiency-driven and innovation-driven countries in two types of entrepreneurial attitudes over the period 2001-2008. Included in this assessment are only countries that have been participating in GEM over the entire period, with a maximum dropout of one year. This includes 17 innovation-driven countries and six efficiency-driven countries¹⁴. Figure 3 shows that the developments in perceived opportunities run reasonably parallel for the two stages of economic development. Since 2003, the share of people in efficiency-driven countries that see good opportunities for start-ups in the area where they live has matched the share in innovation-driven countries. This finding is, however, primarily caused by Argentina showing very low rates before 2003 in the aftermath of the national economic crisis and showing high rates afterwards. The GEM surveys have mostly been

conducted in the months May and June. In 2008, this was after the first signs of a pending financial crisis but before the scale of the current economic crisis was fully appreciated¹⁵. However, most countries show a decline in perceived opportunities from 2007-2008, and this is reflected in Figure 3. Countries showing the severest declines in the rate of perceived opportunities (between 50 and 30 percent) include Iceland, Chile, Ireland, Latvia and Hungary.

Changes over time in the fear of failure indicator are shown in Figure 4. The cyclical patterns of efficiency-driven and innovation-driven countries track each other fairly well. These patterns also appear to be the inverse of the opportunity indicator. Fear of failure has risen to some extent in 2008 for both types of country, and by around the same amount as opportunity perception has fallen. This finding can be directly related to the perceived economic situation. During recessions failures have bigger consequences, as alternative sources of income are scarcer.

Figure 3 — Perceived Opportunities for Starting a Business, 2001-2008

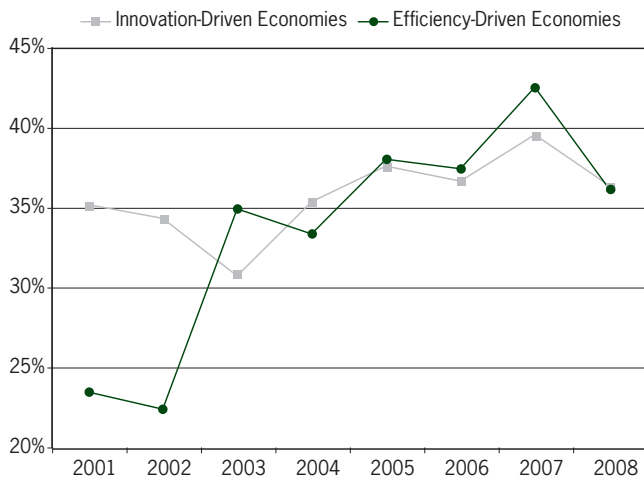
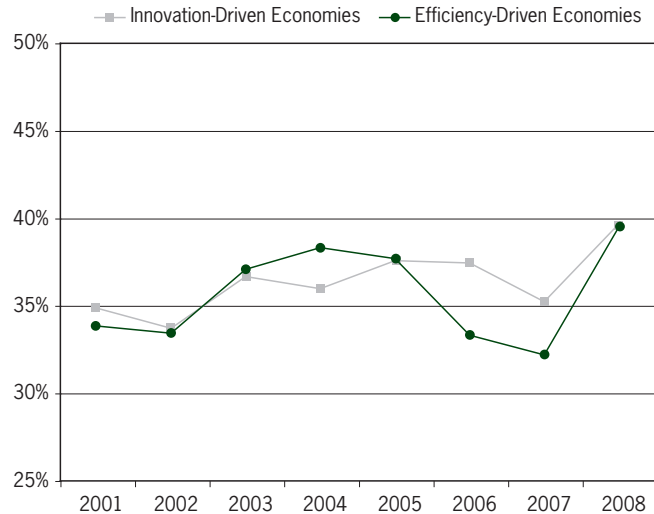


Figure 4 — Fear of Failure among Those who Perceive Good Start-Up Opportunities, 2001-2008



Note: Each data point is a simple country average for that year
 Source: GEM Adult Population Survey (APS)

Entrepreneurial Attitudes, Activity and Aspirations

While perceived opportunities have declined and fear of failure has increased over the period from 2007-2008, perceived skills and knowledge to start a business have remained stable, as shown in Figure 5. Individuals' perceptions about their own skills do not appear to be affected by the business cycle. Furthermore, perceived capabilities for starting a business in efficiency-driven economies are—on average—higher than in innovation-driven economies. This is probably because the perception of an “average” business is different across these two types of countries (see Bosma and Schutjens, 2009). Therefore the required skills and knowledge to start a firm generally associated with these “average businesses” are not completely comparable. If the average business in Mexico, for example, is associated with lower required skills in comparison to Norway, the number of people claiming to have these skills will obviously be higher.

To find out more about future expectations, since 2002 GEM has asked about *intentions* to start a business some time over the next three years. Table 2 shows the country estimates for this indicator in 2008. Here the rates of intentions to start a business are expected

to differ between efficiency-driven economies and innovation-driven economies. In the lower-income segment of efficiency economies, good job alternatives are generally more sparsely available. This implies that more people will intend to start a business. Indeed we observe this in Figure 6: intention rates are consistently higher in efficiency-driven countries than in innovation-driven economies. A second noteworthy finding is that intentions do not appear to decline as much in 2008 as perceived opportunities. There are several possible explanations for this. First, the crisis may actually cause individuals to seriously consider becoming entrepreneurs in the near future because they fear they might lose their jobs. Second, the group of (potential) future entrepreneurs may be less pessimistic than the total adult population and may not perceive the financial crisis as a substantial burden for getting their *own* business started—they might, for instance, draw more heavily on their own (perceived) capabilities to start a business. Third, they may have decided to defer the start-up to the end of the three-year period, in the expectation that the recession will be over within three years.

Figure 5 — Perceived Skills and Knowledge to Start a New Business, 2001-2008

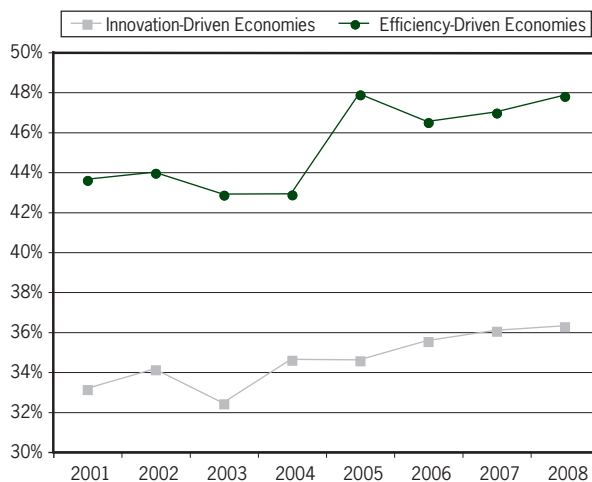
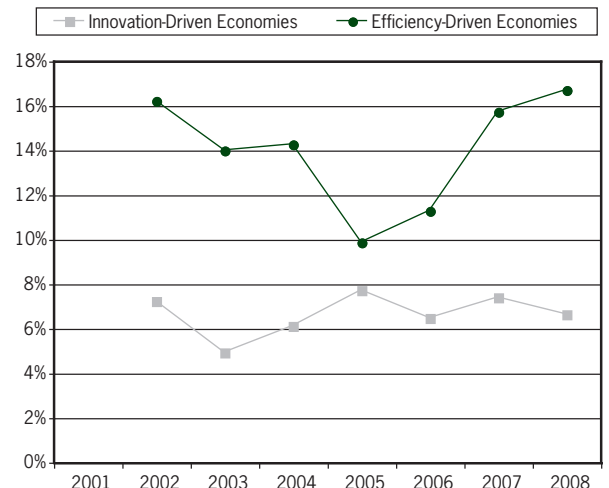


Figure 6 — Intentions to Start a New Business in the Next Three Years, 2002-2008



Note: Each data point is a simple country average for that year
Source: GEM Adult Population Survey (APS)

2.2 ENTREPRENEURIAL ACTIVITY

Table 2 summarizes the involvement in entrepreneurial activity over several phases of the entrepreneurial process (see Figure 2) for each of the 43 GEM 2008 countries. Countries are grouped according to the major phases of economic development, consistent with the classification of the Global Competitiveness Report 2008-2009 (Porter and Schwab, 2008)¹⁶. Taken together, the numbers in the table provide a picture of the characteristics of *overall* entrepreneurial activity for each country, i.e., all types of entrepreneurial activity covering the entire economic spectrum. It is no surprise that in factor-driven economies, with many small-scale and local business activities (see Chapter 1), the rate of involvement is high for both early-stage entrepreneurial activity and established business activity. For Angola, however, the rate of established business activity is very small compared to the other factor-driven economies, while the rate of discontinued business is very high. These findings may reflect Angola's recent emergence from prolonged civil war and unrest.

In the United States, there is more early-stage entrepreneurial activity than in EU-countries and Japan. The rate of early-stage entrepreneurship in Japan has gradually increased in recent years and is now around the EU average. Some European countries—and most notably Belgium, Germany, and France—consistently have the lowest rates of entrepreneurial engagement levels. This possibly reflects the relative risk aversion of European inhabitants and their declared relative preference for employment over self-employment (European Commission, 2008). But it also indicates that there are good job alternatives available. It is possible that in Europe, entrepreneurial behavior manifests itself more within established firms. This is also known as “intrapreneurship” and “corporate entrepreneurship.” Currently little is known about how intrapreneurship activity differs across countries.

Entrepreneurial Attitudes, Activity and Aspirations

Table 2 — Prevalence Rates (in %) of Entrepreneurial Activity and Business Owner-Managers across GEM Countries in 2008, for those Aged 18-64, by Phase of Economic Development

	NASCENT ENTREPRENEURIAL ACTIVITY	NEW BUSINESS OWNER-MANAGER	EARLY-STAGE ENTREPRENEURIAL ACTIVITY (TEA)	ESTABLISHED BUSINESS-OWNER MANAGERS	OVERALL ENTREPRENEURIAL ACTIVITY	BUSINESS DISCONTIN- UATION RATE	SAMPLE SIZE 18-64 YEARS
Factor-Driven Economies							
Angola	19.3	4.1	22.7	4.1	26.0	23.4	1,490
Bolivia	17.4	14.3	29.8	19.1	45.6	10.5	1,879
Bosnia and Herzegovina	6.4	2.7	9.0	8.7	17.1	5.0	1,586
Colombia	13.8	11.7	24.5	14.1	36.7	7.1	2,000
Ecuador	8.7	9.1	17.2	11.9	28.1	5.9	2,142
Egypt	7.9	5.5	13.1	8.0	20.2	6.3	2,603
India	6.9	4.9	11.5	16.5	27.6	10.1	1,919
Iran	5.9	3.4	9.2	6.8	15.7	5.2	3,119
Efficiency-Driven Economies							
Argentina	8.5	8.5	16.5	13.5	29.6	10.2	1,731
Brazil	2.9	9.3	12.0	14.6	26.4	3.5	2,000
Chile	8.6	5.8	14.1	6.8	20.2	5.8	4,068
Croatia	4.9	2.8	7.6	4.8	12.3	2.9	1,696
Dominican Republic	11.7	9.8	20.4	8.2	27.9	11.3	2,013
Hungary	3.8	2.8	6.6	5.3	11.8	1.1	1,994
Jamaica	9.0	7.1	15.6	9.1	24.3	8.9	2,399
Latvia	3.9	2.8	6.5	3.0	9.4	1.7	2,011
Macedonia	7.2	7.7	14.5	11.0	24.8	5.3	1,746
Mexico	9.3	4.0	13.1	4.9	17.8	13.6	2,433
Peru	19.7	6.8	25.6	8.3	32.7	10.4	1,990
Romania	2.5	1.6	4.0	2.1	5.9	2.2	1,667
Russia	1.7	2.0	3.5	1.1	4.4	1.1	1,660
Serbia	4.0	3.6	7.6	9.3	16.5	3.7	1,813
South Africa	5.7	2.1	7.8	2.3	9.9	5.8	2,719
Turkey	3.2	3.0	6.0	4.8	10.7	3.9	2,400
Uruguay	7.7	4.4	11.9	7.9	19.3	9.1	1,645
Innovation-Driven Economies							
Belgium	2.0	0.9	2.9	2.6	5.3	1.5	1,997
Denmark	2.3	2.3	4.4	4.4	8.4	1.9	2,012
Finland	4.1	3.3	7.3	9.2	16.0	2.1	2,011
France	3.8	1.9	5.6	2.8	8.2	2.2	1,573
Germany	2.4	1.5	3.8	4.0	7.7	1.8	4,751
Greece	5.3	4.6	9.9	12.6	22.0	2.9	1,962
Iceland	6.5	3.6	10.1	7.1	16.7	3.4	2,002
Ireland	3.3	4.3	7.6	9.0	16.3	3.6	1,924
Israel	3.5	3.1	6.4	4.5	10.6	3.2	1,778
Italy	2.0	2.7	4.6	6.5	11.0	1.8	2,970
Japan	3.2	2.3	5.4	7.9	12.7	1.0	1,879
Republic of Korea	3.5	6.5	10.0	12.8	22.6	4.7	2,000
Netherlands	2.1	3.2	5.2	7.2	12.3	1.6	2,534
Norway	5.0	4.0	8.7	7.7	15.8	3.4	1,614
Slovenia	4.1	2.4	6.4	5.6	11.8	1.3	3,019
Spain	3.3	3.9	7.0	9.1	14.8	1.3	30,879
United Kingdom	3.1	2.9	5.9	6.0	11.7	2.1	5,892
United States	5.9	5.0	10.8	8.3	18.7	4.4	3,441

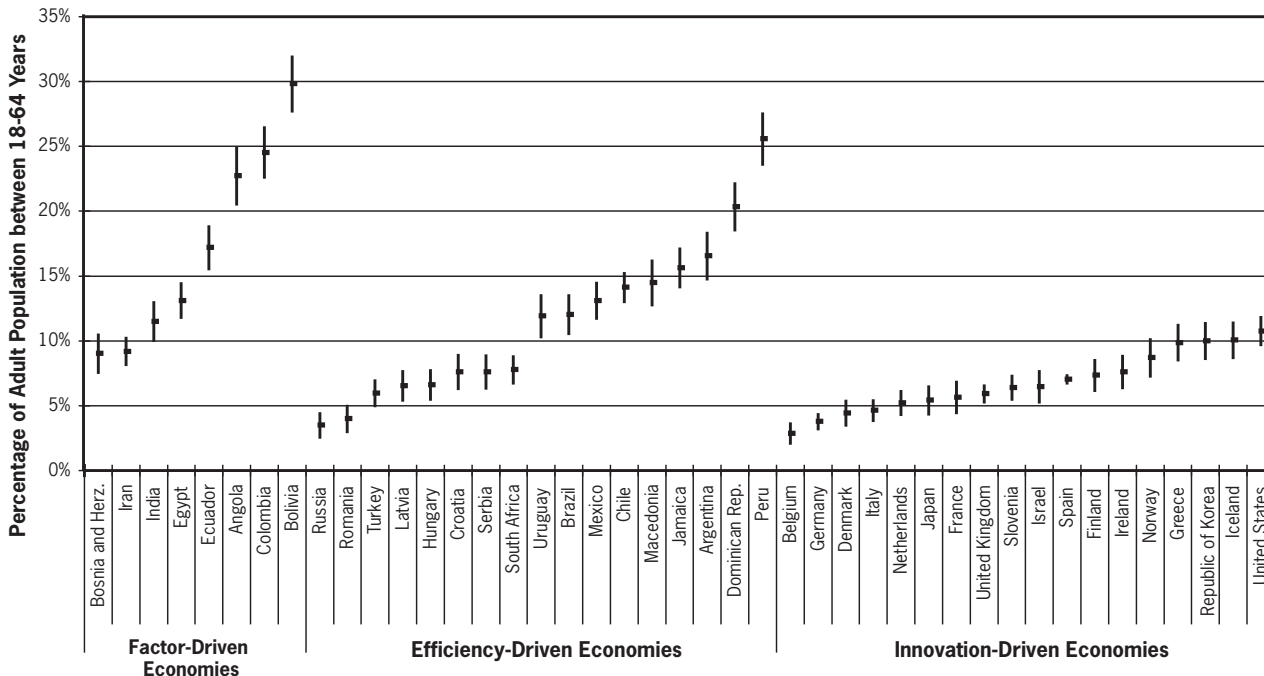
Source: GEM Adult Population Survey (APS)

Figure 7 presents early-stage entrepreneurial activity (TEA) rates for each GEM 2008 country. The TEA rate is the proportion of people aged 18-64 who are involved in entrepreneurial activity as a nascent entrepreneur or as an owner-manager of a new business. The countries are grouped by phase of economic development and ranked within groups in ascending order of the national point estimate for TEA. Note that if the vertical bars on either side of the point estimates for TEA of any two countries do not overlap, this means that they have statistically different TEA rates¹⁷. This figure serves as a benchmark for countries to see how they compare to other countries in similar phases of economic development. It is certainly not the case that higher TEA rates are always to be preferred. In factor-driven economies, for example, a reduction in the TEA rate may be seen as a good sign, and is especially likely when the general economic climate is doing well and job opportunities increase. Such reduction in TEA would typically be due to a decline in the rate of *necessity* entrepreneurship. In innovation-driven economies, a high TEA rate may be specific to regional economic, demographic, and cultural contexts and may be composed of entrepreneurs who may vary in type and aspiration.

GEM reports have demonstrated a consistent U-shaped association between a country's level of economic development and its level and type of entrepreneurial activity¹⁸. Figure 8 illustrates this U-shaped relationship between per-capita GDP levels and TEA rates for 2008¹⁹. TEA rates in 2008 are derived from the annual GEM Adult Population Surveys (APS) administered to representative samples of the national adult population in 43 countries. The measure is described in more detail in the Introduction.

The U-shape pattern can be explained as follows: in countries with low levels of per capita income the national economy is characterized by the prevalence of many very small businesses. As per capita income increases, industrialization and economies of scale allow larger and established firms to satisfy the increasing demand of growing markets and to increase their relative role in the economy. An important factor for achieving growth is the presence of macro-economic and political stability, which is reflected by the development of strong institutions. The increase in the role of large firms may be accompanied by a reduction in the number of new businesses, since a growing number of people find stable employment in large industrial plants.

