



GLOBAL ENTREPRENEURSHIP MONITOR

*2000 Executive Report*



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UNIT	LOCATION	MEMBERS	FINANCIAL SPONSORS
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## Executive Summary

The Global Entrepreneurship Monitor (GEM) was created in 1997 as a joint research initiative by Babson College and London Business School with strong support from the Kauffman Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation. The central aim was to bring together the world's best scholars in entrepreneurship to study the complex relationship between entrepreneurship and economic growth. From the outset, the project was designed to be a long-term, multinational enterprise.

Ten countries participated in the study in 1999: the G7 (Canada, France, Germany, Italy, Japan, the United Kingdom and the United States) plus Denmark, Finland and Israel. GEM 2000 added 11 countries: Argentina, Australia, Belgium, Brazil, India, Ireland, Korea, Norway, Singapore, Spain and Sweden. GEM 2000 also employed larger samples in each country, enhanced research methods and added an important new dimension — an assessment of the role of venture capital in each country. Data were assembled from three principal sources: (a) surveys of the adult population; (b) in-depth interviews with national experts on entrepreneurship in each country; and (c) a wide selection of standardized national data. More than 43,000 individuals were surveyed and nearly 800 experts were interviewed around the globe.

The study focuses on three fundamental questions:

- *Does the level of entrepreneurial activity vary between countries and, if so, by how much?*
- *Does the level of entrepreneurial activity affect a country's rate of economic growth?*
- *What makes a country entrepreneurial?*

By addressing these three questions, GEM seeks to provide a strong forum for public policy debate and development. Although the 21 countries that participated in GEM 2000 differ in significant ways, many confront a common challenge: how to facilitate

entrepreneurial activity and, in turn, national economic growth. Built upon a solid research design, GEM provides an authoritative basis for discussing this issue. The key findings and their implications for public policy are compelling.

- **The level of entrepreneurial activity differs significantly between countries.** In Brazil, 1 in every 8 adults is currently starting a business. This compares with 1 in 10 in the United States, 1 in 12 in Australia, 1 in 25 in Germany, 1 in 33 in the United Kingdom, 1 in 50 in Finland and Sweden, and 1 in 100 in Ireland and Japan. There are also major differences between countries in the prevalence of new firms, those less than 42 months old. Expressed as a proportion of the adult population engaged in new firms, the rates range from 9 percent in Korea to less than 0.5 percent in Japan and Ireland.
- **Entrepreneurship is strongly associated with economic growth.** Among nations with similar economic structures, the correlation between entrepreneurship and economic growth exceeds 0.7 and is highly statistically significant. All countries with high levels of entrepreneurial activity have above average economic growth. Only a few high growth countries have low levels of entrepreneurial activity.
- **Most firms are started and operated by men, with peak entrepreneurial activity among those aged 25-34.** Overall, men are twice as likely as women to be involved in entrepreneurial activity. The ratio of male-to-female participation varies from 12:1 in France to less than 2:1 in Brazil and Spain. However, the broad pattern of under-representation of women holds across all 21 countries in GEM 2000.
- **Financial support is highly associated with the level of entrepreneurial activity.** The amount of formal venture capital invested in 1999 ranged from 0.52 percent of Gross Domestic Product (GDP) in the United States to 0.022 percent in Japan. The average amount invested per company ranged from





slightly more than \$13 million in the United States to less than \$1 million in many other countries. The results show that informal private investments in emerging and new businesses dwarf the more formal venture capital outlays. For the United States alone, GEM estimates total private investments in entrepreneurial companies in 1999 to be more than \$63 billion. This is substantially more than the \$46 billion invested in start-ups and growing firms by the professional venture capital industry during the same period, a year in which the U.S. venture capital industry hit a dramatic new high.

- **Education plays a vital role in entrepreneurship.**

If the level of participation in post-secondary education were the only factor used to predict entrepreneurial activity, it would account for 40 percent of the difference between GEM countries. Providing individuals with quality entrepreneurship education (i.e., training in the requisite skills for converting a market opportunity into a commercial enterprise) was consistently one of the top priorities identified by the experts interviewed in each of the 21 countries.

- **Policies geared toward boosting entrepreneurial activity should not be confined to the entrepreneurship sector *per se*.**

From the GEM results it is clear that fundamental features of the wider economic system play a critical role. Countries with higher levels of entrepreneurial activity are characterized by comparatively lower levels of corporate and marginal personal income tax rates. The most entrepreneurially active countries also have a greater ease of doing business with the government, more flexible labor markets and lower levels of non-wage labor costs.

- **The perceived social legitimacy of entrepreneurship makes a difference.**

GEM 2000 used a variety of measures to determine the level of respect in the community for those starting new firms. Two such indicators were (a) the extent to which fear of failure acts as a deterrent to

starting a new firm and (b) respect for those starting new firms. These and other measures indicate a fundamental difference in social and cultural values between countries with high levels of entrepreneurial activity and countries where entrepreneurship is not an integral feature of everyday life.

A set of straightforward policy principles emerges from the GEM 1999 and GEM 2000 initiatives.

Although the implementation of these principles will vary from country to country, they are nonetheless of significant general applicability.

- *The promotion of entrepreneurship, its role in society and the opportunities it presents for personal gain, appears to be critical for facilitating economic growth.*
- *Policies geared toward enhancing the entrepreneurial capacity of a society (i.e., the skills and motivation to pursue opportunities) will have the greatest impact on the level of entrepreneurial activity.*
- *Increasing the participation of women in entrepreneurship is necessary for long-term economic prosperity.*
- *For the greatest long-term impact, policies should encourage the involvement of people younger than 25 and older than 44 in the entrepreneurial process.*
- *Any government committed to sustained economic progress must ensure that all aspects of its economic system are conducive to and supportive of increased levels of entrepreneurial activity. This includes minimizing taxation, ensuring access to labor, lowering non-wage labor costs, reducing the regulatory burden and making it easier to do business with the government.*
- *Policies should facilitate the development of a professional venture capital industry and create incentives for private individuals to invest directly in early-stage businesses.*

## Entrepreneurship and Public Policy: An Overview

Around the world entrepreneurship is at the top of the social, political and economic agenda. Fueled in part by the rash of Internet start-ups in the late 1990s and the associated increase in venture capital investment and stock market values, the process whereby individuals create and build new firms has captured the public imagination. Given the strong association between entrepreneurship and economic growth, policy makers worldwide have grown increasingly attentive to developing and implementing strategies that nurture and sustain entrepreneurial activity. To illustrate:

- Australia introduced a New Taxation System designed to encourage both domestic and overseas investment in early-stage ventures, accompanied by significant reductions in capital gains and company taxes.
- In October 1999, the Brazilian Government introduced the “Brasil Empreendedor” program, providing low-interest financing, professional training and other basic support services to smaller businesses. To date, one million businesses have made use of the program.
- Denmark’s National Action Plan for Employment emphasizes entrepreneurship. A new loan guarantee fund for entrepreneurs reduces the financial risk for lenders by 25 percent.
- The German Federal Government has launched the European Recovery Program start-up and equity capital aid initiatives to ease restrictions on the flow and accessibility of early-stage financing. In addition, the EXIST program, supporting R&D transfers from universities, has been established in high potential regions.
- In Ireland the government-backed report, “Enterprise 2010,” outlines detailed proposals for boosting the entrepreneurial sector.
- Singapore’s Technopreneurship 21 program aims to significantly improve education, regulations and financing for entrepreneurs.
- Angel investors in Japan have been given new tax incentives and the government has launched a National Forum on Start-ups and Venture Capital.
- A Small Business Services Agency and a national Enterprise Insight Campaign have been launched in the United Kingdom.

Underpinning this plethora of initiatives is one basic assumption: entrepreneurship presents a key to unlocking economic growth. Tony Blair, Prime Minister of the United Kingdom, told the British Venture Capital Association, *“I want this Government to be the champion of entrepreneurs. We need more of you ... You are the front line troops of Britain’s new economy.”* The European Commission speaks of the need to *“nurture a culture of entrepreneurship.”* The Organization for Economic Co-Operation and Development (OECD)<sup>1</sup> suggests entrepreneurship is central to the functioning of market economies and entrepreneurs are *“essential agents of change who accelerate the generation, application and spread of innovative ideas and in doing so ... not only ensure efficient use of resources but also expand the boundaries of economic activity.”*

It is against this backdrop that the GEM project was launched in 1997. GEM 1999 established that there is substantial variation in the level of entrepreneurial activity between countries, with a five-fold difference between the highest and lowest levels observed. In addition, the association between entrepreneurial activity and national economic growth was shown to be quite strong. The key determinants of entrepreneurship were found to be (a) the perception of new business opportunities, (b) demographic characteristics and growth, (c) participation in post-secondary educational programs, (d) cultural and social values supportive of personal independence, and (e) a strong physical and professional infrastructure.

GEM 2000 builds upon and goes beyond the 1999 effort. In particular, the number of countries studied increased from 10 to 21, incorporating such new geographic regions as South America, India and Australia. GEM 2000 also employed larger samples in each country and enhanced research methods. Finally, the 2000 initiative added an important new dimension with an assessment of the magnitude and contribution of venture capital activity in each country. With more countries and new perspectives, GEM 2000 improves our overall understanding of the nature of the relationship between entrepreneurship and economic growth and establishes the leading forum for policy debates and developments worldwide.



## Understanding Entrepreneurship: The GEM Model

GEM 1999 provided broad validation for the conceptual framework developed at the project outset. While the model has been retained, the amount of data and the associated analyses have become more complex. The GEM model provides the framework for assessing the key empirical relationships. The central argument of the model is that national economic growth is a function of two parallel sets of interrelated activities: (a) those associated with major established firms, and (b) those related directly to the entrepreneurial process.

The role of larger established firms is captured in Figure 1. Major firms, often competing on a global scale, clearly make a major contribution to economic growth and prosperity. Their success is determined in part by the national context in which they operate, which is represented in the GEM model by the General National Framework Conditions. A number of major international research projects focus on the role of large established firms in economic development. The Global Competitiveness Report is one such project and the one from which the specific National Framework Conditions listed in Figure 1 are taken.<sup>2</sup>

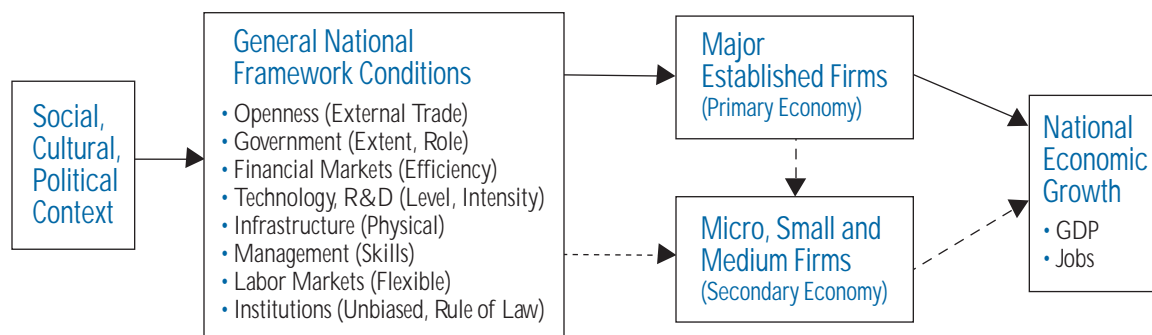
However, empirical tests have proven that transactional activity among large firms explains only a portion of the variation in economic growth. The entrepreneurial process appears to also account for a significant proportion of the differences in economic prosperity between countries. This process is modeled in Figure 2. When considering the nature of the relationship between entrepreneurship and economic growth, it is helpful to distinguish between

entrepreneurial opportunities and entrepreneurial capacity. Entrepreneurial activity is driven by the perception of entrepreneurial opportunities combined with the skills and motivation to exploit them. When opportunities are met with skills and motivation, the outcome is the creation of new firms and, inevitably, the destruction of existing firms. New firms frequently displace inefficient or outmoded existing firms. This process of “creative destruction” is captured in the model by Business Churning. Despite its negative connotation, creative destruction has a positive impact on economic growth as declining businesses are phased out when new start-ups competitively maneuver their way into the market. These dynamic transactions occur within a particular context, which is referred to in the GEM Model as Entrepreneurial Framework Conditions. These include key variables such as (a) the availability of finance, (b) government policies and programs designed to support start-ups, and (c) education and training for entrepreneurship.

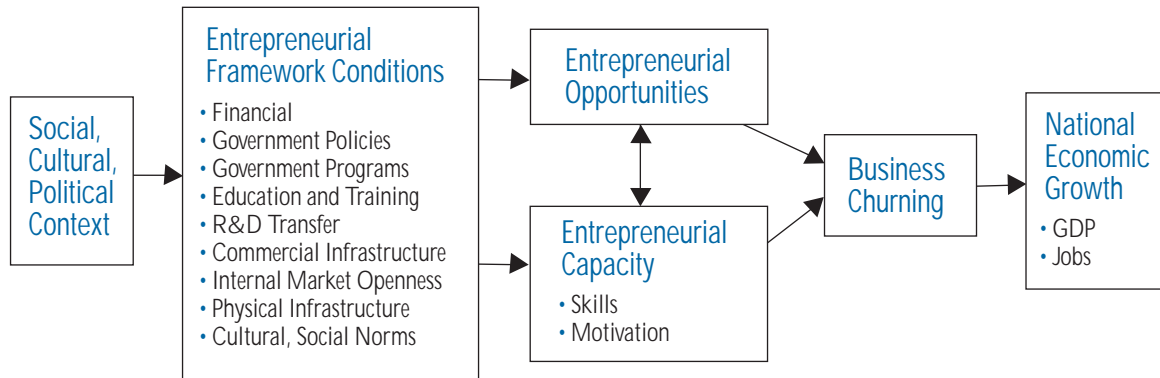
Economic growth, in its truest sense, reflects both sets of processes (Figure 3), although the mix or relative contributions may vary between countries. A fundamental aim of GEM is to understand how the entrepreneurial process operates and how its contribution to economic growth varies across countries.

To assess the model, a wide variety of data were assembled with the consortium of research teams working in each GEM country.<sup>3</sup> First, a representative sample of 2000 adults was interviewed in each country using a standardized questionnaire, which was translated into the native language of each country.<sup>4</sup>

**Figure 1**  
**GEM Conceptual Model (Part 1)**



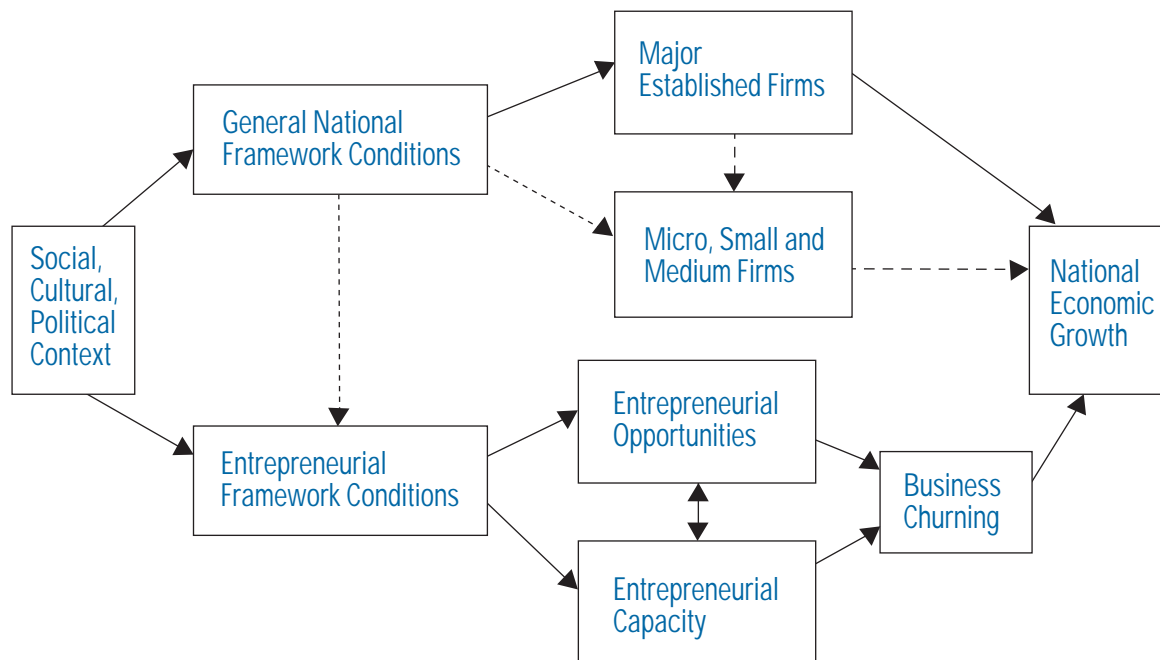
**Figure 2**  
GEM Conceptual Model (Part 2)



Respondents were asked precise questions about their involvement in — and attitudes toward — entrepreneurship. Second, a wide selection of standardized national data was assembled from a variety of sources (e.g., World Bank, United Nations, IMF and venture capital associations). Third, each national team completed a one-hour, face-to-face interview with approximately 35 experts in their country selected to represent the Entrepreneurial Framework Conditions referred to above. Fourth,

each expert was asked to complete a brief questionnaire that involves standardized assessments of important features of his or her country's entrepreneurial sector.<sup>5</sup> Fifth, all national teams provided their own assessment of the current status of entrepreneurial activity in their country. The result of this enormous data collection effort is an unprecedented portrayal of entrepreneurial activity in 21 countries. The picture that emerges is presented in the following sections.

**Figure 3**  
GEM Conceptual Model (The Total Process)



# Levels of Entrepreneurial Activity

Substantial attention to fast growing new firms in expanding new industry sectors has attracted a great deal of attention recently. The focus on these successful young firms in the global economy provides anecdotal evidence that some countries are more entrepreneurial than are others. The intent of GEM 2000, however, is to go beyond such impressionistic evidence and systematically assess two things: (a) the level of start-up activity or the prevalence of nascent firms and (b) the prevalence of new or young firms, i.e., those that have survived the start-up phase.

First, start-up activity is measured by the proportion of the adult population (i.e., 18-64 years of age)<sup>6</sup> in each country that is currently engaged in the process of creating a nascent business.<sup>7</sup> Second, the presence of new firms is measured by the proportion of adults in each country who are involved in operating a business that is less than 42 months old as of July-August 2000 when the surveys were completed. The distinction between nascent and new firms is made in order to determine the relationship of each to national economic growth. For both measures, the research focus is on entrepreneurial activity in which the individuals involved have a direct, but not necessarily full, ownership interest in the business. Based on the adult population surveys, the prevalence rates for nascent and new businesses in each country are presented in Figures 4 and 5 respectively. While the midpoints represent the sample averages, the intervals between the upper and lower bands represent the range in which the sample averages would fall 95 percent of the time if the surveys were replicated (i.e., 95 percent confidence interval). If the upper and lower bands overlap as you move from country to country, then there is no statistically significant difference between the countries.

Although the rank order of countries differs for the two measures, the differences between countries for both types of entrepreneurial activity are striking.

