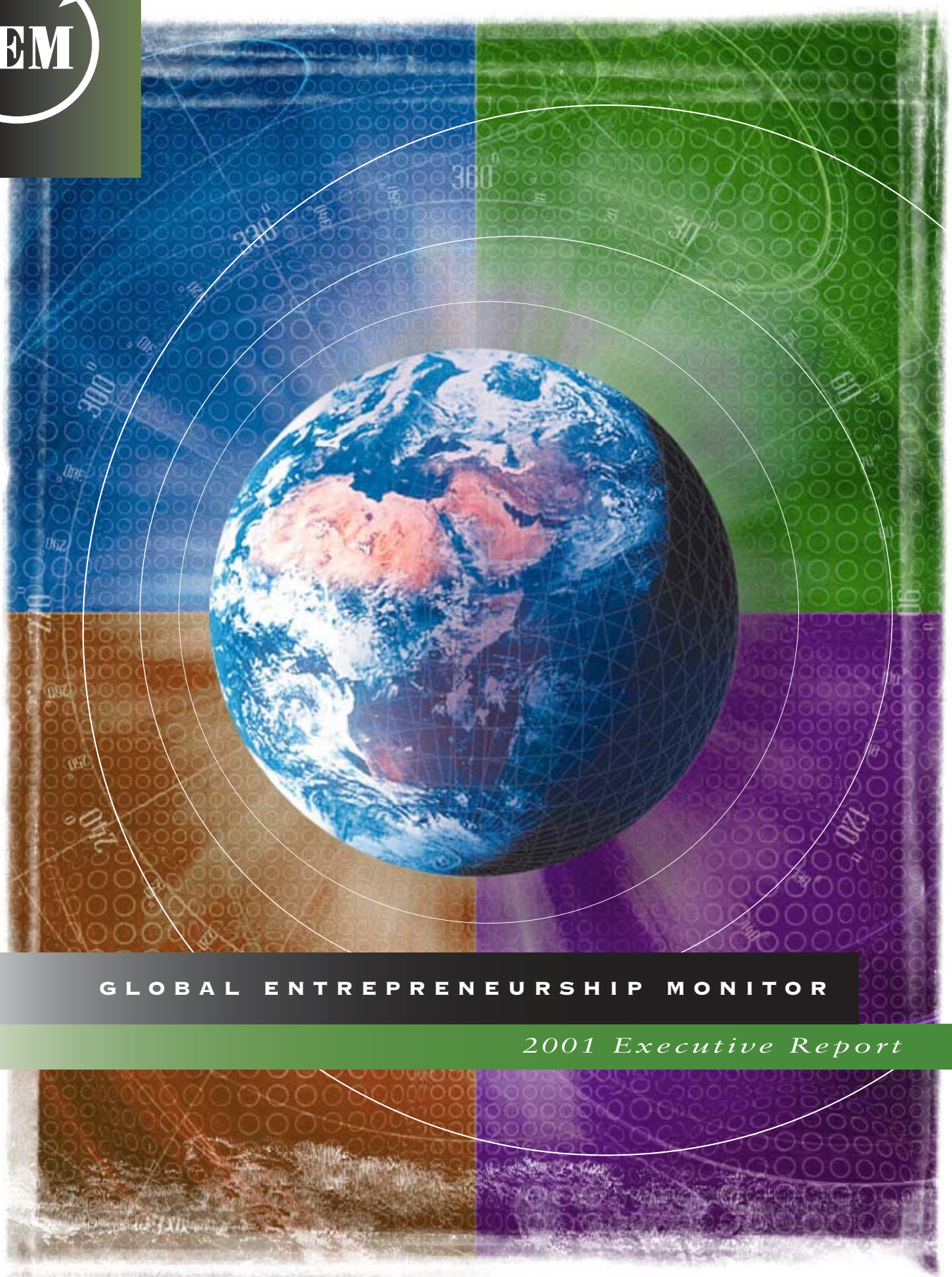
GEM



GLOBAL ENTREPRENEURSHIP MONITOR

2001 Executive Report

Paul D. Reynolds • S. Michael Camp • William D. Bygrave • Erkko Autio • Michael Hay

BABSON COLLEGE

IBM

London Business School

KAUFFMAN CENTER FOR ENTREPRENEURIAL LEADERSHIP
AT THE EWING MARION KAUFFMAN FOUNDATION

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Executive Summary

For several years now, evidence has accumulated that documents the significant relationship between entrepreneurship and national economic adaptation and expansion. As a result, the rate of public and private investments devoted to entrepreneurial activity has exploded in the hopes of accelerating innovation, technology development and job creation benefits. Despite the added attention, however, there have been few systematic cross-national comparisons of the level of entrepreneurship, its association with national economic growth, or the factors that influence it over time.

The third annual assessment of these issues has been completed with 29 countries involved in the Global Entrepreneurship Monitor (GEM) program. GEM was initiated in 1997 by leading scholars from Babson College and the London Business School, with strong support from the Kauffman Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation in Kansas City, Missouri. IBM became a global sponsor for GEM 2001.

In 1999, the first year of the assessment, 10 countries participated. Twenty-one countries participated in 2000 and 29 in 2001. The countries included in the 2001 assessment are:

European Region

Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden and the United Kingdom

Asian Region

India, Japan, Korea and Singapore

Latin American Region

Argentina, Brazil and Mexico

North American Region

Canada and the United States

Other Regions

Australia, Israel, New Zealand and South Africa

The central aim of GEM is to assemble the world's leading scholars to address three compelling questions:

- Does the level of entrepreneurial activity vary between countries?
- Are the differences in entrepreneurial activity associated with national economic growth?
- What national characteristics are related to differences in the level of entrepreneurial activity?

Data were assembled for each participating country from four basic sources: 1) surveys of at least 2,000 adults in each country; 2) in-depth interviews with more than 950 national experts on entrepreneurship; 3) standardized questionnaires completed by the national experts; and 4) a wide selection of standardized national data.

The key findings from the 2001 assessment are:

- ***Entrepreneurship is a global phenomenon with significant differences between countries.*** About 1.4 billion working-age individuals (20 to 64 years old) live in the 29 GEM 2001 countries. Slightly less than 10 percent of these people are, at any point in time, in the process of creating and growing new businesses. *Thus, in the GEM countries alone, almost 150 million people are engaged in some form of entrepreneurial activity!* And the level of that activity varies from country to country, from a low of approximately 5 percent of the adults in Belgium and Japan to about 18 percent in Mexico. In addition, about 3 percent of the adults in the 29 countries have recently invested personal funds into the new businesses of other individuals.
- ***Entrepreneurship is a multi-faceted phenomenon.*** The GEM 2001 assessment uncovered a dynamic dimension inside entrepreneurial activity. Each respondent was asked to indicate whether he was starting and growing his business to take advantage of a unique market opportunity *(opportunity entrepreneurship)* or because it was the best option available *(necessity entrepreneurship).* The average opportunity entrepreneurship prevalence rate across the 29 GEM countries was about 6.5 percent, while the average for necessity entrepreneurship was 2.5 percent.

Four countries ranked highest in opportunity entrepreneurship (in alphabetical order): Australia, Mexico, New Zealand and the United States. Five countries ranked among the highest group for necessity entrepreneurship (in alphabetical order): Brazil, India, Korea, Mexico and Poland. The analysis indicated that developing countries generally have a higher prevalence rate for necessity entrepreneurship.

- *The relationship between entrepreneurship and economic growth is complex.* The prevalence rate for necessity entrepreneurship in 2001 was positively associated with national economic growth. This association was stronger when countries highly dependent on international trade — Belgium, Hungary, Ireland, the Netherlands and Singapore — were excluded. The prevalence rate of opportunity entrepreneurship, on the other hand, was not associated with any measure of national economic growth. Without longitudinal data it is difficult to unravel the mystery of causality in these relationships. However, it does appear that in developing countries, necessity entrepreneurship may have a strong macro-economic function.
- *Several national contextual factors influence the level of entrepreneurial activity.* Both opportunity and necessity entrepreneurship were higher in countries where there was greater income inequality and where the adults expected the national economic situation to improve. Opportunity entrepreneurship was higher where there was (a) a reduced national emphasis in manufacturing, (b) less intrusive government regulations, (c) a higher prevalence of informal investors, and (d) a significant level of respect for entrepreneurial activity. Necessity entrepreneurship was higher in countries where (a) economic development was relatively low, (b) the economy was less dependent on international trade, (c) there was not an extensive social welfare system and (d) women were less empowered in the economy.

The policy implications of the findings from the GEM 2001 assessment are numerous. Although implementation of any of these principles will vary from country to country, several have general applicability.

- *Emphasize economic adaptation as a collective responsibility.* Governments at all levels can promote the view that all citizens share responsibility for change in the economic system. The greater the proportion of economic activity conducted in the private sector, the greater the potential for entrepreneurial activity.
- *Enhance education — general and entrepreneurship-specific.* A strong commitment to education, both general and entrepreneurship-specific, is clearly justified across all national contexts. Not only are those with limited education less likely to participate in entrepreneurial initiatives, they tend to match their business aspirations to their level of skills and knowledge. As a consequence, they generally emphasize less ambitious business activities.
- *Lessen the regulatory burden on new and small firms.* The GEM 2001 assessment clearly identified government regulatory burdens as a major deterrent to higher levels of entrepreneurial activity. Governments should ensure that every aspect of their national economic system is supportive of entrepreneurship, including reducing and simplifying the regulatory burden, minimizing taxation and lowering non-wage labor costs.
- *Strike a balance between economic security and self-sufficiency.* GEM 2001 revealed a strong negative association between the level and duration of unemployment benefits and the prevalence of necessity entrepreneurship. National policy should strive to balance the need to protect the unemployed with the need to encourage higher levels of individual self-sufficiency.
- *Facilitate greater levels of female participation.* Women participate in entrepreneurship at about one-half the rate of men across all GEM 2001 countries. There is perhaps no greater initiative a country can take to accelerate its pace of entrepreneurial activity than to encourage more of its women to participate.
- *Compensate for gaps in the population age structure.* Across the 29 GEM 2001 countries, participation of adults in entrepreneurship is highest between the ages of 25 and 44. Countries with a relative shortage of these mid-career adults or a projected decline in adults in this age range, particularly males, should explore ways to encourage their older citizens to become more active in entrepreneurial efforts.
- *Encourage toleration of diversity in personal income and wealth.* GEM has indicated that greater diversity in household and personal income is consistently associated with higher levels of entrepreneurial activity. As long as this diversity reflects appropriate contributions to national economic growth, governments should ensure that policies reflect a recognition and acceptance of diversity in wealth.

The Global Entrepreneurship Monitor (GEM) program was designed to answer three fundamental questions:

- Does the level of entrepreneurial activity vary between countries, and, if so, by how much?
- Are the differences in entrepreneurial activity associated with national economic growth?
- What national characteristics are related to differences in entrepreneurial activity?

Data were assembled for each participating country from four basic sources: 1) surveys of at least 2,000 adults in each country; 2) in-depth interviews with more than 950 national experts on entrepreneurship; 3) standardized questionnaires completed by the national experts; and 4) a wide selection of standardized national data. In a truly collaborative manner, each country was represented by a national team that participated in development of the research design, collected all data from the national experts, paid for the adult population surveys, contributed to the costs of the coordination activity and reviewed the final data sets for errors and ambiguities.

The total population of the 29 countries participating in GEM 2001 is about 2.5 billion. Approximately 56 percent (1.4 billion) are adults of working age. GEM surveyed random samples of at least 2,000 adults from each participating country to ascertain several measures of entrepreneurial activity. From the more than 74,000 surveys conducted with those 18 to 64 years of age, about 10 percent of the adults were engaged in entrepreneurial activities. Results were similar for the 21 countries participating in GEM 2000. This means that in the 29 GEM 2001 countries, at any point in time, approximately 150 million people are involved in starting and growing new firms.