Figure 7 — Early-Stage Entrepreneurial Activity (TEA) for 43 Nations in 2008, by Phase of Economic Development, Showing 95% Confidence Intervals



Source: GEM Adult Population Survey (APS)

Entrepreneurial Attitudes, Activity and Aspirations

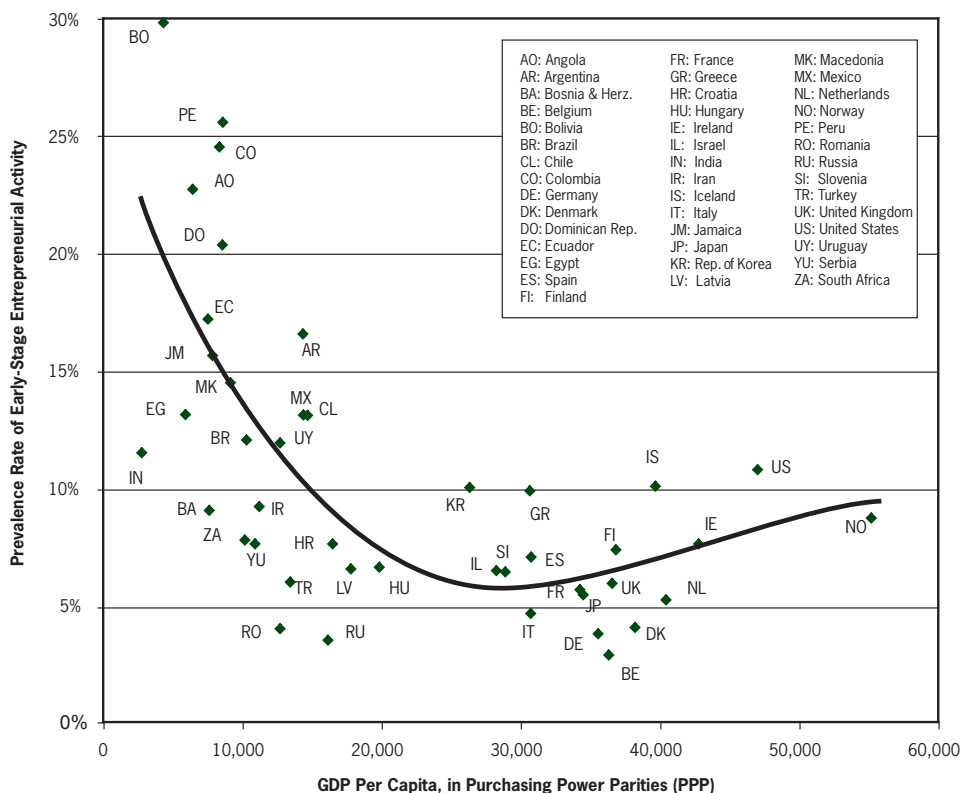
Thus, for countries with low levels of per capita income, a decrease in prevalence rates of entrepreneurial activity may be a good sign, especially if this is accompanied by economic growth and political stability. As further increases in income are experienced, the role played by the entrepreneurial sector may increase, as more individuals can access the resources to go into business for themselves in an economic environment that allows the exploitation of opportunities. Although the annual “snapshot” of early-stage entrepreneurial activity consistently shows the shape of the fitted line over the years, it does not imply that all countries follow this pattern over time. This is because there are also other important national conditions that determine the rate of early-stage entrepreneurial activity. Also, the upward slope for high-income countries is only partially explored because the number of countries with very high per capita income is limited. There is no reason to expect that the upward slope will be as steep as the downward slope.

The dispersion of TEA country estimates around the line of best fit in Figure 8 demonstrates that entrepreneurship rates are not just a function of differences in economic development (or welfare) but

also of other factors. Entrepreneurship is not just an economic event; it is a socio-economic phenomenon. National societies and their economies are to a large extent shaped by historical developments. The rapidly expanding body of entrepreneurship studies as well as ten years of GEM research indicates that entrepreneurial activity rates may differ across countries for cultural, institutional, economic, and demographic reasons. For example, motivations, regulations, and enforcement of regulations for setting up a business can be vastly different across the globe.

Geographical patterns can also be witnessed in Figure 8: it shows that countries with similar geographic backgrounds and traditions tend to cluster together. A group of EU-15 countries is situated close together at the lower end of early-stage entrepreneurial activity. Countries in Eastern Europe and Central Asia are mainly situated at the left hand side, below the fitted curve—even though over the years they appear to move toward the curve. People in these countries are not as much engaged in entrepreneurial activity as citizens of Latin American countries, the Caribbean, and Angola with similar levels of per capita GDP. Wealthier countries at the upper right-hand side are industrialized countries outside the EU—with Ireland

Figure 8 — Early-Stage Entrepreneurial Activity Rates and Per Capita GDP, 2008



as a notable exception. Japan's rate of early-stage entrepreneurial activity has, over the years, been consistently lower than the fitted curve, but has been increasing in recent years and is now very similar to the EU-average.

As the 2007 GEM report demonstrated, institutional characteristics, demography, entrepreneurial culture, and the degree of economic welfare all shape a country's entrepreneurial landscape. The factors of culture, demography, institutions, and economic welfare are linked. For example, national institutions reflect the national culture, since they are designed to formalize norms and values of the country. Also, countries with well-developed institutions generally exhibit higher degrees of welfare. Chapter 3 further explores the role of institutions in enhancing high impact entrepreneurship.

Entrepreneurial Motivations

Although most individuals are *pulled* into entrepreneurial activity because of opportunity recognition, others are *pushed* into entrepreneurship because they have no other means of making a living or because they fear becoming unemployed in the near future. For those who are pulled to entrepreneurship, two major drivers of opportunity entrepreneurship can be identified: those who are pulled primarily because they desire *independence*, and those who are primarily pulled to entrepreneurship because they want to *increase their income* as compared to, for instance, being an employee. The remaining share includes people who maintain that they have no other way of earning a living (necessity-motivated entrepreneurs) and people who became involved in entrepreneurial activity primarily to maintain their income²⁰. We should note that GEM may underestimate necessity entrepreneurship and overestimate opportunity entrepreneurship. The relevant question in the GEM survey forces respondents to choose between "no better options for work" and "exploit business opportunities". That is, there is little room for choosing an option between these extremes and those who find themselves in between may opt for the latter option more frequently—even if they are in fact closer to the former.

In 2007, the calculation method for opportunity-driven early-stage entrepreneurial activity (opportunity-TEA) was refined. It includes only those who are pulled to entrepreneurship by opportunity *and* because they desire independence or to increase their income, not those who are pushed to entrepreneurship out of necessity or those who sought only to maintain their income. Relative prevalence rates are shown in Figure 9 in black. The countries with high relative prevalence of improvement-driven opportunity entrepreneurship are primarily innovation-driven countries. In these

countries, opportunities may be expected to be more abundant, and individuals may have more alternatives to make a living. Therefore, the trend of the degree of opportunity TEA in relation to GDP per capita gradually slopes upward in Figure 9. The green line describes the pattern of the degree of necessity entrepreneurship and is downward sloping²¹. Thus, when countries progress in economic development, their rate of necessity entrepreneurship decreases. This is a clear example of economic development impacting the TEA rate and not the other way around. The different slopes of the two trend lines give support for the interpretation of the U-shaped pattern in Figure 8 as outlined above. An important implication is that when linking entrepreneurship to economic development, the phase of national economic development should be taken into account.

Discontinuing Business

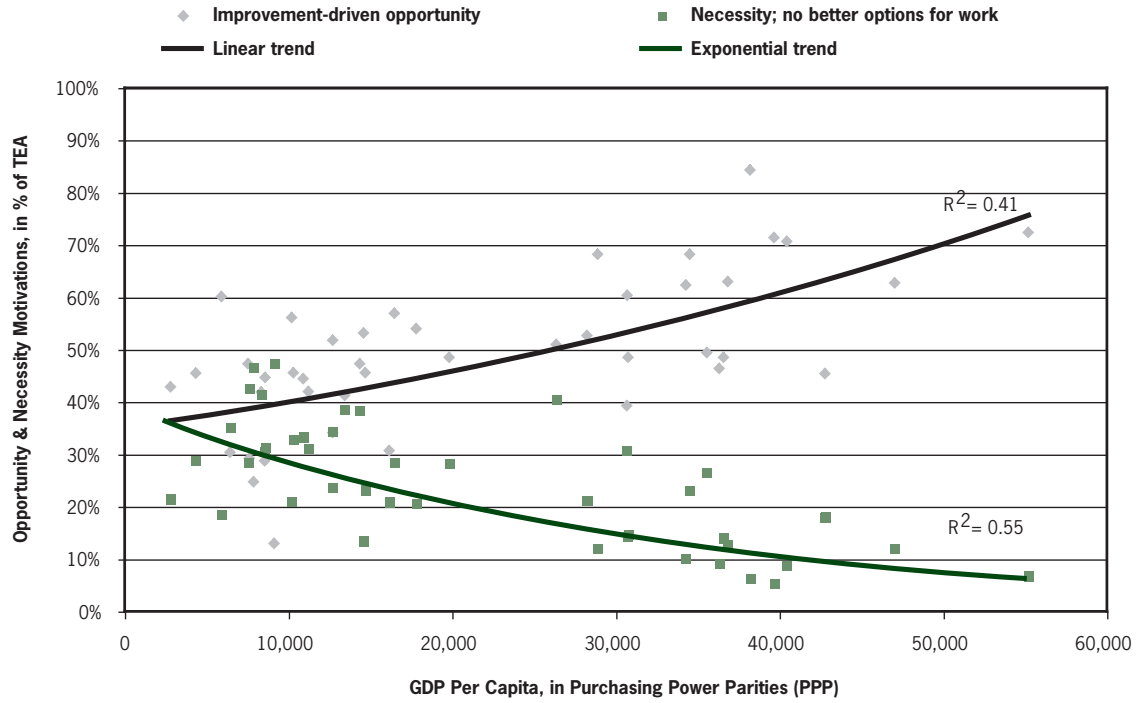
Business discontinuation is an important feature of dynamic economies and entries and exits of businesses are closely correlated²². Table 2 displays prevalence rates of people who discontinued, sold, or quit a business in the twelve months preceding the GEM survey. It can be seen that business discontinuance rates are relatively high in factor-driven economies (in Angola, for example, the reported rate is as much as 23%) and relatively low in innovation-driven economies. Among high-income countries, Norway, the United States, Republic of Korea, Iceland and Ireland have the highest rates of business discontinuation. This suggests that in some countries, there is a rapid turnover of business experiments.

Many businesses that are discontinued are not failed businesses. In a study by Headd (Headd, 2003), owners of about one-third of all firms that closed said their firm was *successful* at closure. In 2008, GEM respondents who said they had discontinued a business in the last 12 months were asked if their business continued. It appears that, on average, about one-third of the businesses that were discontinued by a GEM respondent continued in another form or with different ownership. The respondents who discontinued a business in the last 12 months were also asked to state the most important reason for doing so. Figure 20 shows that the discontinuation of a business does not necessarily mean the business failed.

Financial problems were cited as the reason for quitting the business by no more than 55% of all respondents; it was cited more often by respondents in the factor- and efficiency-driven economies (just over 50%) than innovation-driven countries (just over 40%). The business itself not being profitable was the most reported financial problem. Problems with raising finance were considerably lower in innovation-driven

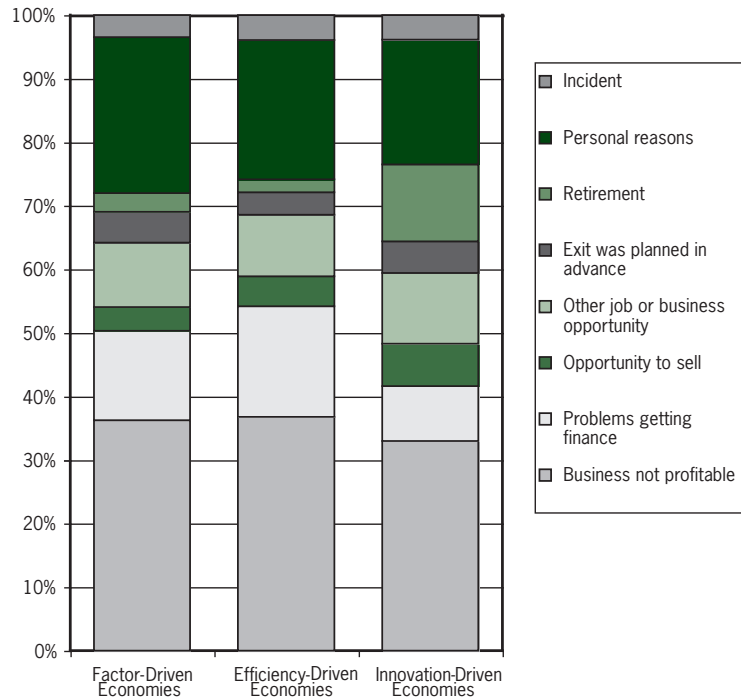
Entrepreneurial Attitudes, Activity and Aspirations

Figure 9 — Necessity- and Improvement-Driven Opportunity Motivations as a Percentage of Early-Stage Entrepreneurial Activity, GEM 2008 Countries



Source: GEM Adult Population Survey (APS) and IMF: World Economic Outlook Database (October 2008 edition)

Figure 10 — Expressed Reasons Behind Discontinuing Businesses, by Age, GEM 2008



Source: GEM Adult Population Survey (APS)

countries where the Entrepreneurial Framework Condition “Entrepreneurial Finance” is generally more developed. “The opportunity to sell” and in particular “retirement,” were mentioned more often in innovation-driven countries as the most important reason to discontinue the business. Personal reasons caused around 20 – 25% of all discontinuations. Such reasons could include sickness, family, or business partner bereavement, divorce, the need to finance an event such as a wedding through sale of business assets rather than the business itself, or simply boredom. They were more prevalent in factor- and efficiency-driven countries.

For many entrepreneurs who exit a business, it is not the end of their entrepreneurial career, but a new beginning. “Entrepreneurial recycling” (Mason and Harrison, 2006) manifests itself in two main ways. First, exited entrepreneurs may start again. This phenomenon is more than twice as prevalent in factor-driven and efficiency-driven economies than in innovation-driven economies. Seventeen percent of nascent entrepreneurs in both factor-driven economies and efficiency-driven economies had stopped running a business in the past year, compared with 8% of nascent entrepreneurs in innovation-driven economies. Second, exited entrepreneurs are

more likely to invest in other people’s businesses than the rest of the population. Almost a fifth of exited entrepreneurs in all three country groups were recent informal investors: around four to five times that of other people in factor-driven and efficiency-driven economies and seven times that of other people in innovation-driven economies.

Sector Distributions

Figures 11 and 12 show the distribution of early-stage entrepreneurial activity and established business owner-managers by industry sector and phase of economic development. This distribution is different in each of the three major phases of economic development. Extraction businesses (farming, forestry, fishing, mining) are more prevalent in factor-driven economies, transforming businesses (manufacturing and construction) are more prevalent in efficiency-driven economies, and business services are more prevalent in innovation-driven economies. The reducing prevalence of consumer services across the three major phases is particularly noticeable. Such services tend to have relatively low resource needs and are often local in nature, particularly in countries with poorly developed transportation and commercial infrastructure.

Figure 11 — Sector Distribution Early-Stage Entrepreneurial Activity

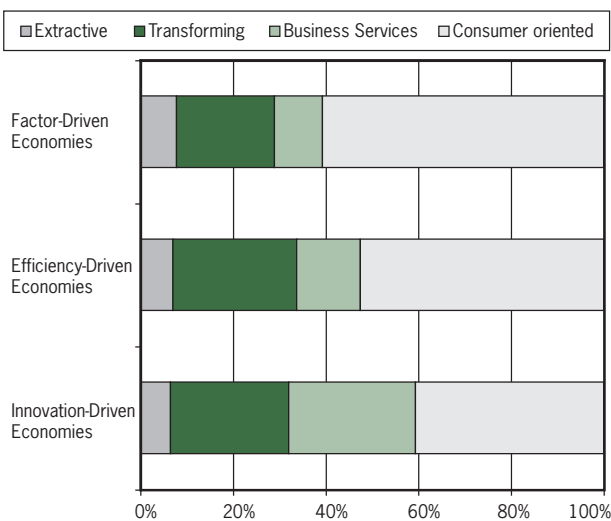
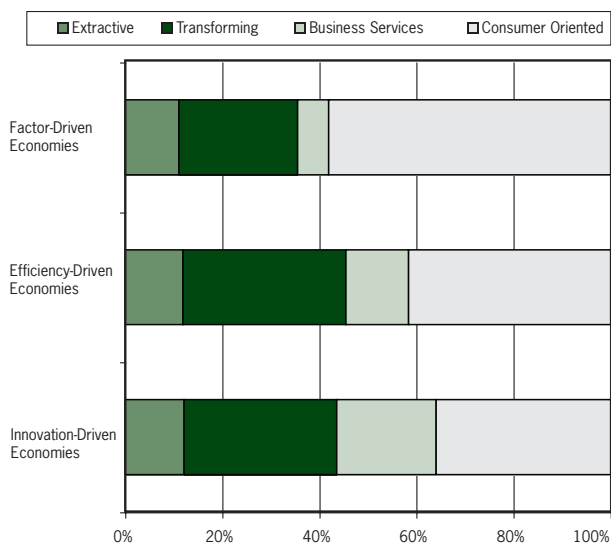


Figure 12 — Sector Distribution Established Business



Source: GEM Adult Population Survey (APS)

Age and Gender Structure

Figure 13 demonstrates that in each phase of economic development, prevalence rates of early-stage entrepreneurial activity differ across age groups. The shapes of the age distributions are very similar across country groups. The 25-34 years age group has the highest prevalence rate for every phase of economic development. Thereafter the prevalence rates decrease as age increases. This inverted U-shape pattern reflects the interaction between desire to start a business, which tends to reduce with age, and perceived skills, which tends to increase with age.

Figure 14 displays the differences in female and male participation for each country in GEM 2008, ordered by major phase of economic development and female participation rate²³. The ratio of female to male participation varies considerably in each phase, reflecting different culture and customs regarding female participation in economic activity. In some factor-driven economies, for example Ecuador and Bolivia, female TEA rates are just below male TEA rates. In Angola, women are actually more likely to be involved in early-stage activity than to men. The situation is very different for Egypt, reflecting different culture and customs. For efficiency-driven economies, the gender gap in TEA rates is also quite low in many Latin American countries and Jamaica. In many, but not all, eastern European countries male TEA rates are substantially higher than female TEA

rates. In innovation-driven countries, the general rule of thumb is that men are twice as likely to be involved in early-stage entrepreneurial activity than women. However, this gap is lower in Germany, Spain, Greece, and the United States.

Trend in Early-Stage Entrepreneurial Activity 2001-2008

According to classic economic thinking, one would expect that when the business cycle is less favorable, fewer people will be involved in entrepreneurial activity because the expected returns are lower in comparison to times of economic prosperity. A counter argument is the so-called “refugee” hypothesis (Storey, 1991; Thurik *et al.*, 2008). This hypothesis implies that when recessions loom, the number of people involved in TEA should become higher because employees either fear that their salaries are at risk, or they have already been let go and self-employment is the last resort. Figure 9 showed that necessity entrepreneurship played a relatively small role in innovation-driven countries in 2008; all high-income countries fall under the category of innovation-driven countries. In fact, a large share of TEA consists of people whose main driver for starting up a business is the fact that they can work independently. If one accepts that desire to be independent is the main driver, little difference over time can be expected for national TEA rates in innovation-driven countries.