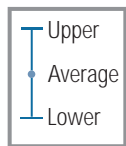
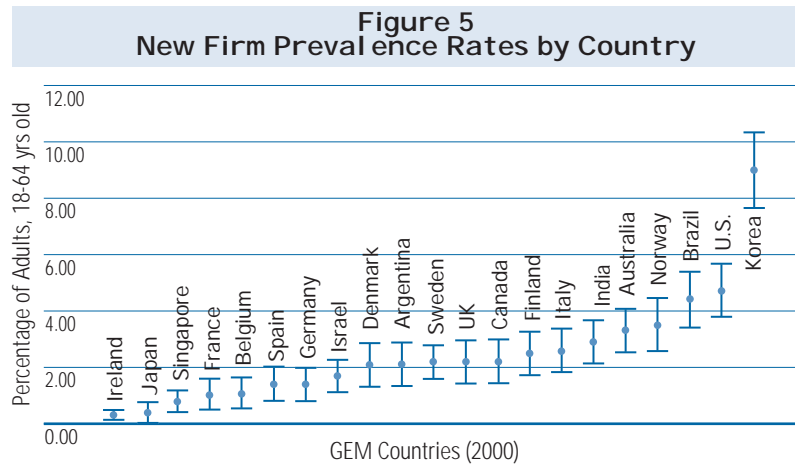
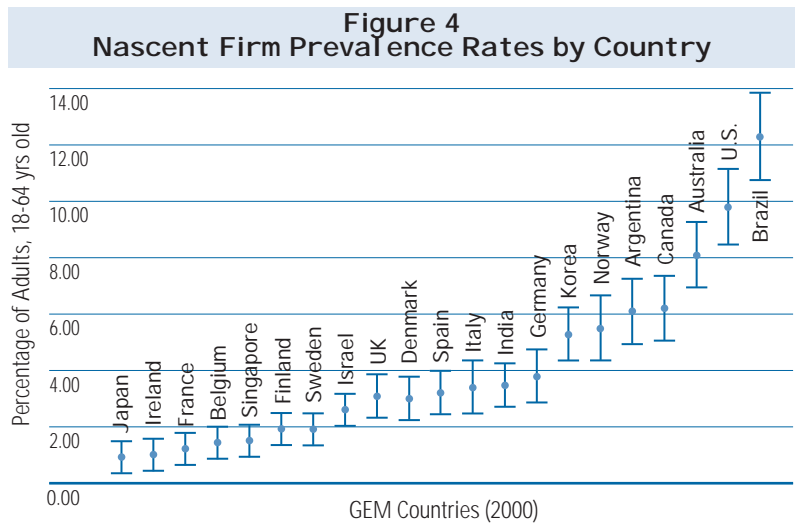
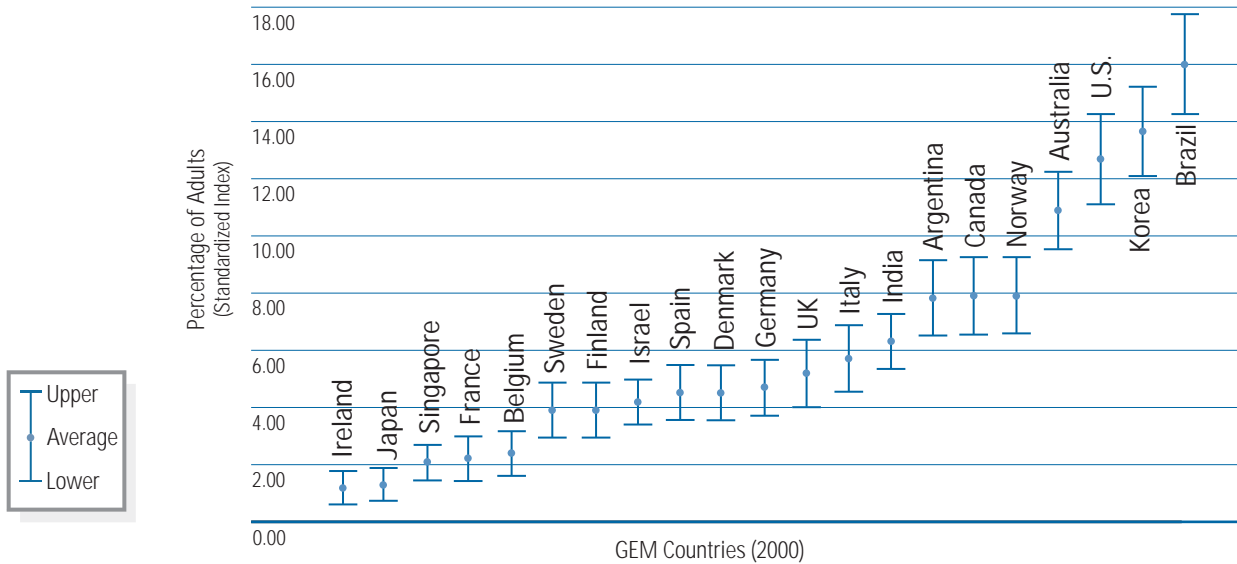


Figure 4 shows that in Brazil, 1 in every 8 adults 18-64 years old (12 percent) is attempting to start a new business, which is the highest level of nascent entrepreneurial activity among the countries included in the GEM 2000 study. This compares with 1 in 10 in the United States (10 percent), 1 in 12 in Australia (8 percent), 1 in 25 in Germany (4 percent), 1 in 33 in the United Kingdom (3 percent), 1 in 50 in Finland and Sweden (2 percent), and 1 in 100 in Ireland and Japan (1 percent).

There are also large differences between countries in the prevalence rates for new firms in Figure 5. Differences range from 1 in 11 of the adult population in Korea (9 percent) to less than 1 in 200 in Japan and Ireland (0.5 percent). As with nascent



**Figure 6**  
**Total Entrepreneurial Activity Prevalence Rates**  
 (GEM TEA Index by Country)



entrepreneurial activity, the United States and Brazil have high numbers of adults involved with new firms, more than 1 in 25 (over 4 percent). Australia and Norway are not far behind with more than 1 in 30 (over 3.3 percent). Korea is unique in that it has a statistically significant higher prevalence rate of new firms than the next highest country, Brazil. This would seem to be a temporary anomaly reflecting the serious economic slump in Korea in 1998.<sup>8</sup>

Measures of nascent and new firm activity represent two important but distinct aspects of the entrepreneurial process. Combining these measures provides an excellent index of the total level of entrepreneurial activity. The GEM Total Entrepreneurial Activity (TEA) Index was computed by adding the proportion of adults involved in the creation of nascent firms and the proportion involved in new firms. The 147 people involved in both nascent and new firms were counted only once.<sup>9</sup> Prevalence rates based on

the TEA Index are provided for all 21 participating countries in Figure 6.

The rank order of countries in Figure 6 is nearly the same as in Figures 4 and 5. Brazil has the highest TEA prevalence rate, 16 percent, followed by Korea (14 percent) and the United States (13 percent). Ireland and Japan are at the lower end of the scale, both with TEA prevalence rates barely above 1 percent. Most European countries, with the exception of Norway, score in the 2 to 6 percent range.

## The Population Profile

GEM 2000 represents a harmonized comparison of the level of entrepreneurial activity between countries. To fully appreciate the implications these measures have for national policy, however, it is important to understand which groups within the

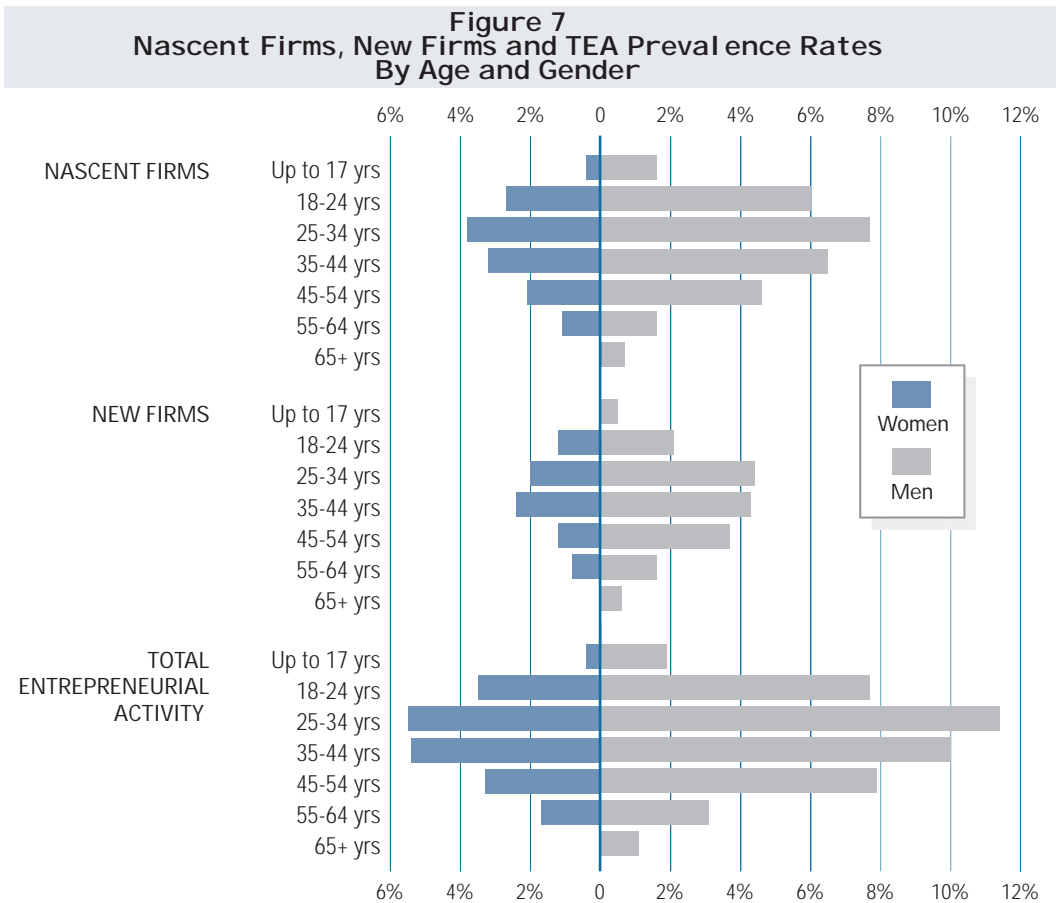


population are most involved in entrepreneurship. GEM 2000 provides some insight into this issue through data on the age and gender of more than 43,000 survey respondents in the participating countries. In particular, the data suggest:

- adults between 25-44 years of age are significantly more active in entrepreneurship than any other age group, and
- men are generally more active in entrepreneurship than women, although the degree to which women are engaged in entrepreneurship varies significantly between countries.

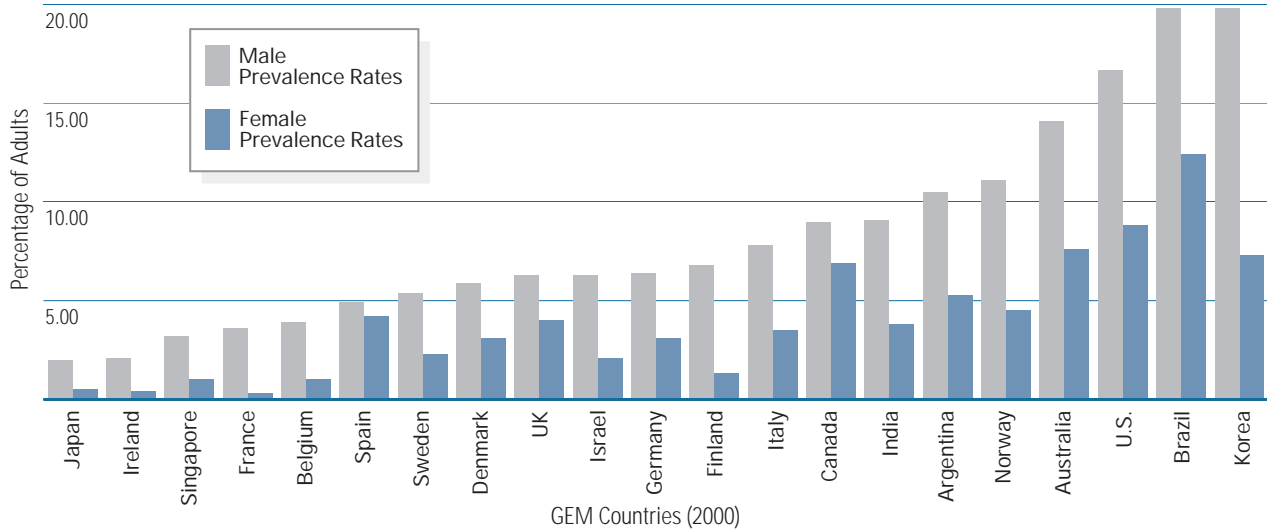
### The Age Profile

The age distribution of those engaged in either nascent or new firms is presented in Figure 7 for all GEM 2000 countries; measures for men are depicted on the right and those for women on the left. The striking pattern is similar for nascent firms, new firms and TEA prevalence rates. Those in the 25-34 age bracket account for the highest level of activity, with a significant drop in the level of activity among those under 25 and above 44 years of age. The age peak is slightly younger in the United States and slightly older in Europe, although the differences are small.





**Figure 8**  
**Total Entrepreneurial Activity by Country by Gender**



## The Gender Profile

Figure 8 represents participation in entrepreneurship by gender. In this figure, where age has been controlled for, the impact of gender is striking. Countries are presented in rank order by their male participation rate. The highest point for each bar in Figure 8 represents the TEA prevalence rate for men and women in each country. From the patterns, it is clear that men are generally twice as likely to be involved in entrepreneurial activity as women. The male-to-female ratio ranges from 12:1 in France (the lowest level of female participation) to 1.6:1 in Brazil (the highest level of female participation).

In all but three countries, the differences are statistically significant. The three exceptions are Japan, Canada and Spain. In Japan, women appear to be less involved than men (0.5 percent of women compared to 2 percent of men).<sup>10</sup> In Canada, the prevalence of women (6.9 percent) is only slightly below that of men (9 percent). The proportion of the female population in Spain involved in entrepreneurship (4.2 percent) is nearly equal to

that of males (4.9 percent). The reliability of the measures for Spain needs to be assessed, but if proven to be correct, it would represent the first recorded case where the level of participation in entrepreneurship by women is on par with that of men.

From this assessment, it is clear that age and gender profiles have significant national policy implications. Increasing the level of entrepreneurial activity in many countries entails encouraging people outside the 25-44 age range to get more involved. In addition, expanding the involvement of women in entrepreneurship is critical for long-term economic growth. However, despite the significant patterns, age and gender are only part of a country's overall demographic structure. As the GEM 2000 study shows, determining what makes a country entrepreneurial involves a close examination of the population structure as a whole, its composition, changing profiles and relative expansion or contraction. The fundamental importance of such population characteristics is examined later in this report.





## Entrepreneurship and Economic Growth

The underlying assumption that entrepreneurship is a key determinant of economic growth makes intuitive sense. But despite the manifest commitment of many governments around the world to boosting entrepreneurship activity, this assumption remains largely untested. Indeed, remarkably little is known about the relationship between entrepreneurship and economic growth, including how it works, what determines its strength and the extent to which it holds for diverse countries.<sup>11</sup> Understanding this relationship is at the heart of the GEM 2000 initiative.

The GEM 1999 prevalence rate for nascent entrepreneurship had a correlation of 0.63 with 1999 measures of national economic growth and 0.57 with economic growth projections for 2000.<sup>12</sup> Both were statistically significant measures of association. One year later and with 21 countries involved, the primary question for GEM 2000 is whether the relationship still holds. The results of the tests of association between entrepreneurship activity and economic growth for GEM 2000 are presented in summary form in Table 1.

Table 1 presents three columns of correlation coefficients: (a) one for the prevalence rates for nascent firms; (b) one for new firms; and (c) one for the Total Entrepreneurial Activity (TEA) Index. The table is separated into four sections, each representing a

different group of countries. In each section, the values represent the correlation between the specific prevalence measure and (a) the actual annual change in Gross Domestic Product (GDP) adjusted for constant prices in 1999 and (b) the projected change in GDP for 2000 adjusted for constant prices. Asterisks designate whether the coefficients (i.e., relationships) are statistically significant.

The first section presents correlation scores for all 21 GEM 2000 countries. Given that none of the correlation coefficients is statistically significant, it is clear there is little relationship between the three measures of entrepreneurial activity and the actual change in 1999 GDP and the projected change in 2000 GDP. The question is whether the nature of the relationship between entrepreneurial activity and economic growth in certain GEM 2000 countries is so unique that it distorts the nature of the relationship when all countries are combined. In other words, would the relationship be more robust if the study controlled for the more unusual countries? Subsequent sections of Table 1 present the correlation coefficients between entrepreneurship activity and economic growth after controlling for the outlying effects of certain unusual national economies.

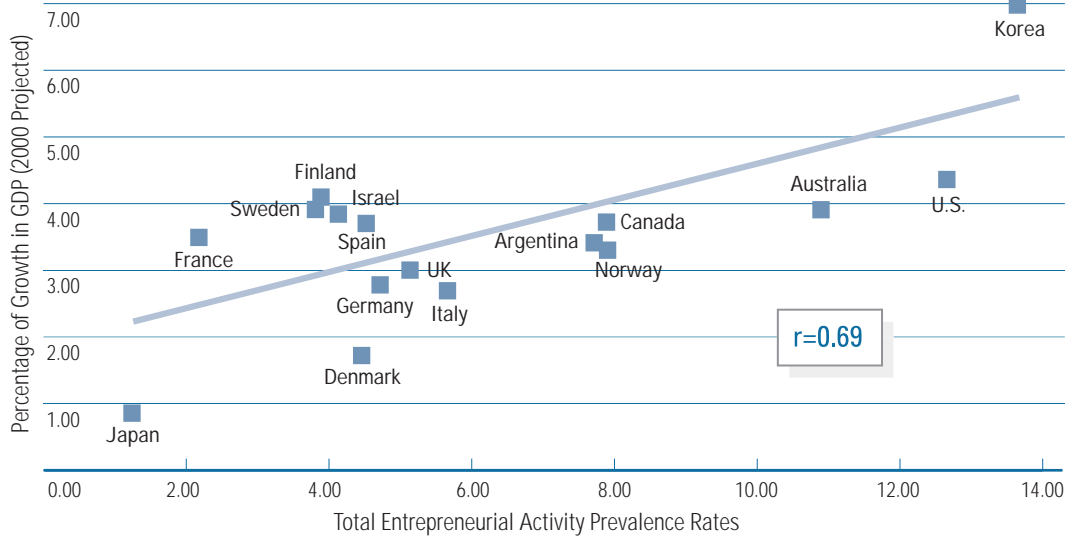
**Table 1**  
**Total Entrepreneurial Activity and National Economic Growth**

	Annual change in GDP	Prevalence of Nascent Firms (2000)	Prevalence of New Firms (2000)	Total Entrepreneurial Activity Index (2000)
All GEM 2000 Countries	1999 Actual	-.13	0.38	0.08
	2000 Projected	0.04	0.35	0.19
Exclude Import/Export Economies	1999 Actual	-.01	0.63*	0.28
	2000 Projected	0.28	0.72**	0.53*
Exclude Import/Export Economies and Developing Countries (Alpha Group)	1999 Actual	0.19	0.73*	0.51
	2000 Projected	0.40	0.81**	0.69**
G-7 Nations Only	1999 Actual	0.63	0.66	0.77*
	2000 Projected	0.77*	0.67	0.76*

\* significant at the 0.05 level (2-tailed test)

\*\* significant at the 0.01 level (2-tailed test)

**Figure 9**  
**Total Entrepreneurial Activity and Economic Growth**  
**(Alpha Group)**



The first outlier effect the study controlled for was the degree to which import/export activity dominated the national economy. To determine the relative dependence on international trade, the total values of imports and exports in 1999 were added, then divided by the 1999 GDP for each of the 21 countries.<sup>13</sup> A value greater than 100 percent meant the import/export activity was greater than the country's entire GDP, and, as such, the country's economy was too heavily dependent on international trade to be included in the GEM 2000 analysis. Three countries have a substantially higher value on this measure: Singapore (211 percent), Belgium (142 percent) and Ireland (126 percent). Canada had the next highest value at 72 percent. These three extreme cases were temporarily removed from further analysis because of their high dependence on external trade.

The second section in Table 1 presents the correlation coefficients between the respective prevalence rates and economic growth after removing Singapore, Belgium and Ireland. It is clear from the values in this section that after controlling for those economies dominated by international trade activity, the correlation between entrepreneurial activity and economic growth increases substantially. Two correlations in particular are statistically significant: the correlation between the prevalence of new firms and projected GDP for 2000 and the correlation between the TEA Index and projected GDP for 2000.

The second outlier effect the 2000 study controlled for was the degree to which the national economy was dominated by agricultural activity. Countries whose economies are dominated by agricultural activity tend to have complex, multifaceted economies with pockets of intense entrepreneurial activity found in some geographic areas or economic sectors. Without more precise measures of economic growth by geographic region or economic sector it is impossible to assess accurately the impact of entrepreneurship within these countries. To determine the relative dependence on agriculture, the total percent of the adult male population employed in the agriculture sector was determined for each GEM 2000 country.<sup>14</sup> Again, two countries were quite distinct with regard to the scope of the agricultural sectors; 58 percent of the males in India and 28 percent of the males in Brazil are engaged in the agricultural sectors; The next highest countries were Ireland, at 15 percent, and Korea and Spain, both at 10 percent. The percentage of males in agriculture was less than 10 percent in all other GEM 2000 countries. Therefore, it seemed reasonable to assume that India and Brazil were, compared to the other 16 GEM 2000 countries, distinct with regard to their high emphasis on agriculture.

The third section in Table 1 presents the correlation coefficients between the respective prevalence rates and economic growth after removing India and Brazil from the analysis. The remaining 16 countries are referred to in this report as the



“Alpha Group.” It is clear from the values in this section that after controlling for those economies dominated by agricultural activity, the correlation between entrepreneurial activity and economic growth increases substantially. Once again, the correlations between the prevalence of new firms and projected GDP for 2000 (.81) and the TEA Index and projected GDP for 2000 (0.69) are highly significant. These relationships are represented graphically in Figure 9.

These relatively large correlation measures suggest a very strong association between entrepreneurship and economic growth. In fact, if there were no other influence on national economic growth, it would be reasonable to conclude that nearly half of the difference in levels of economic growth among the countries in the Alpha Group could be explained by variations in the level of entrepreneurship activity. Unfortunately, there is insufficient data to know if the relationship will hold true over time.<sup>15</sup>

The fourth section in Table 1 presents correlations for the final group of countries. This group comprises only the G7 nations, the nucleus of GEM 1999. Although correlations with such a small number of countries should be treated with caution, the measures are obviously high. The relatively high correlation between the prevalence of nascent firms and projected economic growth (0.77) and the TEA Index and projected economic growth (0.76) are highly significant. It is possible to conclude, therefore, that the

association between entrepreneurship and economic growth is very strong among the G7 countries. If France were excluded from this group the relationship would be close to uniform. France is unusual in that it is able to maintain strong economic growth with comparatively low levels of entrepreneurial activity.