The overall level of entrepreneurial activity for each country is presented in Figure 1. The value depicted for each country shows the number per every 100 adult individuals who are trying to start a new firm or are the owner/managers of an active business less than 42 months old (i.e., the Total Entrepreneurial Activity Index).[1] The vertical bars represent the precision of each estimate based on the size of the sample in each country at the 95 percent confidence interval.

As depicted in Figure 1, the range in prevalence rates represents a four-fold difference from a low of less than 5 percent in Belgium to approximately 18 percent in Mexico. Mexico and New Zealand appear to lead a group of five countries with generally higher prevalence rates than all other GEM 2001 countries. However, the rank order among the five is uncertain since the differences between the countries are not statistically significant.

In Figure 2, the 29 countries are grouped according to global region. The 16 European countries plus Israel form one rather homogenous group with an average prevalence rate of about 8 percent. The four Asian countries (India, Japan, Korea and Singapore) average about 9 percent but with very substantial variation. The two North American countries (Canada and the United States) have an average prevalence rate of approximately 11.3 percent. Three other former United Kingdom colonies (Australia, New Zealand and South Africa) average almost 14 percent, and the three Latin American countries (Argentina, Brazil and Mexico) have an average rate of 14.5 percent. As evident in Figure 2, the North American region has the greatest stability in prevalence rates followed closely by Europe. Differences between developed and developing countries appear significant as well.

Twenty-one of the 29 countries studied in 2001 were also in the GEM 2000 assessment. Despite economic struggles in many of these countries during these two years, a comparison of the difference in the Total Entrepreneurial Activity (TEA) shows that the average for these countries did not significantly decrease. There was no statistically significant difference in the level of activity for 17 countries from 2000 to 2001. However, three countries — Brazil, Norway and the United States — did experience a significant decrease in the level of entrepreneurial activity.

Total Entrepreneurial Activity (TEA) by Country

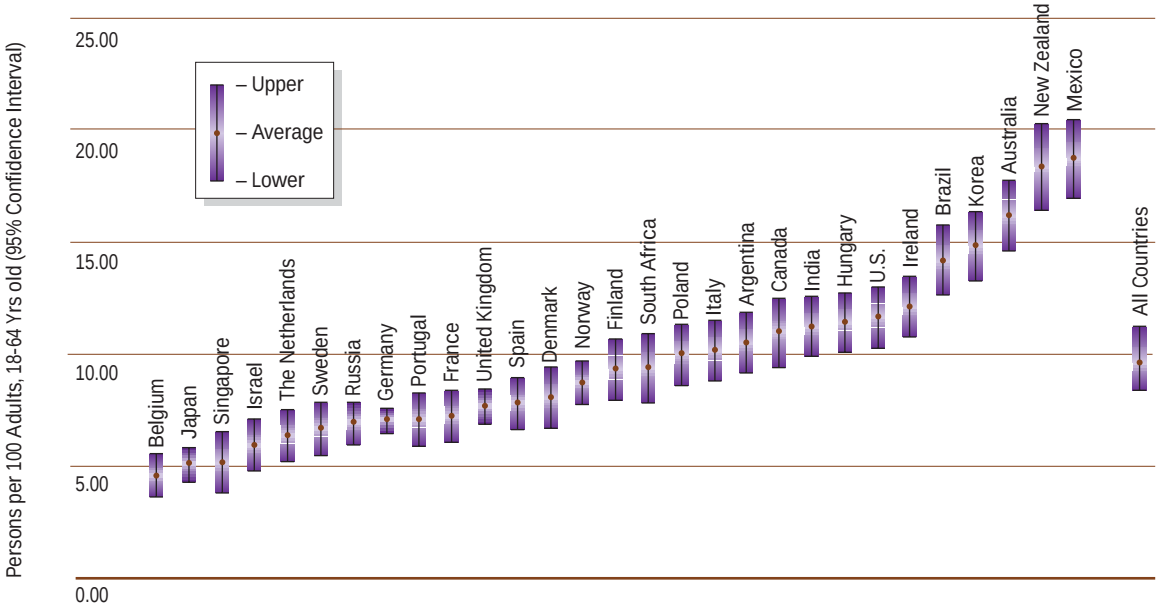

Figure 1

Total Entrepreneurial Activity (TEA) by Global Region

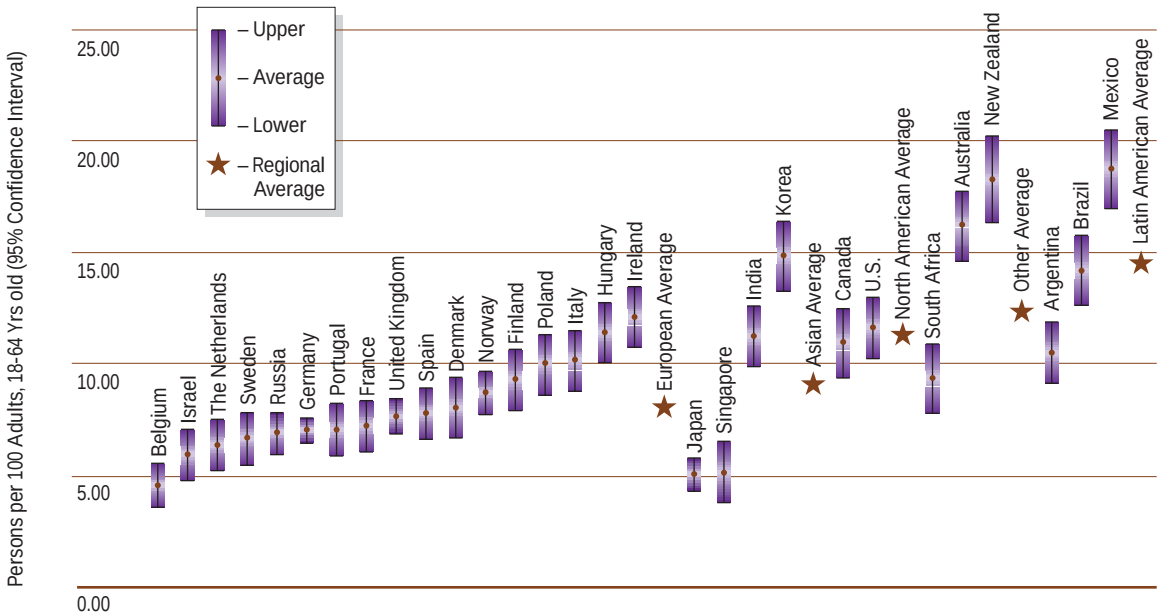

Figure 2

About 54 percent (i.e., 80 million people) of those involved in creating and growing new firms claimed they were pursuing a business opportunity for personal interest, often at the same time they were working in a regular job. These efforts are referred to as "opportunity entrepreneurship," reflecting the voluntary nature of participation. In contrast, about 43 percent (i.e., 63 million people) reported they were involved because they had "no better choices for work." Such efforts are referred to as "necessity entrepreneurship," reflecting to the individual's perception that such actions presented the best option available for employment but not necessarily the preferred option.

The patterns of participation in opportunity and necessity entrepreneurship varied dramatically across the GEM 2001 countries. The remaining 3 percent (i.e., 4 million people) involved in new business activity reflect other motivations.

The cross-national comparisons for opportunity entrepreneurship are presented in Figure 3. The range of prevalence rates represents more than a six-fold difference, from 2 percent for Israel to 15 percent for New Zealand. There is no statistically significant difference among the top three countries — Australia, Mexico and New Zealand.

Opportunity-Based Entrepreneurial Activity by Country

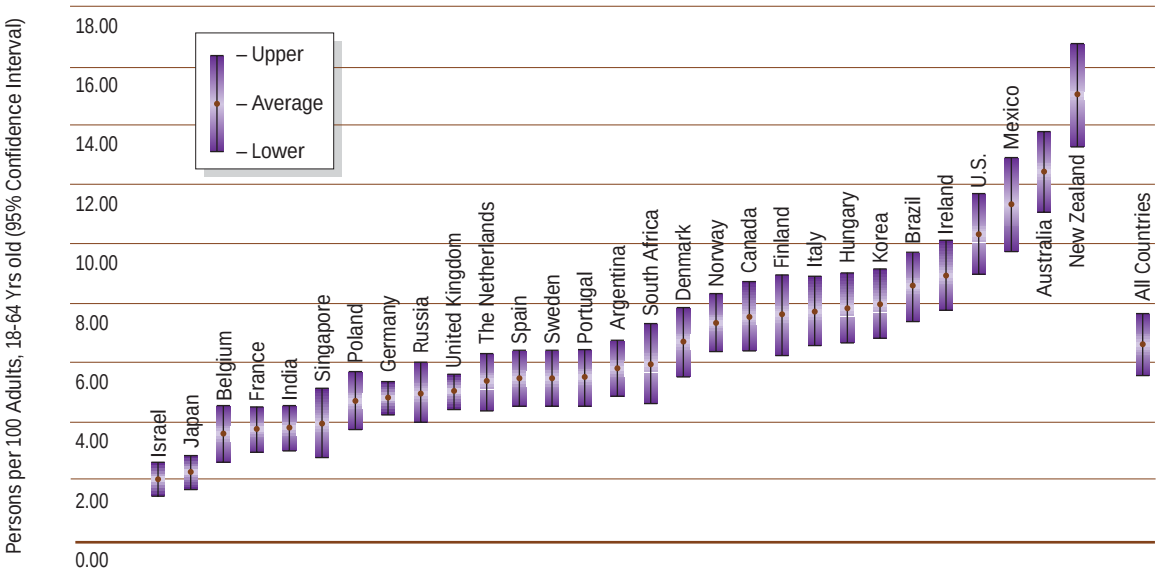

Figure 3

Necessity-Based Entrepreneurial Activity by Country

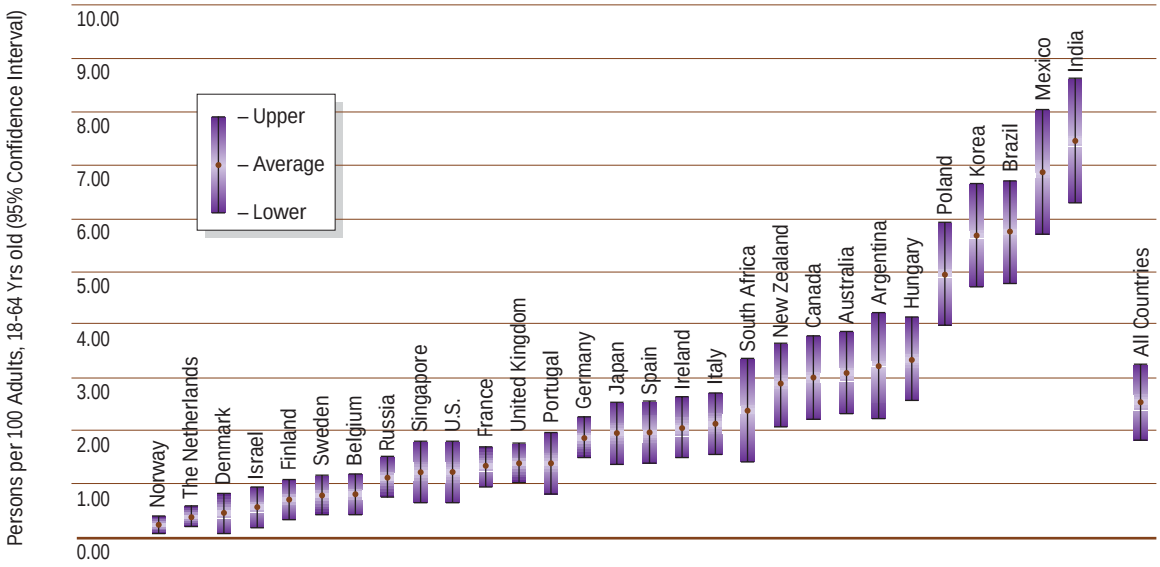

Figure 4

The pattern for necessity entrepreneurship is presented in Figure 4. The range in the prevalence rates represents a 30-fold difference, from less than 0.25 percent (i.e., one in every 400 people) in Norway to approximately 7.5 percent in India. One clear pattern depicted in Figure 4 is that most developing countries, or those with a substantial developing sector, are at the high end of this measure. The more advanced countries tend to be clustered at the low end. Six of the seven countries at or below 1 percent are advanced European Union countries where substantial economic security programs are in place.