Figure 13 — Early-Stage Entrepreneurial Activity for Separate Age Groups, 2008

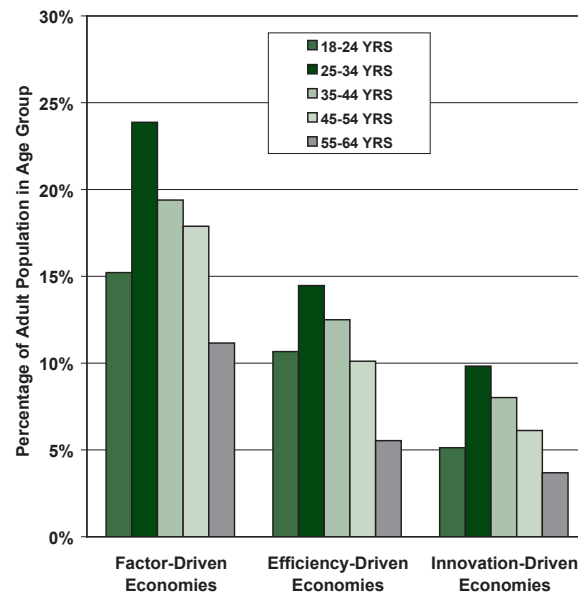
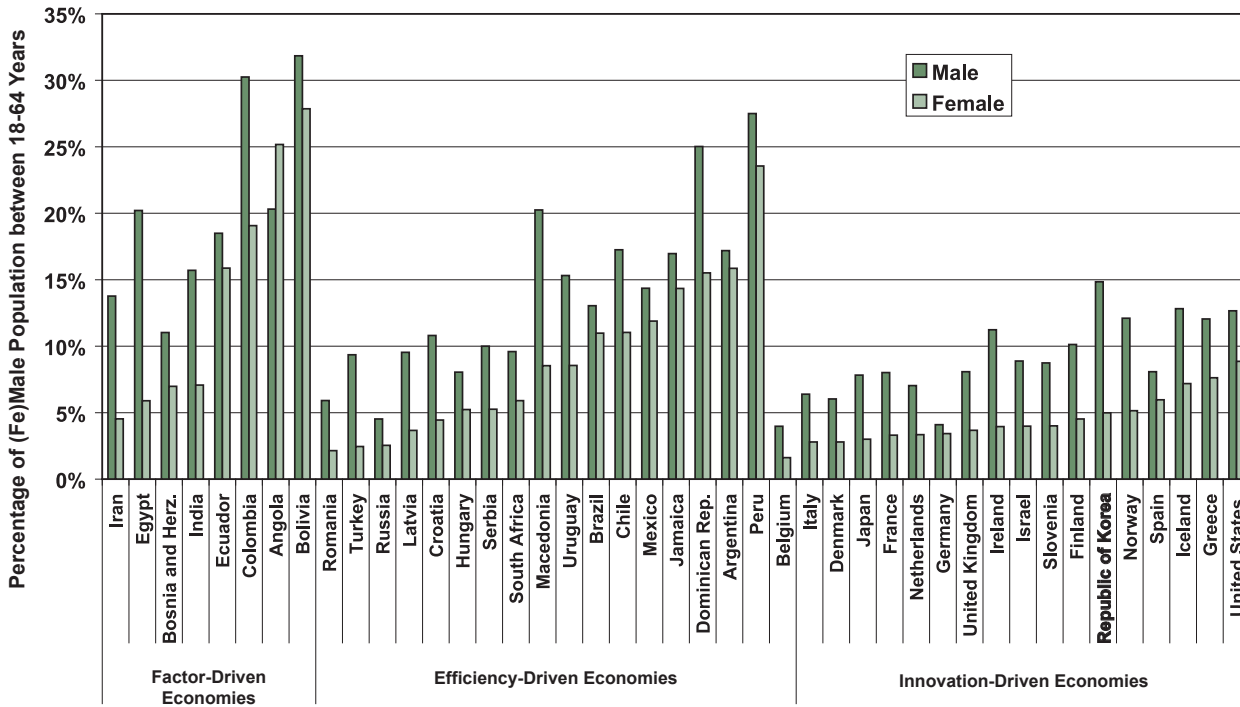


Figure 14 — Early-Stage Entrepreneurial Activity Rates by Gender, 2008



Note: Countries are ordered along phase of economic development and female early-stage entrepreneurial activity rates

Source: GEM Adult Population Survey (APS)

Figure 15 displays the trend in average annual TEA rates from 2001 to 2008 for a subset of GEM efficiency-driven and innovation-driven countries. These are all countries that have been part of GEM since 2001 and have missed at most one year of data collection²⁴. Data is available for only six efficiency-driven economies: Argentina, Brazil, Chile, Croatia, Hungary and South Africa, so the results should be interpreted with some care. A total of 17 innovation-driven economies had sufficient data to be included. Figure 15 shows that the overall development over time of TEA in innovation-driven economies is quite stable. A slight and gradual rise is observed, from 5.7% in 2002 to 6.4% in 2008. The rates of necessity-driven TEA are shown in Figure 16 and have, on average, been very stable as well. For efficiency-driven economies, the pattern is more sensitive to the business cycle. Argentina, in particular, has shown a significant reaction to its national economic crisis; in 2001-2003, the Argentinean rate of necessity early-stage entrepreneurs rose from 3.9 to 7.4 percent. It leveled off afterwards as the national economy recovered, but has been increasing again in recent years.

It remains an unanswered question how much the current global economic crisis will impact necessity-driven TEA rates in efficiency-driven countries and innovation-driven countries. Even though the collapse of the internet bubble in 2001 did not seem to significantly affect overall TEA rates in innovation-driven countries, the current crisis clearly poses more threats to entrepreneurial activity and economic activity in general. Those looking to GEM data for guidance should bear in mind that the TEA rate covers several *phases* of the start-up process. It includes the pre-start-up phase—from the moment of actively starting a business—and the post-start-up phase, up to the moment a business is up and running for 42 months. In addition, most of the GEM 2008 surveys were conducted before the summer, when the true size of the crisis had not manifested itself yet. This means that the impact of the crisis on TEA rates has not yet become apparent. This will to a large extent also hold for the 2009 results; for example, individuals who started their business in 2007 will still be seen as early-stage entrepreneurs. However, it is expected that in due course the crisis will impact both the pre-start-up phase and the post-start-up phase of early-stage entrepreneurship in some ways (see Box 3).

Entrepreneurial Attitudes, Activity and Aspirations

Figure 15 — Early-Stage Entrepreneurial Activity (TEA) Rates for 2001-2008, Averages over Efficiency-Driven Countries and Innovation-Driven Countries

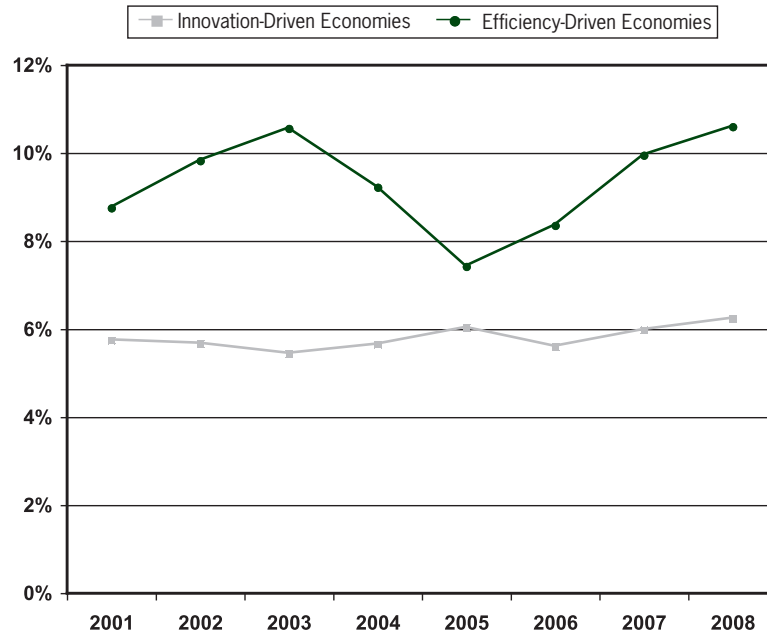
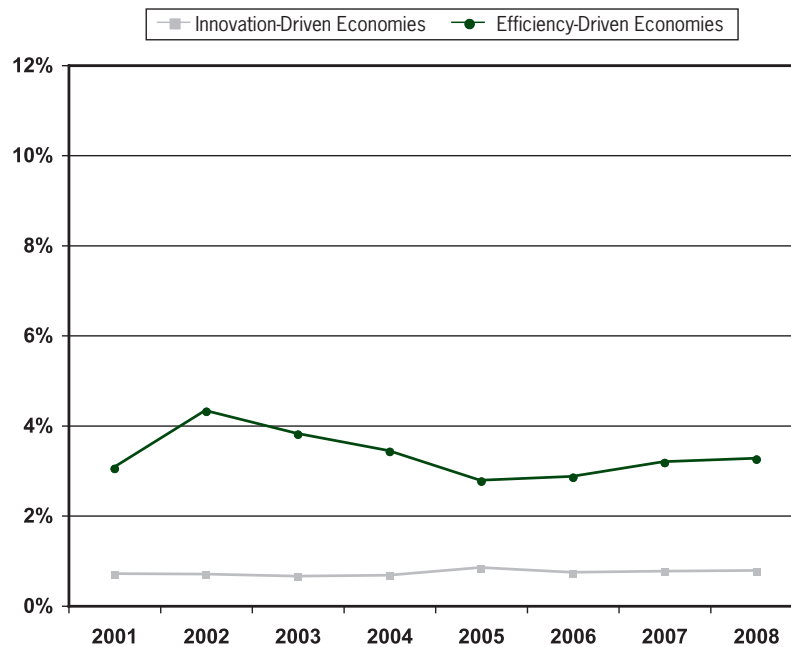


Figure 16 — Necessity-Driven TEA Rates for 2001-2008, Averages over Efficiency-Driven Countries and Innovation-Driven Countries



Note: Each data point is a simple country average for that year
Source: GEM Adult Population Survey (APS)

Box 3. How Does the Current Economic Crisis Affect Entrepreneurship?

It is clear that the current economic crisis will have a substantial impact on entrepreneurship. The crisis started off in the financial sector but has—at the time this report went into print—already hit many other parts of the economy severely and production growth has come to a halt in many industries, in many countries. In this insert, we discuss some important implications of the crisis for entrepreneurship along the three identified components of attitudes, activity, and aspiration. The crisis may have different effects on different *types* and *phases* of entrepreneurship, resulting in both negative and positive trends in activity. Entrepreneurship is thought to be one of the mechanisms that helps turn around recessions by reallocating resources in such a way that promising new activities replace obsolete economic activities. However, this only works well if institutions, captured by the Entrepreneurial Framework Conditions (EFCs) in Figure 1, are conducive to this particular entrepreneurship mechanism and do not, for instance, artificially keep alive obsolete types of economic activity.

Attitudes and Perceptions

The GEM Adult Population Survey measures several perceptions toward entrepreneurship of a representative sample of adults. As a result of the recession, their perceived opportunities for starting a business will be lower because of (i) declining demand for products and thus declining expected returns, and (ii) lower supply of entrepreneurial finance caused by banks being more risk averse. This GEM publication already reports a decline in perceived opportunities for starting a business. Fear of failure is also higher because the *implications* of failure are higher: there are fewer alternatives available on the job market for those who will not be able to make their start-up venture sustainable.

The issue of access to entrepreneurial finance is especially important for entrepreneurs who envision a sizeable new venture. The GEM 2006 Financing Report demonstrates that most business founders expect to finance their venture themselves, and for those who do seek external sources of funding, relatively small sums are involved (Bygrave and Quill, 2007). There may be a trade-off between accessibility of external funding and the cost of resources. In a recession, under-used assets will be released by failing businesses and recycled at a relatively low cost by

other businesses, including new businesses. Also, the decision to become an entrepreneur is not only about expected financial returns versus risk, it is also about (self-perceived) abilities (Davidsson, 1991). Perceived skills are not likely to be affected by the crisis. The GEM perceived start-up skills and knowledge indicator—in contrast to perceived opportunities and fear of failure—was stable in 2008.

National attitudes towards entrepreneurship in general are unlikely to change dramatically. Such attitudes include the degree to which people view entrepreneurship as a good career choice, and the degree to which the media pays attention to entrepreneurship.

Activity

Entrepreneurial activity comprises a static component (in GEM, this is represented by economic activity in “established” businesses) and a dynamic component that focuses on early-stage entrepreneurial activity, but it also includes new economic activities conducted by established businesses. Many established businesses in established sectors may see their turnover dropping due to a reduction in demand. Their profits may decrease and the resources for investments may decrease sharply. Expansion may be more difficult for cash-poor businesses. Factories will stop their production or might even close permanently. Established businesses operating in niche markets, or serving the lower-ends of the market, may be less harmed, and businesses that are cash-rich may find good opportunities for growth by acquisition as the value of business assets drops.

The static component of entrepreneurship is important for preserving economic stability. Governments may seek to support the existing stock of businesses to some extent and help to preserve big and important companies, as well as help the small business sector to survive. In fact, many small businesses’ existence is dependent on the needs of larger businesses. However, companies that find themselves in trouble not only due to the financial crisis, but also because their products and services are essentially outdated, should perhaps not be supported unless they adjust their economic strategy. It is unavoidable that the number of discontinuations will increase. The challenge for governments is to keep alive those firms that still have good potential to do well in the longer run.

While established businesses are important for preserving stability, early-stage entrepreneurship

is important for creating dynamism in economic activity. Of course, pessimistic economic projections may lead to fewer people starting up a business. However, (pending) job losses may also result in more necessity-motivated entrepreneurship. In this particular recession, the first group of people to be affected in this way, those in the financial sector, exhibit high levels of human capital and financial capital relevant to entrepreneurship. Thus, the recession could trigger teams of bright individuals in the financial sector to start their own companies based on new but commonly shared principles. This would in effect be a bottom-up process of reshaping the financial sector to fit the needs of the current globalized economy. It is up to national authorities to recognize and support such new initiatives where they can.

Most individuals who planned to start a business just before the crisis emerged are unlikely to change these intentions, especially if they are driven by the wish to work independently—which is the case with most entrepreneurs in innovation-driven countries. Figure 15 confirms that on average, there has been no significant change in TEA in innovation-driven countries over the past year. Many individuals involved in the pre-start-up phase, however, may have to rethink their products and strategies. It is often easier to adjust a business model in the pre-start-up phase than in the established stage. Banks and other investors, being less eager to lend money, will ensure a very thorough selection of new business activities. In conclusion, the dynamic component of entrepreneurship, in the form of not only early-stage entrepreneurial activity but also new business activities carried out by established businesses, may be important for the change in economic activity that is needed to overcome recessions.

Aspirations

Since many early-stage entrepreneurs lean on their own skills and knowledge when setting up their businesses, the impact of the crisis on growth expectations may be rather low. However, some new realism may be found among nascent entrepreneurs. In general, nascent entrepreneurs tend to overestimate their expected growth (Koellinger, 2008), but it has also been observed that those who expect to grow significantly will, after a few years, exhibit such expansion more often than low-expectation entrepreneurs (Davidsson and Wiklund, 1997).

To some extent, the recession can stimulate innovative entrepreneurship. In economic booms, much money is spent on research and development, but the resulting innovations have often not yet been implemented in new business activities because the “old” products and processes are still generating good returns. Times of recession are often used to actually implement changes in businesses. This especially goes for established business activities because there is always much internal resistance to organizational changes. Innovations in recessions often pave the way for a new period of prosperity. For example, the first supermarket in America started up at the beginning of the Great Depression (Hirooka, 2003). Economic downturns trigger economic activity that is directed toward the future, rather than activity merely prolonging established routines.

2.3 ENTREPRENEURIAL ASPIRATIONS

High-Growth Expectation Entrepreneurship

Studies show that relatively few early-stage entrepreneurial firms contribute a disproportionate share of all new jobs created by new firms (Autio, 2007). In the following analysis, seven years of GEM data (years 2002-2008) are combined to take a closer look at how growth ambitions differ among early-stage entrepreneurs²⁵. The GEM method enables the categorization of early-stage start-up attempts according to their growth ambition. GEM asks all identified early-stage entrepreneurs how many employees they expect to have within five years' time.

Expectations of high-growth are rare among nascent and new entrepreneurs. Seventy percent of all start-up attempts expected any job creation. Only 8% of all start-up attempts expected to create 20 or more jobs. In the remainder of this section, we focus on the prevalence of new and nascent entrepreneurs who expect their business will employ at least 20 people in five years' time. This is known as *high-growth expectation early-stage entrepreneurial activity*, or HEA.

Figure 17 presents the HEA rate in GEM countries for which a sufficient sample size was available, grouped on the basis of per capita GDP. The vertical bars indicate the 95% confidence interval. If vertical bars overlap between two countries, the difference between those countries is not considered statistically significant.

Figure 17 is broadly consistent with the notion that national HEA rates vary with economic context. The United States, New Zealand, Iceland, and Canada have higher levels of HEA than other innovation-driven economies. The HEA rate for these countries is well over 1%. In the United Kingdom, Switzerland, Germany, Slovenia, Norway, and Denmark, the HEA rate is between 0.5 and 0.8%. The lowest levels of HEA, at under 0.5%, occur in Belgium, France, Spain, Japan, Finland, and Greece. Within innovation-driven economies, the differences in prevalence rates of HEA are considerable, ranging from the United States and Iceland's mean of over 1.5%, to approximately 0.3% in Belgium.

HEA rates can vary even among broadly similar high-income countries. Among the large EU economies, the United Kingdom and Germany clearly exhibit higher levels of HEA than France and Spain. In the Benelux countries, the Dutch HEA rate is higher than the Belgian HEA rate. In Scandinavia, the level of HEA in Iceland is four times higher than that of Finland.

Of the factor- and efficiency-driven countries, Colombia, China, Peru, and Chile exhibit the highest prevalence rates of high-expectation entrepreneurship²⁶. In fact, the HEA rate for China is the highest of any GEM country, even though it is not statistically different from that of the United States, New Zealand, and Iceland. Most other middle- and low-income countries in the sample exhibit lower HEA rates than most high-income countries. It is notable that India's HEA rate is less than one-fifth that of China.