## Total Entrepreneurial Activity (TEA) Index

There are numerous ways to measure entrepreneurship activity. The TEA Index proved to be a good indicator of multiple facets of entrepreneurial activity, as demonstrated below. Table 2 shows the correlation of 10 measures of entrepreneurial activity with the TEA Index. Regardless of whether the full set of 21 countries or the reduced set of countries in the Alpha Group are considered, nine of the 10 measures are significantly correlated with the TEA Index. Strong correlations with the prevalence rates of nascent and new firms would be expected, but correlations are also very high for almost all other measures of activity, including prevalence rates of nascent firms by gender and age, prevalence rates for whether the activity is carried out independently or under corporate sponsorship, and the prevalence of growth-oriented nascent firms (i.e., those expecting 15 or more jobs five years after start-up). The correlation with the prevalence of informal investors is the lowest in the

**Table 2**  
**Correlation of Selected Entrepreneurial Activities**  
**with GEM Total Entrepreneurial Activity Index**

	All 21 GEM Countries (n=21)	Alpha Group (n=16)
Nascent Firm Prevalence Rate	0.93**	0.89**
New Firm Prevalence Rate	0.84**	0.84**
Growth-Oriented Nascent Firm Prevalence Rate	0.77**	0.77**
Informal Investor Prevalence Rate	0.51	0.66*
Independent Nascent Firm Prevalence Rate	0.93**	0.88**
Business-Sponsored Nascent Firm Prevalence Rate	0.77**	0.76**
Male Respondent Nascent Firm Prevalence Rate	0.93**	0.88**
Female Respondent Nascent Firm Prevalence Rate	0.91**	0.85**
Young Adult (18-34 yrs old) Nascent Firm Prevalence Rate	0.88**	0.81**
Mid-Career Adults (35-54 yrs old) Nascent Firm Prevalence Rate	0.94**	0.90**

\* significant at the 0.05 level (2-tailed test)

\*\* significant at the 0.01 level (2-tailed test)

table, but at 0.66 the degree of association is still statistically significant for the Alpha Group.

A vigorous entrepreneurial sector has many interrelated facets. The high correlations depicted in Table 2 suggest that all such facets occur together. In other words, it is unlikely that a substantial high technology/high-growth entrepreneurial sector will develop in the absence of broad national participation in entrepreneurship. Likewise, it is unreasonable to expect a strong informal investment community to flourish where there are relatively few people pursuing new business opportunities. Strong co-occurrence among these diverse measures indicates that the TEA Index is a good indicator of the overall level of activity related to entrepreneurship.

To determine the relative importance of the GEM 2000 measures, a detailed analysis was also conducted of the efficacy of other selective international comparative measures for explaining economic growth. Assessments were made of the degree of association between economic growth and (a) the 1999 Global Competitiveness Index, (b) the 2000 World Competitive Yearbook rankings, and (c) the 2000 Index of Economic Freedom. In each case, the resulting measures of association were substantially lower than those associated with the GEM 2000 TEA Index.<sup>16</sup> These results indicate that, although far from perfect, GEM's evolving measures of entrepreneurship hold great promise for identifying and explaining the determinants of economic growth.

more countries are added to the GEM initiative, it will become possible to provide a fuller explanation of the causal aspects of this relationship. Meanwhile, the following conclusions can be drawn.

- The level of entrepreneurial activity in a country is strongly associated with its rate of economic growth. If no other causal factors were present, about half of the difference in levels of economic growth among countries could be explained by variations in the level of entrepreneurship activity.
- Despite the high degree of association between entrepreneurship and economic growth, exceptions suggest there is no one catalyst to economic growth. Ireland, for example, has enjoyed rapid economic growth with relatively low levels of entrepreneurial activity. For many countries entrepreneurship may be a key to economic prosperity but it is not always the only key.
- As the study of the determinants of economic growth continues, alternative models may be required to consider the role of entrepreneurship in economic growth for exceptional economic conditions in certain countries, including those where external trade and agricultural sector activity have a dominant role.
- Of the two dimensions of entrepreneurship considered in this study — nascent firms and new firms — the incidence of new firms is more strongly associated with economic growth. As observed in Table 1, the correlations between the measure of prevalence in new firms and economic growth are the strongest overall. This is particularly true for the Alpha Group. Obviously these new firms would not exist if it were not for earlier start-up efforts. Nonetheless, a great deal more research needs to be conducted to better understand the circumstances and strategies that facilitate a business' transition from a nascent start-up to a thriving young enterprise.<sup>17</sup>

## Summary

Overall, GEM 2000 results replicate those of GEM 1999. The relationship between entrepreneurship and economic growth is highly significant when countries are excluded whose import/export or agricultural activity dominates the economy. Over time, and as



## What Makes a Country Entrepreneurial?

To this point, two things have been established. First, the level of entrepreneurial activity does significantly vary between countries. The highest level of activity was found to be as much as 10 times greater than the lowest level. Second, for certain groups of countries, there is a clear association between the level of entrepreneurial activity and the rate of economic growth. The correlations exceed 0.7 and are statistically significant. While a few countries have high rates of economic growth with relatively low levels of entrepreneurship, no country has high levels of entrepreneurship without high levels of economic growth. But what factors influence a country's level of entrepreneurial activity? In other words, what makes a country entrepreneurial? This question is the focus of the next stage of the GEM 2000 analysis.

The following analysis uses only the 16 countries that make up the Alpha Group. Countries heavily oriented toward international trade (Belgium, Ireland and Singapore) and agricultural activity (Brazil and India) have been excluded. As evident in the first two

columns of Table 3, the core economies of these two types of countries are highly unusual. Until more countries with economic structures similar to these are available for analysis, it will remain difficult to interpret the factors associated with variations in entrepreneurial activity for such special situations.

The Alpha Group includes all of the G7 nations. All of its members are developed countries and, except for Argentina and Israel, all belong to the Organization for Economic Co-Operation and Development (OECD). While these countries have the most sophisticated social, physical and political infrastructures in the world, there is substantial variation between them in the level of entrepreneurial activity and economic growth. For ease of analysis and interpretation, the 16 countries were grouped into Low, Medium and High levels of entrepreneurial activity (see Table 3 for a list of the nations that make up each group). As depicted in Table 3, the average TEA prevalence rate for the High group is more than two times greater than the average for the Medium group and more than five times greater than the average for the Low group.

**Table 3**  
**Types of Countries and Entrepreneurial Activity (Percent)**

	Externally Oriented	Agriculturally Oriented	Alpha Group Low	Alpha Group Medium	Alpha Group High
	Belgium Ireland Singapore	Brazil India	France Japan	Argentina Denmark Finland Germany Israel Italy Spain Sweden United Kingdom	Australia Canada Korea Norway United States
	(%)	(%)	(%)	(%)	(%)
Total Entrepreneurial Activity Prevalence Rate (2000)	1.91	11.17	1.73	4.50	10.15**
Nascent Firm Prevalence Rate (2000)	1.28	7.88	1.04	2.86	6.82**
New Firm Prevalence Rate (2000)	0.74	3.68	0.69	2.01	4.11**
Growth-Oriented Nascent Firm Prevalence Rate (2000)	0.19	0.54	0.00	0.48	0.90**
Business Angel Prevalence Rate (2000)	1.17	1.42	1.64	3.19	4.23**
Nascent Firm Prevalence Rate, Males 25-44 years old (2000)	2.90	12.48	1.45	5.07	11.38**
Nascent Firm Prevalence Rate, Females 25-44 years old (2000)	0.54	7.27	0.37	2.39	5.78**
Percent Real GDP, Constant Prices (1999)	5.36	3.64	1.51	2.45	3.52*
Percent Real GDP, Constant Prices (2000 Projected)	5.55	5.18	2.18	3.22	4.29*
Percent Employment Change (1998-1999)	2.74	2.45	0.60	2.03	1.43
Percent Employment Change (1999-2000 Projected)	5.02	2.59	1.10	1.16	1.59
Exports Plus Imports as Percentage of GDP (1999)	160.04	15.24	28.06	50.54	41.13
Percentage Men Working in Agriculture (1992-1997)	6.33	43.50	5.50	5.50	5.67

This level of variation between groups facilitates the discovery of major differences that may explain why some countries are more entrepreneurial than others.

Perhaps because entrepreneurship is so central to economic life, many factors have a systematic relationship to this activity. GEM 1999 identified six factors: Entrepreneurial Opportunity, Entrepreneurial Capacity, Infrastructure, Demography, Education and Culture. The wider range of variables and the greater number of countries included in GEM 2000 called for a reconsideration of the GEM model (Figure 3). While the individual factors and their order in the causal sequence remains robust, there is evidence suggesting the interrelationships may be different than previously assumed.

Specifically, it may no longer be appropriate to consider a nation's unique social, historical and political background as a collection of independent factors distinct from the more general National Framework Conditions. As economic life evolves within a country, it reflects the accumulation of unique cultural and historical experiences and may be related to a number of features that are interrelated. The political situation in any country at any point in time is usually a temporary compromise. To change the situation involves adjusting these interrelated features over time. Thus, it seems more appropriate to consider these basic features as reflections of an embedded, integrated economic, social and political order. Such arrangements are very influential, slow to change and difficult to modify.

For this reason, this phase of analysis focuses on three sets of factors: Demography, Economic Order and Entrepreneurial Framework Conditions. Factors of demography are fundamental features of the human population within a country, including the anticipated population growth or decline and the age structure of the population. Economic order reflects the way economic life is organized within a country, including features such as the extent of government participation in economic activity, employment, roles developed for women, education and research enterprise sponsored by the country, and other similar features. Entrepreneurial Framework Conditions are factors that, within the context of a country's

established economic order, have direct impact on some aspects of the entrepreneurial sector. The available evidence suggests all three types of factors are significant and need to be considered to develop a full understanding of the sources of variation in entrepreneurial activity. More importantly, their close examination provides the information policy makers need in order to influence the level of entrepreneurial activity.

## Demography

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The importance of age and gender has already been established. However, age and gender differences need to be considered in the context of a country's overall demographic structure. For our purposes, key dimensions of this structure include:<sup>18</sup>

- projected population growth;
- age structure (i.e., the proportion of the working population, male and female, between the ages of 25-44); and
- inward migration.

The relationships between these demographic dimensions and the TEA Index are shown in Figure 10. For comparison purposes, the averages for each factor have been standardized so that the Medium group has a value of zero. The total range for each factor also has been standardized so that the difference between the Low and High groups equals 100. Finally, the Low-Medium and Medium-High differences have been computed for each factor as a percentage of the total range. This has allowed factors based on completely different procedures and scales to be compared within the same figure. Unless otherwise noted, the patterns meet at least minimal standards for statistical significance (0.05 level).

Studying the four demographic measures presented in Figure 10, the fundamental significance of projected population growth stands out. This makes intuitive sense since an expanding population leads to an increased demand for goods and services. This escalating demand can result in greater numbers of new entrepreneurial opportunities. As depicted in Figure 10, there are marked differences between the



three groups in terms of population growth. By 2025, the average projected increase in population for the most active entrepreneurial countries (the High group) is 20 percent. Population growth during this time frame for the Medium group is estimated to be 5 percent. Those countries with the lowest levels of entrepreneurial activity are projecting no change in the size of their populations in the next 25 years.

In terms of population age structure, individuals aged 25-44, on average, account for 26 percent of the population in the High group, 24 percent in the Medium group and 22 percent in the Low group. As we have seen, those aged 25-44 are the most entrepreneurially active. It would stand to reason, therefore, that a country with a smaller proportion of its labor force in the 25-44 age range has relatively fewer individuals to start and expand new businesses. This small but consistent effect, over the long-term, can present significant challenges to any economy.

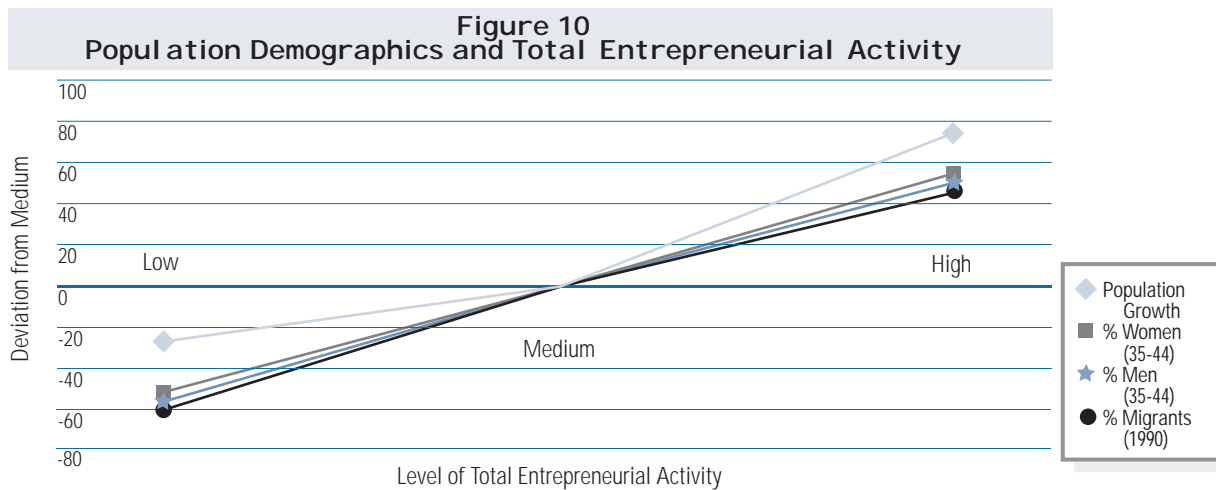
Inward migration is the third demographic dimension. Although there are observed differences between the three groups, none of the differences is statistically significant. Other evidence suggests, however, that apart from contributing to increased demands for goods and services, very new inward migrants generally are not directly or indirectly involved with nascent or new firms.<sup>19</sup>

## Economic Order

Analyzing the economic order of each of the 21 countries, along with the historical, social and cultural context in which each is rooted, is beyond the scope of GEM 2000. It can, however, identify those components of an established economic order that have the greatest impact on entrepreneurship. Of course, the components may be interrelated and, as such, cannot be fully understood in isolation. However, by explicating each factor, GEM 2000 provides policy makers with a better understanding of how the factors impact the level of entrepreneurial activity and how policy influences the factors over time. Six factors have been identified for GEM 2000: Government Presence, Taxation, Income Differential, Labor Market, Education and Participation of Women.

## Government Presence

Popular wisdom suggests the best thing a government can do to promote entrepreneurship is to create a context in which entrepreneurship and other forms of individual initiative can flourish and then stay out of the way. This line of reasoning suggests that government should restrict itself to (a) creating a robust legal system that underpins stable property and patent rights, (b) providing an adequate infrastructure and (c) creating a stable economic climate. Beyond this, a





government can have the greatest impact on entrepreneurship by minimizing both the proportion of state-controlled activities and the regulatory burden upon firms.

GEM 2000 uses two measures to assess the relative presence of government in an economy:<sup>20</sup> (a) total tax revenues as a percentage of GDP and (b) the measure developed for the 1999 Global Competitiveness Report designed to capture the presence of the state in the overall economy. The patterns are the same for both measures. First, tax revenue as a percent of GDP declines as you move from the Low group (39 percent) to the Medium (33 percent) and High (21 percent) groups. Second, the role of the state in the overall economy is substantially less in countries with high levels of entrepreneurial activity; there is no major difference between the countries with low and medium levels of entrepreneurial activity. Considered together, these patterns suggest that in countries with more entrepreneurial activity, the governments play a relatively limited role in the economy.

### Taxation

The role of taxation in promoting or hindering entrepreneurship is a hotly debated issue. Many advocates of enterprise argue that taxation is a critical issue for at least two reasons. First, they argue that high tax rates deter entrepreneurs from building new businesses only to see a significant proportion of the wealth they create absorbed by taxes. Second, they argue taxes present an undue burden on growing enterprises that could better use the capital required to pay taxes to continue expanding their operations, ensuring long-term survivability and generating new jobs.

When the relationship between the average TEA Index and two measures of taxation,<sup>21</sup> corporate tax and maximum personal income tax rates, are examined, the differences between the groups of countries are striking. The average corporate tax, as a percentage of pre-tax profits, is substantially higher for

the Low group (40 percent) as compared to the Medium and High groups (both at 36 percent). The maximum marginal personal income tax rate decreases from 50 percent in the Low group to 45 percent in the Medium group and 36 percent in the High group. Once again, less government presence in the economy and a reduced tax burden for both firms and individuals are associated with significantly higher levels of entrepreneurial activity.

### Income Inequality

This issue, like that of taxation, is highly contentious. The two are linked since governments can strive to minimize income differentials within society through a redistributive tax system. GEM 1999, in its initial attempt to identify the cultural values associated with entrepreneurship, suggested that one of the hallmarks of an entrepreneurial culture was *“tolerance of income disparity and respect for those who accumulate wealth through personal endeavor.”*

Income inequality can be measured by dividing the proportion of total income (i.e., consumption) controlled by the wealthiest 10 percent of a population by the proportion of total income controlled by the poorest 10 percent. Measures such as this are developed infrequently, but for GEM 2000, data from 1990 to 1997 are publicly available for all Alpha Group countries except Argentina.<sup>22</sup>

The relationship of income differentials to TEA prevalence rates is shown in Figure 11. The relationship is unequivocal. The correlation of 0.6, which is statistically significant, suggests that if this were the only predictive variable for entrepreneurial activity it would explain more than one-third of the variation between countries. The direction of the causal relationship is, however, problematic. On the one hand, higher levels of income inequality may provide higher levels of demand for goods and services, as well as a pool of financial resources for private investments in new firms. On the other hand,





entrepreneurship, while it creates wealth for society in the form of economic growth and employment, also creates substantial personal wealth for the individuals who succeed. It is probable that higher rates of nascent and new firms generate more wealthy individuals in a country.

**Labor Market: Flexibility and Non-Wage Labor Costs**

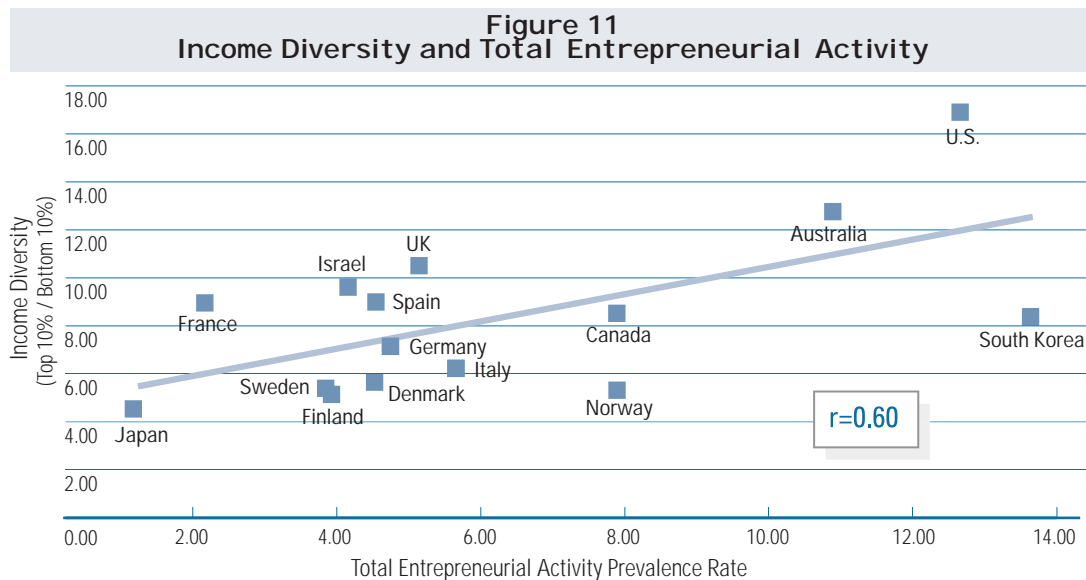
Experts in many of the GEM 2000 countries highlight high costs of employment (i.e., wage and non-wage costs) and rigidities in the labor market as serious deterrents to new, growing firms trying to match their workforce to the changing needs of the business. What is popularly referred to as “the ability to hire and fire” (labor market flexibility) and the potentially onerous employee “non-wage costs” are deemed to be two of the more significant factors. A measure of labor market flexibility was developed as part of the 1999 Global Competitiveness Report.<sup>23</sup> Market, non-wage labor costs were measured by calculating the total social costs of employment (e.g. social security, insurance, health care and pensions) as a percentage of GDP.

The relationships between these measures and entrepreneurial activity among the High, Medium and Low groups were considered. Once again, the patterns, which are statistically significant, are striking. There is considerably greater labor market flexibility in

countries with higher levels of entrepreneurial activity. The increase in the labor market flexibility index between the Low and Medium groups is equal to the increase between the Medium and High groups. Moreover, the social costs of employment borne by the employer as a percentage of GDP drops from an average of 37 percent for the Low group to 22 percent for the Medium group and 12 percent for the High group. There is little question that a more flexible labor market and lower social costs of employment are associated with significantly higher levels of national entrepreneurial activity.