The TEA measure strongly correlates with both opportunity (0.86) and necessity (0.70) entrepreneurial activity. However, opportunity and necessity entrepreneurial actions do not correlate with each other. This is a strong indication that the two activities reflect very different underlying causal mechanisms. An assessment of the start-ups and new firms uncovered in the adult population surveys was completed after the sample data were weighted to represent the national populations.[2] The start-up or new business activity was differentiated by four economic sectors (Table 1): *Extractive* (e.g., farming, fishing, mining); *Transforming* (e.g., construction, manufacturing, transportation, wholesale); *Business Services* (e.g., financial, insurance, real estate, consulting); and *Consumer-Oriented* (e.g., retail, restaurants, consumer services, health, education).[3]

As evident in Table 1, a much greater percentage of opportunity entrepreneurship activity occurs in the business services sector than in the overall sample. There appears to be a greater percentage of necessity entrepreneurship in the consumer-oriented sectors compared to the overall sample. This may reflect the decisions of necessity-based entrepreneurs to concentrate in less complex, lower cost and more immediately accessible market sectors.

As shown at the bottom of Table 1, growth aspirations also vary dramatically between necessity- and opportunity-driven entrepreneurs. About 14 percent of opportunity-driven entrepreneurs expect their new ventures to produce 20 or more jobs in five years (i.e., high-growth firms), seven times the percentage (2 percent) of high-growth firms expected from necessity entrepreneurship activities. In contrast, 9 of 10 necessity-driven entrepreneurs expect their new firms to provide no more than five new jobs in the next five years.

Table 1: Entrepreneurship Motives and Selected Factors

	Total	Opportunity Entrepreneurship	Necessity Entrepreneurship	Mixed or Other
Start-up, or Nascent Firm (number of cases)	**6,609**	**3,489**	2,908	212
Extractive: Farming, Fishing, Hunting, Forestry, Mining	4%	4%	4%	8%
Transforming: Construction, Manufacturing, Transportation, Wholesale, Communications, Utilities	33%	30%	37%	36%
Business Services: Financial, Insurance, Real Estate, Consulting, Business Professionals	14%	21%	5%	13%
Consumer-Oriented: Retail, Hotels, Restaurants, Consumer Services, Health, Education, and Social Services	49%	45%	54%	43%
	100%	100%	100%	100%
Growth Aspirations				
Expect no jobs in 5 years	14%	14%	14%	18%
Expect 1-5 jobs in 5 years	62%	52%	75%	47%
Expect 6-19 jobs in 5 years	15%	20%	9%	18%
Expect 20 or more jobs in 5 years	9%	14%	2%	18%
	101%	100%	100%	101%

GEM uses five distinct measures to account for the many facets of entrepreneurial behavior. They are:

- *the proportion of the population starting new businesses;*
- *the proportion of the population employed as owner/managers of new firms less than 42 months old;*
- *prevalence rates of the overall TEA index;*
- *prevalence rates for opportunity-based TEA; and*
- *prevalence rates for necessity-based TEA.*

The inter-correlations among these measures are presented in Table 2. Four of the five measures are strongly associated: prevalence rates for start-ups, prevalence rates for new firms, the overall TEA index and the opportunity-based TEA. The fifth measure, prevalence rates for necessity-based TEA, does not have a statistically significant relationship to opportunity-based TEA or new firm prevalence rates. This further supports the idea that the motivating influences for people starting businesses out of necessity are distinct from those for other types of entrepreneurial activity.

Several other measures of entrepreneurial activity have high and statistically significant correlations with the five measures of entrepreneurship (bottom of Table 2). These include measures of growth-oriented ventures that expect to produce 15 or more new jobs in five years, independent sponsored nascent firms, nascent firms sponsored by existing businesses, and nascent firms initiated by male, female, young and mid-career adults. From the consistently high correlations revealed in Table 2, it is clear that the TEA index provides a good indicator of the overall level of entrepreneurial activity, subject to the unique patterns associated with necessity entrepreneurship.

Table 2: Inter-Correlations Among Measures of Entrepreneurial Activity

	TEA Overall	TEA Opportunity	TEA Necessity	Nascent Firms	New Firms
TEA Measures					
TEA Overall (#/100 18-64 yrs old)	1.00				
TEA Opportunity (#/100 18-64 yrs old)	0.87	1.00			
TEA Necessity (#/100 18-64 yrs old)	0.67	0.26*	1.00		
Nascent Firms (#/100 18-64 yrs old)	0.92	0.78	0.71	1.00	
New Firms (#/100 18-64 yrs old)	0.82	0.75	0.43	0.53	1.00
Growth Oriented TEA Measures					
Growth Oriented TEA (#/100 18-64 yrs old)†	0.73	0.79	0.26*	0.63	0.65
Independent Nascents (#/100 18-64 yrs old)	0.90	0.77	0.72	0.90	0.64
Business Sponsored Nascents (#/100 18-64 yrs old)	0.75	0.73	0.44	0.75	0.54
Male Nascents (#/100 18-64 yrs old)	0.97	0.78	0.70	0.86	0.84
Female Nascents (#/100 18-64 yrs old)	0.93	0.90	0.52	0.90	0.70
Young Adult Nascents (#/100 18-34 yrs old)	0.88	0.67	0.76	0.81	0.72
Mid-Career Adult Nascents (#/100 35-54 yrs old)	0.84	0.85	0.38	0.73	0.76

†Expect 16 or more jobs in five years; *Not statistically significant.

Since 1999, GEM has demonstrated that entrepreneurial activity is associated with national economic growth. While the relationship is consistent, the strength of the association tends to vary depending on the countries included in the analysis and the nature of the entrepreneurial activity. For GEM 2001, the association between the specific measures of entrepreneurial activity and growth in gross domestic product (GDP)[4] is presented in Table 3. As shown in the top portion of Table 3, none of the measures of entrepreneurship has a negative relationship with actual or projected growth in GDP. The strongest measure of association is TEA necessity entrepreneurship, with a statistically significant correlation of 0.55 with 2002 projected growth in GDP.

The TEA index is a measure of indigenous entrepreneurial activity. If a country has substantial imports and exports, it is reasonable to expect that national economic growth will reflect competitiveness in international markets and be less dependent on internal developments. Five of the 29 GEM 2001 countries had a level of total

Table 3: Correlations Between Measures of Entrepreneurial Activity and Economic Growth

	Real GDP Growth 2000	Real GDP Growth: 2001 (Projected)	Real GDP Growth: 2002 (Projected)
All GEM 2001 Countries			
TEA (Total Entrepreneurial Activity) 2001	0.18	0.22	0.32
Nascent (Start-up) firm prevalence rate: 2001	0.02	0.20	0.23
New business prevalence rate: 2001	0.36	0.18	0.36
TEA opportunity entrepreneurship rate: 2001	0.10	0.07	0.05
TEA necessity entrepreneurship rate: 2001	0.16	0.37	0.55*
GEM 2001 Countries without Export Emphasis (Excludes Belgium, Hungary, Ireland, the Netherlands and Singapore)			
TEA (Total Entrepreneurial Activity) 2001	0.31	0.28	0.39
Nascent (Start-up) firm prevalence rate: 2001	0.09	0.28	0.27
New business prevalence rate: 2001	0.51*	0.19	0.44*
TEA opportunity entrepreneurship rate: 2001	0.12	0.00	-0.01
TEA necessity entrepreneurship rate: 2001	0.31	0.58*	0.73**

*Statistically significant: 0.05 level; **Statistically significant: 0.01 level.

Necessity Entrepreneurship and 2002 Projected Growth in GDP

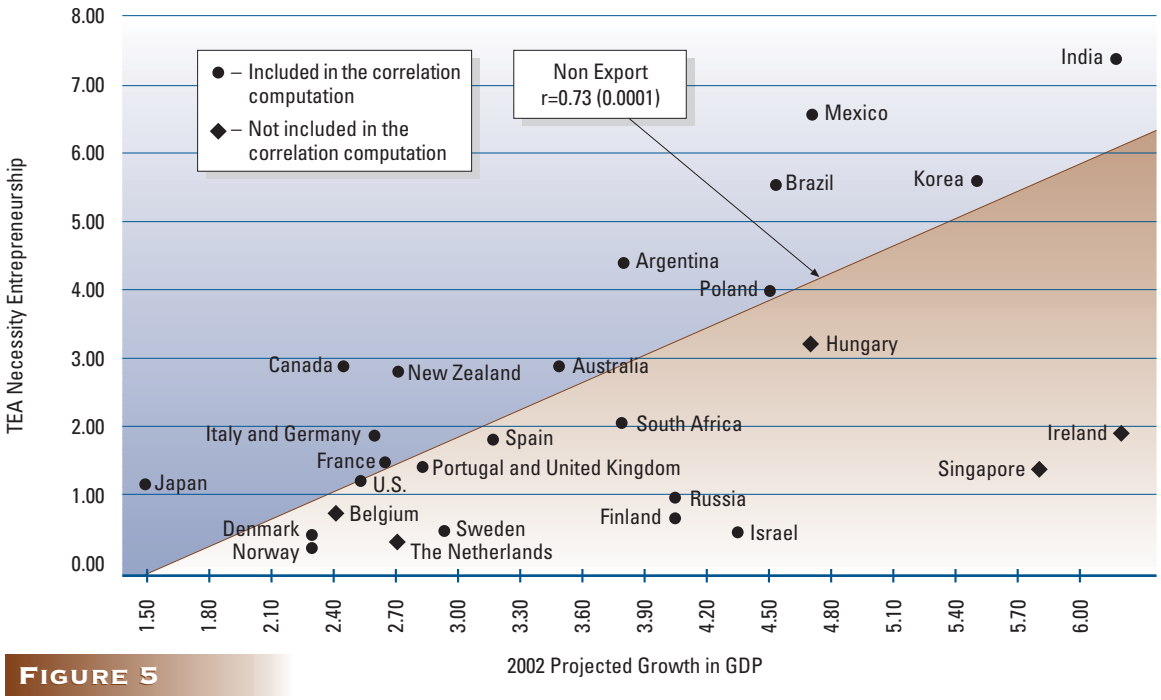

Figure 5

international trade (exports plus imports) that was greater than GDP — the Netherlands (total international trade was 110 percent of GDP), Hungary (121 percent), Ireland (135 percent), Belgium (156 percent) and Singapore (295 percent). Correlations between the GEM measures of entrepreneurial activity and economic growth are presented in the bottom portion of Table 3 for the 24 GEM countries with total trade less than GDP. Most correlations increased somewhat, with the highest correlation (0.73), again, between TEA necessity entrepreneurship and 2002 projected growth in GDP. Figure 5 presents the TEA necessity entrepreneurship correlations with 2002 projected growth in GDP for the 24 countries with annual international trade less than GDP.

For the third year in a row, GEM has demonstrated a statistically significant association between entrepreneurial activity and national economic growth. While very few GEM countries have high levels of necessity entrepreneurship and low levels of economic growth, the countries with the highest level of necessity entrepreneurship are also the most underdeveloped. While it is clear from the 2001 assessment that necessity entrepreneurship is significantly associated with economic growth, unraveling the causal mechanisms that account for this relationship will require tracking both activities over time. GEM is uniquely positioned as the leading international forum capable of conducting such longitudinal analyses.

Individuals, whether alone or in teams, create new businesses. But they do so in a distinctive national context. As noted earlier, it is estimated that in 2001 more than 150 million people engaged in entrepreneurial activity in the 29 participating countries. What common traits can be found among so many people from so many countries engaged in such a unique phenomenon? What individual traits would be unique to a particular nation? What national conditions universally dictate entrepreneurial behaviors? For this analysis, the global sample was weighted to compensate for differences in the sizes of the working populations in the 29 countries. This assures that the global sample represents the worldwide community of entrepreneurs.