Figure 17 — Prevalence Rates of High-Growth Expectation Early-Stage Entrepreneurship (HEA) in the Adult Population

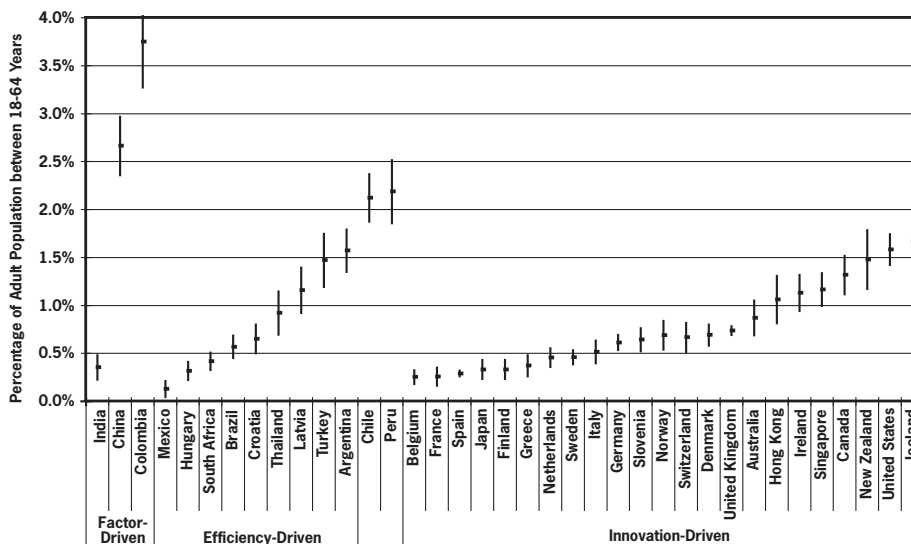
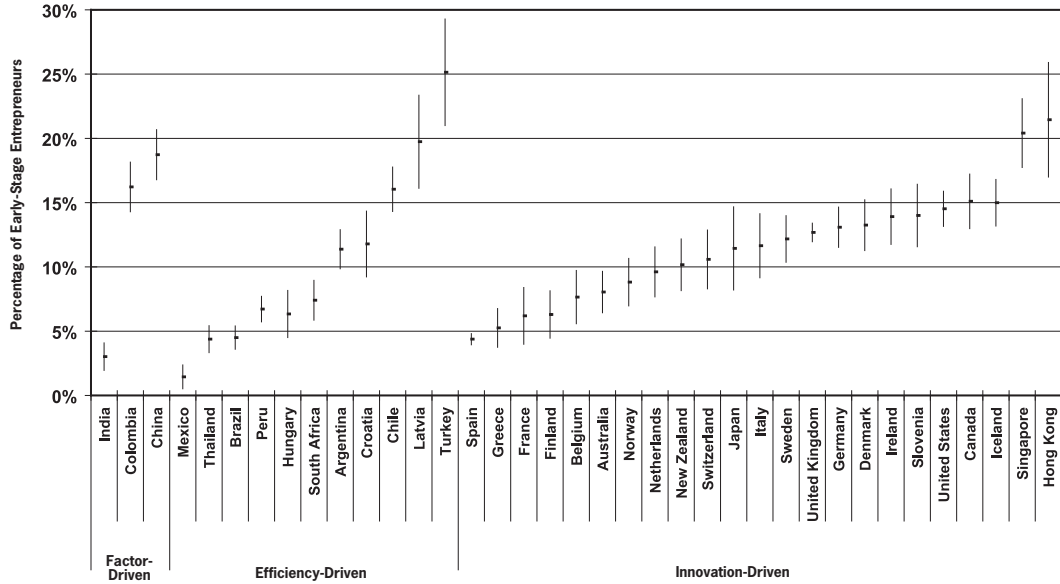
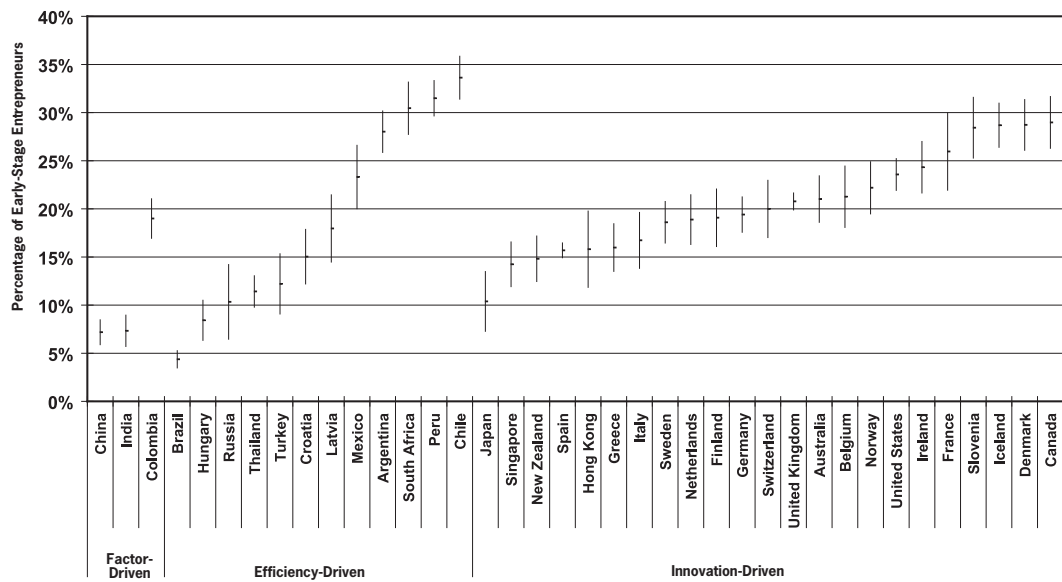


Figure 18 — Anatomy of High-Growth Expectation Early-Stage Entrepreneurship (HEA): Percentages in TEA



Source: GEM Adult Population Survey (APS)

Figure 19 — Percentage of Early-Stage Entrepreneurial Activity with New Product-Market Combination, 2002-2008



Source: GEM Adult Population Survey (APS)

An analysis of the anatomy of entrepreneurial activity (defined as the relative prevalence of HEA entrepreneurs among all TEA entrepreneurs) reveals a slightly different pattern to that shown in Figure 17.

Figure 18 shows that the countries with arguably the “healthiest” entrepreneurial anatomies, in this sample of nations, are Singapore, Latvia, Hong Kong, China and Turkey. In Singapore and Hong Kong, over 20% of nascent and new entrepreneurs aspire for rapid growth, the highest relative prevalence of HEA of all innovation-driven countries in the sample. Thus, in spite of their low overall rate of entrepreneurial activity, the contribution of entrepreneurs to these two densely populated economies may be quite significant²⁷. Greece and Spain stand out as countries where very few nascent and new entrepreneurs (around 5%) anticipate creating a business of significant size. Also France, Finland, Belgium, Australia, and Norway exhibit low levels of entrepreneurial growth ambition, with less than 10% of all start-up attempts expecting high-growth.

Among factor-driven and efficiency-driven economies, China’s nascent and new entrepreneurs appear to be the most growth-oriented, with nearly 20% of them anticipating high-growth. Early-stage entrepreneurial activity in India and Mexico, on the other hand, is marked by low levels of growth expectation.

In summary, innovation-driven economies typically have a higher relative prevalence of HEA than efficiency-driven and factor-driven economies. There

are notable exceptions to this overall pattern, however. Some high-income countries have low relative prevalence of HEA and some middle- and low-income economies have high relative prevalence.

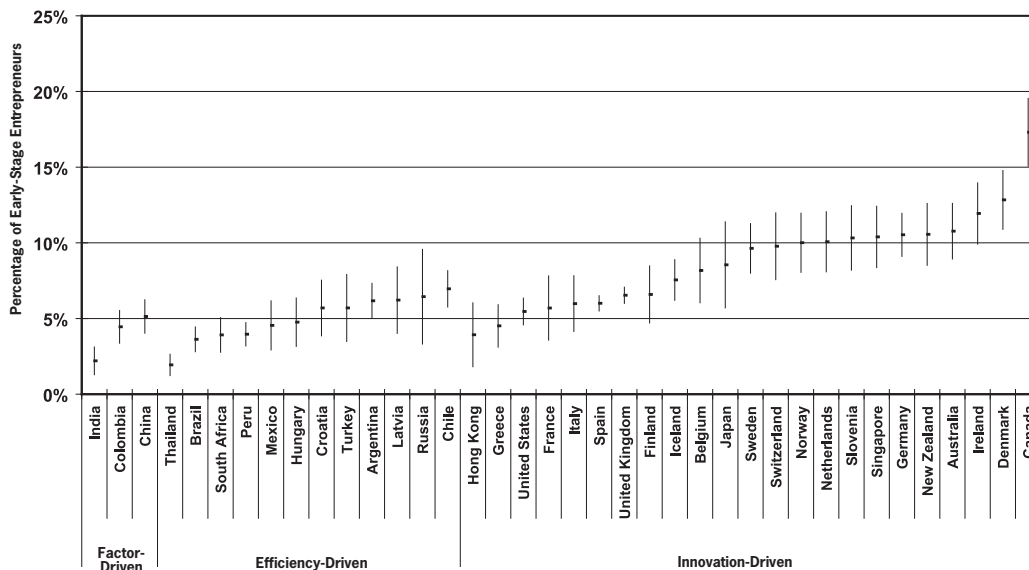
Innovation- and Technology- Oriented Entrepreneurial Activity

The essence of Schumpeter’s (1942) theory of creative destruction is that entrepreneurs distort the market equilibrium by introducing new product-market combinations or innovations. Sometimes they use new technologies to do so. By innovating, entrepreneurs drive less productive firms out of the market and advance the production frontier. Innovation is therefore an important means by which entrepreneurial firms contribute to economic growth.

GEM assesses innovation in entrepreneurial businesses in a variety of ways. First, there are assessments of early-stage entrepreneurs and established business owner-managers concerning the novelty (or unfamiliarity) of their products or services relative to customers’ current experience. A second way that GEM assesses the innovativeness of entrepreneurial businesses is by measuring the degree of competition faced by the business, or whether the owner-manager perceives that many, few, or no other businesses offer similar products or services.

Figure 19 evaluates GEM countries on an index that combines the two measures of innovation discussed above (product novelty and degree of competition), and

Figure 20 — Percentage of Early-Stage Entrepreneurial Activity Active in Technology Sector, 2002-2008



Source: GEM Adult Population Survey (APS)

Entrepreneurial Attitudes, Activity and Aspirations

ranks countries in their country groups on the relative prevalence of innovative early-stage entrepreneurial activity. In essence, this index measures the percentage of early-stage entrepreneurs with novel product-market combinations. These entrepreneurs offer a product or service they believe is new to some or all customers and they also believe that there are few or no businesses offering the same product. In order to derive more precise estimates, we combined GEM data from 2002-2008.

Looking at the country groups, it is apparent that in each group there are countries with high and low relative prevalence of innovative early-stage entrepreneurial activity. Interestingly, within the innovation-driven country group, the EU-countries emerge as having—on average—the highest relative prevalence. The figure shows, however, a wide variation in relative prevalence, even within the EU block. For example, Greece, Spain, and Italy have relatively few new product-market oriented entrepreneurs in early-stage entrepreneurial activity, whereas Denmark, Slovenia, France, and Ireland have high rates. Among other innovation-driven countries, it is striking that Asian countries have low relative prevalence.

Turning to factor-driven and efficiency-driven countries, Figure 19 demonstrates that factor-driven countries tend to have lower rates of innovative early-stage entrepreneurial activity, and that some efficiency-driven countries appear to have the highest rates of all countries in the sample of GEM nations.

In considering these patterns, it is important to bear in mind that this index works well if both the availability of new products and services and the strength of competition are evenly distributed throughout the world. This is a big assumption to make. By comparing within country groups, we control to some extent for differences in product availability and ferocity of competition. But it may be that some countries score high on this index merely because relatively few new products are available in them and competition is weak.

Information on the business activities of nascent entrepreneurs and owner-managers is available in some detail from the GEM Adult Population Surveys²⁸. For example, the share of early-stage entrepreneurs who are active in technology sectors according to the OECD definition can be estimated²⁹. Figure 20 presents these percentages for the selected set of GEM 2008 countries. This figure confirms that countries in the innovation-driven stage have higher shares of technology-related early-stage entrepreneurial activity. Also here, some European countries tend to score high, although some can also be found at the lower end of the ranking of innovation-driven economies on this measure. Chile, Russia, and Latvia score high among efficiency-driven economies. India, Thailand, and Brazil have the lowest scores.



Box 4. The Institute for Innovation & Information Productivity

Where innovation and productivity meet...

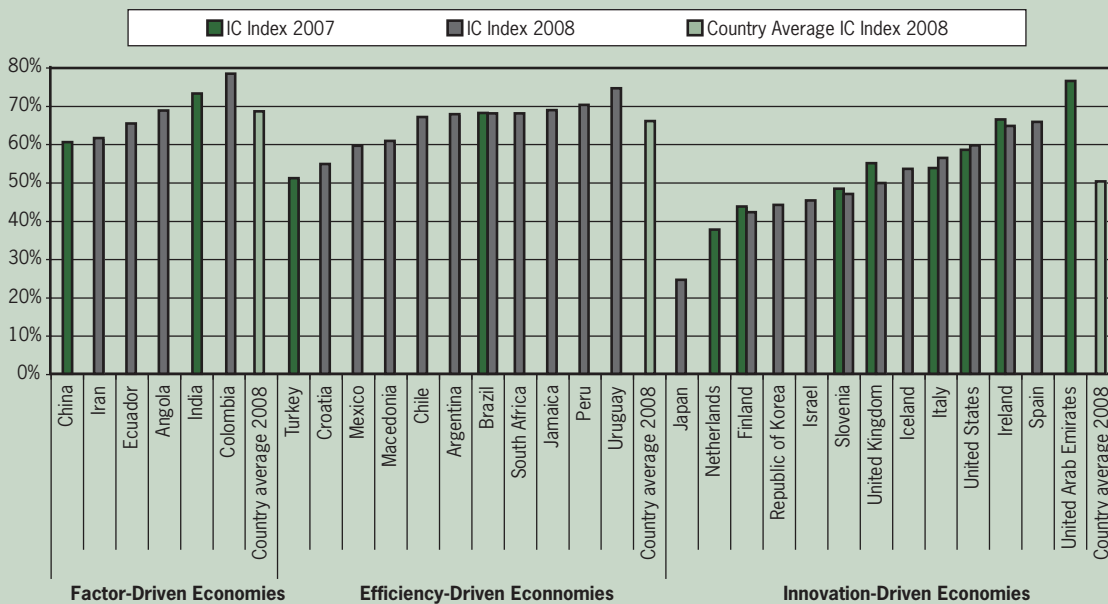
In 2007, the IIIP Innovation Confidence Index was developed by the Institute for Innovation & Information Productivity (IIIP) in association with GERA. This year, 26 GEM countries collected data on personal innovation confidence through the Adult Population Survey (APS), more than doubling the number of participating countries³⁰.

The premise behind the Index is that innovative entrepreneurs need customers who are willing to buy new products and services and to try products and services that utilize new technology (Bhidé, 2006). Consumers who are receptive to such innovations tend to believe that they will improve their life. The index captures these three dimensions of innovation confidence: willingness to buy new products or services, willingness to try products or services that involve new technology, and the belief that new products or services will improve one's life. Each dimension is measured using a five-point scale and then combined into an index at the country level³¹. The final IC Index is the average percentage of the sample agreeing to each item. Figure 21 plots the results in rank order by country. It shows that innovation confidence varies widely, even among countries at similar stages of economic development, but

tends to be lower in more developed economies. The IC Index correlates positively with early-stage entrepreneurial activity ($r = .642, p = .000$) and negatively with the mean age of the working age (18-64) population ($r = -.603, p = .001$).

Seven countries participated in both 2007 and 2008, enabling an estimate of the stability of the index. The correlation of the 2007 and 2008 IC indices for all seven nations was .966 ($p = .000$). The index does not appear to be just measuring consumer confidence. AC Nielsen found that consumer confidence in April 2008 dropped by 10 to 20% of the point estimate for April 2007 in five of these seven countries. In one country, it remained unchanged and the other country was not measured. By contrast, the IC Index in six of these nations dropped by only around 2 to 4% of the 2007 value; only in the UK did it drop by as much as 9% of the previous year's point estimate. The IC Indices and annual changes were uncorrelated with their respective GCC Indices and their annual changes. This suggests that the IC Index is stable and does not track consumer confidence. For more details on the IIIP Innovation Confidence Index, see www.iii-p.org.

Figure 21 — Innovation Confidence Index for 2007 and 2008 by Country and Country Group



3.0 Entrepreneurship, Institutions and Economic Development

The interdependence of economic development and socio-political change is generally recognized by social scientists (Adelman and Morris, 1965). Joseph Schumpeter provided an early statement on this (Schumpeter, 1934). In recent years, economists have come to recognize what Leibenstein (1968) termed the “input-completing” and “gap-filling” capacities of potential entrepreneurial activity in innovation and growth, and the significant contribution of innovation and growth to prosperity and economic welfare (Acs and Armington, 2006; Schramm, 2006; Audretsch, 2007). Entrepreneurship is considered to be an important mechanism for economic development through employment, innovation, and welfare effects (Wennekers and Thurik, 1999; Baumol, 2002).

The environment shaping the economy affects the dynamics of entrepreneurship within any given country. This environment is marked by interdependencies between economic development and institutions, which affect other characteristics such as quality of governance, access to capital, and other resources, and the perceptions of entrepreneurs. Institutions are critical determinants of economic behavior and economic transactions in general, and they can impose direct and indirect effects on both the supply and demand of entrepreneurs. Therefore, if one is interested in understanding entrepreneurship within or across countries, the broad nexus among entrepreneurship, economic development, and institutions is a critical area of inquiry. This nexus is especially important in helping understand why the relative contributions of entrepreneurship can vary significantly across countries and regions.

Understanding this nexus is crucial to gain insight into what can work for economic development. This is for the following two reasons. First, the international economic development community has learned that a one-size-fits-all approach simply does not work (Easterly, 2001). Second, economic importance attributed to “the entrepreneur” and concurrent policy interest in his/her activities has exploded in recent years. This combination suggests that public policy needs to be informed by the dynamics of entrepreneurship and economic development, as well as relevant local institutional conditions and context-specific variables. In fact, one of the main goals of the GEM project is to measure differences in the level of entrepreneurial activity among countries. The purpose of this section is to outline the relationship between entrepreneurship and economic development and to sketch the beginnings of a Global Entrepreneurship Index to measure and understand this relationship.