**Education**

GEM 1999 identified a strong link between post-secondary (post high school) educational opportunities and entrepreneurship. The level of post-secondary educational participation in a country was strongly related to its observed level of entrepreneurial activity. For GEM 2000, this relationship continues to be strong. Participation in educational programs is calculated by dividing the total number of students participating at each education level by the total number of age-eligible individuals. At the primary school level, for instance, the ratio is typically close to 100 percent for all developed countries; all those eligible are actually enrolled in school. However, as you move further up the educational program scale, the ratio becomes lower and there is more country-to-country variation.



**Figure 12**  
**Post-Secondary Education and Total Entrepreneurial Activity**

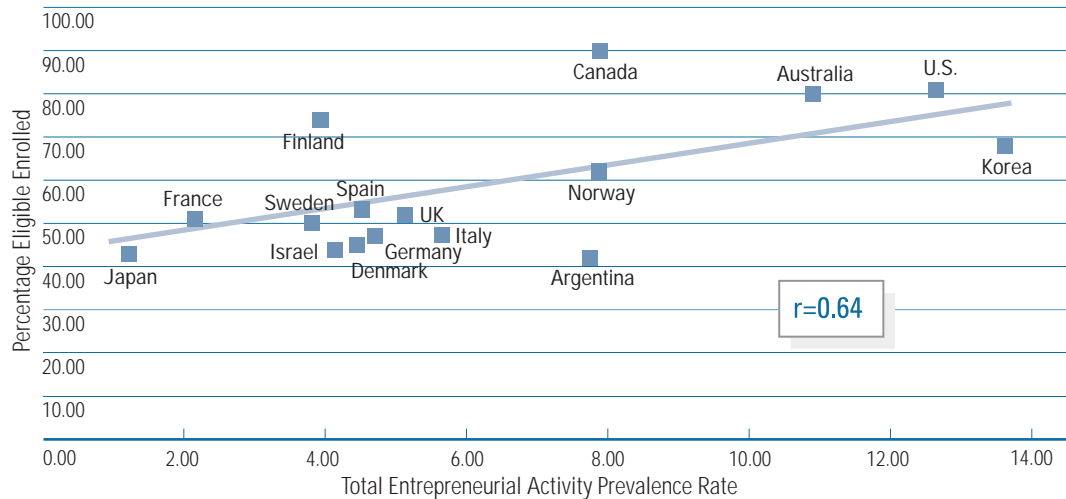


Figure 12 presents the ratio of enrolled students to all individuals age-eligible for any post-secondary educational program (e.g., trade school, vocational school, college, university, professional or graduate training) in relationship to the TEA Index. A statistically significant correlation of 0.64 suggests a strong relationship. The relationship is so strong that if it were the only factor used to predict entrepreneurial activity, it would explain more than 40 percent of the variation between countries.

The educational attainment of adult survey respondents was available for 18 of the 21 GEM 2000 countries — almost 36,000 individuals. Although educational systems are quite different across these countries, it is possible to classify educational attainment into four categories: (a) no formal education, (b) secondary school (high school) not completed, (c) secondary school completed and (d) any post-secondary school experience, including vocational or technical training, college, university or graduate program.

TEA prevalence rates are related to educational attainment by age and gender in Figure 13. There are three sets of horizontal bars. The sets are designated

by age group, those 18-34 years old, those 35-54 years old and those 55 years and older. The right side of each set of horizontal bars is for men, the left side is for women. There are four horizontal bars in each set. The top bar represents those with post-secondary school experience. The next bar is for those with a secondary school degree. The third is for those with some education but no secondary school degree, and the bottom is for those with no formal education. Except for women 35-54 years old and 55 plus years old, the biggest jump in participation comes when those with no schooling are compared with those who have any level of formal education. Particularly among those 18-34 years old, the comparison between the prevalence rates for those with no schooling and those with any level of schooling is similar for both men and women.

Since the proportion of individuals with different levels of education varies dramatically across countries, it is useful to consider the educational attainment of the 1,935 GEM 2000 respondents who are entrepreneurially active and for whom the level of educational attainment is known. Forty percent of the entrepreneurially active respondents report some



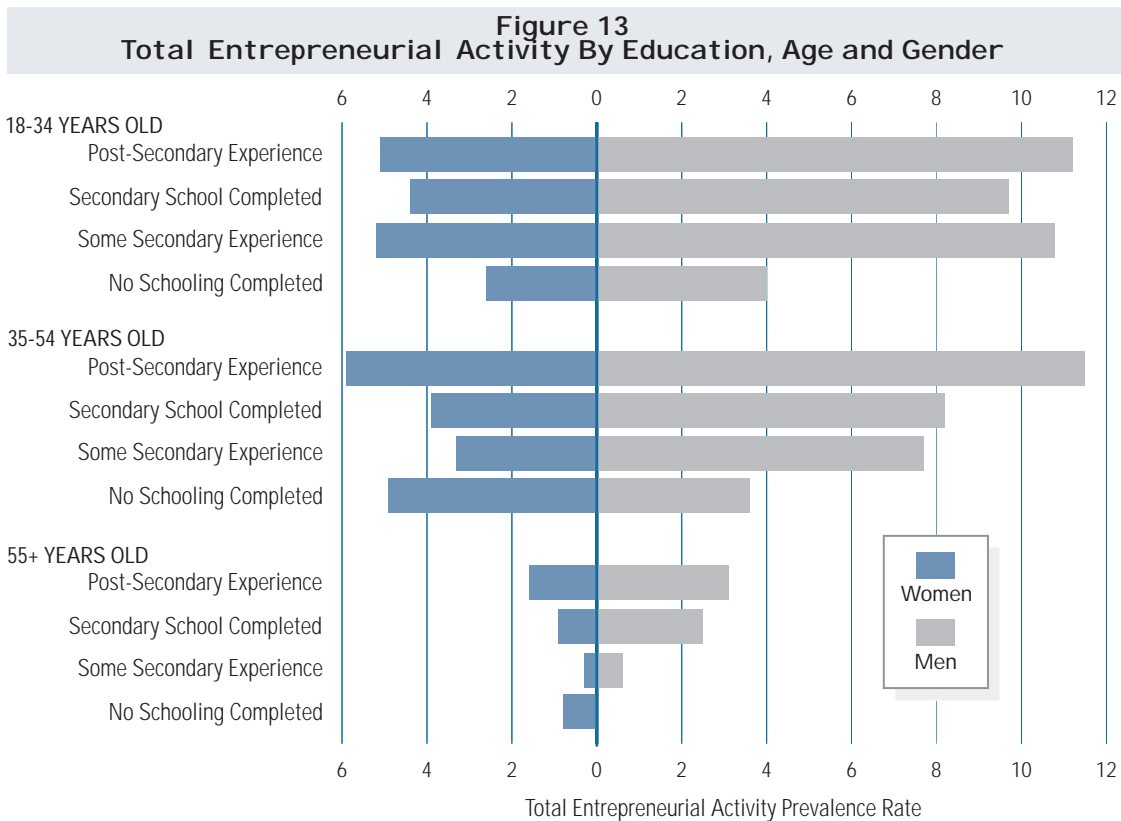
post-secondary school experience, while nearly 33 percent have a secondary school degree; 20 percent have attended school but not finished the post-secondary programs; and only 1 in 50 (2 percent) report no formal education. It is interesting to note that in those countries where the data are available — Canada and the United States — those reporting graduate educational experience are slightly less likely to pursue an entrepreneurial opportunity than those completing a college or university degree program.

Several general features of the relationship between education and entrepreneurship are clear. First, the more extensive the national post-secondary education system, the greater the overall national level of participation in entrepreneurship. This may reflect, in part, a greater national commitment to an advanced education, scientific and research infrastructure. Second, the biggest gains may come from broadening post-secondary institutions and educational programs to provide opportunities for the largest number of individuals. Third, a substantial proportion of those active in entrepreneurship are from all levels of education. This strongly supports the idea of incorporating specific entrepreneurship curricula at all levels of the education system.

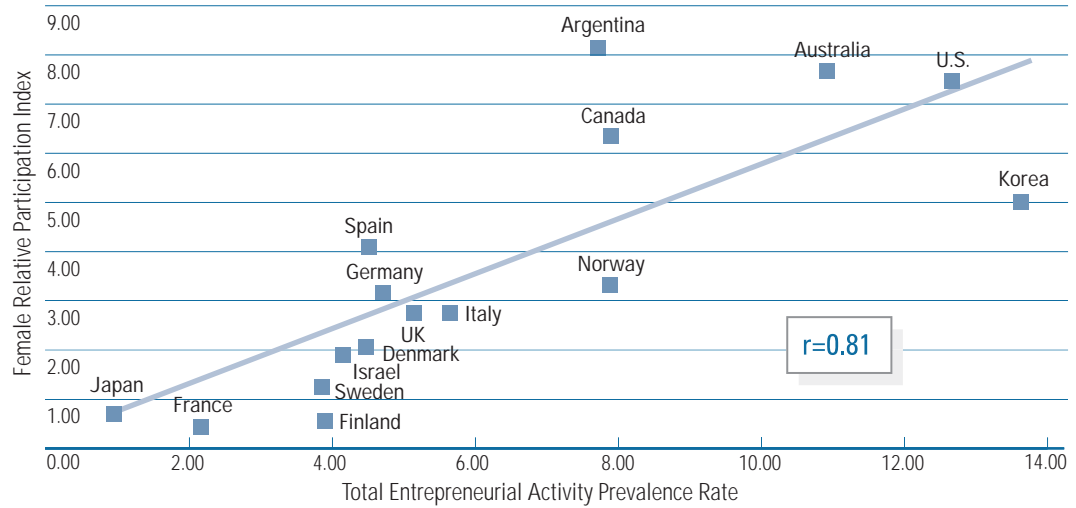
### Participation of Women

The GEM 2000 analysis provides new understanding of the participation of women in entrepreneurship. In cross-national comparisons, two dimensions of how women influence the level of entrepreneurial activity were explored. First, as a baseline, the degree to which women are actively engaged in the labor force was assessed. Their rate of participation compared to men ranges from 60-90 percent across the Alpha Group countries.<sup>24</sup> Second, the proportion of the female population directly involved in the creation and management of new businesses was measured. As previously described in Figure 7, this measure also varies substantially across the GEM 2000 countries.

Finally, to assess the relative impact that women have on their host economies, these two components were combined to form a new index, which indicates female entrepreneurial participation relative to their general participation in the labor force. The index is computed by dividing the female entrepreneurial prevalence rate by the female-to-male labor force participation ratio. This adjustment reduces the values for countries where the labor force participation of women is high but their participation in entrepreneurship



**Figure 14**  
**Female Participation and National Entrepreneurial Activity**



is low, such as in Sweden, Finland and Denmark. On the other hand, it increases the value for countries where the participation of women in the labor force is low but their participation in entrepreneurship, relatively speaking, is high, as in Korea.

The startling results from the comparison of this index to the national TEA prevalence rates for each of the Alpha Group countries are presented in Figure 14. The statistically significant correlation of 0.8 suggests that, if considered as the only independent factor affecting national entrepreneurial activity, the relative level at which women participate in entrepreneurship would explain nearly 65 percent of the difference between countries. Thus, it is obvious that countries that do not fully encourage women to engage in the creation and growth of new businesses may not be realizing their fullest entrepreneurial potential.

## Entrepreneurial Framework Conditions

The two sets of factors addressed so far, demography and economic order, represent the general context in which entrepreneurship may occur. However, the GEM model also identifies a number of dimensions that are considered to have a more immediate and direct impact on the level of entrepreneurial activity. These additional items, included under the headings Entrepreneurial Framework Conditions, Entrepreneurial Opportunity and Entrepreneurial Capacity in the GEM model (Figure 3), represent areas of interest to policy makers trying to encourage entrepreneurship. Rather than consider all of the factors identified in the model, this report focuses on the five that appear to have the greatest significance: Entrepreneurial Opportunity, Entrepreneurial Capacity, Social Legitimacy, Finance and Information Technology.



### Entrepreneurial Opportunity

Entrepreneurship springs from opportunity, or at least the entrepreneur's perception that there is an opportunity worth exploiting. While GEM does not assess the accuracy or validity of this perception, it does measure the extent to which people "see" entrepreneurial opportunities within their national setting. Perceptions of opportunity are captured in both the adult population survey for 43,000 respondents and the questionnaire completed by the national experts. In the survey, respondents were asked if they believe that *"In the next six months good opportunities will have developed for starting a business in the area where you live."* This was asked of all respondents in the 10 GEM 1999 countries and the 21 GEM 2000 countries. The assessment of national experts is based upon five items in the questionnaires completed by 788 experts around the world — approximately three dozen per country. Examples of these items include, *"In my country one sees more good opportunities than people able to take advantage of them,"* and *"In my country opportunities to create a truly high-growth firm are rare."* Responses to the five items were then combined to create an index of perceived opportunity.

For the Alpha Group countries observed in 2000, there is a significant difference between the Low and Medium groups but little difference between the Medium and High groups for both the adult population survey and the expert assessments. The perception of opportunity as recorded for the 10 countries in GEM 1999, however, has a very powerful relationship with the level of entrepreneurial activity in these same 10 countries in the year 2000. Both of the comparisons across the Low, Medium and High groups and the 0.93 correlation with the TEA prevalence for the same 10 countries in 2000 are statistically significant. This suggests that in countries where there is a widespread perception of opportunity, there will be a significantly higher level of entrepreneurial activity in the next 16-18 months. But how does a society develop the capacity of its people to recognize and pursue entrepreneurial opportunities?

### Entrepreneurial Capacity

The perception of opportunity is a necessary but insufficient condition for entrepreneurship. The

emergence of entrepreneurial activity requires other elements to be present. As the GEM model illustrates, a person must also possess the capacity (motivation and skill) to take advantage of the opportunity through the creation of a new firm. Entrepreneurship therefore occurs at the intersection of an individual's perception of an opportunity and the motivation and skill to pursue that opportunity. It is possible to imagine a society quite rich in perceived opportunity but impoverished in terms of actual entrepreneurial activity because few people are motivated or trained to take advantage of the opportunities.

Two measures of Entrepreneurial Capacity were developed from the national expert interviews. The first is a five-item index related to expert judgments about the skill level needed to start new firms. Examples include, *"In my country many people have experience in starting new businesses,"* and *"In my country many people can react quickly to good opportunities for a new business."* A second measure assessed the national experts' opinion about the adequacy of their country's education systems for training aspiring and practicing entrepreneurs at all levels. From the discussion about education in the previous section, it is clear that graduates at all levels of the educational system make up a significant number of the people involved in entrepreneurial activity.

The experts were also asked a variety of questions about the quality and availability of specific entrepreneurship instruction at different educational levels. Typical items included, *"In my country, teaching in primary and secondary education gives adequate attention to entrepreneurship and new firm creation,"* and *"In my country, colleges and universities have enough courses and programs on entrepreneurship."*

When considered across the three groups of countries, the patterns for the two indices are identical, with a statistically significant difference between the Low and Medium groups and a modest difference between the Medium and High groups. These results suggest that lower levels of entrepreneurial activity are present where there are major shortages of the skills necessary to convert perceived opportunities into market realities.

## Social Legitimacy

Though anchored in perceived opportunity, entrepreneurship is realized through the application of entrepreneurial skills and a high level of personal motivation. The extent to which individuals feel motivated to pursue entrepreneurial opportunities will, in large part, be reflected in their belief that entrepreneurship is socially acceptable and entrepreneurs themselves are respected members of the community. The notion of social legitimacy was measured with both the adult population survey and the interviews with the national experts.

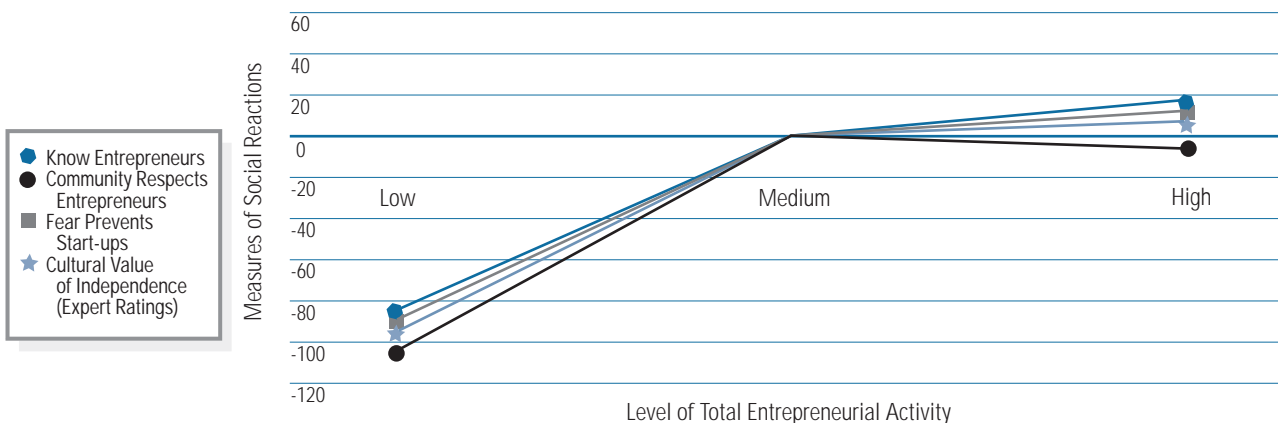
The adult survey included the following four items: (a) the proportion of recently known entrepreneurs; (b) respect in the community for those starting new firms; (c) the extent to which fear of failure acts as a deterrent to starting a new firm; and (d) the degree to which the society resents successful entrepreneurs who have become wealthy. Data from the national experts were used to develop a measure of the extent to which society values independence. Typical items were, "In my country, a high value is placed on self-sufficiency, autonomy, individualism, and personal initiative," and "In my country, people prefer to work for well established organizations rather than new firms." The results for these measures are presented in Figure 15 across the three levels of total entrepreneurial activity.

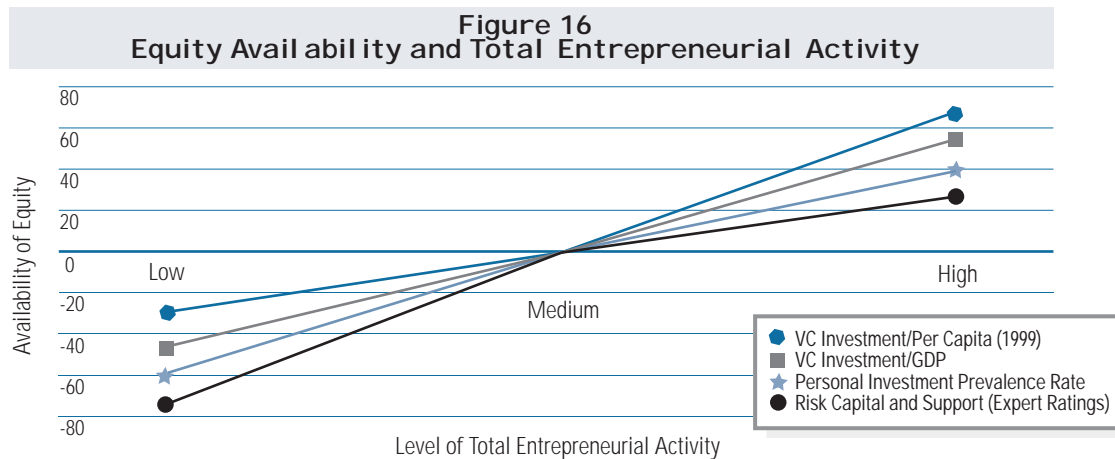
The pattern in Figure 15 reveals a major gap between the Low and Medium groups but little difference between the Medium and High groups. One item was derived from a question in the adult population survey that assessed the degree of agreement with the statement, "People you know resent those who make a lot of money from starting a business." Though not shown in Figure 15, the pattern for this measure suggests that in countries with a larger proportion of individuals involved in entrepreneurship, ordinary people are more likely to resent wealthy entrepreneurs.

## Finance

The availability of finance, particularly for the earliest stages of new venture development, is a hot topic within entrepreneurship circles. National experts around the world consider problems with financing one of the four major issues hindering entrepreneurship in their countries. Four measures were developed for GEM 2000 to assess the significance of this issue. The first was a measure of the proportion of respondents to the adult population survey who claimed they had provided financial assistance to others starting new firms. The second used a multi-item index that captured the views of the national experts on the availability of risk capital from private investors and venture capital firms and support in preparing

**Figure 15**  
Social Reaction to Entrepreneurship and  
Total Entrepreneurial Activity





companies for an IPO. Typical items included, “In my country, venture capitalists are an important source of private support for new and growing firms,” and “In my country, initial public offerings (IPOs) are an important source of equity for new and growing firms.” The third measure included the total amount of venture capital invested in start-up and new firms (classic venture capital investments) as a percentage of national GDP in 1999 and, as a fourth measure, the 1999 classic venture capital investments on a per capita basis.

The relationship between these four components of early-stage funding and entrepreneurial activity is presented in Figure 16. The patterns are consistent across all four items. The availability of early-stage financing, either from informal sources such as private individuals or formal sources such as venture capital funds, is greater among countries that have higher levels of entrepreneurial activity. Differences between the Low and Medium groups are as great as the differences between the Medium and High groups. There appears to be no ambiguity about the relationship between funding and the level of entrepreneurial activity; investors seek high quality investment opportunities and the better opportunities are always where the level of entrepreneurial activity is the greatest. However, there are differences in the roles and impact between formal venture capital and the more informal private funding.