ENTREPRENEURIAL ACTIVITY BY GENDER AND AGE

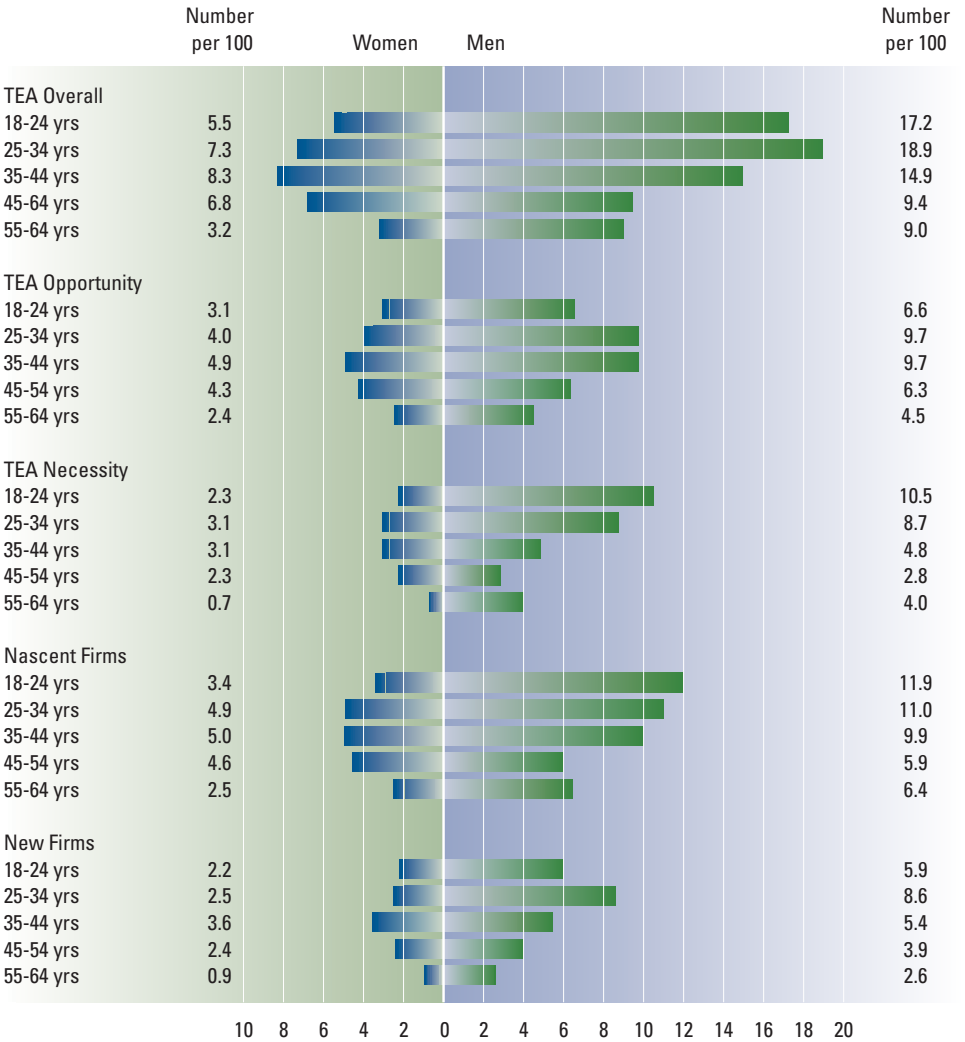

FIGURE 6

Entrepreneurial Activity by Gender by Country

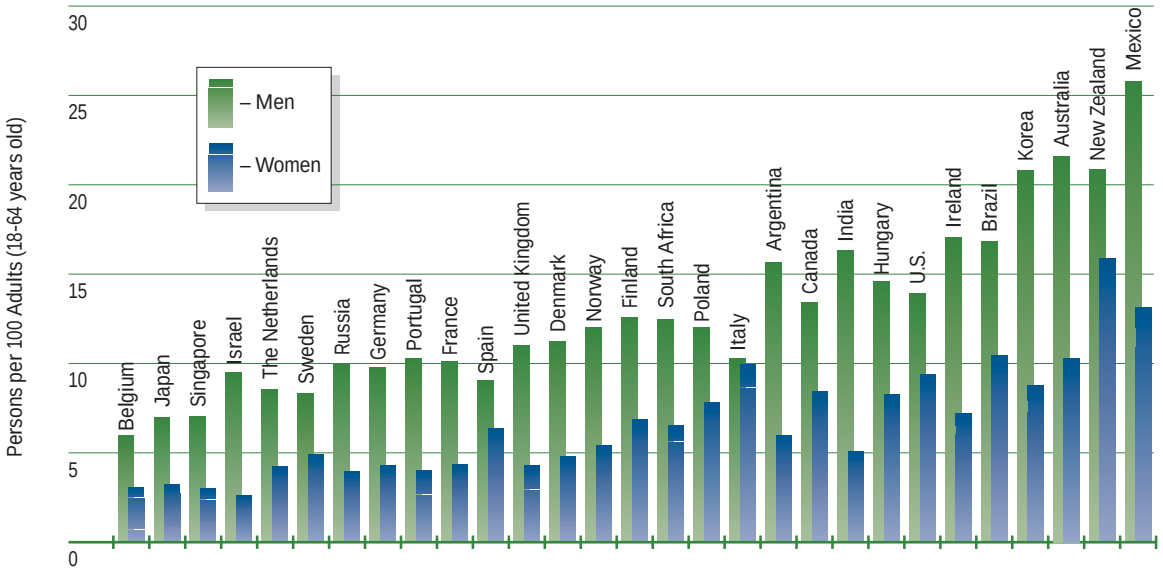

Figure 7

Demography: Personal Characteristics

For determining patterns in the demography of entrepreneurs around the world, nothing is more fundamental than age and gender. The basic patterns as gleaned from the adult population surveys are shown in Figure 6. Figure 6 illustrates the entrepreneurial prevalence rates for men on the right and women on the left for all five GEM measures of entrepreneurial activity. The age categories are also presented for each type of entrepreneurial activity.

The two major patterns that have been empirically confirmed in a variety of other studies are: 1) men are more than twice as active in entrepreneurship as women; and 2) 25- to 44-year-olds represent the most active age group. For the GEM 2001 sample, 70 percent of those actively involved were men, and this pattern holds for all five measures of entrepreneurial activity presented in Figure 6. Patterns in age distribution show that those 25 to 44 years old make up 55 percent of entrepreneurially active adults. Those 18 to 24 years old make up 22 percent and those older than 45, men and women, account for the remaining 22 percent.

Perhaps most striking is that the levels of opportunity and necessity entrepreneurship are about equal in this global sample (Figure 6). Since much of necessity entrepreneurship is concentrated in developing countries, this pattern is a consequence of adjusting the sample to reflect the global community of entrepreneurs. Patterns related to age, however, are quite different for opportunity and necessity entrepreneurship. For men and women, opportunity entrepreneurship is highest from 35 to 44 and generally lower for those younger and older. Necessity entrepreneurship for men is highest for the youngest age group, 18 to 24, and then declines steadily in the older age categories. For women, the level of necessity entrepreneurship is about the same for each age category until they reach age 54. After 54, there is a dramatic decline in necessity entrepreneurship among women. Previous assessments of entrepreneurship based only on data from developed countries, where necessity entrepreneurship is quite low, did not reflect this steady decline with age.

Figure 7 depicts the extent to which the gender difference is similar across countries. The bars represent the entrepreneurship prevalence rates for those 18 to 64 years of age by gender for each country. The gender differences were statistically significant for all but three countries — Italy, New Zealand and Spain. In 2000, gender differences for Italy were significant; however, the level of participation by men and women was about the same for Spain. New Zealand was new to GEM in 2001, so no data were collected to assess gender differences in 2000.

Education

Other personal characteristics that deserve attention are educational attainment and household financial status. Educational attainment data were available for 42,000 respondents from 24 countries.[5] The general patterns by gender and educational attainment for the five types of entrepreneurial activity are presented in Figure 8. The GEM analysis shows that nearly 62 percent of those who are active in entrepreneurship have not completed more than a secondary education. Those with at least some university experience represent 35 percent of the total. The remaining 3 percent include men and women with graduate experience.

When all types of activity are considered, as shown in Figure 8, there are quite different patterns for men and women. Participation in entrepreneurial activity increases with more education for women, with a major jump among those who go beyond completion of secondary education. For men, in contrast, there is a reduced participation among those who go beyond secondary education, with the lowest levels among those with the most (i.e., graduate experience) or least (i.e., no secondary degree) amount of education.

But when those pursuing opportunities are compared with those involved in entrepreneurial activities out of necessity, the patterns are quite different. Among those pursuing opportunities, there is no difference among men who have completed secondary school and received additional education at any level. Participation among those who have not completed secondary school, on the other hand, is rather low. The pattern among women pursuing opportunities is consistent with their pattern overall — their prevalence rates increase with higher levels of

Entrepreneurial Activity by Gender and Educational Attainment

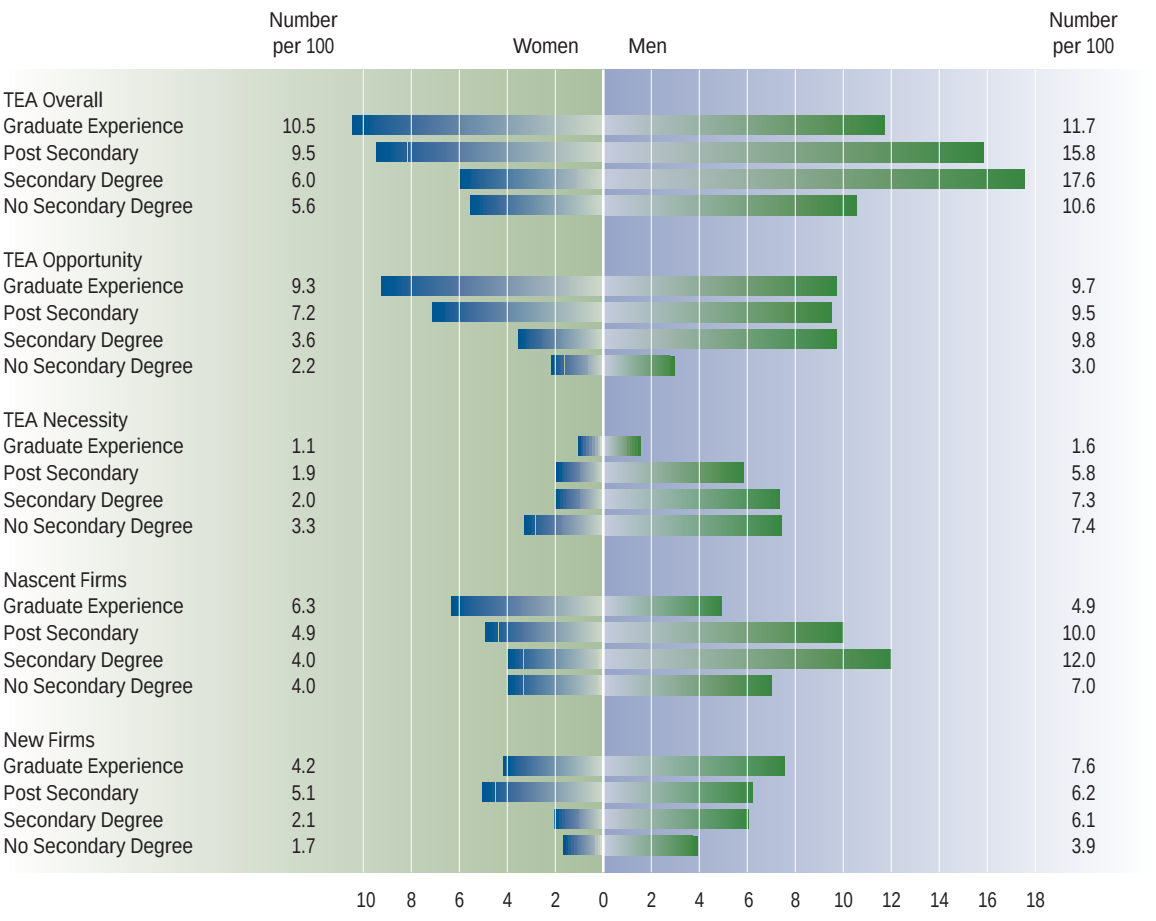

Figure 8

Table 4: Educational Attainment and Types of Entrepreneurial Ventures

	Secondary School Experience	Secondary School Completed	University or College Experience	Graduate Experience	All Levels
Economic Sector					
Number	1,010	1,571	1,298	75	3,954
Extractive	4%	5%	3%	7%	4%
Transforming	32%	32%	29%	20%	31%
Business Services	7%	9%	24%	42%	14%
Consumer-Oriented	57%	54%	44%	30%	51%
Expected Growth					
Number	1,648	2,455	2,891	280	7,274
No jobs in 5 years	36%	27%	40%	21%	34%
1-5 jobs in 5 years	57%	54%	38%	48%	48%
6-19 jobs in 5 years	6%	9%	14%	14%	11%
20 or more jobs in 5 years	1%	10%	7%	17%	7%

education. However, the pattern for necessity entrepreneurship is reversed for both men and women, although the differences are less dramatic for women (Figure 8).