3.1 LINKING INSTITUTIONS, ENTREPRENEURSHIP, AND DEVELOPMENT

For over a century, there has been a trend in economic activity, exhibited in virtually every developed industrialized country, away from small firms and toward larger organizations. It was, therefore, particularly striking when a series of studies identified that this trend had not only ceased sometime during the mid-1970s, but had actually begun to reverse (Blau, 1987; Evans and Leighton, 1989). More recent studies have confirmed this result for most developed countries in the 1970 and 1980s (Acs, Audretsch, and Evans, 1994). The empirical evidence clearly shows that firm size distribution in developed countries began to shift away from larger corporations and toward entrepreneurial activity.

There are three reasons why entrepreneurial activity rises in countries in the *innovation-driven* phase of economic development: First, the *innovation-driven* phase is marked by decreases in the share of manufacturing in the economy. Virtually all industrialized market economies experienced a decline in manufacturing over the last thirty years. The business service sector expanded relative to manufacturing. Service firms are smaller on average than manufacturing firms, therefore, economy-wide, average firm size may decline. Moreover, service firms provide more opportunities for entrepreneurship. This is clearly the case in the United States, as well as in several EU countries, including Germany and Sweden.

Second, technological change during the postwar period has been biased toward industries in which entrepreneurial activity is important (Jorgenson, 2001). Improvements in information technologies such as telecommunications may increase returns to entrepreneurship. Express mail services, photocopying services, personal computers, the internet, web services, and mobile phones services make it less expensive and less time consuming for geographically separate individuals to exchange information.

Third, some theorists suggest that the easier it is to substitute capital for labor, the richer countries become, and the easier it is to become an entrepreneur (Aquilina, Klump, and Pietrobelli, 2006).

Thus in countries in the early phases of economic development, the *factor-driven* and *efficiency-driven* phases, entrepreneurial activity would be negatively related to economic development since most people would be trying to move from subsistence self-employment to wage employment. In developed

economies, we would expect entrepreneurial activity to be positively related to economic development as people shift from wage work to entrepreneurial activity. These economies have entered the *innovation-driven* phase.

This framework seems to imply that the relationship between entrepreneurial activity and economic development in the global economy may be U-shaped. Figure 8 shows that countries with very low levels of per capita income like Angola, Peru, and Ecuador all have high levels of early-stage entrepreneurial activity. As per capita income increases, entrepreneurial activity tends to decrease, but then levels off. At the bottom of the U are countries that appear to be transitioning from efficiency-driven economies to innovation-driven economies, including many Eastern European countries. Many innovation-driven countries such as Germany, France, Belgium and Italy have relatively low levels of entrepreneurial activity, but the richest, such as the US, Norway, and Iceland do tend to have higher levels.

Research on the relationship between entrepreneurship and economic development has greatly expanded in the past decade. For example, in 2002, Carree and colleagues examined the relationship between economic development and business ownership for OECD countries and reaffirmed the existence of a U-shaped relationship. In 2005, Wennekers and colleagues were the first to regress GEM data for nascent entrepreneurship on the level of economic development. They also found support for the U-shaped relationship among countries at different stages of development.

However, this line of research is not without limitations for the study of entrepreneurship and development. For example, it considers the quantity rather than the quality of entrepreneurship, and does not take into account institutional differences between countries in the same phase of economic development. It is hard to use this U-shape relationship for policy purposes, since it seems to suggest that less entrepreneurship is better for developing countries, while more is better for developed countries. In this chapter, we consider a composite measure of entrepreneurship that could be more useful in understanding entrepreneurship in both developed and developing countries. There are at least three composite measures that have been used to measure different aspects of economic development in the global economy. These are briefly reviewed in the following paragraphs.

The Ease of Doing Business Index (EDBI) was created by the World Bank to measure the simplicity of regulations for businesses and the level of protection of property rights. It was designed to evaluate the effect of improving regulations on economic growth

and to determine the optimal levels of business regulation. Fewer and simpler regulations generate higher rankings. The index is based on the study of expert opinion on laws and regulations and ranks nations based on the average of 10 sub-indices. The Index of Economic Freedom (IEF), created by the Wall Street Journal and The Heritage Foundation, uses 10 economic measures to evaluate degree of economic freedom.

It is based on economic theories of liberty, with the objective of *creating basic institutions* that protect individual liberties in pursuit of economic interests for greater economic prosperity.

Economic freedom is defined as “the absolute right of property ownership, fully realized freedom of movement for labor, capital, and goods, and an absolute absence of coercion or constraint of economic liberty beyond the extent necessary for citizens to protect and maintain liberty itself.” The IEF, therefore, evaluates the economic environment or set of policies for their conduciveness to economic freedom, with absolute freedom the ideal target. The index uses statistics from the World Bank, the IMF, and the Economist Intelligence Unit to score countries.

The Global Competitiveness Index (GCI) is an annual report by the World Economic Forum, covering about 131 countries. It “assesses the ability of countries to provide high levels of prosperity to their citizens,” which is dependent on how productively a country uses available resources (allocative efficiency). The GCI measures the set of institutions, policies, and factors that determine short- and medium-term sustainable levels of economic prosperity. The Index is based on theoretical and empirical research and made up of about 90 variables, two-thirds of which come from the Executive Opinion Survey and one-third from publicly available data sources such as the United Nations. It classifies the variables into nine pillars, each representing an area considered an important determinant of competitiveness.

Together with GEM, these three projects represent a sort of “development diamond” focusing on freedom, competitiveness, cost of doing business, and entrepreneurship. There are natural connections between these facets of the development diamond. For example, as Carl J. Schramm has argued, “In the past two years...essays on entrepreneurship and labor freedom have evinced a growing recognition that developments on the micro level are centrally important to economic freedom,” (Schramm, 2008, p. 15). These facets are being measured with some regularity but there is not a well-developed overall measure of entrepreneurial adaptation. Much of the material required to develop the components of such a measure can be drawn from existing GEM data.

3.2 RECOGNIZING THE COMPLEX RELATIONSHIP BETWEEN ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT USING GEM DATA

In the 2004 *Global Entrepreneurship Report*, GEM started to pursue the idea of using the *opportunity-necessity ratio* as a composite indicator of entrepreneurial activity and economic development. Over the years, GEM researchers began to collect data on both opportunity entrepreneurship (starting a business to exploit a perceived business opportunity) and necessity entrepreneurship (starting a business because you were pushed into it). However, both measures show higher levels in developing countries than in developed countries. A clearly discernible trend occurs between the ratio of opportunity to necessity entrepreneurship and the per capita income of a country. Opportunity to necessity entrepreneurship ratio is a short-hand approach to describe the importance of the desirable, opportunity entrepreneurship relative to the necessity-induced entrepreneurship. Countries where more entrepreneurship is motivated more through the recognition of an economic opportunity than by necessity have higher levels of income. Complex measures such as this point the way to a more nuanced understanding of the relationship between entrepreneurship and economic development.

Acs and Szerb (2008), Acs and Stenholm (2008), Ahmad and Hoffmann (2008), and Klapper, Amit, Guillén and Quesada (2007), among others, are developing a new family of global entrepreneurship indices. In this chapter, one such attempt is summarized: the Global Entrepreneurship Index (GEI) (Acs and Szerb, 2008). The GEI uses 32 variables (19 from GEM) to create 14 indicators and three sub-indices that measure entrepreneurial activity, entrepreneurial aspiration and entrepreneurial attitudes for all 64 countries that have participated in the GEM project, including developed and developing countries across the years 2003-2008. The index takes a value from 0 to 1 and is plotted against income per capita based on purchasing power parity in U.S. dollars.

Acs and Szerb propose a four level index building logic: variables and weights, indicators, sub-indices, and finally, the super-index. All three sub-indices contain several indicators; they can be interpreted as quasi-independent building blocks of this entrepreneurship index. The three sub-indices of attitudes, activity, and aspiration are combined to produce an entrepreneurship super-index, the Global Entrepreneurship Index. In this way, the design of GEI is consistent with the revised GEM model.

Entrepreneurial attitudes are defined as the general attitude of a country population toward recognizing opportunities, knowing entrepreneurs personally, attaching high status to entrepreneurs, accepting the risk associated with business start-up, and possessing the skills required to create successful start-ups. Entrepreneurial attitudes are important because they express the general feelings of the population toward entrepreneurs and entrepreneurship. Those people that can recognize valuable business opportunities, who have the necessary skills to exploit these opportunities, who attach high status to entrepreneurs, can bear and handle start-up risk, and know entrepreneurs personally can be considered as the reserve army of future entrepreneurial activity. Moreover, these people can provide the cultural support, help, financial resources, and networking potential to those who are already entrepreneurs or want to start a business.

Entrepreneurial activity is defined as the new venture start-up rate, adjusted for the churning effect of business closures, initiated by educated entrepreneurs and launched because of opportunity motivations. For the calculation of start-up rate, Acs and Szerb use the GEM TEA index that captures both independent and “corporate” start-ups. The churning effect measures the net change of businesses; it is based on the assumption that a high rate of discontinued businesses can be harmful. Quality differences in start-ups are quantified by education, i.e., having at least post-secondary education. Opportunity motivation is assumed to be a sign of better planning, sophisticated strategy, and higher-growth expectations as compared to necessity motivation.

Entrepreneurial aspiration is defined as the effort of the entrepreneur to engage in introducing new products or new production processes, to open foreign markets, to plan to increase the number of employees substantially, and to be able to finance the business with formal and/or informal venture capital. Product and process innovation, internationalization and, high growth are considered to be the heart of entrepreneurship. The benchmark businesses are those that sell product/services considered to be new to at least some of the customers, use a technology less than five years old, and have sales from foreign markets. Also included in this sub-index is a finance variable that serves to capture the informal and formal venture capital potential vital for innovative start-ups and high-growth firms.

The weakness of these sub-indices is that they capture a limited number of aspects of attitudes, activity, and aspiration. However, it is logical to expect that these missing variables have a high correlation with the chosen variables. Figure 22 shows that when these sub-indices are combined into one super-index, the picture of the relationship between entrepreneurship

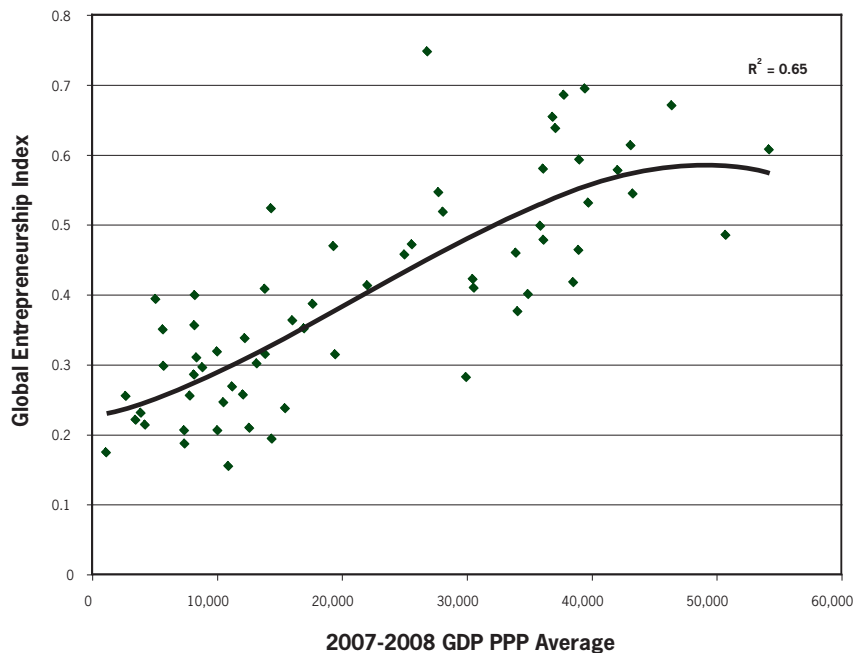
and economic development turns out to be mildly S-shaped rather than U-shaped. Measures such as this can enable comparisons of developed and developing countries in the same analysis (Acs and Szerb, 2008).

The GEI is broadly consistent with the three-phase model of *factor-driven*, *efficiency-driven* and *innovation-driven* economic development (Porter, *et al.*, 2002). In the efficiency-driven stage, entrepreneurial activity is mildly increasing or relatively flat as necessity entrepreneurship is steadily reduced and innovation comes from the outside, since developing countries are far from the technological frontier (Acemoglu, Aghion, and Filibotti, 2006). This has been demonstrated in the case of Latin America by Acs and Amoros (2008). The role of foreign direct investment becomes critical in creating efficiency in the *efficiency-driven countries*. In innovation-driven countries, knowledge spills over to move a country to

the technological frontier, enabling a further intensity of entrepreneurial activity (Baumol, *et al.*, 2007).

Figure 23 shows the relationship between the GEI Index, the Ease of Doing Business Index, the Index of Economic Freedom and the Global Competitiveness Index. The results in Figure 23 demonstrate that entrepreneurship complements and rounds out the other facets of the development diamond. In other words, while we do not imply causation entrepreneurship, ease of doing business, economic freedom and competitiveness are all correlated. Table 3 provides a correlation matrix of the GEI along with the other four major measures of institutions and development. The correlation 0.79 between the GEI and the Doing Business Index and 0.79 between the GEI and the Index of Economic Freedom suggests that the different facets of the “development diamond” move together with economic development.

Figure 22 — The Global Entrepreneurship Index in Terms of GDP PPP



Source: Acs and Szerb, 2008

Table 3 — The Correlation Coefficients between GE INDEX and Other Major Indices

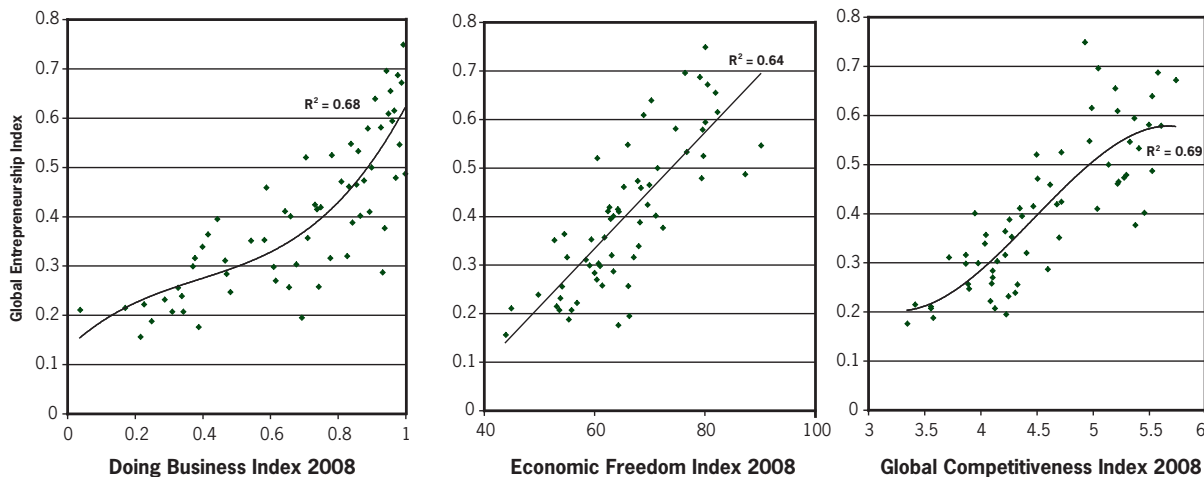
	1	2	3	4	5	6
1 Global Entrepreneurship Index	1	0.82	0.79	0.79	0.89	0.79
2 Global Competitiveness Index		1	0.82	0.76	0.88	0.83
3 Doing Business Rank (normalized)			1	0.84	0.82	0.74
4 Index of Economic Freedom				1	0.85	0.74
5 Corruption Perception Index					1	0.86
6 Per Capita GDP in PPP 2008 World Bank						1

Note: All coefficients are significant at $p < 0.001$
 Source: Acs and Szerb, 2008

To conclude, this section introduced a complex index of entrepreneurship, the Global Entrepreneurship Index that goes beyond the standard GEM measure of early-stage entrepreneurial activity. The relationship between the GEI and the wealth of nations is a mild S shape rather than U-shape. The GEI supports both the revised GEM model and the notion of a “development diamond” composed of four main facets:

economic freedom, competitiveness, the cost of doing business, and entrepreneurship. These four facets are positively correlated and appear to move together as an economy develops, but associate in subtly different ways. These new insights could help policymakers understand how different aspects of policy can affect productive entrepreneurship through the major phases of economic development.

Figure 23 — Relationships between the Global Entrepreneurship Index and Economic Freedom Index, Doing Business Index and Global Competitiveness Index



4.0 Special Topic 2008: Entrepreneurship Education and Training

From 10 years of GEM data on expert perceptions of the environment for entrepreneurship, one theme stands out. Consistently, GEM expert surveys in every country demonstrate a general perception that the provision of entrepreneurship education and training at school is inadequate. In most countries, experts also perceive that the provision of entrepreneurship education and training after school is poor. Yet several studies have demonstrated links between provision of entrepreneurship education and levels of entrepreneurial activity³². This makes the topic of entrepreneurship education and training worthy of more detailed examination, and it was chosen by GEM national teams as a special topic subject for 2008.

The GEM model identifies Entrepreneurship Education and Training as an entrepreneurial framework condition that affects levels of entrepreneurial attitudes, aspirations and activity, which then affect the level of new enterprises in the economy. This chapter uses new data collected in order to shed light on these relationships, while recognizing how country-level contexts can change how individuals calculate their allocation of effort into productive entrepreneurship rather than into other forms of economic activity.

In 2008, 38 GEM countries collected additional data on entrepreneurship education and training through their Adult Population Survey³³. Every respondent was asked if they had had training in starting a business during or after school, and whether this was voluntary or compulsory. For after-school training, the nature of the training provider was also obtained. This provided national-level estimates of the *quantity* of entrepreneurship education and training in each nation, and of the relative importance of different types of provider.

In addition, entrepreneurship experts in 31 countries were asked, as usual, to rate the provision of entrepreneurship education and training in their country. This year they were also asked to rate their country on two additional items: the extent to which startup entrepreneurs in their country needed help with their plans and the extent to which such help was available outside the education system. These ratings provided estimates of the *quality* of entrepreneurship education and training. Data was available for both quantity and quality of education/training in 28 countries. Six of these were factor-driven nations, 13 were efficiency-driven nations, and nine were innovation-driven nations.

4.1 PARTICIPATION IN ENTREPRENEURSHIP EDUCATION AND TRAINING

Table 4 shows the percentage of working age adults who received training in starting a business in each country, by country groups. Overall levels of trained individuals varied greatly by country within country groups. For example, among factor-driven countries, the proportion of individuals who had received any training in starting a business, either in school or after school, varied from 40% in Colombia to 8% in Egypt. In efficiency-driven countries, it varied from 43% in Chile to 6% in Turkey. In innovation-driven countries, it varied from 48% in Finland to 13% in Israel. This range of training quantity across countries with similar levels of economic development is remarkable.