**Formal Venture Capital:** In many countries much of the debate has revolved around the dedication of venture capital funds to early-stage investments. Critics argue that the phrase “venture capital” itself is something of a misnomer because in some nations —

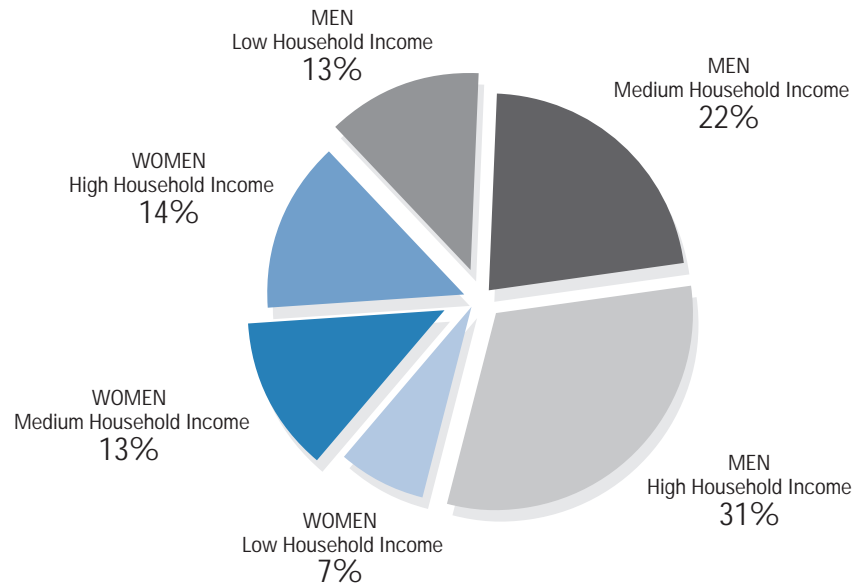
especially in Europe — a substantial proportion of so-called venture capital is used to finance acquisitions and leveraged buyouts of more mature companies. The difference among nations is dramatic. In 1999, for instance, 75 percent of all United Kingdom venture capital was used to finance buyouts compared to only 4 percent in the United States and none in Israel. This is a vital issue in the debate about whether there is sufficient risk capital available — sometimes called “classic venture capital” — to finance early-stage and expansion-stage ventures.

To assess the validity of this argument and to shed new insights into the role of formal venture capital in the entrepreneurship process, GEM 2000 assembled aggregate data on venture capital investments for as many countries as possible. This unique international comparison adds insight into where the venture capital investments are going and what role those investments are playing in advancing entrepreneurship. A special report beginning on page 48 provides a detailed summary on this new feature of GEM 2000. The findings are highlighted below.

- The amount of classic venture capital invested in 1999 ranged from 0.52 percent of GDP in the United States to 0.022 percent in Japan.
- The average amount invested per company ranged from a little more than \$13 million in the United States to less than \$500,000 in Finland and Korea.
- Venture capital is playing a crucial role in building the new economy with significant investments in the information technology sectors of many countries.



**Figure 17**  
**Informal Investors by Gender and Household Income**



- There are strong significant correlations between venture capital investments and the entrepreneurial framework conditions of the GEM model. Venture capital invested is strongly related to entrepreneurial opportunity, entrepreneurial capacity and motivation. It also strongly correlates with high-growth start-ups, or the proportion of start-ups expecting to create at least 15 jobs within the first five years.
- In many countries venture capital is playing an increasingly important role, although the United States eclipses every other GEM 2000 nation. The scale of venture capital activity, both inside the United States and the investments of U.S. funds working overseas, could be said to constitute a core competitive advantage for the United States in the high-growth entrepreneurship arena.

**Private Investors:** Like formal venture capital, the role and availability of the informal, private funding is a topic of considerable importance. The adult population surveys completed for GEM 2000 included questions on the extent to which adults provided others with funds to start, build and grow nascent and new firms.<sup>25</sup> The correlation of the prevalence of informal investors with the TEA Index was about 0.6 for the Alpha Group. However, it is of some importance to get

a better idea of just who is providing and who is receiving these funds.

Eight hundred informal investors completed the GEM 2000 adult population interviews. Exactly half (50 percent) reported providing personal funds to family members or other relatives. More than a third (37 percent) invested their funds with work colleagues, neighbors or friends. The remainder reported financing strangers (9 percent) or those under another relationship (4 percent). Clearly, informal funds are broadly distributed through multiple social networks that develop in all countries.

It is obvious that those with more money have the potential to make more informal, personal investments. It was important therefore to determine which respondents to the adult population survey would have the greater potential for a personal investment. Information on household or personal annual income was available for respondents in 16 of the 21 countries — almost 27,000 individuals participating in the adult population surveys. Respondents in each country were divided into approximately equal thirds and labeled as Low, Medium and High income. There are, of course, major differences across countries in price levels and





standards of living, so that, for example, household incomes in the upper third in India or Brazil may be in the lower half when compared with European countries.

Relative personal or household income has a major impact on provision of personal funds to start-ups. About 1 in 20 (or 5 percent) of those in the High group, based on the relative income distribution, report a recent informal investment, compared to about 3 percent (1 in 33) for the Medium group and 2 percent (1 in 50) in the Low group. Once again women play a major role in providing informal financial support. Figure 17 presents the nature of these 828 informal investors from 16 countries, by gender and relative income. Approximately two-thirds are men and one-third women; almost half (45 percent) are from the upper-third in the income distribution in their respective countries.

**Total Financial Support:** The relative role of formal venture capital and the informal financial contributions to those starting nascent firms is quite different. For 13 of the 21 GEM 2000 countries, it was possible to use the prevalence of informal investors and their investment amounts to estimate total contributions for those 18 years of age and older

in each country.<sup>26</sup> The analysis excluded Brazil and India<sup>27</sup> where the prevalence rates for informal investments were suspiciously low and those countries where less than half of the informal investors provided estimates of their total investments over the past three years (Belgium, France, Ireland, Italy, Japan and Spain).

An estimate of the total funds provided to nascent and new firms by formal venture capital investments and informal personal contributions is provided in Table 4. All figures have been adjusted to U.S. dollars as of the exchange rates on July 27, 2000. The average annual informal investment, the fourth column, ranges from \$2,050 for Finland to more than \$11,000 for Singapore. There were, however, only 22 respondents in Singapore, and it is unlikely this is a stable estimate. Multiplying the annual estimate by the percentage of informal investors and by the total number of persons 18 years of age and older in 1999 provides an estimate of the total informal funding for each country (column 5). The total of both venture capital and personal funds is provided in millions of U.S. dollars in column 6, the percentage from informal sources in column 7, and the average per person 18 years of age and older in column 8.<sup>28</sup>

**Table 4**  
**Total Start-Up Support, Formal Venture Capital and Informal Investments**

Country	Total Formal VC Classic (1999) (U.S.\$ 1,000,000)	Prevalence of Informal Investors (18 Years and Older, 2000) (%)	Average Annual Informal Investment (1997-2000) (U.S.\$)	Total Informal for Country (18 Years and Older) (U.S.\$ 1,000,000)	Total All Nascent, New Firm Financial Support (U.S.\$ 1,000,000)	Percentage from Informal Sources (%)	Average Total per Person (18 Years and Older) (U.S.\$)
Korea	890	5.5	8,966	16,939	17,828	95	519
U.S.	45,932	7.0	3,827	54,333	100,265	54	494
Australia	288	2.6	7,596	2,803	3,091	91	218
Canada	1,489	2.7	5,273	3,373	4,863	69	205
Norway	96	5.1	3,770	656	752	87	220
Argentina	n/a	2.5	2,237	1,383	n/a	n/a	n/a
UK	1,895	3.1	8,888	12,610	14,504	87	317
Germany	2,024	3.9	4,605	11,979	14,003	86	210
Denmark	75	4.1	6,806	1,165	1,241	94	297
Israel	432	3.7	4,576	651	1,083	60	282
Finland	106	3.6	2,050	269	402	74	100
Sweden	261	2.5	3,574	535	797	67	133
Singapore	145	1.3	11,332	458	604	76	194

Even though these estimates are subject to possible errors, the results are striking. Billions of dollars are involved each year: \$100 billion in the United States, \$18 billion in Korea, and \$14 billion in Germany and the United Kingdom. This represents a major infusion of economic resources into nascent and new firms in all countries, a great deal of which reflects people's personal decisions. Informal funding provides from 54-95 percent of the start-up financial support in the GEM 2000 countries. The low figure of 54 percent for the United States reflects the unusually high level of classic venture capital support in 1999.

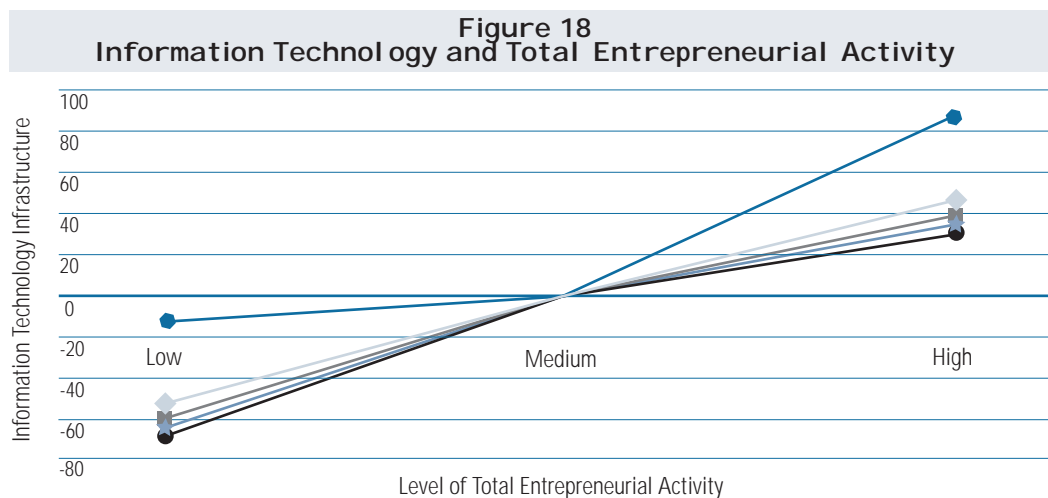
It is clear that both informal channels of funding and formal risk equity are significant and important for a strong national entrepreneurial sector. Each provides support for a different category of nascent and new firms. The largest proportion of financial support, however, comes from informal personal investments. The exact arrangements in each country probably reflect the social relations among those starting new firms and their family, friends, work colleagues and acquaintances. There is again, however, a question of causality. Does the presence of a substantial number of nascent and new firms create investment opportunities, or does the existence of funds, both private and institutional, for early-stage investment spur new venture creation?

between the information technology infrastructure and the level of entrepreneurial activity. Five measures related to different aspects of information technology are compared across the three groups of countries in Figure 18.<sup>29</sup> Measures include (a) the aggregate national computer power adjusted for the GDP (in 1999), (b) the percentage of the population with access to the Internet (in 2000), (c) the number of Internet hosts per 1000 persons (in 1999), (d) the number of personal computers per 1000 persons (in 1998) and (e) total telecommunications investment as a percentage of GDP (for 1995-1997). In Figure 18, they each reflect the same pattern across countries with different levels of entrepreneurial activity. Only the national aggregate computer power and total telecommunications investment as a percentage of GDP are statistically significant.

Despite the consistency of these results, once again, there is the question regarding causality. It is quite likely that in countries where entrepreneurial activity is an accepted feature of the economic order, new firms emerge to enhance the information technology infrastructure. In a privatized, market-driven telecommunications industry, all of these features could result from entrepreneurial efforts to take advantage of new business opportunities. However, without annual measures of entrepreneurial activity and attention to the sectors in which nascent firms are being created, there is no way to determine causality.

### Information Technology

The recent surge of Internet firms has substantially increased interest in the relationship



## National Comparisons

National comparisons of the 21 GEM 2000 countries are available from two sources. First, there is the systematic comparison of comments made by the three dozen national experts interviewed in each of the 21 countries. Second, summaries are provided of each country's situation based upon these interviews, the national team's assessment of the situation and detailed knowledge of their own country. Each summary provides unique and detailed information about the GEM 2000 countries.

### Summary of Expert Analysis

One of GEM's unique features is its combination of a vast array of standardized data (e.g., adult population surveys, cross-national statistics, etc.) and the intense country-by-country fieldwork undertaken by 21 national teams. Each team, chosen for its expertise in entrepreneurship and typically comprising three to four individuals, conducted in-depth face-to-face interviews with selected experts in their country. Each expert was chosen because of his or her particular knowledge of at least one of the nine entrepreneurial framework conditions in the GEM model (Figure 3).

The interviews conducted for GEM 2000 constitute a rich portrayal of the major entrepreneurial issues in each country and a unique basis for making intercountry comparisons. Summaries of all these interviews have been assembled around two important indicators: incidence of issues and the most critical issues.

### Incidence of Issues

All the issues raised during interviews have been classified and a count made of how often they were mentioned. The results are presented in Table 5. Here the countries are listed in rank order by the measured level of total entrepreneurial activity. The nine entrepreneurial framework conditions are ranked, from left to right, on the basis of the frequency with which an issue was raised. For each country the percentage of all comments in each issue category was calculated and the average percentage across all 21 countries provided for each of the entrepreneurial framework conditions. It is therefore easy to see at a glance (a) the incidence that an issue was raised by country and (b) how this compares with other countries and the overall average.

**Table 5**  
**Emphasis on Entrepreneurial Framework Conditions**  
(Percentage of Comments in Each Category)

Country	Government Policies	Education and Training	Financial Support	Cultural and Social Issues	Research and Development Transfer	Government Programs	Commercial Professional Infrastructure	Access to Physical Infrastructure	Internal Market Openness
Brazil	17	12	14	13	12	11	7	7	7
Korea	7	18	22	11	8	11	8	4	12
U.S.	16	15	19	15	9	7	8	5	5
Australia	22	23	15	23	7	5	1	2	3
Canada	28	13	31	22	2	—	2	—	3
Argentina	23	11	19	27	9	4	2	1	4
Norway	21	16	24	11	12	6	8	1	2
India	17	16	12	11	11	8	9	10	6
Italy	13	12	16	13	13	11	7	8	8
UK	8	36	10	30	6	4	1	6	—
Germany	17	16	17	13	10	10	10	5	3
Spain	18	16	16	14	10	8	6	8	3
Denmark	6	29	19	14	4	27	1	—	—
Israel	42	31	11	6	11	—	—	—	—
Sweden	20	18	14	19	7	5	6	6	6
Belgium	24	13	16	14	13	6	6	5	3
France	13	13	23	16	7	15	6	4	3
Singapore	21	18	14	24	3	0	7	12	1
Japan	8	16	17	16	9	12	10	6	7
Ireland	13	14	14	13	10	11	4	12	6
Average of All	18	18	17	16	9	8	5	5	4

**Table 6**  
**Most Important Issues Derived from Experts**

	Most Often Mentioned	Second Most Often	Third Most Often
Brazil	Government Policy	Education and Training	Finance
Korea	Government Policy	Finance	Education and Training
United States	Cultural, Social Norms	Finance	Education and Training
Australia	Education and Training	Cultural, Social Norms	Government Policy
Norway	Education and Training	Cultural, Social Norms	Government Policy
Canada	Government Policy	Finance	Cultural, Social Norms
Argentina	Cultural, Social Norms	Finance	Government Policy
India	Government Policy	Education and Training	Cultural, Social Norms
Italy	Education and Training	Government Policy	Cultural, Social Norms
United Kingdom	Education and Training	Cultural, Social Norms	Government Policy
Germany	Government Policy	Finance	Cultural, Social Norms
Denmark	Education and Training	Government Programs	Finance
Spain	Cultural, Social Norms	Finance	Government Policy
Israel	Government Policy	Education and Training	Finance
Finland	Cultural, Social Norms	Government Policy	Education and Training
Sweden	Government Policy	Cultural, Social Norms	Education and Training
Belgium	Cultural, Social Norms	Government Policy	Finance
France	Cultural, Social Norms	Finance	Education and Training
Singapore	Cultural, Social Norms	Education and Training	Government Policy
Japan	Cultural, Social Norms	Finance	Government Policy
Ireland	Government Policy	Finance	Cultural, Social Norms

## The Critical Issues

At the end of each interview experts were asked a simple question: *“What are the three most critical issues for entrepreneurship in your country?”* The number of times each of the nine topics was mentioned was used to determine the emphasis among experts within each country. The results are presented in Table 6, showing the rank order of the top three topics for each country.

## Pattern of Emphasis

Across all 21 countries four topics account for two-thirds of the total mentions: cultural and social values, education and training, finance and government policies (as distinct from government programs geared to entrepreneurship). Interestingly, although finance is always in the top group it is rarely the dominant issue. It is also notable that in those countries with lower levels of entrepreneurial activity a relatively greater emphasis is placed on entrepreneurship-specific government programs. There is no clear pattern related to the level of entrepreneurial activity among the other

eight topics. The nine entrepreneurial framework conditions appear to capture almost all of the issues raised, with only 10 percent of the comments categorized as “other.”

One can see immediately how the major issues vary by country. For example, the critical issue in the United Kingdom is education and training, followed by cultural and social norms. In Israel, there is a strong emphasis on government policies and education and training but virtually no emphasis (as shown in Table 5) on any of the four least-emphasized entrepreneurial framework conditions. Ireland and Singapore give above-average emphasis to access to physical infrastructure, while Japan and Germany show clear concern about the presence of an appropriate commercial and professional infrastructure for entrepreneurship.

It is against this backdrop that the national summaries can be considered. Each summary has been prepared by the respective national team and is intended to provide an overview of unique national features as well as key issues for encouraging entrepreneurship.



## National Team Summaries

### ARGENTINA

#### Level of Entrepreneurial Activity

- The level of entrepreneurial activity among the adult population in Argentina is among the highest in the middle group of GEM 2000 countries — 7.8 percent.
- In Argentina, 1 in 50 individuals makes private investments in new start-up businesses, which is the average for all GEM 2000 countries.
- The entrepreneurial activity rate of women is half the rate of men, slightly above the average for all countries considered.

#### Unique National Features

- Argentina, rich in natural resources, benefits from a highly literate population, an export-oriented agricultural sector and a diversified industrial base.
- The comprehensive restructuring program of 1991 marked a turning point: the currency was linked to the dollar and major state-owned companies were privatized. These changes have had a profound effect, accompanied by a changing attitude toward entrepreneurship.
- There is increased recognition of the value of personal independence, particularly among the young, although much of the impetus toward starting a business or becoming self-employed is a reflection of the “push” effect of the high unemployment rate. Nonetheless, there is evidence of a shift away from a “wage culture” toward greater independence, representing a return to the country's roots when millions of European immigrants came to “make the Americas.”

#### Key Issues

- Despite recent shifts the key impediment to entrepreneurship remains a set of social and cultural norms that accords little value to entrepreneurs.
- Finance is a major obstacle. Capital is expensive and scarce. Entrepreneurs have little expertise in raising funds, and investors have a comparable lack of skills in assessing investment opportunities. Recently some venture capital has become available, although this is biased toward Internet and new technology companies.

- Education also constitutes a stumbling block. Little or nothing is available to equip individuals with the requisite skills and the education system does not encourage entrepreneurs.
- Facilitation of entrepreneurship will require a government policy emphasis on long-term economic stability, respect for the law, a proactive attitude toward business, and a focus on the awareness and understanding of the importance of entrepreneurship.

### AUSTRALIA

#### Level of Entrepreneurial Activity

- In Australia, 1 in 9 adults is engaged in entrepreneurial activity, making the country one of the most entrepreneurially active GEM 2000 countries.
- Approximately 2 percent of the adult population invests in new business start-ups, slightly above the average for all GEM 2000 countries.
- The percentage of women engaged in entrepreneurial activity is 54 percent that of men — among the five highest ranking GEM 2000 countries.

#### Unique National Features

- Australia has a relatively underdeveloped venture capital industry and a paucity of early-stage investors. In terms of classic venture capital investment, Australia ranks 15th out of the 19 GEM 2000 countries for which comparable data is available and 16th out of 17 on all stages of venture capital investment in information technology.
- The term “entrepreneur” is still tainted by the legacy of the so-called entrepreneurs of the 1980s whose empires collapsed, leaving many creditors and their founders in jail or in exile overseas. Thus, Australia lacks positive entrepreneurial role models.
- Australia has a high regulatory compliance burden coupled with high levels of taxation, although recent capital gains tax changes represent a step in the right direction.
- Much of Australia's national R&D is anchored in the public sector where commercialization skills are weak and R&D transfer mechanisms are underdeveloped.
- The media is generally negative and entrepreneurially ignorant, which exacerbates the problem of lack of entrepreneurial role models and low tolerance of failure.

### Key Issues

- The country must re-balance the focus of education away from training good employees for corporate employment and toward creating greater awareness of the entrepreneurial career option and developing the requisite skills.
- There needs to be a further reduction of the regulatory and tax burden combined with incentives to encourage early-stage investment.