Education is, however, related to the type of economic activity and expected firm growth. As shown in Table 4, those with more education are much more likely to engage in entrepreneurial activity in business service sectors and much less likely to pursue a consumer-oriented initiative. While most respondents (82 percent) anticipated creating no more than five jobs in five years, the percentage who anticipated growing more substantially was significantly higher (31 percent) for those with graduate experience.

Household Income

A measure of the relative standing of approximately 43,000 respondents from 23 countries related to annual household income was developed.[6] Each respondent was classified in relation to others from the same country into three categories — the upper, middle and lower third of the total household income distribution. While men again make up the majority of the individuals (72 percent), the allocation is evenly divided among those with different relative household incomes, with 30 percent from the upper third, 38 percent from the middle third, and 32 percent from the lowest third.

As shown in Figure 9, there are again differences by gender and type of entrepreneurial activity. Being from the lowest income level is associated with less activity for opportunity entrepreneurship for men and women. This pattern is even more pronounced for the prevalence rates of owner/managers of new firms. Lower levels of household income are strongly associated with higher levels of necessity entrepreneurship, especially for men. However, there appears to be no relationship for men between household income and the level of nascent or start-up activity.

Factors measuring an entrepreneur's immediate social situation and perceptions of the environment are believed to affect the decision to pursue an entrepreneurial initiative. GEM includes several such measures, including knowing an entrepreneur, perceived opportunities in the community, perceived ability to start a new business, fear of failure and judgments about the immediate economic future.

The GEM analysis shows that those who believe they have the skills to pursue a new venture are six times more likely to be active entrepreneurially (21.3 percent) than those who do not believe they have the necessary skills (3.7 percent). In the same fashion, those who believe there are good opportunities to start a business in their community are three times more likely to be

Entrepreneurial Activity by Gender and Household Income

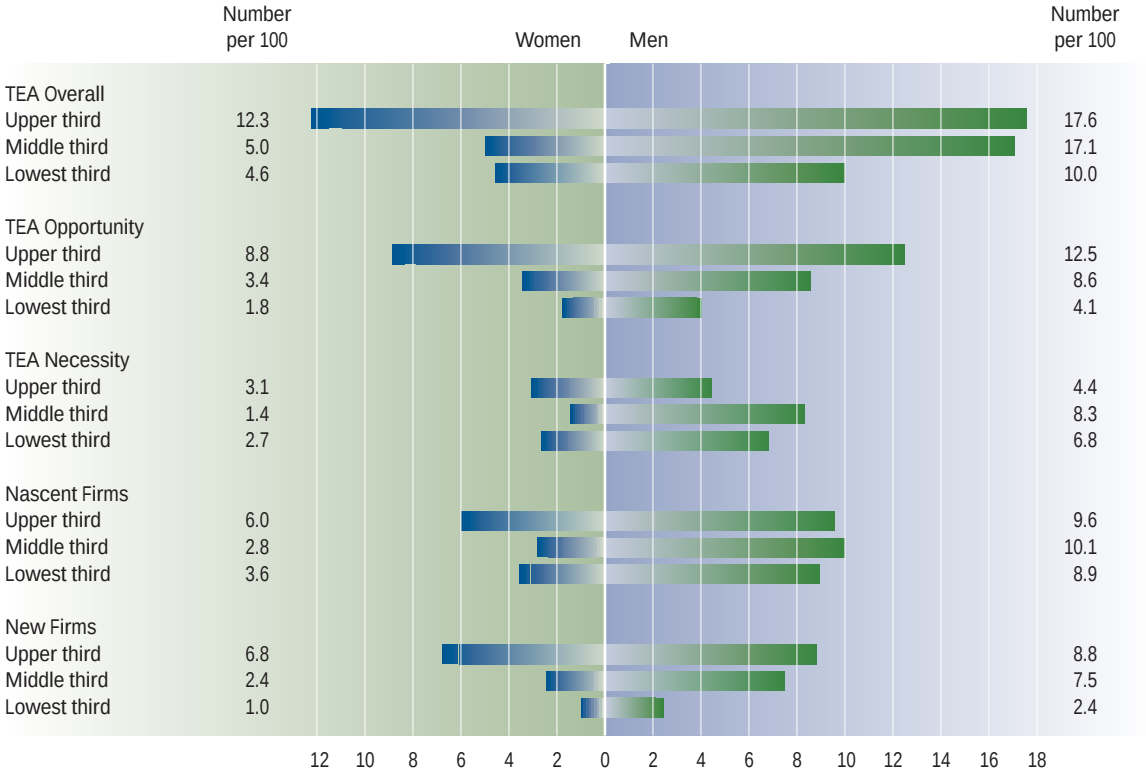

Figure 9

involved in entrepreneurship (21.4 percent) than those who do not believe such opportunities exist (7.0 percent). Those who personally know an entrepreneur are more than twice as likely to be involved themselves (18.7 percent) as those who have no entrepreneur acquaintances (7.7 percent). Those expecting their family's economic situation to improve in the next year are three times more likely to be involved in entrepreneurship (15.0 percent) than those expecting their situation to decline (4.5 percent).

While a detailed analysis of the complex interactions among these various contextual and background factors is beyond the scope of this presentation, the joint impact can be dramatic. For example, among those reporting that they have the skills to start a business *and* consider there to be good business opportunities *and* expect their family's economic situation to improve in the near future, 31 percent are actively involved in entrepreneurship. These individuals represent only 13 percent of the total sample, but 38 percent of all those entrepreneurially active. In contrast, among those reporting that they do not have the skills *and* do not see good opportunities *and* expect their family's economic situation to decline, 2 percent are involved in entrepreneurial activity. These individuals account for 5 percent of the total sample, but less than 1 percent of all those engaged in any form of entrepreneurship.

GEM has demonstrated decisively that the level of entrepreneurship does vary from country to country. Every country, however, has some level of entrepreneurial activity, no matter how small; one in 20 mid-career adults are involved in the least-active countries. Given the apparent association between entrepreneurship and national economic growth, it is obvious that any study of the entrepreneurial process would include a detailed look at the national context. Findings from the assessment of the national characteristics of the 29 GEM 2001 countries are presented in the next section.

National Characteristics

The focus of this assessment is to understand more fully how different national conditions affect entrepreneurs who create and maintain new businesses. An analysis of context, for simplicity's sake, requires grouping several factors into three major categories delineated by the degree to which they can be manipulated. The three categories are: 1) basic or background national conditions, which rarely change over time, 2) intermediate or framework conditions which change slowly over time and 3) the immediate or short-term conditions which can be more easily influenced. The assessment is complicated further by the complexity of entrepreneurial activity. While the overall TEA index provides a useful summary measure of entrepreneurial activity, GEM has demonstrated that opportunity and necessity entrepreneurship are disparate phenomena. Therefore, all contextual analyses have utilized GEM's three primary measures of entrepreneurship. The analyses for each contextual domain are summarized below.

Background Conditions

The social, cultural and political context of a national economy usually develops very slowly, requiring a great deal of time for public consensus to emerge regarding acceptable forms of national structures, procedures and values. As a result, it can take decades, if not longer, to establish or change basic conditions. Table 5 presents a series of national features and their correlation with the three GEM measures of entrepreneurial activity. The specific features under review are: the level of economic development; the degree of integration into world markets; the relative emphasis on different economic sectors; the extent to which government programs attempt to insulate

Table 5: National Background Conditions and Entrepreneurial Activity

	TEA Overall	TEA Opportunity	TEA Necessity
Level of Development			
GDP Per Capita: 2000	-0.26	0.08	-0.66**
Human Development Indicator: 2000	-0.24	0.10	-0.70**
Integration in World Markets			
International Trade as percentage of GDP: 2000	-0.28	-0.15	-0.28
Globalization Index: 2000	-0.40*	-0.03	-0.75**
Economic Structure			
Agriculture: Percentage of workforce: 1998	0.53**	0.29	0.72**
Manufacturing: Percentage of workforce: 1998	-0.39*	-0.42*	-0.10
Services: Percentage of workforce: 1998	-0.21	0.00	-0.53**
Extent of Social Benefits/Security Program			
Total Social Security Cost as percentage of GDP: 1996 (n=27)	-0.43*	-0.16	-0.67**
Unemployment benefits as percentage of work salary: 1995 (OECD only, n=16)	-0.45	-0.37	-0.50*
Role of Women			
Gender Empowerment Measure: Human Development Report 2000	-0.10	0.16	-0.52**
Female/Male Labor Force Participation Ratio: 1999	-0.24	0.00	-0.53**

*Statistically significant: 0.05 level; ** Statistically significant: 0.01 level.

citizens from economic uncertainty; and the role of women in the economy. Because such features take long to establish within any national context, they are also slow to change, which means the extent to which they influence the level of entrepreneurial activity has significant implications for national public policy.

Measures of economic development include GDP per capita and the Human Development Index. The Human Development Index is a product of the United Nations and is based on a combination of measures related to the health status, education and living standards in the population.[7] As revealed in Table 5, these measures have a dramatic negative relationship with the level of necessity entrepreneurship. In other words, countries with higher levels of economic development generally have a lower prevalence of necessity entrepreneurship.

A second important national feature is the extent to which countries are involved in international trade. Two indicators of international trading activity are assessed: 1) total international trade as a percent of GDP, which proved not to be significant (Table 5) and 2) the A.T. Kearny/Foreign Policy Magazine Globalization Index™. The Globalization Index is computed by a weighted combination of measures of international trade, the inflow and outflow of capital, personal contacts with outsiders and the Internet capacity of the country.[8] This index, which has been reversed so that large numbers reflect higher levels of globalization, also has a consistent negative relationship with entrepreneurial activity. In other words, countries that are well integrated into the global trading economy have much lower levels of necessity entrepreneurship.

A third national feature of importance is the economic structure of the host economy. One structural measure is the percentage of the workforce employed in three economic sectors — agriculture, manufacturing and services.[9] There is a clear pattern among the GEM 2001 countries in this regard, with a significant positive relationship between the level of the workforce employed in agriculture and necessity entrepreneurship. In sharp contrast, there is a significant negative relationship between the proportion of the workforce in manufacturing and all three measures of entrepreneurship. The proportion of the labor force in the services sector is also negatively associated with the level of necessity entrepreneurship.

Most modern societies have developed a range of programs to provide economic security for their citizens. This includes public programs designed to provide retirement support, health care and unemployment benefits. The cost of such benefits, as a percent of GDP, provides one measure of the state's willingness to reduce ambiguity and uncertainty in the economic life of its citizens. Such a measure for 1996 is available for all but one of the GEM 2001 countries; the range is from 2 percent of GDP for India to 34 percent for Sweden.[10] A measure of the munificence of unemployment payment schemes is available for 16 OCED countries from 1995.[11] The "gross replacement rate" is an estimate of the percentage of full-time wages available to the unemployed and ranges from 21 percent for the United Kingdom to 77 percent for Sweden. As shown in Table 5, the higher the level of national spending on economic security and unemployment benefits, the lower the level of all forms of entrepreneurial activity.