In most countries, the proportion of individuals ever having had training in starting a business decreased with age. However, there was no significant decrease with age in Jamaica, Greece, Iceland and Israel, while in Japan there was a significant *increase* in training levels with age³⁴. In India, the Dominican Republic and Germany, training levels were highest among adults aged 25-34. Among 18-24 year olds, diffusion of training ranged from over 60% in Chile and Finland to under 10% in the Dominican Republic and Turkey. This gap was much smaller in older age groups. Among 55-64 year olds, the gap varied from 33% in Finland to 4% in Egypt.

Women were significantly more likely to have received training in starting a business than men in only one country: Latvia. In all factor-driven countries, men were significantly more likely to have received training in starting a business than women. In only nine, or just over half of the efficiency-driven countries, men were significantly more likely to have received such training. However, 11 or 73% of innovation-driven countries had significantly higher levels of training among men than women. These differences by country groups may reflect differences in attendance rates at school and workforce participation rates among males and females at different levels of economic development, as well as differences in entrepreneurial attitudes, aspirations and activity rates.

Table 5 shows the percentage of individuals who participated in training in starting a business after primary or secondary school, by type of training provider and whether the training was voluntary or compulsory. It shows that the most frequent source of training was self-directed learning, such as reading or observing or working in other people's businesses, followed by voluntary formal education and by

Special Topic 2008: Entrepreneurship Education and Training

voluntary training provided by a college or university but outside the formal education system. Other sources, such as business or trade organizations, government agencies, or employers, typically were used by 3% or less of individuals, although Colombia, Chile, Peru, and Finland stood out as having higher than usual usage of all sources. Exceptions to these general trends include Iran, where government agencies were the most frequent source of training after self-directed learning, Germany, where chambers of commerce was the most frequent source of training after self-directed learning, and Belgium, where compulsory training was more frequently reported than voluntary training for most types of training provider.

Compulsory training was rarely reported by more than 1% of individuals. However, at least 5% of individuals in Chile, Latvia, Finland, and Slovenia reported participating in compulsory training in starting a business as part of their formal post-school education.

A striking feature of the patterns in Table 5 is the contrast in training take-up between close neighbors. For example, Brazil has one of the lowest rates of training across all providers, while Chile has one of the highest. Slovenia and Croatia have relatively high rates while Hungary, Romania, and Serbia have relatively low rates.

Those who had participated in training in starting a business after school were also asked if they had taken online training. Figure 24 shows the frequency of use of this form of training by country and country type. Chile stands out as having a very high rate of online training usage, with a fifth of the population of working age adults noting they have taken this form of training. This is probably due to integration of online training into online registration systems in Chile.

Table 4 — Percentage of the Population Aged 18-64 that Received Voluntary or Compulsory Training in Starting a Business During or After School, by Type of Country

	SCHOOL VOLUNTARY ⁱ	SCHOOL COMPULSORY	SCHOOL ANY	AFTER SCHOOL VOLUNTARY ⁱ	AFTER SCHOOL COMPULSORY	AFTER SCHOOL ANY	ANY TRAINING
Factor-Driven Economies							
Bolivia	8.2	2.4	10.6	10.3	3.9	14.2	19.1
Bosnia and Herzegovina	12.7	0.8	13.5	8.1	2.5	10.6	19.9
Colombia	19.2	4.0	23.2	20.7	8.7	29.4	40.0
Ecuador	16.1	4.3	20.4	8.3	7.3	15.6	27.2
Egypt	3.8	0.9	4.7	2.1	2.1	4.2	7.5
India	3.3	1.7	5.0	3.8	7.0	10.8	13.1
Iran	8.9	6.6	15.4	9.2	10.3	19.5	28.9
Country average	10.3	3.0	13.3	8.8	6.2	14.9	22.2
Efficiency-Driven Economies							
Argentina	6.4	3.2	9.6	7.3	3.6	10.9	17.4
Brazil	4.5	0.8	5.3	1.6	5.0	6.6	9.4
Chile	16.8	8.5	25.3	18.9	13.8	32.7	42.5
Croatia	8.6	11.1	19.7	8.0	7.6	15.6	27.6
Dominican Republic	4.7	0.6	5.3	1.9	2.1	4.0	7.7
Hungary	2.8	14.2	17.1	1.4	8.6	10.0	24.4
Jamaica	6.8	9.2	16.0	2.9	6.4	9.3	21.0
Latvia	6.1	8.4	14.5	9.0	10.1	19.1	28.0
Macedonia	10.3	2.3	12.6	7.2	3.7	10.9	19.1
Mexico	5.8	3.6	9.5	3.6	5.9	9.5	15.5
Peru	11.5	2.9	14.4	12.2	12.5	24.7	29.6
Romania	3.3	2.2	5.5	2.8	1.8	4.6	8.0
Serbia	1.5	1.5	3.0	2.6	4.9	7.6	10.2
South Africa	6.6	2.7	9.3	3.8	5.2	9.0	13.8
Turkey	1.9	0.6	2.5	1.9	2.3	4.2	6.3
Uruguay	9.7	1.0	10.7	9.5	8.9	18.4	24.1
Country average	6.7	4.6	11.3	5.6	6.3	12.3	19.0
Innovation-Driven Economies							
Belgium	17.8	7.0	25.0	3.0	15.2	18.2	33.3
Denmark	2.4	7.1	9.5	2.1	11.9	14.0	22.0
Finland	10.1	7.8	17.9	19.6	20.8	40.4	47.9
France	5.3	4.9	10.2	5.9	6.6	12.5	18.1
Germany	10.3	2.0	12.3	8.4	4.7	13.2	21.0
Greece	5.0	1.2	6.1	6.4	6.5	12.9	17.0
Iceland	6.5	5.3	11.8	11.3	6.5	17.8	26.7
Ireland	8.1	5.8	14.0	9.9	7.6	17.5	26.1
Israel	4.1	1.7	5.8	4.5	4.1	8.6	12.8
Italy	6.0	4.2	10.2	5.3	3.7	9.1	16.5
Japan	2.8	2.1	4.9	10.1	5.6	15.7	17.4
Republic of Korea	2.7	3.2	5.9	3.8	5.4	9.2	13.6
Slovenia	13.0	11.3	24.3	10.3	12.3	22.6	35.7
Spain	9.5	3.0	12.5	7.9	6.8	14.7	21.9
United Kingdom	5.8	3.1	8.9	7.7	6.1	13.8	19.5
Country average	7.3	4.6	11.9	7.7	8.3	16.0	23.3

i: "Voluntary" includes those reporting voluntary training or a mix of voluntary and compulsory training.

Table 5 — Percentage of the Population Aged 18-64 that Received Any Training in Starting a Business After School, by Type of Training Providerⁱ

TYPE OF TRAINING PROVIDER	COLLEGE, FORMAL		COLLEGE, INFORMAL		CHAMBER OF COMMERCE		GOV. AGENCY		EMPLOYER		OTHER		SELF DIRECTED LEARNING
	V	C	V	C	V	C	V	C	V	C	V	C	
VOLUNTARY OR COMPULSORY TRAINING													
Factor- Driven Economies													
Bolivia	9	1	5	1	3	0	2	0	3	0	4	0	11
Bosnia and Herzegovina	6	0	3	0	2	0	1	0	4	0	2	0	9
Colombia	20	2	10	1	6	0	5	0	4	1	7	0	24
Ecuador	10	2	4	1	4	0	2	0	3	1	3	0	10
Egypt	2	0	1	0	1	0	1	0	1	0	0	0	2
India	3	2	2	1	2	1	2	1	1	1	3	1	5
Iran	6	2	3	2	2	0	8	2	3	1	2	0	10
Country average	8	1	4	1	3	0	3	1	3	1	3	0	10
Efficiency-Driven Economies													
Argentina	5	1	5	0	5	0	2	0	3	1	2	0	9
Brazil	1	1	1	0	4	0	1	0	1	1	0	0	2
Chile	13	5	10	1	8	1	10	1	9	3	15	0	26
Croatia	6	4	4	1	3	1	1	0	3	1	2	0	12
Dominican Republic	2	0	1	0	1	0	1	0	1	0	0	0	2
Hungary	3	1	2	0	1	0	1	0	1	0	0	0	1
Jamaica	4	3	2	1	1	0	2	1	1	1	0	0	4
Latvia	9	5	4	1	2	0	3	0	3	1	1	0	13
Macedonia	5	1	3	0	3	0	2	0	3	1	2	0	8
Mexico	2	0	1	0	2	0	1	0	2	0	0	0	4
Peru	13	2	11	1	6	0	5	1	6	2	6	1	16
Romania	2	0	1	0	1	0	0	0	1	0	1	0	3
Serbia	1	0	1	0	1	0	2	0	1	0	0	0	3
South Africa	4	2	3	1	2	1	2	1	2	1	2	1	6
Turkey	1	0	1	0	0	0	0	0	1	0	1	0	3
Uruguay	9	2	9	1	8	1	3	0	5	2	4	0	13
Country average	5	2	4	1	3	0	2	0	3	1	2	0	8
Innovation-Driven Economies													
Belgium	7	3	2	3	1	2	1	3	1	1	1	2	8
Denmark	3	4	1	1	2	1	0	1	0	0	2	1	8
Finland	16	14	9	1	5	0	6	1	3	1	6	1	30
France	4	2	1	1	5	1	4	1	1	0	4	0	8
Germany	6	1	2	0	7	1	3	1	4	1	3	0	10
Greece	8	1	1	0	4	0	2	0	2	1	1	0	8
Iceland	7	3	4	1	2	0	2	0	4	1	4	0	14
Ireland	6	3	6	1	4	0	6	1	3	2	1	0	14
Israel	4	1	3	1	3	0	3	0	2	0	1	0	6
Italy	6	1	2	0	3	0	1	0	2	1	1	0	6
Japan	6	2	7	1	2	0	2	0	3	1	2	0	12
Republic of Korea	4	1	3	1	2	0	1	0	1	0	1	0	4
Slovenia	9	6	8	1	5	1	4	1	4	2	3	0	15
Spain	9	1	7	1	6	0	5	1	4	1	7	0	10
United Kingdom	6	2	4	1	3	1	3	0	2	1	1	0	10
Country average	7	3	4	1	4	1	3	1	2	1	2	0	11

4.2 EXPERT OPINIONS ON QUALITY OF ENTREPRENEURSHIP TRAINING

We now turn to a different source of evidence on the state of entrepreneurship education and training in GEM nations. The GEM national expert survey contains several measures of quality of training provision, and these are shown in Table 6. It should be borne in mind that measures of quality refer to perceptions of current quality, whereas the quantity measures displayed in the previous tables refer to training activities in the past—up to 50 years ago in the case of older adults. For this reason, there may be no relationship between current quality of provision and current outcomes.

Table 6 shows average ratings on a 1 to 5 scale by entrepreneurship experts in each country on the need for, availability of, and quality of entrepreneurship education and training by country and country group³⁵. Within each country group, average scores varied little from country to country. The average scores by country type suggest that start-up entrepreneurs' need for external help reduces slightly as countries develop economically, and the availability of that help increases. The perceived level of help is insufficient in factor-driven countries and generally sufficient in innovation-driven countries. The perceived quality of school-level entrepreneurship education and training increases with economic development, but perceived quality of post-school entrepreneurship education does not, and is seen as inadequate in almost all innovation-driven countries. This suggests that experts in most innovation-driven

countries see plenty of help available, but question its quality.

Among the six factor-driven countries, there was a high correlation in average ratings by experts of the quality of school and after-school education and training in the country ($r = .833, p = .039$). There was also a high correlation between the perceived quality of school-based and after school-based entrepreneurship education in the country as rated by country experts and the proportion of individuals who had voluntarily taken after-school training in starting a business ($r = .825, p = .043; r = .966, p = .002$). There was a high correlation between the proportion of individuals who had taken compulsory school-based training and the proportion of individuals who had taken compulsory after-school-based training ($r = .967, p = .002$).

Among males, the quality of post-school entrepreneurship education and training correlated significantly with levels of necessity-driven TEA ($r = .880, p = .021$) across countries with factor-driven economies. For females in these countries, it correlated significantly with opportunity perception ($r = .875, p = .023$) and start-up expectation over the next three years ($r = .845, p = .034$), and with two measures of high-growth expectation³⁶ ($r = .881, p = .02; r = .818, p = .047$). Levels of voluntary after-school training for males and females produced similar high and significant correlations. National levels of opportunity perception among females correlated highly with overall TEA rates ($r = .847, p = .033$), necessity entrepreneurship ($r = .963, p = .002$), and entrepreneurship aimed at developing and expanding new markets ($r = .879, p = .021$).

Figure 24 — Percentage of Adults Aged 18-64 Who Have Used Online Training in Starting a Business

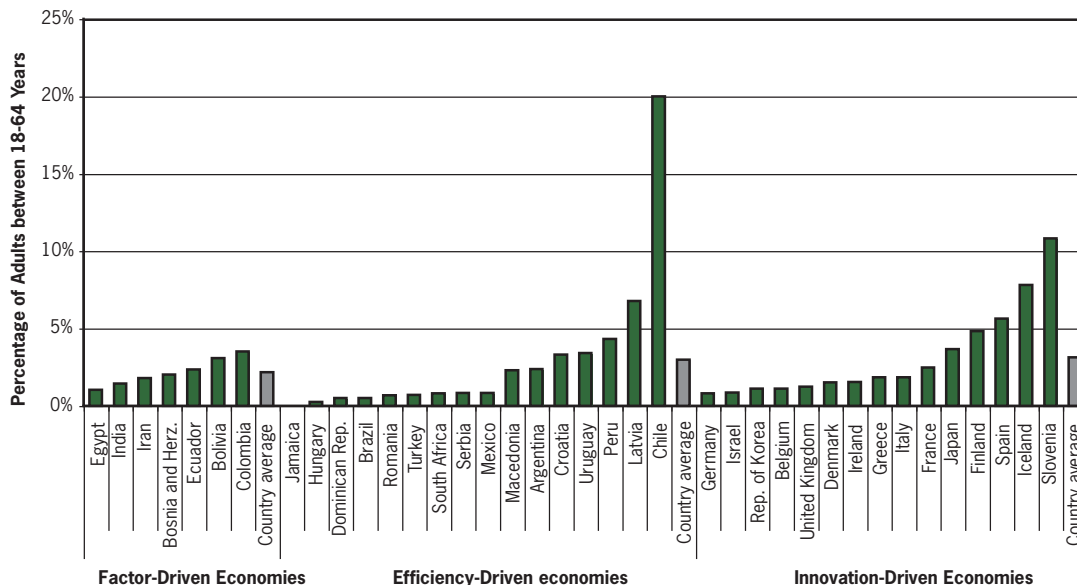


Table 6 — Perceived Need for and Availability and Quality of Entrepreneurship Education and Training, by Country and Country Group (Average Ratings by Experts from 1 to 5)

	ENTREPRENEURS IN GENERAL NEED HELP WITH THEIR PLANS BEFORE STARTUP	ENOUGH HELP AVAILABLE OUTSIDE EDUCATION SYSTEM	QUALITY OF ENTREPRENEURSHIP EDUCATION AND TRAINING AT SCHOOL	QUALITY OF ENTREPRENEURSHIP EDUCATION AND TRAINING AFTER SCHOOL
Factor-Driven Economies				
Bolivia	3.9	2.3	1.7	2.6
Bosnia and Herzegovina	4.1	2.7	1.9	2.4
Colombia	4.3	2.6	2.0	3.2
Ecuador	3.8	2.3	1.6	2.6
Egypt	4.3	2.1	1.3	1.8
Iran	4.5	3.2	1.7	2.4
Country averages	4.2	2.5	1.7	2.5
Efficiency-Driven Economies				
Argentina	4.2	2.8	2.1	3.4
Brazil	4.2	2.9	1.6	2.8
Chile	4.1	2.6	1.6	2.9
Croatia	4.2	3.1	2.2	2.8
Dominican Republic	4.2	2.3	1.7	3.2
Jamaica	3.8	2.7	2.0	2.8
Macedonia	4.3	3.1	2.2	2.8
Mexico	4.4	2.9	1.7	3.0
Peru	3.9	2.5	1.9	2.9
Russia	n.a.	n.a.	2.5	3.1
Serbia	3.9	3.1	2.0	2.9
South Africa	4.1	2.4	1.9	2.5
Turkey	4.1	2.6	1.9	2.7
Uruguay	3.9	3.2	2.1	2.9
Country average	4.2	2.8	2.1	3.4
Innovation-Driven Economies				
Denmark	4.3	3.1	2.4	2.4
Finland	4.0	3.7	2.5	2.8
Germany	3.6	3.9	1.9	2.7
Greece	3.7	2.4	1.8	2.5
Ireland	4.1	3.6	2.5	3.0
Italy	4.0	2.8	1.8	2.8
South Korea	3.9	3.6	2.4	2.9
Norway	4.3	2.9	2.6	2.9
Slovenia	3.8	3.5	2.4	3.0
Spain	4.3	3.3	1.9	2.9
United States	3.9	3.3	2.1	2.9
Country averages	4.0	3.3	2.2	2.8

These patterns make sense; for factor-driven economies, where necessity entrepreneurship is an important source of economic self-sufficiency in the absence of other job opportunities, the quality and quantity of training available might be expected to increase the rate of entrepreneurship and the extent to which individuals can create new and growing markets where none previously existed. Perhaps after-school education has a more indirect effect, via increased opportunity perception, on females than on males in factor-driven countries. Multi-level, multivariate analysis would be required to analyze this in greater detail.

Among the 13 efficiency-driven countries, there were no significant correlations between average expert assessments of the state of school-based entrepreneurship education and training in their country and country-level rates of entrepreneurial attitudes, aspirations or activity. Expert perceptions of post-school-based entrepreneurship education and training correlated mildly with overall entrepreneurial activity levels for both males and females ($r = .606$, $p = .028$; $r = .555$, $p = .049$), and with opportunity entrepreneurship for males ($r = .563$, $p = .045$) and necessity entrepreneurship for females ($r = .703$, $p = .007$). It also correlated with two measures of growth expectation among females ($r = .680$, $p = .011$; $r = .730$, $p = .005$). For both males and females, levels of after-school training in starting a business (whether voluntary or compulsory) correlated highly with voluntary training at school level (males: $r = .920$, $p = .000$; $r = .813$, $p = .001$; females: $r = .893$, $r = .000$; $r = .822$, $p = .001$) but not with compulsory training at school level, with the exception of females and after-school compulsory training ($r = .677$, $p = .011$). Voluntary school level training levels also correlated significantly with levels of entrepreneurship with profound market expansion intentions among males and females, ($r = .774$, $p = .002$; $r = .713$, $p = .006$), and correlated mildly with growth expectation entrepreneurship among females ($r = .554$, $p = .049$).