## BELGIUM

### Level of Entrepreneurial Activity

- Despite average growth in GDP, Belgium's rate of entrepreneurial activity (2.4 percent) is among the lowest of all GEM 2000 countries. This may be explained by the very high level of exports and imports in Belgium as compared with the GDP.
- Only 1 in every 100 adults is investing personal funds in new business start-ups in Belgium. Only India and Ireland rank lower in this regard.
- The total number of women involved in entrepreneurial activities is four times lower than that of men, well below the GEM 2000 average.

### Unique National Features

- Historically, Belgium has had a strong owner-managed Small- and Medium-Sized Enterprise (SME) sector, particularly in traditional economic sectors. There are relatively few large global companies and corporate generated spin-offs are relatively scarce.
- Belgium's generous social security system, and the costs associated with moving outside it, has suppressed entrepreneurship, particularly on the part of those enjoying the security of large corporations.
- There are signs that this is changing with an increasing number of high-tech start-ups, enhanced recognition for successful entrepreneurs and less aversion to external investors. The openness of the Belgian economy, together with its central location in Europe and presence of the European Commission, further creates entrepreneurial opportunities.

### Key Issues

- The principal impediments to entrepreneurship include (a) excessively onerous administrative burdens associated with starting a business, (b) the perceived stigma of failure combined with financial penalties such as the loss of social security benefits, (c) government policies that are widely perceived to be ineffective, (d) an education system that, despite its many strengths, does little to encourage enterprise or creativity, (e) high taxes and social security burdens, and (f) a professional service infrastructure that is perceived to be geared primarily to the needs of corporate clients who are better able to pay the high fees involved.
- In terms of classic venture capital Belgium ranks high (5th of 19) with respect to the number of companies receiving investment per 1,000 citizens.

## BRAZIL

### Level of Entrepreneurial Activity

- In Brazil, 1 in every 6 adults (12.3 percent) is engaged in entrepreneurial activities, placing Brazil first among all GEM 2000 countries.
- Approximately 2 percent of the adult population invests in new business start-ups, well below the average for all GEM 2000 countries.
- There are many more women (63 percent when compared with men) involved in entrepreneurship than in the majority of the GEM 2000 countries, making Brazil third behind only Spain and Canada.

### Unique National Features

- Prevailing cultural attitudes toward entrepreneurship in Brazil tend to be conservative, as reflected in the negative assessment of failure (which is not seen as part of the learning process) and the skepticism that greets stories of individual success and wealth creation.
- An attitude of dependence and an assumption that a paternalistic state will take care of social and economic well being prevails.
- Although some steps toward privatization and deregulation have been taken, government involvement in business casts a long shadow.



### Key Issues

- Access to capital is a major obstacle despite its improved availability. Efforts by the government to improve the situation have yet to have a real impact.
- There are major infrastructure limitations and issues of public safety. Although literacy levels are improving, overall standards of education are inadequate.
- The total tax burden is perceived to be high, constituting a deterrent to business expansion. Although employee taxes are high, Brazil operates with an internationally competitive wage structure.
- Government support for enterprise is regarded as inadequate; programs fail to address key issues and are insufficiently publicized throughout the country.

## CANADA

### Level of Entrepreneurial Activity

- With a total entrepreneurial activity rate of 7.9 percent, Canada is among the highly entrepreneurial countries. However, while as many as 1 in 16 adults is involved in a nascent business, only 1 in 45 is managing a new business, which is low relative to the other GEM 2000 countries.
- In Canada, 2.5 percent of the adult population is investing directly in new business start-ups, which is higher than the average for all GEM 2000 countries.
- The percentage of women engaged in entrepreneurial activities (6.9 percent) is more than 15 times higher than the two countries with the lowest rate (Ireland and France) and is as much as 77 percent of the male activity rate in Canada.

### Unique National Features

- Despite a dramatic increase in venture capital in the last five years, the industry is still perceived as overly risk averse. Access to seed capital is a continuing problem, as is the financing gap for private angel investors.
- With smaller Canadian companies facing a tax burden 40 percent higher than large organizations, the allure of lower taxes and strong infrastructure in places such as Silicon Valley attracts entrepreneurial talent out of the country.
- Government policies and programs vary significantly between provinces, with none having a long-term

and comprehensive policy toward entrepreneurship. Multiple layers of government create duplicated costs and incompatible regulations.

### Key Issues

- Financing — at equity, debt and seed levels — is the dominant issue, and it is exacerbated by little support for private investors in terms of tax incentives or network infrastructure.
- No major policy initiatives to boost entrepreneurship have been undertaken in the past year.
- The potential for entrepreneurial activities to create wealth, particularly with high technology and fast-growth businesses, is not appreciated.
- Education and training are seen as the keys to creating a culture of enterprise, recognizing entrepreneurship as a career option and developing the requisite skills.

## DENMARK

### Level of Entrepreneurial Activity

- The rate of entrepreneurial activity in Denmark (4.5 percent) is significantly lower than the most active countries, but not significantly different from other participating European countries.
- The rate of private investment in new start-ups in Denmark (3.4 percent) is above average for all GEM 2000 countries and below only Norway and Germany among the European GEM 2000 countries.
- The rate of involvement in entrepreneurial activities for men is twice the rate for women — slightly above the GEM 2000 average.

### Unique National Features

- The term “entrepreneur” did not enter the Danish language until the mid 1970s. Perhaps reflecting this, Danes favor a “wage earning” culture and income security.
- The entrepreneurial process is not particularly well understood.
- Respect for entrepreneurs and tolerance of entrepreneurial failure is low.



## Key Issues

- Entrepreneurship is further constrained by a lack of venture finance. What is available is biased toward information technology and biotechnology. Of all the Scandinavian countries in GEM 2000, Denmark ranks lowest in domestic investment. Of the 16 Alpha Group countries, it ranks lowest in investment in information technology as a proportion of GDP.
- There are relatively undeveloped mechanisms for effective R&D transfer. Because business schools display a bias toward large firms, the education system is perceived to give little attention to entrepreneurship.
- Government can contribute most significantly by making entrepreneurship an explicit priority, reducing the administrative and tax burden on new firms and extending the reach of current initiatives, such as “Innovations Environment” beyond the information technology and biotech sectors.

## FINLAND

### Level of Entrepreneurial Activity

- The entrepreneurial activity rate in Finland (3.9 percent) is at the middle-lower end of the GEM 2000 ranking. This is due mainly to the very low level of nascent businesses (1.9 percent) since the prevalence rate of new businesses is slightly above the average for all GEM 2000 countries.
- Approximately 1 in 30 adults in Finland is investing in new business start-ups — placing Finland among the highest-ranking countries in the participating European GEM 2000 group.
- The entrepreneurial rate among Finnish women is five times lower than that of men. Only Ireland and France have a lower participation rate for women in new businesses.

### Unique National Features

- In the World Economic Forum’s 2000 rankings, Finland was ranked as the most competitive nation in the global economy; this economic strength is attributed in large part to the “Nokia phenomenon” and associated export strength.
- Leadership in many information technologies makes Finland uniquely placed to take full advantage of the

Information Society, although the country ranks 7th out of the 17 GEM 2000 countries on the measure of venture capital invested domestically in all stages of information technology per head of population.

- High levels of corporate and personal income tax (by international standards) and a dominant public sector amounting to 50 percent of GDP combine to stifle entrepreneurial activity.

## Key Issues

- Capitalizing on the emerging entrepreneurial opportunities requires a much stronger entrepreneurial culture than currently exists.
- The combination of low levels of social security provision for entrepreneurs and a high tax rate further inhibits entrepreneurship, encouraging many aspiring entrepreneurs to leave the country.
- In key regional growth centers, entrepreneurship is taking root, supported by a developing venture capital community, but this is at the expense of other geographic regions in which a subsidy-oriented perspective still prevails.
- Strengthening entrepreneurship education remains a key challenge at all levels of the education system.

## FRANCE

### Level of Entrepreneurial Activity

- Despite its average rate of GDP growth, France’s rate of entrepreneurial activity (2.2 percent) is among the lowest of all GEM 2000 countries and only greater than Ireland’s level of activity among the participating European countries.
- Approximately 1 in 100 adults in France is actively investing personal funds in business start-ups. Among the European GEM 2000 countries, France’s rate of angel investing is higher than only that for Belgium and Ireland.
- France’s very low rate of entrepreneurial activity may be explained by the low involvement of women in business, which is the lowest among the GEM 2000 countries and 12 times lower than the rate for French men.





### Unique National Features

- A strong legacy of state control of the economy exists, as reflected in an excessive regulatory burden (particularly in terms of employment) that falls on new and small firms.
- There is weak interaction between the public and private sectors, which distorts the design of programs geared to supporting enterprise.
- A high degree of centralization, with multiple levels of decision making involving many different parties, creates confusion and ambiguity.

### Key Issues

- Continuing negative attitude toward business failure is a key issue.
- The education system, particularly pre-university, does not promote values compatible with entrepreneurship, such as individual initiative, autonomy, risk taking and personal responsibility.
- Though there have been improvements in the availability of capital for new ventures, much of this is biased toward Internet and biotech investments. There needs to be better funding to complement a strong physical and professional infrastructure.

## GERMANY

### Level of Entrepreneurial Activity

- Germany has a below-average entrepreneurial activity rate (4.7 percent), but among the European GEM 2000 countries, it is below only Norway, the United Kingdom and Italy.
- As many as 1 in 25 German adults is investing in new business start-ups, making Germany 4th among all GEM 2000 countries and behind only Norway in the participating European group.
- The entrepreneurial activity rate for women is slightly below half of that for men, close to the average for all GEM 2000 countries.

### Unique National Features

- There has been a significant change in the entrepreneurial climate in Germany, particularly among younger people, where entrepreneurship is

now an integral topic of debate in the business, scientific and political communities.

- Still, the prevailing social and cultural norms — with an emphasis on risk avoidance and social stigma attached to failure — are inconsistent with the encouragement of enterprise, particularly in eastern parts of the country and among older members of the population.
- Germany has a strong physical and commercial infrastructure to support entrepreneurs.

### Key Issues

- Early-stage financing is creating two classes of new ventures: those in the “new economy” for whom ample finance is available and those in more traditional businesses still confronted by a risk averse and inadequately skilled banking sector. Across both groups there is evidence of a financing gap for relatively small amounts of early-stage capital. In terms of the total amount of classic venture capital invested domestically in 1999, Germany ranks second after the United States.
- Changes in the tax and legislative environment have not kept pace with those starting a business; entrepreneurs still are confronted with significant administrative obstacles.
- R&D transfer from universities is hampered by a lack of clarity in terms of intellectual property rights and minimal incentives for academics to pursue entrepreneurial opportunities.
- Entrepreneurship remains largely ignored in schools and universities, with very few programs available and an acute shortage of staff with the skills required to teach in the area.

## INDIA

### Level of Entrepreneurial Activity

- The entrepreneurial activity rate among the adult population in India is 6.3 percent, which is among the highest in the medium group. However, the importance of the agricultural sector in the economic structure of the country may distort the results.
- Fewer than 1 in 100 adults in India invests in new business start-ups, the lowest business angel rate of all GEM 2000 countries.

- The entrepreneurial activity rate among women is less than half that of men, which is the average for all GEM 2000 countries.

### Unique National Features

- Striking features of the entrepreneurial environment in India include the importance of traditional business communities with a marked difference in attitude toward risk-taking and entrepreneurship across geographic regions and between distinctive communities.
- For many of those who are self-employed, sustenance rather than growth is the key objective; small entrepreneurs and failure are not respected.
- Wealth distribution rather than wealth creation is seen as more important.

### Key Issues

- Access to capital — particularly for first-time entrepreneurs — is made difficult by the risk-averse nature of financial institutions, the relatively recent growth of venture capital and continuing lack of suitable exit routes.
- In terms of classic venture capital, India ranks in the middle for the amount raised in 1999, and 12th out of 19 countries in respect to the total amount invested domestically, although the number of companies and the average amount invested per company is lower than elsewhere.
- Poor infrastructure, excessive regulation and associated bureaucratic complexity delay decision making and handicap entrepreneurs.
- There are relatively low levels of investment in R&D as well as difficulties experienced by small firms in gaining access to R&D and commercial information on a global scale.
- India has significant entrepreneurial assets: a strong educational base, (although there is relatively little focus on entrepreneurship), a strong tradition of family business and a growing respect for first-generation entrepreneurs driven largely by the growth in the information technology sector.

## IRELAND

### Level of Entrepreneurial Activity

- Despite very high GDP growth, Ireland has the lowest rate of entrepreneurial activity of all GEM 2000 countries (1.2 percent).
- Less than 1 in 100 Irish invests in new business start-ups, the lowest business angel rate among the participating European countries and above only India when taking into account all GEM 2000 countries.
- The entrepreneurial activity among women is five times lower than that for men, the second lowest ratio of all GEM 2000 countries.

### Unique National Features

- Ireland has created a business environment that is highly supportive of inward foreign direct investment in high technology sectors. Exports from these companies fuel Ireland's growth.
- Historically, cultural factors and limited economic opportunities have mitigated against entrepreneurship.
- In the last five years, numerous agencies have been created with the objective of supporting new business creation and local entrepreneurship.
- Economic success has created a tight labor market so that there is no "push" to entrepreneurship. The buoyant economy is, however, creating entrepreneurial opportunities.

### Key Issues

- An increase in the number of VAT registrations and an increase in the number of quality start-ups approved by the development agencies indicate that the relatively low entrepreneurial levels may be improving. The challenge is to accelerate this trend.
- The low level of R&D in third level colleges has precluded any significant technology transfer from this source. The significant investment currently being made in science and technology is designed to rectify this situation.
- Capital markets are insufficiently developed for new and growing firms, with a perceived lack of seed



capital and well-developed exit mechanisms for early stage investors. Ireland also has the lowest level of classic venture capital invested domestically in 1999 out of the 19 GEM 2000 countries for which comparable data exists.

- Government needs to rigorously enforce a competition policy that creates business opportunities for entrepreneurs, particularly in many non-traded sectors.
- The challenge is to maximize the benefits conveyed by the large multinational presence through capturing sub-supply opportunities, R&D transfer and entrepreneurial spin-off.

## ISRAEL

### Level of Entrepreneurial Activity

- Entrepreneurial activity in Israel (4.2 percent) is significantly lower than the rate of the most active GEM 2000 countries, but it is still in the Medium group.
- About 1 in every 30 adults invests in new business start-ups, creating an angel business investment rate among the highest of all GEM 2000 countries.
- The rate of entrepreneurial activity of men is three times higher than that of women, which is above the average of all GEM 2000 countries.

### Unique National Features

- Israel has witnessed dramatic expansion in the number of new technology-based firms, driven in part by the rapid development and transfer of defense technology and increasing levels of civil R&D.
- The high-tech sector has made a significant contribution to the growth of the Israeli economy. Underpinning this is a highly educated work force bolstered by immigration from the former Soviet Union and the role of compulsory military service in creating a pool of well-trained individuals with strong technical skills.
- The emergence of successful high-tech entrepreneurs as Israel's new cultural heroes is encouraging young people to see entrepreneurship as the preferred career path and creating a strongly supportive culture, although this is not true of the Arab sector.

### Key Issues

- Despite having a highly educated work force, education emerges as a critical issue, with the need to encourage science studies, incorporate entrepreneurship and even out regional imbalances.
- The focus on high tech has created a sense of inferiority on the part of the nontechnological industrial sector for which governmental financial support remains weak.
- Venture capital is the mainstay of Israel's high-tech boom. In 1999 Israel raised more venture capital as a proportion of GDP than any other GEM 2000 country. It was second only to the United States in the amount invested per capita, the amount invested per company and the amount invested in information technology in proportion to GDP.

## ITALY

### Level of Entrepreneurial Activity

- The entrepreneurial activity rate among the adult population in Italy is 5.7 percent, the second highest among the European countries, behind only Norway.
- The rate at which individuals make private investments in new start-up businesses is approximately 2 percent, which is at the lower end of the GEM 2000 European ranking.
- The entrepreneurial activity rate for women is slightly below half that for men, which is average for all GEM 2000 countries.

### Unique National Features

- Italy's economy is characterized by a large number of very small firms generating increasing levels of employment and GDP contribution. However self-employment/self-sufficiency is the goal of most start-ups, hence the over-representation of new firms in mature economic sectors.
- Significant socio-economic differences exist between regions, reflected also in marked variations in entrepreneurial vitality. This is particularly noticeable between the South — where entrepreneurs work in comparative isolation and are hampered by the lack of administrative clarity — and the North.

## Key Issues

- R&D transfer mechanisms are undeveloped, links between industry and research institutions are virtually nonexistent, and ambiguity over intellectual property rights combined with unfavorable tax regulations deter aspiring academic entrepreneurs from exploiting the commercial potential of their work.
- Entrepreneurs have few financing options open to them (debt is the most widely used but at a high cost) particularly relative to larger firms and at the expense of the development of other financial intermediaries, notably venture capitalists. The figures bear this out. Italy ranks 18th out of 19 on the measure of classic venture capital invested domestically as a proportion of GDP, and 15th out of 17 in information technology investment.
- Labor market rigidities, combined with one of the highest levels of employment costs in the world, hinder new firm growth. Many new businesses favor short-term or unregistered labor at the expense of building long-term capabilities and capacity.
- Despite this, there is evidence that in some regions the entrepreneurial drive is taking root, particularly among younger people. Also, there are signs that entrepreneurs are increasingly respected. There is no stigma attached to failure, and those who accumulate wealth through entrepreneurial success are not resented.

## JAPAN

### Level of Entrepreneurial Activity

- Japan has one of the lowest rates of entrepreneurial activity among the GEM 2000 countries (1.3 percent), higher only than Ireland.
- Private investors in start-ups account for 1 percent of the adult population, higher only than Belgium, Ireland and India.
- The rate of entrepreneurial activity for women is four times lower than that for men, which is well below the GEM 2000 average.

### Unique National Features

- The cultural climate in Japan is unfavorable for entrepreneurs, to whom little respect is accorded.

Compared with the predominant preference for employment in large corporations, entrepreneurs are seen as somewhat eccentric.

- Entrepreneurs themselves typically do not have many of the requisite skills to start a business and government policy reflects little real understanding of their needs.

## Key Issues

- Japanese education, while strong technically, is geared primarily to preparing students for employment in large organizations and does little to encourage creativity or individualism.
- Japanese financial institutions do not have the capacity to properly assess new ventures, and although there has been an increase in funds available for early-stage investment, much of this is biased toward health care, information technology and biotechnology.
- The personal costs of entrepreneurial finance in Japan are high and banks typically require loans to be secured by personal guarantees.
- Improvements in the capital markets are taking place, for instance with the creation of NASDAQ Japan, and with regulatory changes that allow pension funds to invest in venture capital and that make it possible for companies at the pre-profitability stage to secure a listing on the new Market for High Growth and Emerging Stocks launched by the Tokyo Stock Exchange.

## KOREA

### Level of Entrepreneurial Activity

- As many as 1 in 7 adults is involved in some sort of entrepreneurial activity in Korea, the second-highest rate after Brazil. However, this very high entrepreneurial rate is driven by the very high new business prevalence rate (9 percent, significantly higher than the second-ranked country). The percentage of the adult population starting a new business (5.3 percent) is only slightly above the average for all GEM 2000 countries.
- Approximately 5 percent of the adult population directly invests in new business start-ups, scoring second among all GEM 2000 countries after the United States.



- The entrepreneurial activity rate of women is only 37 percent when compared to men, below the average of all countries.

### Unique National Features

- The 1997 financial crisis forced many to find new ways of making a living, spurring new business start-ups financed by severance payments, personal savings and loans.
- In response to the crisis the government launched a range of measures to curb the power of large conglomerates, strengthen market forces and promote new ventures.
- Korea is well endowed with a well-educated, technologically sophisticated population, many of whom are highly individualistic and not risk averse.

### Key Issues

- Despite government emphasis on deregulation and privatization, excessive red tape and regulatory requirements still inhibit start-up activities.
- The inability of financial markets to assess the real value of new businesses and technologies fueled a “venture bubble” — the fallout from which is still being felt. This is reflected partly in the venture capital data where Korea ranks third in the number of companies per head of population receiving investment but with the second-lowest average investment size.
- Government policy is regarded as short-term and lacking real coherence.
- The premium placed on strong university education leaves little time for entrepreneurship education, so universities are seen as providing an insufficient number of graduates prepared for commercial life.
- Many entrepreneurs, while technologically strong, lack adequate managerial capacity.

## NORWAY

### Level of Entrepreneurial Activity

- With 7.9 percent of the adult population involved in entrepreneurial activity, Norway is among the most

entrepreneurial countries of the GEM 2000 in general and the most entrepreneurial of the GEM 2000 European countries in particular.

- Approximately 4 percent of the population invests directly in new business start-ups, the highest angel business rate of all the European countries in the GEM 2000, behind only the United States and Korea overall.
- The rate of entrepreneurial activity among women is slightly below average for all GEM 2000 countries.

### Unique National Features

- Norway has one of the highest levels of income per capita in the world, a relatively even distribution of wealth and a well-developed social security system.
- Among OECD countries, Norway has the lowest level of self-employment; international attitude surveys reveal a marked aversion to this form of employment.