An additional important feature of the GEM 2001 countries is the role of women in the national economy measured by (a) a Gender Empowerment Measure developed with the United Nations Human Development Report[12] and (b) the female-to-male ratio in the labor force. The latter measure was provided for 1990 and 1999 as part of the World Bank Development Indicators[13]. During the 1990s, only 10 of 29 GEM 2001 countries reflected any change in the female-to-male ratio in the labor force, and none increased by more than 10 percent. Both measures reflect the more advantaged status of women in more developed countries, particularly northern Europe, where there are higher levels of female participation in the labor force but less indigenous entrepreneurial activity. The significant negative correlations with necessity entrepreneurship suggest that in countries where women are more active in the labor force the level of necessity entrepreneurship is lower.

Intermediate Conditions

Intermediate conditions consist of several national framework features that can be influenced to produce a more positive climate for entrepreneurship. General framework conditions organized for the annual Global Competitiveness Report sponsored by the World Economic Forum include the newly developed Current Competitive Index and the Growth Competitive Index[14]. Other more direct measures of intermediate conditions include the government's presence in the national economy, the costs associated with registering a new business, measures of household income disparity (income inequality) and the availability of venture financing. Correlations between these indices and the prevalence rates for TEA Overall, TEA Opportunity and TEA Necessity are presented in Table 6.

The global competitiveness indices are complex multi-item measures based on combinations of harmonized national data and responses by business executives to standardized questionnaires. The indices are refined and adjusted to maximize the association with per capita income. Historically, correlations between the indices and measures of economic growth have been strongly negative. This may well reflect the fact that less developed

Table 6: Intermediate Conditions and Entrepreneurial Activity

	TEA Overall	TEA Opportunity	TEA Necessity
Global Competitiveness Indices			
Current competitiveness index	-0.37*	-0.09	-0.64**
1) Quality of established firm management	-0.43*	-0.19	-0.65**
2) Efficiency of domestic financial markets	-0.36*	-0.08	-0.58**
3) Technology, R&D national capacity	-0.32	-0.06	-0.62**
4) Efficient, unbiased administrative, judicial institutions	-0.31	-0.02	-0.62**
5) Openness to international trade	-0.29	0.09	-0.71**
6) Quality of physical infrastructure	-0.29	0.04	-0.64**
7) Labor market flexibility	-0.12	0.17	-0.51**
8) Efficiency of government operations	0.32	0.39*	0.11
Growth competitiveness index	-0.31	0.02	-0.64**
1) Technology transfer capacity	-0.28	-0.17	-0.37
2) Business environment	-0.21	-0.01	-0.39*
3) Economic creativity	-0.20	0.04	-0.48**
4) "Start-up" index (not a direct measure of start-ups)	0.22	-0.06	0.57**
Measurements of Government Presence			
Government employ as percentage of total employ	-0.40*	-0.16	-0.61**
Taxes collected as percentage of GDP	-0.38*	-0.09	-0.68**
Collected income tax as percentage of GDP	-0.06	0.24	-0.53**
Regulation of New Start-ups			
Number of procedures to register new firms: 1995	-0.30	-0.50*	0.35
Start-up registration cost index: 1995	-0.26	-0.42*	0.29
Income/Wealth Inequality			
Gini Index: 2001	0.42*	0.25	0.44*
Top 10%/Lowest 10%	0.40*	0.27	0.38*
Access to Capital			
Informal Investors Prevalence: 2001 (18 and older)	0.45*	0.60**	-0.09

*Statistically significant: 0.05 level; ** Statistically significant: 0.01 level.

countries grow faster than more developed countries simply because they start from a much lower base. This would be consistent with the general pattern among the correlations in Table 6. Almost all aspects of the competitiveness measures have negative relationships with all three measures of entrepreneurial activity, and many are statistically significant. This pattern is particularly true for necessity entrepreneurship.

Another more direct measure of the intermediate framework situation involves the government's role in the national economy. The three measures presented in Table 6 show a similar pattern to that of the competitiveness indices.[15] As a country experiences increases in (a) the number of government employees as a percentage of the total labor force, (b) total taxes collected as a percent of GDP and (c) income taxes collected as a percent

of GDP, the level of entrepreneurial activity declines. As the government's role increases, the scope of economic activity available for private initiatives is reduced, and fewer individuals will have the skills or motivation to create new businesses.

Measures of the costs involved in formally registering a new business have a negative relationship with the level of entrepreneurial activity.[16] Whether a simple count of the number of procedures or an index based on procedures, time required and financial costs is utilized, the negative association with opportunity entrepreneurship is statistically significant. This result suggests that in countries where the time and costs to register a new business are high, opportunity entrepreneurship will be lower.

Income disparity or inequality tends to be higher in less developed countries, where there are also higher levels of necessity entrepreneurship. Two measures of income inequality[17] are presented in Table 6: 1) the Gini Index, which measures deviations from perfect equality of income distribution and 2) the total income of the top 10 percent of the households as a ratio of the total income of the bottom 10 percent. Both reflect significant positive relationships (0.40 and above) with entrepreneurial activity. In other words, the greater the income disparity in a country, the higher the level of entrepreneurial activity.

Developing and implementing a new business requires resources. Financial resources and the ability of the entrepreneurial community to access them are particularly important. For purposes of understanding the influence of intermediate contextual conditions, this assessment examined the prevalence rates of informal financial contributions provided by the family, friends and associates (i.e., *business angels*) of the individuals initiating new businesses. The association of these financial flows with the level of entrepreneurial activity is presented in Table 6. The prevalence rate of informal investors has a statistically significant positive association with the overall level of entrepreneurial activity and a stronger relationship with the level of opportunity entrepreneurship. In other words, in countries where the general

Table 7: Short-Term Conditions and Entrepreneurial Activity

	TEA Overall	TEA Opportunity	TEA Necessity
Perception of Opportunity			
Adult survey: % yes business opportunity: 1999 (n=10)	0.79**	0.74**	0.02
Adult survey: % yes business opportunity: 2000 (n=21)	0.21	0.40*	-0.05
Adult survey: % yes business opportunity: 2001 (n=29)	0.25	0.48**	-0.16
Potential for Entrepreneurial Activities			
Adult survey: Skills for Start-up: % yes: 2001 (n=29)	0.65**	0.73**	0.27
Expert ratings index: Business mgt potential: 2001 (n=26)	0.32	0.38*	0.10
Adult survey: Know an entrepreneur: % yes 2000 (n=20)	0.35	0.57**	-0.20
Adult survey: Know an entrepreneur: % yes 2001 (n=29)	0.34	0.59*	-0.24
Motivation to be an Entrepreneur			
Adult survey: Fear of failure: % no: 2000 (n=21)	-0.16	-0.40*	0.22
Adult survey: Fear of failure: % no: 2001 (n=29)	-0.01	-0.09	0.17
Expert ratings index: Acceptance of career turbulence: 2001 (n=26)	0.12	0.33	-0.30
Adult survey: Family economic future better: % 2001 (n=29)	0.44**	0.38*	0.31
Adult survey: Country economic future better: % 2001 (n=29)	0.24	0.12	0.39*

*Statistically significant: 0.05 level, **Statistically significant: 0.01 level.

population is investing more personal funds in new business ventures, the level of opportunity-driven entrepreneurial activity is significantly higher.

Short-Term Conditions

The creation of a new firm, while a uniquely personal process, is also highly complex. As illustrated in the GEM model (see Appendix), the process includes personal judgments about the presence of opportunities for entrepreneurial initiatives, the extent to which one possesses sufficient entrepreneurial potential, and the motivation to pursue a perceived opportunity. Indicators for all three dimensions are presented in Table 7 along with the correlations for the three primary measures of entrepreneurial activity. As depicted in Table 7, nearly all the major effects are related to the prevalence rate for opportunity entrepreneurship. This reflects the emphasis in the GEM model on entrepreneurship as the exploitation of opportunities rather than as an employment mechanism when all other options for participating in the economic system are personally less favorable.

GEM's adult population surveys in 1999, 2000 and 2001 included the same item regarding the perception of opportunities for new business start-ups.[18] As shown at the top of Table 7, there is strong positive association between the survey-based measures of opportunity and the prevalence for entrepreneurial activity. In fact, the data from the 10 GEM 1999 countries have a rather strong correlation of 0.79 with the presence of opportunity-driven entrepreneurship in 2001.

Entrepreneurial potential — having the skills, training and experience to create a new firm — is also represented in Table 7. Correlations are provided between measures of entrepreneurial activity and the percentage of adults who say they have adequate entrepreneurial skills (2001) and the percentage who say they personally know an entrepreneur (2000 and 2001).[19] In addition, a multi-item index based on the questionnaire completed by national experts indicates that their judgments regarding the potential of the general public to manage new and small businesses shows a positive correlation with opportunity entrepreneurship prevalence rates.[20] All measures reflect the same pattern — the higher the percentage of adults who believe they have adequate entrepreneurial skills, the higher the level of entrepreneurial activity. This pattern is particularly true for opportunity-based entrepreneurial behavior.

Measures of association between entrepreneurial activity and the motivation to create a new firm are also reflected in Table 7. The adult population data from 2000 and 2001 includes the percentages of those who say the fear of failure would not prevent them from starting a new business. Another multi-item index based on ratings by the national experts indicates that a general acceptance of career turbulence has a positive association with opportunity entrepreneurship.[21] In addition, the percentage of adults who believed economic conditions for their family and country would be better in the coming year was also represented.[22] From the correlations presented in Table 7, it appears that fear of failure reduces the prevalence of opportunity entrepreneurship. Additionally, the percentage of respondents who expected their family's economic situation to get better over the next 12 months seems to have a positive association with entrepreneurial activity.

The more careful the analysis, the more complex the entrepreneurial process appears. From a careful assessment of individual and national context factors, it is clear that both have an impact on the emergence of new business ventures. It is also clear that the mechanisms that drive necessity entrepreneurship are different from those that drive opportunity entrepreneurship. They represent different contextual features and involve different kinds of people, but both have a role to play in national economic growth and adaptation.

Informal Finance and Venture Capital: A Closer Look

William D. Bygrave

Some of the most striking findings from the GEM adult population surveys are the overall degree to which people informally invest in entrepreneurship throughout the world and the high level of variation in this activity between countries. As depicted in Figure 10, the overall prevalence rate of informal investors 18 and older among GEM 2001 countries is 3.1 percent. The percentage ranges from 0.9 percent in Brazil to 6.2 percent in New Zealand, more than a six-fold difference. Based on population counts, it is estimated that informal investors provide $196 billion per year to start-up and growing companies in the participating GEM countries. In the context of national economies, the total informal investment was 1.1 percent of the combined GDP for all GEM countries. Korea had the highest level of informal investment as a percentage of GDP at 3.7 percent. Brazil had the lowest at 0.14 percent.

Clearly, when the amount of informal investment for start-up and growing businesses is as much as 1 to 2 percent of a nation's GDP, it is a significant factor in that nation's economy. In all GEM 2001 countries, informal investors allocated more money for start-ups and growing businesses than did professional venture capital firms. For every dollar of classic or traditional venture capital there was an average of $1.60 of informal capital invested. In New Zealand, Australia, Denmark and Korea, informal investors provided 90 percent or more of informal and classic venture capital. The lowest proportion was in Israel, the United States and Canada, where informal investment represents slightly less than 60 percent of the total investment pool.

Classic venture capital[23] is a rare but extremely important form of financing for entrepreneurial start-ups. To illustrate how rare this form of venture financing is, consider that while an estimated 150 million adults are involved in start-ups or new businesses at any point in time in the 29 GEM countries, fewer than 20,000 businesses received classic venture capital in 2000.

Though venture capital-backed financings are rare, their impact is significant. According to a recent study by the Wharton Econometric Forecasting Associates which was supported by the National Venture Capital Association,[24] venture capital-backed companies created 4.3 million new jobs in the United States. These same companies generated $736 billion in revenues in 2000. Put another way, the relatively small number of venture capital-backed companies account for 3.3 percent of the total jobs in the United States and 7.4 percent of GDP.