Among the innovation-driven countries, there were significant correlations between the perceptions of experts on the quality of school-based entrepreneurship education and training and both opportunity perception rates ($r = .727$, $p = .026$) and fear of failure rates ($r = -.880$, $p = .009$). These correlations were similar for both males and females. Countries with more favorable expert perceptions of school-based entrepreneurship education and training also tended to have higher growth expectations among their startup entrepreneurs for the first of the two growth measures employed in this analysis ($r = .803$,

$p = .009$). There was a high correlation between the proportion of individuals who took any school-based training in starting a business and those who took voluntary training after school ($r = .824$, $p = .006$). There was a high level of correlation between the proportion of individuals who took voluntary and compulsory training after school ($r = .729$, $p = .026$). There was also a significant correlation between the proportion of individuals who took any school-based and any after school-based training ($r = .775$, $p = .014$).

In general, neither high levels of training nor high levels of positive entrepreneurial attitudes were significantly correlated with entrepreneurial activity rates across countries in this group. Exceptions included a significant correlation between male necessity TEA rates and skills perception rates ($r = .885$, $p = .001$), and a significant negative correlation between compulsory school-based training rates for females and female necessity entrepreneurship rates ($r = -.711$, $p = .032$). High rates of school-based training among females were associated with lower rates of future startup intention ($r = -.785$, $p = 0.012$). High rates of voluntary school and after-school training were associated with lower rates of entrepreneurial activity involving profound market expansion ($r = -.709$, $p = .032$; $r = -.683$, $p = .042$). These negative correlations may reflect the efforts of some governments in innovation-led countries with low entrepreneurship rates to provide entrepreneurship education as part of the school curriculum, in an effort to boost entrepreneurial activity.

In summary, the quality and level of entrepreneurship education and training may have different impacts on attitudes, aspirations, and activity in countries at different stages of economic development. In factor-driven economies, the higher the quality and quantity of after-school training, the higher the levels of necessity entrepreneurship; this effect may be indirect in the case of females. This is because factor-driven economies provide few other opportunities for employment. In efficiency-driven economies, the more post-school training in starting a business, the higher the levels of market-expansion entrepreneurship, reflecting the growth of these economies. In innovation-driven economies, several negative correlations are apparent, possibly because governments with low levels of entrepreneurial activity have been investing more in entrepreneurship education and training in an effort to increase entrepreneurial activity.

4.3 ENTREPRENEURSHIP TRAINING AND ENTREPRENEURIAL ATTITUDES, ASPIRATIONS, AND ACTIVITY AT THE INDIVIDUAL LEVEL

In this final section, we consider the attitudes, aspirations, and activities of those who have and have not had training in starting a business. Table 7 shows the proportions of working age individuals who are not running or actively trying to start a business who 1) perceive good opportunities for starting a business in their local area and 2) perceive they have the skills, knowledge, and experience to start a business, by type of training received. By removing those who are currently nascent, new or established entrepreneurs, we remove the possibility of biased response. The patterns are different for each attitude, with a more mixed picture on opportunity perception than on skills perception. Each country seems to have its own unique pattern of relationships between training and attitudes, and the country group averages can be misleading. For example, in India and Greece, only compulsory training had a positive effect on opportunity perception, but it had a negative effect in Colombia. Only voluntary training had a positive effect in Romania and Finland. Both voluntary and compulsory training had similar and positive effects in Argentina, Hungary, Peru, Turkey, Germany, Japan, Spain, and Slovenia.

In every country except Jamaica and the Dominican Republic, those who had taken either voluntary or compulsory training were more likely to have positive self-perceptions than those who had not taken training. In five of the nine innovation-driven countries (Italy and Spain excepted), those who had taken voluntary training were most likely to perceive they had the skills to start a business. In Italy and Spain, voluntary and compulsory training appeared to deliver similar and positive effects, but in Belgium and Israel, those with compulsory training were more likely to have positive skills self-perception. In most factor-driven and efficiency-driven countries, both voluntary and compulsory training produced similar elevated levels of skills perception. Overall, levels of skills perception were higher in factor-driven and efficiency-driven countries than in innovation-driven countries.

Table 8 shows the proportion of individuals aged 18-64 who expected to start a business in the next three years and the proportion who were currently actively trying to start a business or were running a new business. In most countries, individuals who had taken either voluntary or compulsory training were significantly more likely to expect to start a business in the next three years, and generally those with voluntary training had the highest levels. In Bosnia, India, Iran, Hungary, Mexico, Romania, Turkey, France, and the United Kingdom, both voluntary and compulsory training produced similar elevated levels of start-up aspiration. In Chile and Japan, those with compulsory training were no more likely to expect to start a business in the next three years than those who had taken no training at all, while in Belgium, those who had taken compulsory training had the highest start-up aspirations. Neither voluntary nor compulsory training appeared to make any difference to aspiration in Jamaica or Greece.

The relationship between type of training and early-stage entrepreneurial activity rates tended to track the relationship with aspiration, but at a much lower level. In some countries, including Bolivia, Iran, and Argentina, compulsory training had no effect on activity, although it did have a significant effect on aspiration. However, in Brazil, Turkey, Uruguay, Iceland, and Italy, compulsory training appeared to have a stronger effect and voluntary training appeared to have a weaker effect on activity than would have been predicted on the basis of aspiration.

In conclusion, the relationship between training in starting a business and entrepreneurial attitudes, aspirations, and activity is generally positive, but complex. Some differences are apparent between country groups, in line with theory and the GEM model. However, each country seems to have a unique training footprint, which is a function of current and past quality and quantity of training, of demand, of regulations, and of employment choice. The “yield” from training, or the ratio of activity among the trained to that among the non-trained, varies from country to country, but on average the yield from compulsory training is slightly more than half that of voluntary training. Some countries, such as France and Latvia, appear to have yields from voluntary training as high as 5, while others have very low yields.

Further analysis of this topic will be provided by a special report on entrepreneurship entrepreneurship education and training to be published later in 2009.

Table 7 — Percentage of the Population Aged 18-64 Who Are Not Running or Trying to Start a Business and Their Perceptions of Entrepreneurship, by Type of Business Start-Up Training Received and by Type of Country

	PERCEIVE GOOD OPPORTUNITIES IN THE LOCAL AREA IN THE NEXT SIX MONTHS			HAVE SKILLS, KNOWLEDGE, EXPERIENCE TO START A BUSINESS		
	Voluntary training ⁱ	Compulsory training	No training	Voluntary training ⁱ	Compulsory training	No training
Factor-Driven Economies						
Bolivia	52.5	47.6	46.0	81.5	63.2	64.5
Bosnia and Herzegovina	57.1	50.0	39.1	81.8	87.5	56.9
Colombia	64.7	42.1	52.6	73.4	53.8	45.3
Ecuador	38.3	47.2	35.4	81.9	77.2	60.7
Egypt	31.7	44.4	30.1	70.2	75.0	51.1
India	47.8	81.8	52.8	64.0	86.7	42.3
Iran	34.0	32.6	29.1	76.1	73.1	51.9
Country average	46.6	49.4	40.7	75.6	73.8	53.2
Efficiency-Driven Economies						
Argentina	56.6	50.0	39.0	80.8	62.5	48.4
Brazil	50.0	37.0	37.9	76.5	75.0	46.5
Chile	30.8	26.4	21.0	78.1	68.5	41.7
Croatia	61.3	52.1	35.6	77.4	75.2	48.1
Dominican Republic	56.5	53.8	51.2	85.2	78.6	69.0
Hungary	22.2	25.7	14.0	67.7	65.5	36.4
Jamaica	55.1	47.5	48.3	67.0	64.5	64.6
Latvia	41.9	28.6	16.0	70.9	46.8	13.3
Macedonia	50.6	46.2	43.1	74.1	71.4	47.8
Mexico	49.4	54.4	43.0	76.1	59.5	53.4
Peru	63.5	66.7	47.5	78.4	79.1	61.5
Romania	51.5	27.8	23.8	70.7	44.4	19.1
Serbia	73.7	56.4	50.9	84.2	85.7	57.2
South Africa	57.7	50.0	31.3	81.0	60.0	25.9
Turkey	53.8	50.0	33.4	71.9	76.2	42.8
Uruguay	45.2	61.0	48.7	78.5	75.0	53.2
Country average	51.2	45.9	36.5	76.2	68.0	45.6
Innovation-Driven Economies						
Belgium	12.2	18.9	12.0	41.6	66.4	25.0
Denmark	57.1	65.9	60.8	50.8	45.3	25.9
Finland	56.5	48.0	45.6	57.1	36.7	16.2
France	35.7	25.0	20.5	75.8	39.0	20.3
Germany	36.2	38.0	17.7	59.9	37.5	24.8
Greece	21.5	43.6	23.9	58.8	50.0	44.0
Iceland	38.7	37.2	32.3	76.5	61.4	36.5
Ireland	29.6	28.9	24.4	66.7	56.6	34.7
Israel	41.5	52.0	21.7	55.9	73.3	31.0
Italy	33.0	35.8	28.1	53.3	53.6	32.3
Japan	13.0	16.3	6.2	34.5	19.1	6.3
Republic of Korea	36.8	19.2	10.8	39.5	20.0	21.8
Slovenia	53.9	52.9	36.5	73.6	53.8	34.0
Spain	29.7	27.5	23.4	53.2	51.4	40.2
United Kingdom	39.8	31.1	26.2	74.2	59.6	40.0
Country average	35.7	36.0	26.0	58.1	48.2	28.9

i: "Voluntary" includes those reporting voluntary training or a mix of voluntary and compulsory training. Figures in bold denote statistically significant differences in proportions of attitude by type of training, $p < .05$.

Table 8 — Percentage of the Population Aged 18-64 Expecting to Start a Business in the Next Three Years or Engaged in Early-Stage Entrepreneurial Activity by Type of Training Received and by Type of Country

	EXPECT TO START A BUSINESS IN THE NEXT THREE YEARS			ACTIVELY TRYING TO START OR RUNNING A NEW BUSINESS (TEA)		
	VOLUNTARY TRAINING ⁱ	COMPULSORY TRAINING	NO TRAINING	VOLUNTARY TRAINING ⁱ	COMPULSORY TRAINING	NO TRAINING
Bolivia	65.7	50.7	38.0	39.1	25.0	28.3
Bosnia and Herzegovina	55.6	61.3	25.9	12.8	23.5	7.8
Colombia	81.2	72.5	58.4	34.6	26.2	19.0
Ecuador	60.2	52.3	36.6	25.7	23.0	14.3
Egypt	73.5	60.5	38.1	25.5	22.0	12.2
India	50.0	48.3	30.3	34.2	21.1	9.1
Iran	50.8	46.0	32.9	18.1	7.3	7.5
Country average	62.4	55.9	37.2	27.1	21.2	14.0
Argentina	43.2	30.3	19.7	26.1	12.1	15.5
Brazil	52.7	30.6	23.0	19.5	21.9	11.1
Chile	54.7	32.1	31.1	18.4	14.2	10.4
Croatia	22.4	15.3	9.5	16.7	10.7	5.3
Dominican Republic	71.6	58.5	34.6	41.1	34.1	18.7
Hungary	13.5	13.5	4.4	10.8	10.9	5.2
Jamaica	20.0	25.6	20.6	16.8	14.2	15.5
Latvia	33.9	17.8	4.3	20.1	8.7	3.5
Macedonia	68.3	61.1	40.8	22.9	19.0	12.7
Mexico	43.5	40.9	28.1	22.2	19.0	12.0
Peru	58.5	50.8	34.0	38.1	30.1	21.6
Romania	41.1	36.8	9.2	25.9	12.2	2.5
Serbia	67.1	42.2	31.6	17.6	13.6	6.7
South Africa	43.5	29.5	13.3	22.6	17.8	5.6
Turkey	41.5	42.2	22.6	10.5	21.2	5.3
Uruguay	41.2	27.7	18.7	16.7	19.8	10.0
Country average	44.8	34.7	21.6	21.6	17.5	10.1
Belgium	10.4	15.6	5.4	4.3	5.6	1.9
Denmark	17.1	10.4	6.2	7.1	5.0	4.1
Finland	15.5	8.9	3.7	14.1	6.4	4.4
France	31.9	30.4	11.7	20.3	12.0	3.3
Germany	17.8	10.3	3.6	8.0	8.0	2.6
Greece	18.2	19.5	16.1	10.0	16.7	9.2
Iceland	34.5	20.9	12.8	16.8	16.4	7.4
Ireland	23.2	14.5	6.5	16.4	9.1	5.5
Israel	42.6	34.1	15.1	16.9	13.1	5.1
Italy	22.8	12.6	7.4	10.6	8.6	3.6
Japan	24.9	6.4	5.8	15.6	7.8	3.9
Republic of Korea	44.8	25.5	20.6	14.3	11.3	9.5
Slovenia	24.2	12.2	5.6	13.5	7.0	4.2
Spain	12.3	8.7	6.7	9.8	7.3	6.5
United Kingdom	15.8	12.6	5.2	14.7	9.1	4.3
Country average	23.7	16.2	8.8	12.8	9.6	5.0

i: "Voluntary" includes those reporting voluntary training or a mix of voluntary and compulsory training. Figures in bold denote statistically significant differences in proportions of aspiration or activity by type of training, $p < .05$

References

- Acemoglu, D., P. Aghion and F. Zilibotti (2007). "Distance to Frontier, Selection and Economic Growth," *Journal of the European Economic Association*, 4, 37-74.
- Acs, Z. J. (2006). "How is Entrepreneurship Good for Economic Growth?" *Innovations* 1(1), 97-107.
- Acs, Z. J., P. Arenius, M. Hay and M. Minniti (2005). *Global Entrepreneurship Monitor 2004 Executive Report*. London, U.K.: London Business School and Babson Park, MA: Babson College.
- Acs, Z. J., D. B. Audretsch, P. Braunerhjelm and B. Carlsson (2003). "The Missing Link: The Knowledge Filter and Endogenous Growth," *Center for Business and Policy Studies*. Stockholm, Sweden.
- Acs, Z. J., D. B. Audretsch and D. Evans (1994). "Why Does the Self-Employment Rate Vary across Countries and over Time?" *CEPR Discussion Paper No. 871*. Center for Economic Policy Research.
- Acs, Z. J. and J. E. Amorós (2008). "Entrepreneurship and Competitiveness Dynamics in Latin America." *Small Business Economics*, 31(3), 305-322.
- Acs, Z. J. and C. Armington (2006). *Entrepreneurship, Geography and American Economic Growth*. Cambridge: Cambridge University Press.
- Acs, Z. J. and P. Stenholm (2008). "A Global Entrepreneurship Index Using GEM Data." Mimeo, School of Public Policy, George Mason University.
- Acs, Z. J. and L. Szerb (2008). "Gearing Up to Measure Entrepreneurship in a Global Economy," Mimeo, Faculty of Business and Economics, University of Pecs.
- Acs, Z. J., N. S. Bosma and R. Sternberg (2008). "The Entrepreneurial Advantage of World Cities," *EIM Scales Paper H200810*, Zoetermeer: EIM.
- Acs, Z. J., W. Parsons and S. Tracy (2008). "High Impact Firms: Gazelles Revisited." Office of Advocacy, U.S. Small Business Administration.
- Adelman, I. and C. T. Morris (1965). "Factor Analysis of the Interrelationships between Social and Political Variables and Per Capita GNP," *Quarterly Journal of Economics* 79, 555-78.
- Ahmad, N. and A. N. Hoffmann (2008). "A Framework for Addressing and Measuring Entrepreneurship," *OECD Statistics Working Paper*, 2. Retrieved May 9, 2008, from: <http://ssrn.com/abstract=1090374>.
- Aquilina, M., R. Klump and C. Pietrobelli (2006). "Factor Substitution, Average Firm Size and Economic Growth," *Small Business Economics*, 26(3), 203-214.
- Audretsch, D. B. (2007). "Entrepreneurship Capital and Economic Growth," *Oxford Review of Economic Policy*, 23(1), 63-78.
- Audretsch, D. B. (2007). *The Entrepreneurial Society*. Oxford: Oxford University Press.
- Autio, E. (2007). *Global Entrepreneurship Monitor 2007 Global Report on High Growth Entrepreneurship*. London, U.K.: London Business School and Babson Park, MA: Babson College.
- Baumol, W. J. (2002). *The Free-market Innovation Machine: Analyzing the Growth Miracle of Capitalism*. Princeton: Princeton University Press.
- Baumol, W. J., R. E. Litan and C. J. Schramm (2007). *Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity*. New Haven and London: Yale University Press.
- Béchar, J.-P. and D. Grégoire (2005). "Entrepreneurship Education Research Revisited: The Case of Higher Education," *Academy of Management Learning and Education*, 4(1), 22-49.
- Bergmann, H. and R. Sternberg (2007). "The Changing Face of Entrepreneurship in Germany," *Small Business Economics*, 28 (2), 205-221.
- Blau, D. (1987). "A Time-Series Analysis of Self-Employment in the United States," *Journal of Political Economy*, 95 (3), 445-67.
- Bosma, N. S. and V. A. J. M. Schutjens (2007). "Outlook on Europe: Patterns of Promising Entrepreneurial Activity in European Regions," *Tijdschrift voor Economische en Sociale Geografie*, 98 (5), 675-686.
- Bosma, N. S. and V. A. J. M. Schutjens (2009). "Mapping Entrepreneurial Activity and Entrepreneurial Attitudes in European Regions," *International Journal of Entrepreneurship and Small Business* 7 (2), forthcoming.
- Bosma, N. S., K. Jones, E. Autio and J. Levie (2008). *Global Entrepreneurship Monitor 2007 Executive Report*. London, U.K.: London Business School and Babson Park, MA: Babson College.
- Bygrave, W. D. with M. Quill (2007). *Global Entrepreneurship Monitor 2006 Financing Report*. London, U.K.: London Business School and Babson Park, MA: Babson College.