### Key Issues

- There is increasing awareness of the importance of entrepreneurship and an improvement in the entrepreneurial climate, but this has not been matched by commensurate changes in relevant laws and regulations.
- Although capital itself is available there is a narrow base of expertise in venture capital investing and little in terms of networks or other mechanisms to bring entrepreneurs into contact with potential private investors. Nonetheless, Norway leads all GEM 2000 Scandinavian countries on the measure of per capita venture capital invested domestically in all stages of information technology.
- The taxation regime puts at a disadvantage those who own more than two-thirds of their business, taxes options and provides no real incentives for private investors, thus hindering the start-up process.
- Entrepreneurship barely plays a part in education and Norwegians have comparatively few entrepreneurial role models.
- The current debate about privatization and deregulation of state-owned monopolies is likely to create new entrepreneurial opportunities.

## SINGAPORE

### Level of Entrepreneurial Activity

- Despite higher-than-average GDP growth, Singapore has one of the lowest rates of entrepreneurial activity among the GEM 2000 countries (2.1 percent), higher only than Japan and Ireland. This could be explained by the high dependence of Singapore's economy on the external sector (i.e., the sum of exports and imports over GDP is 211 percent).
- Around one percent of the adult population invests assets in new business start-ups, which is among the lowest of all GEM 2000 countries.
- The entrepreneurial activity of women is less than a third of that of men, well below the GEM 2000 average.

### Unique National Features

- Entrepreneurship has been identified as a fundamental driver of the next phase of Singapore's economic growth.
- Spearheading this is the government's Technopreneurship 21 campaign, key features of which include: creating research and innovation centers in universities, building strong links with Silicon Valley entrepreneurs and investors, establishing a \$1 billion Technopreneurship Investment Fund, and relaxing regulations in respect to bankruptcy and the use of domestic premises to start firms.
- Singapore has the highest ratio of classic venture capital commitments to GDP after Israel; ranks 15th out of 19 in respect to the ratio of venture capital invested domestically to GDP; and invests relatively high average amounts per company with significant commitments to information technology.

### Key Issues

- Although it is too early to assess the results of recent initiatives, it is clear that success will entail tackling several impediments to entrepreneurship, notably fear of failure and an associated preference for stable, corporate employment.
- Success will also involve overcoming a very low unemployment rate and tight labor market and no depth of entrepreneurial experience, including

among those providing finance and delivering support programs.

- Additional issues appear to be an education system that develops technical excellence but not creativity, the small local market and the pervasive involvement of government-linked companies in that market.

## SPAIN

### Level of Entrepreneurial Activity

- The business start-up rate among the adult population in Spain is 4.5 percent, slightly below the average for all GEM 2000 countries but in the middle of the participating European group.
- The rate at which individuals make private investments in new start-up businesses (2.2 percent) is average among the European GEM 2000 countries.
- The rate of entrepreneurial activity among women is strikingly high (86 percent of that for men) — twice as high as the average for all GEM 2000 countries. Spain is the only country in which women and men's participation in entrepreneurial activities is almost 1-to-1.

### Unique National Features

- There are signs that an entrepreneurial culture may be taking root in Spain, particularly among the young, although there remains a strong preference for stable income in a state-owned company or in the public sector.
- In broad terms, there persists a somewhat suspicious attitude toward entrepreneurs and little acceptance of their success.

### Key Issues

- Developing entrepreneurial activity tends to be geographically localized in cities such as Madrid, Barcelona, Bilbao and Valencia.
- Excessive regulation and regulatory differences between regional governments undermines attempts to support programs for entrepreneurs.
- University education is regarded as not preparing students for business and has little focus on entrepreneurship itself.





- Availability of finance is a major obstacle. The financial system is perceived as adopting a short-term perspective and fundamental change is required in the banking system to provide real support for entrepreneurial ventures.
- Government policies tend to be opportunistic and there is no clear sense that entrepreneurship is a long-term government priority.

## SWEDEN

### Level of Entrepreneurial Activity

- Approximately 1 in 25 adults is engaged in entrepreneurial activity in Sweden, among the lowest in the GEM 2000 European group.
- The angel business rate is 2.3 percent, slightly below the average for all GEM 2000 countries but close to the European average.
- The rate of participation in entrepreneurial activity among women is 43 percent of that of men, which is the average for all GEM 2000 countries.

### Unique National Features

- Sweden retains strong dependence on export activities, particularly from traditional firms in areas such as wood/pulp, although the balance is beginning to shift toward new sectors, notably information technology as reflected in the 15 percent to 25 percent contribution to GDP growth represented by Ericsson alone.
- The rapid move toward “new economy” firms has created a serious shortage of skilled people, notably engineers, although this is combined with a relatively high unemployment rate driven by industrial restructuring.
- A significant part of GDP is accounted for by the public sector, with a high ratio of women employees, which accounts in part for the relative under-representation of women entrepreneurs.
- Significant regional imbalances exist with much activity centered on Stockholm, where excessive pressure on the infrastructure combined with the high cost of living is creating concern about the economy overheating.

### Key Issues

- There are a number of historical impediments to entrepreneurship, notably: owner-managers’ reluctance to share equity, little attention to entrepreneurship in education, socially negative attitudes toward entrepreneurial failure, and an egalitarian bias as reflected in sustained efforts to narrow income differentials.
- Structural constraints include high corporate and personal tax rates plus high non-wage costs, excessive regulation, and existence of a strong social security net for employees, although this is much lower for entrepreneurs.
- Sweden has gained a reputation as a hotbed for the development of Internet and mobile communications businesses. Out of 17 GEM 2000 countries for which data exist for 1999, Sweden ranks fourth for classic venture capital commitments as a proportion of GDP, and first for the number of companies receiving venture capital per million of population. More than 40 percent of those companies were in the information technology industry.

## UNITED KINGDOM

### Level of Entrepreneurial Activity

- The rate of entrepreneurial activity in the United Kingdom (5.2 percent) is behind only Norway and Italy in the European group, although not significantly different.
- The rate of angel investment in new start-ups is 2.9 percent, above the GEM 2000 average.
- The percentage of entrepreneurial activity of women compared with men is 63 percent, which is among the four highest rankings and well above the average for all GEM 2000 countries.

### Unique National Features

- The United Kingdom has a supportive business environment for entrepreneurs and its commercial and professional infrastructure is rated one of the strongest among the GEM 2000 countries.



- The government has made a sustained commitment to boosting entrepreneurship, launching in the past year the Small Business Service and the Enterprise Insight Campaign.
- The taxation regime has been significantly improved. Notable recent examples are a reduction in capital gains tax and additional tax relief on R&D.

### Key Issues

- Approximately one-third of all experts identify education as the most critical issue, with younger people receiving limited exposure to business issues. This is consistent with the GEM 1999 finding.
- A comparable proportion of the experts focused on social and cultural norms being out of sync with an entrepreneurial society. The media is held to play a key role in this. Though it tends to celebrate entrepreneurial success, less tolerance is shown toward those who fail. Changes in the law relating to bankruptcy have an important role to play in this regard as well.
- In terms of finance, more new venture capital was raised in the United Kingdom in 1999 than any other GEM 2000 country apart from the United States. The United Kingdom ranks third in respect to total amount of classic venture capital invested last year, with high average amounts invested per company but in relatively few companies compared with other countries.
- National experts expressed concern about the unequal geographic distribution of new equity investment and a bias away from manufacturing industries. This is reflected in the figures that indicate, on a per capita basis, the United Kingdom is the third-ranked major investor in information technology and the largest investor in consumer companies.

## UNITED STATES

### Level of Entrepreneurial Activity

- The entrepreneurial activity prevalence rate in the United States is 12.7 percent, the third highest behind Brazil and Korea.

- In the United States, 1 in every 15 adults invests in new business start-ups, the highest private investor rate among all GEM 2000 countries.
- The entrepreneurial activity rate for women is slightly above half that for men, which is above the average for all GEM 2000 countries.

### Unique National Features

- The culture of entrepreneurship is deeply rooted: entrepreneurs are celebrated as role models, failure is seen as a learning experience and the entrepreneurial career option is regarded as attractive.
- U.S. classic venture capital eclipses all other countries and has grown exponentially, with \$46 billion invested in 1999 (an increase of 150 percent over 1998, representing more than an eight-fold increase in five years). The United States has the largest number of companies receiving venture capital, the highest average investment size and by far the greatest commitment to investment in information technology.
- Venture capital is being exported at record levels, notably to the United Kingdom, Israel and Japan. U.S. venture pension funds were the single biggest source of new venture capital in the United Kingdom for the third year in a row.

### Key Issues

- Women and minorities lack the strong networks and access to capital needed to pursue high-potential ventures.
- Many experts fear the “bubble economy” in which there is too much venture equity chasing too few quality deals.
- A cooling IPO market, which fueled record venture capital returns, could lead to a decline in the amount of venture capital being raised and invested.
- Geographic differences in the level of activity, especially high technology, are marked.
- Key constraints include creaking infrastructure, notably transportation in entrepreneurial hotbeds such as Silicon Valley, and continuing shortages of skilled personnel, especially software engineers.



## Policy Implications and Conclusions

The fundamental aim of GEM is to provide a strong foundation for an informed public policy debate. The question of most interest to policy makers is what can be done to enhance entrepreneurship and create a genuinely entrepreneurial society. The range of initiatives referred to at the beginning of this report (see *Entrepreneurship and Public Policy: An Overview*) is clear evidence of both the commitment of many governments and the diverse ways in which it is being addressed. Common to all of such initiatives is the assumption that entrepreneurship and economic growth are closely linked.

GEM 2000 provides strong evidence in support of this assumption. When comparing countries with similar economic structures, there is an extremely strong association between the level of entrepreneurial activity and national economic growth. The level of association is even higher for the G7 nations, which form the nucleus of GEM 1999 analysis. Across the 21 nations participating in GEM 2000, the study found no exceptions to the proposition that countries with a high level of entrepreneurial activity have a relatively high level of economic growth. Some, however, have high levels of growth and low levels of entrepreneurial activity.

Moreover, in analyzing the factors that explain differences in the level of entrepreneurial activity, consistent patterns emerge. The most significant patterns include:

- (a) the fundamental importance of demographic structure;
- (b) the consistent under-representation of women;
- (c) central features of an economic system such as the presence of government in the economy, levels of taxation, the operation of the labor market and investment in education;
- (d) the extent to which individuals perceive there are good opportunities to start a business;
- (e) the presence of entrepreneurial capacity (the skills required to start new businesses);
- (f) the availability of early-stage finance, both public and private; and
- (g) the degree to which entrepreneurial initiatives are socially acceptable.

These clear patterns provide the backdrop for the GEM 2000 policy proposals. In developing these proposals, careful consideration has been given to (a) GEM 2000 empirical findings, (b) policy proposals developed from the GEM 1999 research effort, and (c) the policy recommendations developed by each of the national teams, which, despite the differences between countries, share a number of common features. In taking GEM forward, policy proposals will need to be developed for each particular country. What follows, therefore, are broader implications that have general applicability.

**The promotion of entrepreneurship, its role in society and the opportunities it presents for personal gain play an important part in facilitating economic growth.** The strong association between entrepreneurship and economic growth suggests that governments at all levels should do all they can to introduce people to the opportunities afforded through entrepreneurship. To see the greatest number of people recognize and pursue opportunities, aggressive efforts should be made to build the awareness of and ensure access to entrepreneurship among people of all demographic profiles.

**Policies geared toward enhancing the entrepreneurial capacity of a society (i.e., the skills and motivation to pursue opportunities) will have the greatest impact on the level of entrepreneurial activity.** Entrepreneurial capacity refers to the skills and motivation individuals need to take advantage of entrepreneurial opportunities. Virtually every GEM national team identified the development of entrepreneurial skills as a fundamental policy priority. Education for entrepreneurship should be woven into the educational curriculum at all levels and the pursuit of entrepreneurial opportunity identified as a genuine, legitimate career option.

**Increasing the participation of women in entrepreneurship is critical to long-term economic prosperity.** Findings from GEM 2000 suggest that, if considered as a major independent variable, the relative participation of women in entrepreneurship would account for as much as two-thirds of the variation of entrepreneurial activity between countries. Across the GEM 2000 sample, men are typically twice as likely

to be involved in entrepreneurship as are women. Thus, the relative representation of women constitutes a latent economic resource of real significance to most nations. Unlocking the entrepreneurial potential of women could prove to be challenging in many cultures but would undoubtedly boost entrepreneurial capacity.

**For the greatest long-term impact, policies should be adopted that encourage the involvement of people younger than 25 and older than 44 in the entrepreneurial process.** In many countries, those younger than 25 are highly motivated to start businesses; however, due to their youth, they often lack the skills necessary to do so. On the other hand, those 45 and older typically have years of employment experience on which to draw for knowledge of how to build and operate a business. Programs that ensure ample training, provide access to start-up resources and reduce the regulatory hurdles young firms face are critical to encouraging higher levels of participation among these age groups. Equally important for those younger than 25 is an ample supply of and easy access to positive role models. Role models, when promoted through the national media, serve to enhance the culture's positive perception of entrepreneurship and provide the impetus youth need to explore entrepreneurial opportunities.

**Any government committed to sustained economic progress must ensure that all aspects of its economic system are conducive to and supportive of increased levels of entrepreneurial activity.** A number of features of any economic system have a material effect on entrepreneurship. Countries with high levels of entrepreneurial activity are characterized by a reduced governmental presence in the normal economic order, reflected in lower levels of corporate and marginal personal tax rates, more flexible labor markets, lower non-wage labor costs, fewer regulatory burdens and greater ease of doing business with governments. These features are echoed in many of the national summaries that place particular emphasis on reducing the burden of regulation.

**Policies should encourage the development of formal venture capital and create incentives for private individuals to invest directly in early-stage businesses.** The GEM 2000 special report on venture capital provides clear evidence of the key role played by classic venture capital investments in new and growth firms. But in many countries this contribution is dwarfed by the informal investments made by private individuals, friends and family of the nascent entrepreneur. Policies should generally incite greater participation in both formal and informal financing. At a minimum, governments should ensure that efforts to regulate transactional activity (e.g., intellectual property rights, taxation, stock option plans, etc.) do not impede an individual's access to the pursuit of opportunity.

In conclusion, therefore, GEM 2000 makes clear the case for:

- boosting entrepreneurship as part of a broader strategy for promoting economic growth;
- enhancing entrepreneurial capacity by teaching the basic entrepreneurial skills needed to recognize and exploit an entrepreneurial opportunity at all levels of the educational system;
- releasing the untapped capacity of women, youth and those over 44 years old to engage in entrepreneurship;
- adopting a broad set of economic measures — taxation, labor market features and regulations — that are consistent with the requirements of the entrepreneurial sector; and
- maximizing sources of early-stage financing from both venture capital funds and private individuals.

These proposals are essentially entrepreneurship-specific, focusing on those factors that will have the most immediate and direct effect. But the entrepreneurial process does not function in isolation. It is shaped by a broader social and cultural context that has a tremendous influence on the level of entrepreneurship realized in a society. Thus, to ensure the most realistic perspective of the implications of the GEM study, it is important to consider a set of broader



contextual issues. The areas of particular importance include Education, Incentives, Social and Cultural Values.

## Education

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The strong link between entrepreneurship and education identified in 1999 has been reinforced in GEM 2000. Indeed, if access to post-secondary educational opportunities were the only factor used to predict entrepreneurial activity it would account for 40 percent of the cross-national variation. Investment in education, while it may take time to pay dividends, clearly has a major impact on entrepreneurship. It ensures an ongoing supply of people creating new ideas, technology, and knowledge — broadly defined — which leads to new business opportunities: capable of successfully launching entrepreneurial firms; or as a potential talent pool for new and growing companies.

## Incentives or Support

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GEM 1999 made a distinction between “incentive pull” and “support push” measures. In many countries, policies are biased toward support push measures embodied in programs aimed at helping those starting a business by removing obstacles, reducing regulatory barriers and providing employment support. Incentive pull, on the other hand, operates on the principle that entrepreneurs — and their financial backers — are attracted by strong social and economic incentives. These incentives often take the form of manifest celebration of entrepreneurial success and the elevation of entrepreneurial role models, aggressively structured tax incentives and tax relief on investment. One striking feature of the policy proposals made by the various GEM national teams is the bias toward incentives rather than support. There is considerable evidence to support government policy emphasis on incentives rather than a plethora of support programs that, rather than encourage the pursuit of innovative

opportunities, may create a small business “safety net” mentality.

## Social and Cultural Values

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Opportunity alone does not result in entrepreneurship. As noted, individuals need to feel motivated to take advantage of opportunity. The extent to which they do will reflect their belief that being an entrepreneur, irrespective of whether one is successful or not, is socially valued. The conviction that success will not be resented or failure stigmatized is fundamental. GEM 2000 used a variety of measures to assess the perception of social legitimacy of entrepreneurship. What emerged was a striking difference between countries with high levels of entrepreneurial activity and those with considerably less activity. This highlights the pivotal importance of creating a strong culture of entrepreneurship that embodies norms and values that are supportive of entrepreneurs.

## Summary

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The analysis of the 10 countries for GEM 1999 indicated a substantial variation among countries in entrepreneurial activity, a strong association with economic growth and a range of factors associated with variation in entrepreneurial activity. It was a very successful pilot study. GEM 2000, utilizing an expanded group of 21 countries and a more elaborate set of factors, has strongly confirmed the GEM 1999 findings and provided a more sophisticated portrayal of the factors affecting entrepreneurship and the effect of entrepreneurship on economic growth. Though more needs to be done, the trajectory of the GEM initiative, with the periodic addition of countries and annual assessments of national entrepreneurial activity, holds great promise for realizing substantial insights about this phenomenon.

## A Special Report

# Venture Capital Activity in the GEM 2000 Countries

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Classic venture capital<sup>30</sup> is risk money invested by professionals in small, young companies with the potential to grow rapidly into enterprises that contribute significantly to local, regional and national economies. Some of the more highly acclaimed companies backed by venture capital, such as Intel, Microsoft and Cisco, have even changed the face of the global economy. It is claimed that companies in Silicon Valley, the center of the venture capital universe, account for as much as 10 percent of the U.S. Gross Domestic Product (GDP). Venture capital speeds the commercial adoption of new technologies and accelerates the growth of new industries with the power to transform the way we live, work and play. Famous examples include the semiconductor, minicomputer, biotechnology, personal computer, software, data communications and dot-com industries. Hence, companies backed by venture capital are a vital subset of the start-ups studied in the GEM 2000 initiative.

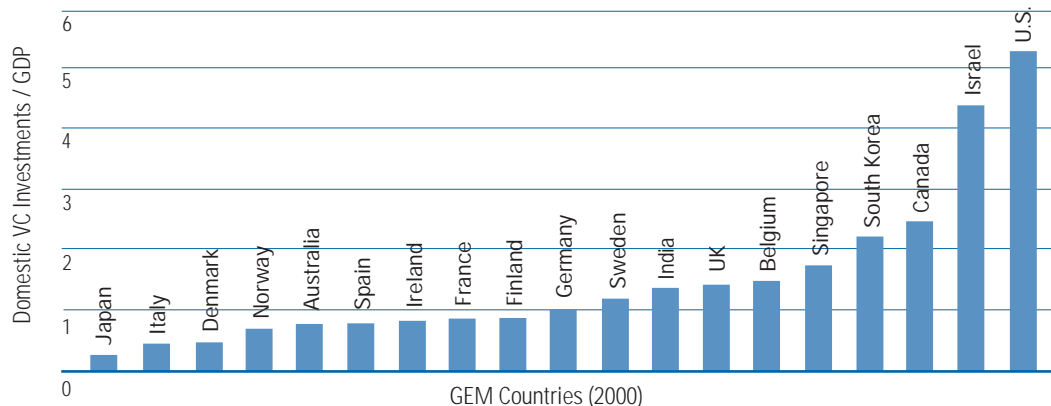
By almost any measure, 1999 was the most spectacular year ever for the venture capital industry. In the United States, \$46 billion was invested, a 150 percent increase over 1998 investments and more than eight times the amount invested in 1995. In Europe, approximately \$10.8 billion was invested, an 84 percent increase over 1998 and more than five times the amount invested in 1995. And 1999 was a very good

year for venture capital investments in Asia, Australia and Canada. In addition, venture capital funds raised a record amount of new money in 1999 for future investments. More than \$46 billion was raised in the United States and \$10.6 billion in Europe. Through the first half of 2000, venture capital investments continued to set new records in the United States and Europe. The amount invested in the United States more than doubled on a year-to-year basis, while Germany's year-to-year amount increased 78 percent.

The red-hot stock market for initial public offerings (IPOs) of young venture-backed companies produced spectacular returns for venture capital firms in the United States, and, in turn, stimulated a record level of new capital flowing into the industry. The amount raised by 270 venture-backed IPOs in the United States alone topped \$20 billion in 1999, setting a new record. The one-year return on all venture capital was 62.5 percent, with seed and early-stage returns hitting 91.2 percent. The junior stock markets in Europe flourished as well. EASDAQ, the first truly pan-European stock exchange, continued to grow. NASDAQ announced plans to create a European NASDAQ in 2001. Though the number of IPOs in Europe backed by venture capital fell from 239 in 1998 to 149 in 1999, the number of trade sales of such companies increased from 965 to 1,241.