In 2000, the total amount of classic venture capital invested by domestic firms in the 24 GEM countries where such data were available was $123.9 billion, or 0.5 percent of the total GDP of those countries[25]. Of the total, $100.6 billion (81 percent) was invested in the United States and $23.3 billion (19 percent) in the other 23 countries. The proportion of classic venture capital that was invested in the United States increased from 76 percent of the total for all the GEM countries in 1999.

As depicted in Figure 11, the year-to-year gains in the amount of venture capital invested were substantial. All but two of the countries for which 1999 data were available had an increase in the amount of classic venture capital invested in 2000. The single largest percentage increase was in Israel at 179 percent. Sweden had the lowest increase at 18 percent over 1999 levels. The two countries where the amount of classic venture capital invested in 2000 was less than that invested in 1999 were Belgium (18 percent decrease) and India (23 percent decrease).

Informal Investment by Country

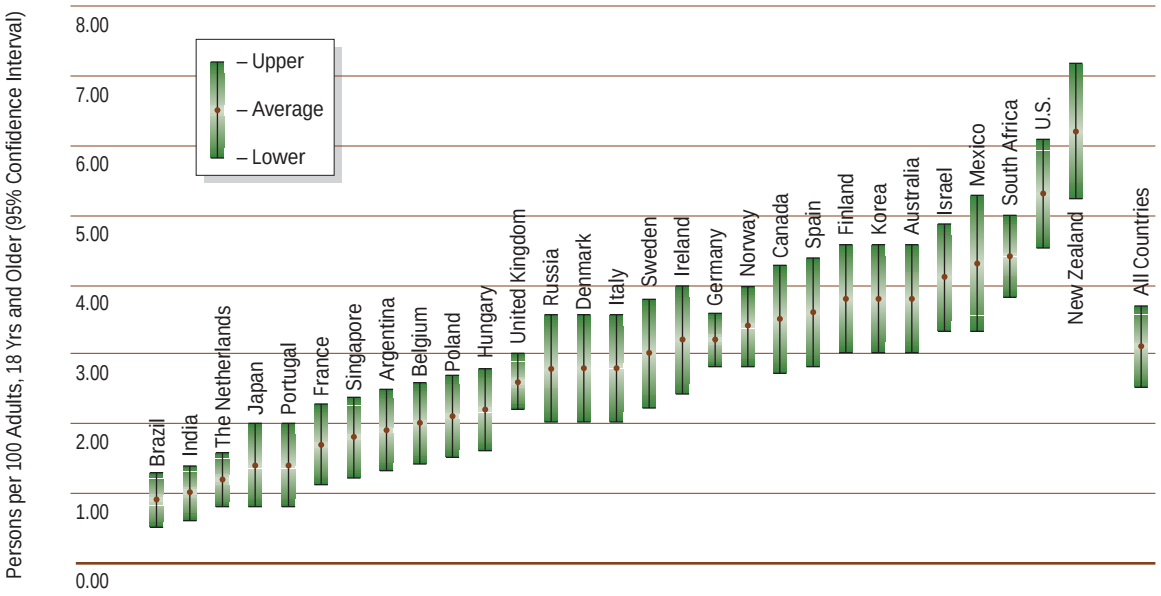

Figure 10

Domestic Venture Capital Investment as a Percent of GDP

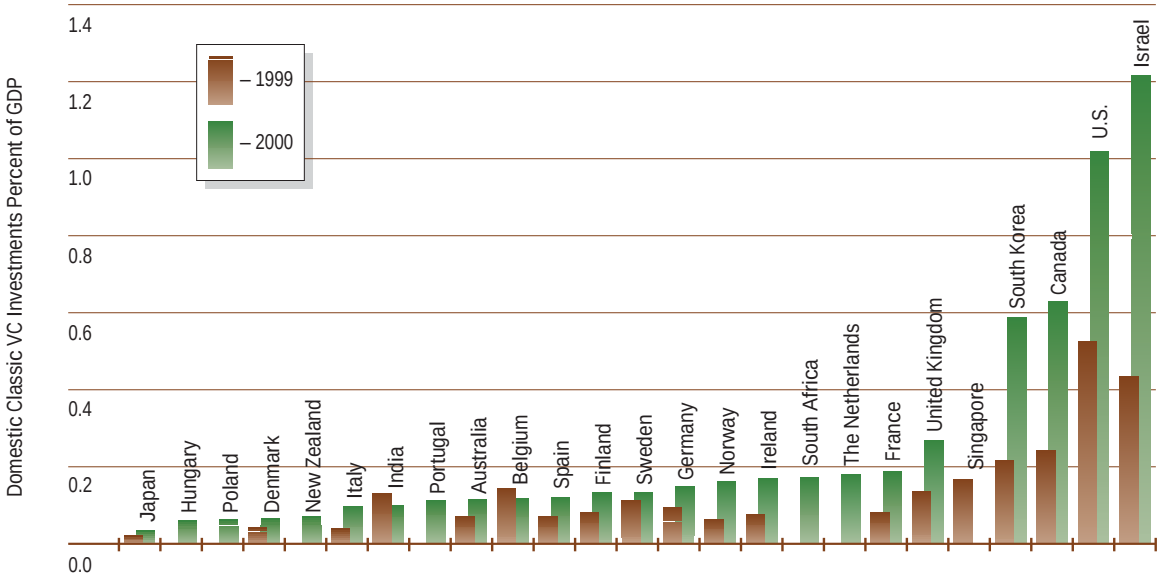

Figure 11

Number of Companies Receiving Venture Capital in 2000

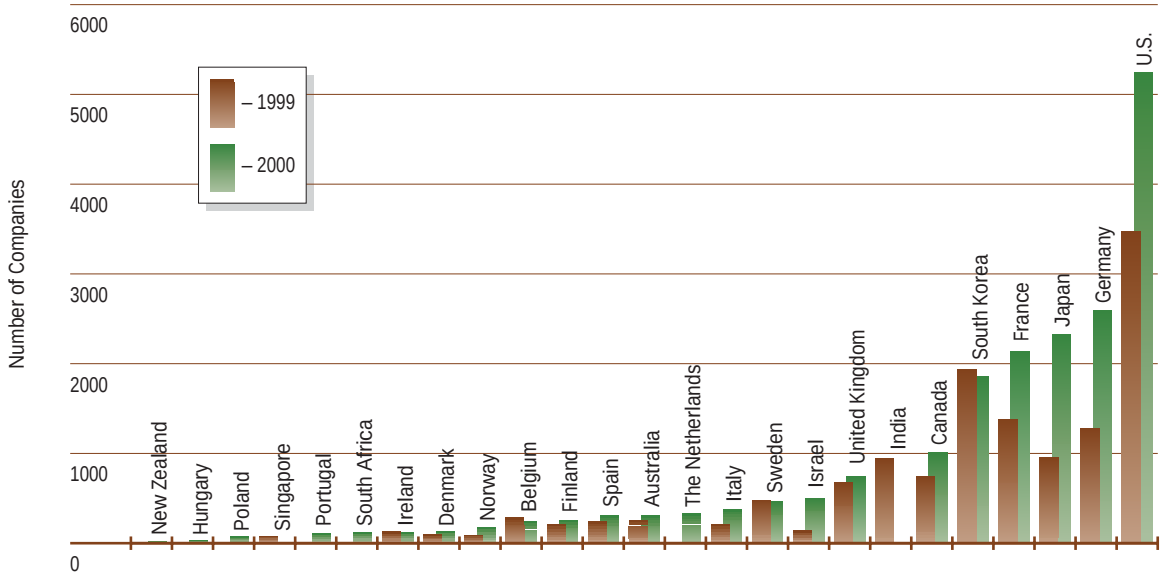

Figure 12

The number of companies receiving venture capital in each country is shown in Figure 12. Except for Belgium, Ireland and Sweden, all GEM 2001 countries for which both 1999 and 2000 data were available had more companies receiving venture capital in 2000 than they did in 1999. The biggest increases in the number of companies occurred in the United States, Germany, Japan and France. Nearly 27 percent of the companies receiving venture capital as reflected in Figure 12 were located in the United States.

Although only 27 percent of the companies were in the United States, they accounted for 81 percent of the venture capital invested in all the participating GEM countries. The average amount invested per company in the United States was $19.2 million compared with an average of $1.7 million for all companies located outside the United States, more than an 11-fold difference (Figure 13). Finland's average per company investment of $0.63 million was the lowest for all participating GEM countries.

Estimates of (a) the total domestic venture capital support for start-ups and (b) the total informal funds were plotted in Figure 14 for 14 GEM 2001 countries. Figure 14 portrays the amount invested for every adult citizen in each country for which data were available.[26] About one-half of the total flow of informal funds goes to family members and relatives. Thirty percent goes to co-workers, friends and neighbors, and the remainder to "strangers with good ideas." The total of both forms of investment capital varies from less than US$50 per person in South Africa to US$1,400 per person in the United States. The U.S. figure is uniquely high due to the US$100 billion invested in telecommunications in 2000 — a level of investment that has not been sustained in 2001.

It is clear that both forms of financial support — classic venture capital and informal funds from family and friends — are important sources of support for the wide range of new businesses being developed around the world. While venture capital is well known to policy makers, the flow of informal investment — the source of the largest share of the new venture funds — should be examined more carefully.

Domestic Venture Capital Invested per Company (US$1,000)