References

- Cantillon, R. (1755). *Essai sur la Nature du Commerce en Général* (The Nature of Trade in General), Paris: Institut National D'études Démographiques.
- Carree, M. A. and R. A. Thurik (2003). "The Impact of Entrepreneurship on Economic Growth." In: Z. J. Acs and D. B. Audretsch (Eds.), *Handbook of Entrepreneurship Research*. Boston: Kluwer Academic Publishers, 437-471.
- Carree, M. A., A. J. van Stel, A. R. Thurik and A. R. M. Wennekers (2002). "Economic Development and Business Ownership: An Analysis Using Data of 23 OECD Countries in the Period 1976-1996," *Small Business Economics*, 19, 271-290.
- Davidsson, P. (1991). "Continued Entrepreneurship – Ability, Need, and Opportunity as Determinants of Small Firm Growth," *Journal of Business Venturing*, 6 (6), 405-426.
- Davidsson, P. (2004). *Researching Entrepreneurship*. New York: Springer.
- DeTienne, D. and G. Chandler (2004). "Opportunity Identification and its Role in the Entrepreneurial Classroom: A Pedagogical Approach and Empirical Test," *Academy of Management Learning and Education*, 3(3), 242-257.
- Easterly, W. (2001). "The Lost Decade: Developing Countries' Stagnation in Spite of Policy Reform 1980-1998," *Journal of Economic Growth*, 6, 135.
- Evans, D. and L. S. Leighton (1989). "The Determinants of Changes in U.S. Self-Employment, 1968-1987," *Small Business Economics* 1(2), 111-119.
- Fiet, J. O. and P. C. Patel (2008). "Entrepreneurial Discovery as Sustained, Systematic Search," *Small Business Economics*, 30, 215-229.
- Gartner, W. B. (1985). "A Framework for Describing and Classifying the Phenomenon of New Venture Creation," *Academy of Management Review*, 10(4), 696-706.
- Godin, K., J. Clemens, and N. Veldhuis (2008). "Measuring Entrepreneurship: Conceptual Frameworks and Empirical Indicators," *Studies in Entrepreneurship and Markets*, 7. Fraser Institute.
- Gries, T. and W. Naude (2008). "Entrepreneurship and Structural Economic Transformation," UNU-Wider Research Papers. Helsinki.
- Headd, B. (2003). "Redefining Business Success: Distinguishing Between Closure and Failure," *Small Business Economics* 21, 51-61.
- Henrekson, M. (2005). "Entrepreneurship: A Weak Link in the Welfare State?" *Industrial and Corporate Change*, 14(3), 437-467.
- Hills, G. E. and R. P. Singh (2004). "Opportunity Recognition." In: Gartner, W. B., K. G. Shaver, N. M. Carter and P. D. Reynolds (Eds.), *Handbook of Entrepreneurial Dynamics; The Process of Business Creation*, London: Sage Publications.
- Hirooka, M. (2003). "Nonlinear Dynamism of Innovation and Business Cycles," *Journal of Evolutionary Economics*, 13, 549-576.
- Holmes, K. R., E. J. Feulner and M. A. O'Grady (2008). *2008 Index of Economic Freedom*. Washington, D.C.: The Heritage Foundation and New York: Wall Street Journal.
- Honig, B. (2004). "Entrepreneurship Education: Toward a Model of Contingency-Based Business Planning," *Academy of Management Learning and Education*, 3(3), 258-273.
- Jorgenson, D. W. (2001). "Information Technology and the U.S. Economy," *American Economic Review*, 91 (1), 1-32.
- Kihlstrom, R. E. and J. J. Laffont (1979). "A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion," *Journal of Political Economy*, 87, 719-749.
- Kirzner, I. (1973). *Competition and Entrepreneurship*. Chicago: University of Chicago Press.
- Koellinger, P. (2008). "Why are Some Entrepreneurs More Innovative than Others?" *Small Business Economics*, 31, 21-37.
- Kuznets, S. (1966). *Modern Economic Growth*. New Haven: Yale University Press.
- Leibenstein, H. (1968). "Entrepreneurship and Development," *American Economic Review*, 58 (2), 72-83.
- Levie, J. and E. Autio (2008). "A Theoretical Grounding and Test of the GEM Model," *Small Business Economics*, 31(3), 235-263.
- Lewis, W. A. (1954). "Economic Development with Unlimited Supplies of Labour," *The Manchester School*, 28(2), 139-191.
- Lucas, R. E. Jr. (1978). "On the Size Distribution of Business Firms," *Bell Journal of Economics*, 9, 508-523.

- Marshall, A. (1890). *Principles of Economics*. London: Macmillan and Co.
- Mason, C. and R. Harrison (2006). "After the Exit: Acquisitions, Entrepreneurial Recycling and Regional Economic Development," *Regional Policy*, 40(1), 55-73.
- OECD (2003). *Science, Technology and Industry Scoreboard*. Paris: OECD.
- Parker, S. C. (2004). *The Economics of Self-employment and Entrepreneurship*. Cambridge: Cambridge University Press.
- Peterman, N. and J. Kennedy (2003). "Enterprise Education: Influencing Students' Perceptions of Entrepreneurship," *Entrepreneurship Theory and Practice*, 28, 129-144.
- Porter, M. E., J. J. Sachs, and J. McArthur (2002). "Executive Summary: Competitiveness and Stages of Economic Development." In: Porter, M, J. Sachs, P.K. Cornelius, J.W. McArthur, and K. Schwab (Eds), *The Global Competitiveness Report 2001-2002*, New York: Oxford University Press, 16-25.
- Porter, M. E. and K. Schwab (2008). *The Global Competitiveness Report 2008-2009*. Geneva, Switzerland: World Economic Forum.
- Reynolds, P. D., N. S. Bosma, E. Autio, S. Hunt, N. De Bono, I. Servais, P. Lopez-Garcia and N. Chin (2005). "Global Entrepreneurship Monitor: Data Collection Design and Implementation, 1998-2003," *Small Business Economics*, 24(3), 205-231.
- Robinson, C., B. O'Leary, and A. Rincon (2006). *Business Start-Ups, Closures and Economic Churn: A Review of the Literature*. Final report prepared for the Small Business Service, 23 August. London: National Institute of Economic and Social Research.
- Schramm, C. J. (2006). *The Entrepreneurial Imperative*. New York: Harper Collins.
- Schramm, C. J. (2008). "Economic Fluidity: A Crucial Dimension of Economic Freedom." In: Holmes, K. R., E. J. Feulner, and M. A. O'Grady (Eds.), *2008 Index of Economic Freedom*. Washington, D.C.: The Heritage Foundation and New York: Wall Street Journal, 15-22.
- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Cambridge MA: Harvard University Press.
- Schumpeter, J. A. (1942). *Capitalism, Socialism and Democracy*, New York: Harper and Row.
- Shane, S. and S. Venkataraman (2000). "The Promise of Entrepreneurship as a Field of Research," *Academy of Management Review*, 25, 217-226.
- Shane, S. (2003). *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*. Aldershot, UK: Edward Elgar.
- Storey, D. J. (1991). "The Birth of New Firms – does unemployment matter? A Review of the evidence," *Small Business Economics*, 3(3), 167-178.
- Thurik, A.R., M.A. Carree, A. van Stel and D.B. Audretsch (2008). "Does Self-Employment Reduce Unemployment?" *Journal of Business Venturing*, 23(6), 673-686.
- Wennekers, A.R.M. and A.R. Thurik (1999). "Linking Entrepreneurship and Economic Growth," *Small Business Economics*, 13(1), 27-55.
- Wennekers, A.R.M., A. van Stel, A.R. Thurik and P.D. Reynolds. (2005). "Nascent entrepreneurship and the level of economic development," *Small Business Economics*, 24(3), 293-309.
- Wiklund, J., P. Davidsson and F. Delmar (2003). "What Do They Think and Feel About Growth? An Expectancy-Value Approach to Small Business Managers' Attitudes Towards Growth," *Entrepreneurship Theory and Practice*, 27 (3), 247-266.

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	Utrecht University IE Business School	Jeff Seaman Niels Bosma Alicia Coduras		

About the Authors

NIELS BOSMA

Niels Bosma is a member of the Urban and Regional research centre Utrecht, section of Economic Geography, Utrecht University. He is the Research Director for GERA, the research organization that hosts the Global Entrepreneurship Monitor. He has an MSc in Econometrics from the University of Groningen and was previously an entrepreneurship researcher at EIM Business & Policy Research in the Netherlands. He has published several articles in entrepreneurship journals.

ZOLTAN J. ACS

Zoltan J. Acs is University Professor at the School of Public Policy and Director of the Center for Entrepreneurship and Public Policy. He is also a Research Scholar at the Max Planck Institute for Economics in Jena, Germany, and Scholar-in-Residence at the Kauffman Foundation. He is coeditor and founder of *Small Business Economics*, the leading entrepreneurship and small business publication in the world. Dr. Acs is a leading advocate of the importance of entrepreneurship for economic development. He received the 2001 International Award for Entrepreneurship and Small Business Research, on behalf of The Swedish National Board for Industrial and Technical Development. He has published more than 100 articles and 20 books, including articles in the *American Economic Review*, *Review of Economics and Statistics*, *Kyklos*, *Journal of Urban Economics*, *Economica*, *Research Policy* and *Science Policy*. His most recent publication is *Entrepreneurship, Geography and American Economic Growth*, Cambridge University Press.

ERKKO AUTIO

Erkko Autio is QinetiQ-EPSRC Chair Professor of technology transfer and entrepreneurship at the Imperial College Business School in London. He has published widely in high-growth entrepreneurship, international entrepreneurship, and technology-based venturing. He has served on the boards of several technology-based ventures and VC funds and advised several governments on entrepreneurship policy. Currently chairing EU DG Innovation's advisory panel on high-growth entrepreneurship policy, he is a founding coordination team member of the Global Entrepreneurship Monitor.

ALICIA CODURAS

Alicia Coduras is a research professor in the Department of Entrepreneurial Management in the Instituto de Empresa Business School, Madrid, Spain. She is a member of the GEM Coordination Team and Technical Director of GEM Spain. She holds a doctorate in Political Sciences from the University of Pompeu Fabra and a degree in Economic and Business Sciences from the University of Barcelona. She has published more than 30 articles and book chapters based on GEM data and led the regional development of GEM Spain.

JONATHAN LEVIE

Jonathan Levie is a senior lecturer at the Hunter Centre for Entrepreneurship in the University of Strathclyde, Glasgow, UK, where he was Director from 2000 to 2005. He was previously Associate Coordinator of Global Entrepreneurship Monitor, based at London Business School. He has a PhD from London Business School and MSc and BSc from the National University of Ireland. He has been teaching and researching entrepreneurship for more than 25 years.



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Universidad del Desarrollo, UDD, Educational project was driven by outstanding leaders of the Chilean public and business scene and is today one of the top three prestigious private universities in Chile. Success came quickly, after just eighteen years, its rapid growth has become an expression of the University's main facet: entrepreneurship. UDD MBA is rated one of the best in Latin America and number one in Entrepreneurship, according to *AméricaEconomía* magazine, and achievement that once again represents the "entrepreneurial" seal that is embedded in the spirit of the University. For more information visit www.udd.cl.

Contacts

For more information on this report, contact Niels Bosma at:

nbosma@gemconsortium.org

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Nations not currently represented in the GEM Consortium may express interest in joining and ask for additional information by e-mailing:

Mick Hancock at mhancock@gemconsortium.org

Marcia Cole at colema@gemconsortium.org, or

Chris Aylett at Caylett@london.edu



- ⁱ These phases coincide with the classification by the most recent Global Competitiveness Report into factor-driven, efficiency-driven and innovation-driven economies. See Porter and Schwab (2008).
- ⁱⁱ Evidence is documented by e.g. Carree and Thurik (2003), Acs (2006), Audretsch, (2007).
- ⁱⁱⁱ See Acs, Parsons and Tracy (2007).
- ^{iv} See Wennekers and colleagues (2005), Gries & Naude (2008).
- ^v See e.g. Gartner (1986) and Shane and Venkataraman (2000).
- ^{vi} See Levie and Autio (2008) for a more detailed discussion.
- ^{vii} Most new businesses do not survive beyond three or four years. This is the main rationale for the choice of 42 months as the cut-off period. However, the choice of 42 months reflects also operational issues. According to Reynolds and colleagues (2005), "The relevant interview question asked only the year when salary and wage payments were initiated and most surveys occurred in the summer months; so the alternatives for choosing a "new firm age" were 1.5 years, 2.5 years, 3.5 years, etc. The shortest time frame that would provide enough cases for stable prevalence rates with a total sample of 2,000 seemed to occur at 3.5 years. Conceptually, any time period under five years seemed satisfactory so this age was considered an appropriate trade-off between conceptual and operational considerations in the early years of the project. There has been no compelling reason to adjust this criterion and a desire for a stable time series has led to its continued use. It should be considered a procedure to capture existing firms less than three or four years old."
- ^{viii} The sample sizes in the GEM 2008 study typically range from 2,000 to 3,500. Notable exceptions are Spain (31,000 respondents) and the UK (8,000 respondents).
- ^{ix} See Kirzner (1973) and Shane (2003).
- ^x This report focuses on country comparisons. For many countries, regional differences in entrepreneurial behavior are also significant. This has been documented for Europe, using GEM data, by Bosma and Schutjens (2007) and for Germany by Bergmann and Sternberg (2007). The relationships described in this section are also applicable to regional differences.
- ^{xi} For literature on opportunity costs of entrepreneurship see e.g. Lucas (1978), Shane and Venkataraman (2000) and Parker (2005).
- ^{xii} Hills and Singh (2004) report that among 472 US nascent entrepreneurs in 1998, for 37% the opportunity discovery came before the desire to start a business, while for 42% the desire to start came before the recognition of an opportunity. For the remaining 21% opportunity recognition and desire to start came at about the same time.
- ^{xiii} The model proposed by Shane focuses on entrepreneurial behavior without necessarily linking to owning and managing a business.
- ^{xiv} This concerns the following efficiency-driven countries: Argentina, Brazil, Chile, Croatia, Hungary and South Africa. Innovation-driven economies included in this analysis are Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Netherlands, Norway, Slovenia, Spain, Sweden, United Kingdom, United States.
- ^{xv} For instance, on 25 March 2008 the Financial Times reported that Iceland's banking system was in trouble, see http://www.ft.com/cms/s/0/5f9301dc-fa51-11dc-aa46-000077b07658.html?nclick_check=1.
- ^{xvi} In the Global Competitiveness Reports the countries are classified in three major phases and two 'transition' phases. To create three country groups, we assigned countries in a transition phase to the major phase they were emerging from..
- ^{xvii} "Statistical significance" refers to a calculation of where the range within which the average value of 95 out of 100 replications of the survey would be expected to lie. This range is shown in Figure 2 by vertical bars on either side of each data point. If the 'confidence intervals' (denoted by the vertical bars) of two national TEA

rates do not overlap, the difference between the TEA rates is not statistically significant at the 0.05 level. Reference in this report to significant differences implies statistically significant difference at the 0.05 level.

^{xviii}See the Global Entrepreneurship Monitor reports from 2004-2006 available at www.gemconsortium.org.

^{xix}The R-squared of the fitted curve (third order polynomial) equals 0.49.

^{xx}The calculation of opportunity-driven early-stage differs somewhat from pre-2007 reports. GEM identifies these different motivations in two stages. First, respondents involved in early-stage entrepreneurial activity are asked whether they are involved because they recognized an opportunity, or because they had no better options for work. Recognizing that this question is polyvalent and that people operating somewhere in between these extremes tend to answer the first option, those who chose recognition of an opportunity were asked whether the main driver behind pursuing this opportunity was: (a) to increase their own income, (b) to be independent; or (c) to maintain their income. The latter category was not considered as a genuine opportunity for the measures shown in Figure 11.

^{xxi}As argued further above, the necessity rates are probably a conservative estimation. For the remaining group, i.e. the individuals involved in TEA who were not classified in either of the categories “improvement-driven opportunity” or “necessity,” no statistical pattern could be discerned.

^{xxii}Robinson, C., B. O’Leary, and A. Rincon, (2006). Business start-ups, closures and economic churn: A review of the Literature. Final report prepared for the Small Business Service, 23 August. London: National Institute of Economic and Social Research.

^{xxiii}More detailed information can be found in the special GEM reports on Women and Entrepreneurship, available on the GEM website (www.gemconsortium.org).

^{xxiv}Missing data have been estimated as a function of the existing data.

^{xxv}In total, we had 678, 714 adult-population interviews for the combined 2006 – 2008 data set.

^{xxvi}An over-sample for the Shenzhen region was excluded from China’s data because of its anomalous nature.

^{xxvii}In general world cities exhibit higher aspiration levels in early-stage entrepreneurial activity in comparison to the rest of the country, see Acs and colleagues 2008.

^{xxviii}Business activities are reported in answer to an open-ended question. The open-ended questions are coded into the ISIC coding classification (4-digits).

^{xxix}This classification includes ‘medium high’ and ‘high’ technology sectors in Manufacturing and Services. See OECD (2003).

^{xxx}Data for Hungary is not reported here because of an unusually high “don’t know” response rate.

^{xxxi}Factor analysis was conducted on the total sample and country by country. Across the 25 nations, the three original items loaded onto one factor which explained 67% of the variance with acceptable reliability (0.754) and sampling adequacy (.676). Country level reliability and sampling adequacy were similar. This suggests that these three items are capturing different dimensions of one underlying construct.

^{xxxii}Researchers have suggested that education and training for entrepreneurship should positively impact entrepreneurial activity by enhancing instrumental skills required to startup and grow a business (Honig, 2004), by enhancing cognitive ability of individuals to manage the complexities involved in opportunity recognition and assessment (DeTienne and Chandler, 2004), and by affecting their cultural attitudes and behavioral dispositions (Peterman and Kennedy, 2003). Demonstrating these effects, however, has been a challenge. First, there may be considerable self-selection into entrepreneurship education. Secondly, the effects may be long term rather than instantaneous. For example, in the short term, graduates of entrepreneurship education may recognize the need to amass specific knowledge (Fiet and Patel, 2008) and decide to defer action. Thirdly, there is the need for adequate control groups to demonstrate effects. Fourthly, individuals may receive such education and training at several points in their lives, such as at school, university, or after formal education, and it may take the form of traditional learning or experiential immersion in the phenomenon,

Endnotes

through a placement, for example. As a result of these issues, population-level evidence concerning the influence of entrepreneurship training and education on entrepreneurial activity is still lacking (Béchar and Grégoire, 2005). See Levie and Autio (2008) for a wider discussion.

^{xxxiii}A small subset of respondents in Angola were also asked these questions. As this sample was too small for the analysis undertaken here, Angola is not included in this chapter.

^{xxxiv}Chi-square tests were used to test for significant differences in proportions of training by age group for each country. Chi-square statistics returning p values of less than 0.05 were regarded as evidence of significant differences in proportions.

^{xxxv}Typically, between 18 and 36 experts completed a structured questionnaire containing statements about aspects of entrepreneurship education and training in the country. They rated each statement on a 5-point scale, where a score of 1 would be “not true,” of 3 would be neutral, and of 5 “completely true.”

^{xxxvi}The two measures of high-growth expectation were: expect to create at least 10 jobs and at least double current employment in 5 years time, and expect to create at least 20 jobs in 5 years time. These two measures were highly correlated across the 28 countries ($r = .961$, $p = .000$).