**Figure 19**  
Ratio of Venture Capital Invested Domestically to GDP in 1999



### Comparison among GEM Countries

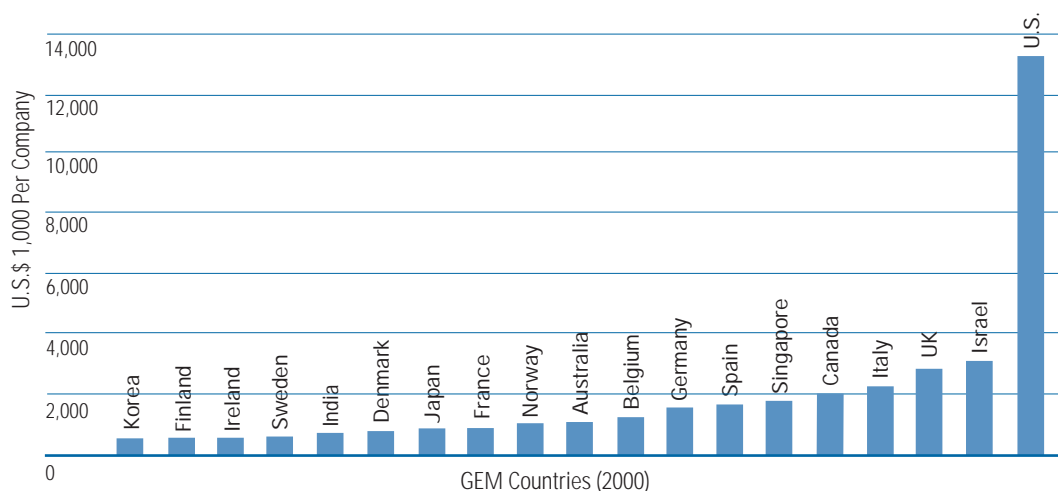
To facilitate comparisons among GEM 2000 countries, the amount of venture capital<sup>31</sup> invested domestically was calculated as a proportion of GDP for each country (Figure 19).

The amount invested ranged from 0.53 percent of the GDP in the United States to 0.022 percent in Japan. There also is a huge disparity between the GEM 2000 nations in the average amount invested per company, ranging from \$458,000 in Korea to \$13,207,000 in the United States (Figure 20). The mantra of the U.S. venture capital industry in recent years seems to be: Invest lots of money in relatively few truly outstanding companies as early as possible, take them public as

soon as possible, and thereby raise more money. If the stock price rises substantially after the IPO, raise even more money with a secondary offering.

This financing strategy has provided some young venture-backed companies with enormous amounts of capital, which has enabled them to grow and expand at a breathtaking pace not only in the United States but also in the global marketplace. U.S. companies have established a global presence ahead of most of their rivals from other countries. For instance, Yahoo! is the leading portal on the Continent with about twice the number of visitors as the leading European Internet service provider and portal, Deutsche Telekom's T-Online. European sales by eBay are eight times more than its nearest competitor, London-based QXL. And Amazon.com's European sales are more than five times

**Figure 20**  
Amount of Domestic Venture Capital Invested Per Company in 1999 (U.S.\$ 1,000)



those of Bertelsmann BOL, Ltd., the largest European online bookstore.<sup>32</sup>

## The New Economy

Venture capital is playing a vital role in the new economy. It is a crucial ingredient in the Entrepreneurial-Internet-Digital Revolution that is transforming the global economy. In the first six months of 2000, approximately 80 percent of venture capital invested in the United States went to companies with Internet-related products or services. To permit comparisons among the GEM 2000 countries, the amount of venture capital invested domestically in information technology was aggregated. This figure includes investments in computer hardware, software, communications and Internet companies at all stages, including buyouts and acquisitions.

The amount invested in information technology companies in 1999 ranged from 0.41 percent of GDP in the United States to 0.009 percent in Denmark (Figure 21). Companies in the United States received 86 percent of the total invested in information technology among all GEM 2000 countries combined, excluding Argentina, Brazil and Korea. In contrast, the United States did not dominate the venture capital investment in consumer industries and services, which accounted for 32 percent of the total amount invested among all GEM 2000 countries. The United Kingdom dominated

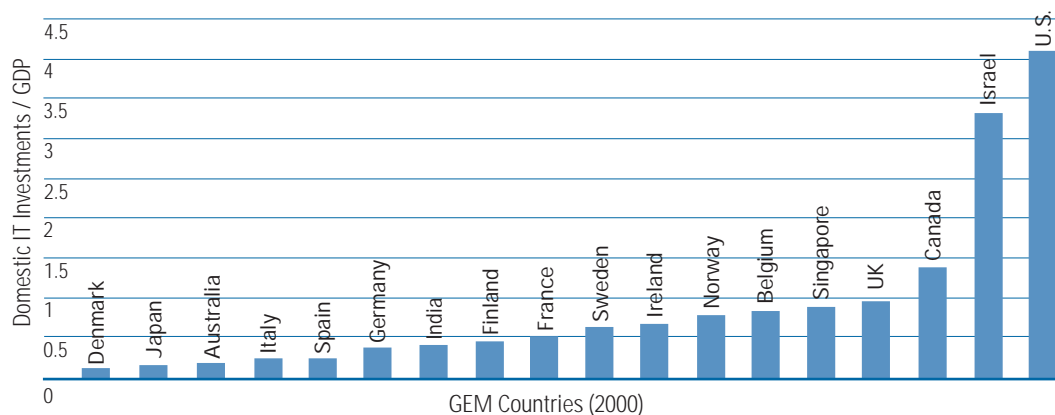
these investments, placing nearly 40 percent of the total investments in consumer companies among all GEM 2000 nations.

## Factors Associated with the Level of Venture Capital Investment

Venture capital fits elegantly into the GEM model for economic growth. Table 7 provides the correlations of venture capital investments with the Entrepreneurial Framework Conditions, Entrepreneurial Opportunity, Entrepreneurial Capacity and High-Growth Start-ups. The results, presented for both the full set of 21 GEM 2000 countries and the Alpha Group, reflect the (a) domestic investments in seed, start-up, early- and expansion-stage companies, and (b) investments in all stages of information technology companies.

As revealed in Table 7, countries with the highest levels of perceived entrepreneurial opportunity, capacity and motivation have the greatest level of venture capital investment per GDP. Similarly, countries with higher levels of R&D transfer and availability of entrepreneurial education and training have higher levels of venture capital investment. The quality of the commercial infrastructure correlates more strongly with venture capital investments in information technology companies than it does with

**Figure 21**  
Ratio of Venture Capital Invested Domestically in All Stages of Information Technology Companies to GDP in 1999





**Table 7**  
**Aspects of Venture Capital Correlated with Selected Aspects of the GEM Model**

	Venture Capital Invested Domestically in Seed, Start-up, Early-, and Expansion-Stage Companies in All Industries Divided by GDP		Venture Capital Invested Domestically in All Stages of Information Technology Companies Divided by GDP		
	21 Nations minus Argentina and Brazil	Alpha Group	21 Nations minus Argentina, Brazil, Japan and Korea	Alpha Group Except Japan and Korea	
<b>ENTREPRENEURIAL FRAMEWORK CONDITIONS</b>					
R&D Transfer	0.58**	0.72**	0.54**	0.65**	† Significant at the 0.1 level (2-tailed test) * Significant at the 0.05 level (2-tailed test) ** Significant at the 0.01 level (2-tailed test) *** Significant at the 0.001 level (2-tailed test)
Entrepreneurship Education and Training	0.57**	0.67**	0.60*	0.70**	
Financial Support: Angel, Venture Capital and IPO	0.49*	0.51**	0.43	0.42	
IT: Hosts per 10,000 Persons in 1999	0.41 <sup>†</sup>	0.40	0.48 <sup>†</sup>	0.46	
Commercial Infrastructure	0.36	0.42	0.63**	0.74**	
<b>ENTREPRENEURIAL OPPORTUNITY AND CAPACITY</b>					
Entrepreneurial Opportunity	0.61**	0.75***	0.61**	0.71**	
Entrepreneurial Capacity: Skill	0.67**	0.79**	0.60**	0.76***	
Entrepreneurial Capacity: Motivation	0.78***	0.86***	0.75**	0.81***	
<b>HIGH-GROWTH START-UPS</b>					
Percent of Start-ups Expecting 15+ Jobs in 5 Years	0.63**	0.67**	0.57**	0.59*	

investments in all companies in all industries. One plausible explanation is that many of today's young information technology companies are located in business hatcheries, incubators and technology parks where commercial support is plentiful. The level of Internet hosts correlates strongly with venture capital, perhaps because Internet-related companies are so prominent among the more recent high-growth start-ups. Finally, as expected, the level of venture capital investment is associated with availability of financial support.

One of the most important findings from this initiative is that countries with the highest levels of venture capital investment also have greater prevalence rates for high-growth start-ups. The GEM 2000 study produces convincing evidence in support of the GEM conceptual model. The strong correlations in Table 7 demonstrate that venture capital plays a central role in facilitating high-growth entrepreneurship.

## End Notes

- <sup>1</sup> OECD. 1998. Fostering Entrepreneurship. Paris, France: OECD.
- <sup>2</sup> Schwab, K., M. Porter, and J. Sachs, The Global Competitiveness Report: 1999. Geneva, Switzerland: World Economic Forum, 1999; see pp. 96-98 for definitions and a description of measurement procedures for the National Framework Conditions.
- <sup>3</sup> Details of all methodological procedures and data sources are provided in the GEM 2000 Operations Manual prepared by the GEM Coordination Team.
- <sup>4</sup> The actual interview schedule is available from the GEM Coordination Team. In some countries, multiple languages were required: English and French in Canada; Arabic, Hebrew, and Russian in Israel; and six different languages in India. Surveys were completed by market research firms in each country, with nine (Canada, Denmark, Finland, Germany, Italy, Japan, Norway, Spain and the United Kingdom) coordinated by Taylor Nelson Sofres plc of London; six (Australia, Belgium, France, India, Ireland, and Israel) by AC Nielsen Inc of Pleasantville, New York; and the remainder (Argentina, Brazil, Korea, Singapore, Sweden and the United States) directly by the GEM Coordination Team.
- <sup>5</sup> The revision and improvements to this instrument, development and analysis of reliable multi-item indices based on the judgements of the 788 national experts, was developed and supervised by Professor Erko Autio, Helsinki University of Technology.
- <sup>6</sup> The actual surveys included all those in the national population considered eligible for work. This excludes those in the military, schools or universities, mental institutions or prisons. The lower end was 18 years old for about half the countries but as young as 14 years in some. Some national survey samples included a higher proportion of those past their retirement years. The oldest respondent was 98 years old. In order to provide a standardized measure and reduce the effect of variation in ages among the samples, only those between 18-64 were included in most analyses. This was about 90 percent of the total of 43,000 respondents.
- <sup>7</sup> A person was considered to be involved in a nascent firm if he or she had engaged in any activity to start the firm in the past 12 months, expected to own all or part of the new firm once it became operational, and the initiative had not paid salaries and wages to anyone, including owner-managers, for more than three months. A person was considered to be a principal in a new firm if he or she reported managing an operating business and was a sole or part owner and the business had not paid salaries and wages to anyone, including owners and managers prior to 1997. This would include new firms from 0-42 months old.
- <sup>8</sup> The annual change in GDP in Korea was 5 percent in 1997, -6.7 percent in 1998, 10.7 percent in 1999 and projected to be 7.0 percent in 2000. The number of new business registrations provided by the Korean tax officials was 706,000 in 1997, 581,000 in 1998 and 1,078,000 in 1999. This is strong evidence that one reaction to the dramatic decline among large Korean multi-nationals in 1997 was the creation of new firms — an entrepreneurial activity associated with the subsequent recovery in the national economic growth trajectory.
- <sup>9</sup> These individuals were uniformly distributed across the 21 GEM 2000 countries so that there is no bias in comparing countries on the TEA prevalence measure due to these multiple activity respondents.
- <sup>10</sup> The total number of individuals in Japan who reported participation in entrepreneurial activity (less than 20) is so small that comparisons within the sample are probably unstable and do not justify much confidence.
- <sup>11</sup> Numerous analyses of cross-regional comparisons within countries have shown a strong association between measures of entrepreneurial activity and regional economic growth. These correlations tend to be reasonably strong (above 0.6) for concurrent measures in the same time period or with 1-2 year lags. It has not, however, been possible to show a strong independent causal effect from entrepreneurial activity on subsequent economic growth. [Bosma, Niels and Henry Nieuwenhuijsen. Turbulence and Productivity in the Netherlands. Zoetermeer, NL: EIM Small Business Research and Consultancy, Research



- Report 9909/E, 2000. Reynolds, Paul D. "Business Volatility: Source or Symptom of Economic Growth?" in Z. J. Acs, et al. (Eds.) Entrepreneurship, Small and Medium-Sized Enterprises, and the Macro-Economy. Cambridge, UK: Cambridge University Press, 1998.] Preliminary studies indicate that European countries with greater small firm expansion, relative to large firm expansion, have greater subsequent economic growth. [Thurik, Roy. "Small Firms, Entrepreneurship, and Economic Growth." Rotterdam, The Netherlands: Erasmus U. F. de Vries Lecture, 1994.]
- <sup>12</sup> Measures of national economic growth and annual rates of change in GDP at constant prices were taken from the International Monetary Fund World Economic Outlook Database (April 2000) available at [www.imf.org/external/pubs/ft/weo/2000/01/data/index.htm](http://www.imf.org/external/pubs/ft/weo/2000/01/data/index.htm).
- <sup>13</sup> National import/export data for 1999 were taken from International Monetary Fund World Trade Organization Statistics available at [www.wto.org/english/res\\_e/statistics\\_e/overvw\\_e.htm#longterm](http://www.wto.org/english/res_e/statistics_e/overvw_e.htm#longterm).
- <sup>14</sup> World Bank, World Development Indicators: 2000, Washington, DC: The World Bank, Table 2.4. The percentage of males in the labor force engaged in agriculture by year of assessment varies from 1992-1997.
- <sup>15</sup> A linear additive model using 1999 nascent firm prevalence rates and 1999 growth in GDP accounts for more than 70 percent of the variance in estimate growth in GDP for the year 2000. Despite a correlation of 0.57 between 1999 nascent firm prevalence rates and estimated growth in GDP for 2000, it does not provide a statistically significant improvement in the predictive equation compared to the 1999 growth in GDP.
- <sup>16</sup> These three measures are produced on an annual basis: Schwab, K., M. Porter, and J. Sachs, The Global Competitiveness Report: 1999, Geneva, Switzerland: World Economic Forum, 1999; Garelli, Stephane, The World Competitiveness Yearbook: 2000, Lausanne, Switzerland: International Institute for Management Development, 2000; O'Driscoll, G.P., K. R. Holmes, and M. Kirkpatrick. 2000 Index of Economic Freedom, Washington, D.C. and New York, NY: Heritage Foundation and the *Wall Street Journal*, 2000. Considering only the 16 Alpha Group countries in the GEM 2000 analysis, the correlation between the 1999 Global Competitiveness Index and estimated growth in GDP for 2000 is exactly 0.00; for the 2000 World Competitiveness Index it is 0.11; and for the 2000 Index of Economic Freedom it is 0.12.
- <sup>17</sup> Panel studies of business start-ups require identification of nascent firms in the pre-birth or organizational phase and regular assessments to determine which nascent firms become new firms. Although expensive and complicated to implement, such studies are under way in Argentina, Canada, Greece, the Netherlands, Norway, Sweden and the United States. The Kauffman Center for Entrepreneurial Leadership is a major sponsor of the U.S. project; information is available at <http://projects.isr.umich.edu/psed/> and in Reynolds, Paul D., "National Panel Study of U.S. Business Start-ups: Background and Methodology." in J. Katz (ed.), Advances in Entrepreneurship, Firm Emergence and Growth, Vol. 4: Stamford, CT: JAI Press, pp. 153-227, 2000.
- <sup>18</sup> Estimates of population were taken from [www.census.gov/ipc/www/idbnew.html](http://www.census.gov/ipc/www/idbnew.html), a standardized portrayal of all countries' population characteristics, past and projected, maintained by the U.S. Department of Commerce. Migration data were taken from [www.undp.org/popin/wdtrends/migpol95/timp.htm](http://www.undp.org/popin/wdtrends/migpol95/timp.htm) maintained by the United Nations Population Division of the Department of Economic and Social Information and Policy Analysis.
- <sup>19</sup> Of the 300 new Russian immigrants interviewed in Israel, only one was participating in an entrepreneurial activity, a prevalence rate of 0.3 percent. Research based on representative surveys in the United States find that most individuals that have lived in a county less than five years (there are over 3,000 counties in the United States) are not involved in nascent firms (Reynolds P. and Sammis White, The Entrepreneurial Process, Westport, CT: Quorum Books, 1997). This does not mean that prevalence rates of entrepreneurial activity may not be higher among some immigrant groups as they become established within a country.
- <sup>20</sup> The "Government" dimension developed for the Global Competitiveness Report: 1999, [Schwab, K., M. Porter, and J. Sachs, The Global Competitiveness Report: 1999, Geneva: Switzerland: World Economic Forum, 1999.] is an index based on 22 specific measures derived from a combination of executive questionnaire responses for each country to "Government economic policies are independent of pressure from special interest groups" and national economic statistics, such as the inflation rate and general government surplus as a proportion of GDP. As the published report only provides a rank order of countries on this measure, data from the report on individual items was used to estimate the interval value on this dimension using regression analysis, providing greater precision in national comparisons. Total tax revenues as a percentage of GDP was taken from World Development Indicators: 2000, Washington, DC: The World Bank, 2000, Table 5.5, based on data from the International Monetary Fund.

- <sup>21</sup> Average corporate tax rates were obtained from PriceWaterhouseCoopers' worldwide tax reports as summarized in Garelli, Stephane, The World Competitiveness Yearbook: 2000, Lausanne, Switzerland: International Institute for Management Development, 2000. Maximum personal income tax rates were taken from World Development Indicators: 2000, Washington, DC: The World Bank, 2000, Table 5.5, summarizing data from PriceWaterhouseCoopers' worldwide tax reports.
- <sup>22</sup> World Development Indicators: 2000, Washington, DC: The World Bank, 2000, Table 2.8.
- <sup>23</sup> The "Government" dimension developed for the Global Competitiveness Report: 1999 is an index based on 17 specific measures, including business executive questionnaire responses to "the social welfare system has preserved labor market flexibility" and detailed numerical data such as work days lost to labor disputes. Non-wage costs for 1998 taken from Garelli, Stephane. The World Competitiveness Yearbook: 2000, Lausanne, Switzerland: International Institute for Management Development, 2000 based on PriceWaterhouseCoopers' worldwide tax reports.
- <sup>24</sup> World Development Indicators: 2000, Washington, DC: The World Bank, 2000, Table 1.3.
- <sup>25</sup> The specific items, Q.1.d and Q.4.a-c, are found in the full questionnaire available from the GEM Coordination Team.
- <sup>26</sup> The total of informal contributions to start-ups for GEM 2000 countries was computed as follows. Since many informal investors may be past the working years, all those 18 and older were used in the computations. Those survey respondents reporting an informal contribution to a start-up in the past three years were asked the total amount they had provided in this time period. The average value for each national sample was divided by three, to get an annual amount, and the sum converted to U.S. dollars using the exchange rate as of July 27, 2000. The prevalence rate of informal investors was then multiplied by the national population of those 18 and older. This person count was then multiplied by the average annual informal investment in dollars to get a final national estimate. For most countries, this provides an order of magnitude estimate with a very wide confidence interval, as the confidence interval for the total informal investments would involve multiplication of the standard error of the prevalence rate with the standard error of the average amount informally invested in start-ups.
- <sup>27</sup> There was a very high non-response among the Indian respondents on several items involving money that were universally answered in the other 20 national surveys. This suggests that Indian respondents were more suspicious of the interview situation and that the data may provide a substantial underestimate of the true prevalence rate of informal investors in that country.
- <sup>28</sup> The measurement and definitions associated with data on venture capital for Brazil and Argentina were not consistent with the practices in the other GEM 2000 countries. Since harmonized comparisons were not possible, these two countries have been omitted from the analysis.
- <sup>29</sup> Data were obtained from Garelli, Stephane, The World Competitiveness Yearbook: 2000, Lausanne, Switzerland: International Institute for Management Development, 2000; World Development Indicators: 2000, Washington, DC: The World Bank, 2000; NAU Internet Surveys [www.nau.ie](http://www.nau.ie), and the Internet Software Consortium [www.isc.org](http://www.isc.org).
- <sup>30</sup> In this report, classic venture capital is money invested in seed, start-up, early-, expansion- and later-stage companies (using the definitions in the National Venture Capital Association's 2000 Yearbook and the European Venture Capital Association's 2000 Yearbook). Except where explicitly stated otherwise, it does not include buyout and acquisition financing.
- <sup>31</sup> Sources of data for this study include the following: Australian Venture Capital Journal, British Venture Capital Association, Canadian Venture Capital Association, European Venture Capital Association, Indian Government, Israel Venture Capital Online, National Venture Capital Association (U.S.).
- <sup>32</sup> *Business Week*, August 7, 2000, pp. 54-55.

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