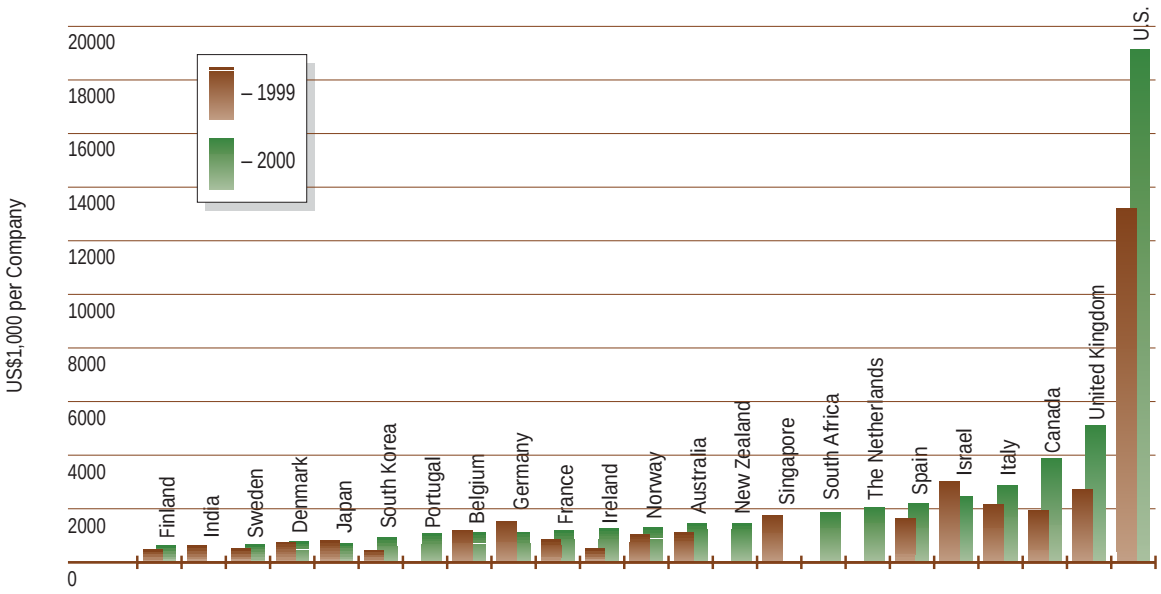

Figure 13

Total Informal and Venture Capital Investment per Person

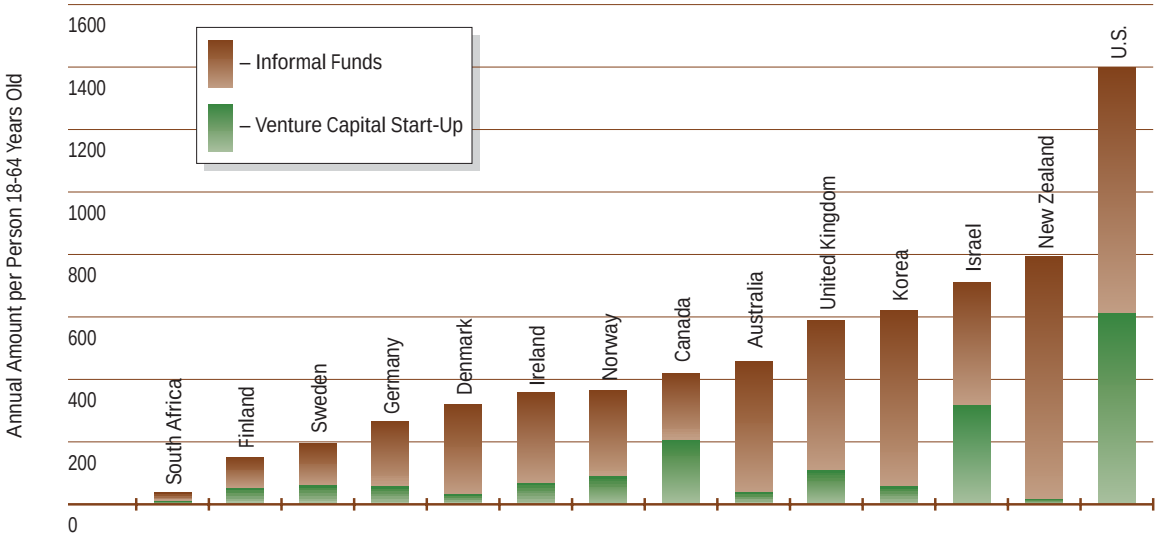

Figure 14

Research and Technological Development and Entrepreneurial Activity: A Closer Look

Erkko Autio and Riikka-Leena Leskelä

According to modern theory, economic growth is ultimately driven by the search for new ideas by profit-seeking innovators.[27] Greater investments in research and technological development are assumed to increase the rate at which innovations are produced. Innovations then translate into economic growth and well-being.

While economists agree on the causal role of technology in economic growth, they are generally silent about the organizational forms through which these benefits materialize. Even though Schumpeter (1912) initially assigned this role to entrepreneurs who start new firms, he later revised his theory and assumed these contributions were provided by large, established firms who could afford long-term R&D projects.[28] This change of mind coincided with the invention of the industrial R&D department in large institutions in the 1940s.

The empirical evidence on the relationship between technological development and entrepreneurship appears mixed. The available data and analyses suggest that some economic sectors may be more conducive to the creation of technology-based new firms than others (e.g., Acs and Audretsch, 1988).[29] For example, many information technology sectors, such as packaged computer software, tend to be populated by new and smaller firms. Typically these firms are able to respond to the rapid pace of development with speed and flexibility. The pharmaceutical industry, on the other hand, requires massive investments in R&D with which only the largest and financially resourceful companies are able to keep pace.

We explored the GEM data for relationships between various aspects of national research and technological development and entrepreneurial activity. Consistent with recent theorizing on national innovation systems,[30] which emphasize the interactive nature of the technological innovation process, we classified national research and technological development (RTD) indicators into three categories: *Input, Process* and *Output*. Input indicators comprise various resource and knowledge inputs for basic and applied research. Process indicators relate to interactions between various institutions within the national innovation system. Output indicators describe the results of innovative processes. In addition, we also analyzed relationships between various aspects of the national technological development infrastructure and entrepreneurial activity.

Insights

Differences in national RTD systems reflect the increased variety of culture and social systems of the 29 countries in the GEM 2001 consortium. The total national expenditure on R&D, as a percentage of 1999 GDP, ranged from 0.5 percent in Argentina to 3.9 percent in Israel. The average level of national expenditure on R&D was 1.9 percent for all GEM countries. After Israel, the next three highest percentages were Sweden (3.8 percent), Finland (3.3 percent) and Japan (3.1 percent).

Additionally, the total national income from royalties and license fees, as a percent of 1999 GDP, varied greatly, suggesting a high level of disparity in the ability of countries to benefit commercially from their investment in RTD. Royalties and license fees ranged from 0.1 percentage of GDP in Argentina and India to 0.6 percent in the Netherlands, the United Kingdom and Sweden. The average for all GEM countries was 0.2 percent.

The outputs of national RTD processes varied significantly across the 29 GEM countries, as did the sophistication of the national technology infrastructure. The number of scientific and technical journal articles per 100,000 people ranged from 0.87 in India to 96.0 in Israel. The average for the 29 GEM countries was 42 articles per 100,000 people. The per capita computing power available for R&D, as measured by millions of instructions per second per 1,000 people in 1998, ranged from a low of 513 in India to a high of 96,000 in Sweden.

The great diversity among the GEM countries made it necessary to run several correlations, one for each facet of entrepreneurial activity. Four of the GEM measures of entrepreneurial activity were

Table 8: Correlations Between Entrepreneurial Activity and National Research and Technological Development Indicators

	TEA Overall	TEA Opportunity	TEA Necessity	Firm-Sponsored Start-Ups
National RTD System Input Indicators				
Computer Power per capita (MIPS per 1,000 People), 1998	0.03	0.35†	-0.58***	0.31
Gross School Enrollment in Tertiary Education, 1996	0.23	0.48*	-0.40*	0.42*
Information and Technology Expenditure as % of GDP, 1999	0.17	0.39†	-0.33†	0.29
Total Expenditure in R&D as % of GDP, 1999	-0.33	-0.21	-0.49**	-0.14
Total R&D Personnel per 1,000 People, 1999	-0.31	-0.04	-0.61***	-0.27
National RTD System Process Indicators				
GEM Technology Transfer Index, 2001	-0.04	0.02	-0.39	0.14
Number of Science Parks, 1999	-0.39	-0.20	-0.58*	-0.37
Royalties and License Fees as % of GDP, 1999	-0.27	-0.07	-0.51**	-0.04
National RTD System Output Indicators				
High-Technology Exports as % of Manufactured Exports, 1999	-0.04	0.09	-0.34†	0.11
Nobel Prizes per capita, 1901-2000	-0.20	0.03	-0.45*	0.03
Number of Patents in Force per 100,000 People, 1998	-0.31	0.00	-0.54*	-0.15
Percentage Change in High-Tech Exports, 1995-1998	0.22	0.32	-0.45†	0.23
Percentage Change in High-Tech Imports, 1995-1998	-0.61*	-0.55*	-0.34	-0.53*
Scientific and Technical Journal Articles per 100,000 People, 1997	-0.17	0.10	-0.66***	0.05
National RTD System Infrastructure Indicators				
Internet Hosts per 10,000 People, July 2000	0.25	0.53**	-0.38†	0.56***
Mobile Telephones per 1,000 People, 1999	-0.22	0.03	-0.60***	-0.06
Personal Computers per 1,000 People, 1999	0.04	0.35†	-0.56***	0.27
Intellectual Property Protection Index				
GEM Intellectual Property Protection Index, 2001	0.28	0.47*	-0.28	0.44*

†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).

included in the analysis: 1) the overall TEA index; 2) the TEA Opportunity Entrepreneurship; 3) the TEA Necessity Entrepreneurship; and 4) the level of firm-sponsored start-up activity. The results of this explorative analysis are presented in Table 8.

As Table 8 shows, the different facets of entrepreneurial activity indeed depict different relationships with various aspects of national RTD. The correlation coefficients for TEA Opportunity Entrepreneurship suggest a strong association with several input, output and infrastructure factors. All correlations also appear to be in the expected direction. Increases in input, infrastructure and intellectual property rights indicators are associated with higher levels of opportunity entrepreneurship, while increases in high-tech imports are associated with lower levels. The clearest associations can be observed with necessity entrepreneurship. Furthermore, all significant correlations are quite strong and point in the same direction. As expected, the greater the technological sophistication of the economy or the greater the resources allocated for RTD processes, the smaller the level of necessity-based entrepreneurship.

Conclusions

These observations are consistent with the overall GEM model: an increased investment in RTD appears to be associated with higher levels of opportunity entrepreneurial activity and lower levels of necessity entrepreneurial activity. From Table 8 we can also observe that a part of the effect is channeled through the corporate sector. The effects of the national RTD system on firm-sponsored start-up activity appear quite similar to those for independent opportunity entrepreneurial activity.

The findings are also consistent with theories on endogenous economic growth and with previous empirical assessments of the relationship between RTD and entrepreneurial activity in different industry sectors. The numerous significant negative relationships between national RTD indicators and necessity entrepreneurship suggest a clear wealth-creation effect for technological development activity. Apparently, the greater a nation's investment in RTD, the smaller the number of forced new firm start-ups. Investment in technology development thus appears not only to create new wealth, but it may create enough new quality jobs to lower the level of necessity entrepreneurship in the more technologically sophisticated GEM 2001 countries.

The apparently weaker effects on opportunity entrepreneurship are consistent with the findings from earlier studies of small firm innovation in different industry sectors. In some industries, R&D investments are predominantly channeled through large established firms, whereas other sectors may be populated by high-tech start-ups. It is possible that at the national level, differences between industry sectors mask the complex relationships between national RTD and opportunity entrepreneurship.

One of the most important findings from this exploratory analysis is that the relationships between national RTD investment and various facets of entrepreneurial activity appear highly complex. It is clear that more data and more sophisticated analyses are required to uncover these effects. For now, we have only scratched the surface of the multi-faceted and complex processes through which national RTD feeds entrepreneurial activity and through which entrepreneurial activity, in turn, converts national RTD investment into economic growth and well-being.

The creation and growth of new firms, whether out of necessity or opportunity, is the essence of entrepreneurship. However, as GEM has revealed, there are considerable differences from country to country in the levels of entrepreneurship and the context in which entrepreneurship flourishes. Many countries struggle with increasing the level of entrepreneurial activity due to deeply rooted cultural issues that may take decades to resolve through standard policies, programs and practices. Some of the struggle, however, is due to a lack of understanding regarding what makes a country entrepreneurial.

As in previous years, the GEM 2001 assessment included semi-structured face-to-face interviews with experts on entrepreneurship within each country. This year, more than 950 such informants from 26 countries were interviewed for their unique expertise in one or more of the nine entrepreneurial framework conditions outlined in the GEM model.[31] The interviews constitute a rich data source for identifying and assessing the major entrepreneurial issues in each country and a unique basis for cross-national comparisons. The observations provide an in-depth perspective only available through a qualitative research protocol that offers a systematic assessment of patterns across countries.[32]

Defining the Global Landscape

The first phase of the analysis consisted of a count of the three most important issues raised in each country. This gives a basis of comparison with data obtained through interviews in GEM 2000 and defines the common global landscape for entrepreneurship. This analysis revealed the three most important issues for 2001 as (a) cultural and social norms, (b) financial support and (c) government policies. Interestingly, these issues were also ranked highest in the GEM 2000 analysis, making it clear that issues in these domains dominate the international scene.

Culture and Social Norms

Across the GEM 2001 countries, the most pressing issue with respect to cultural and social norms is the public's general attitude toward entrepreneurship. This includes the public's attitude toward, support for and understanding of the importance of entrepreneurship in society. In nearly every country, this attitude was mentioned as one of the greatest inhibitors to, or enhancements of, entrepreneurship. The specific issues include the social legitimacy of entrepreneurship, the value society places on self-employment and the reward for individualism and self-reliance. Experts also expressed a concern over the idea of creating wealth. Even those from countries with higher levels of entrepreneurial activity agreed that when some within society earn substantially more than others earn, perceived inequities are created.

The experts consistently expressed additional concern for the way in which societal norms impacted entrepreneurial behavior. In several European countries, for instance, the experts were clear that a society's negative posture with respect to creativity, innovation and change significantly reduces the number of people engaged in starting new firms. For many such countries where societal norms mitigate against entrepreneurship, there is little regard for personal characteristics that define the entrepreneurial mindset, such as self-confidence, self-reliance, personal drive and a strong internal locus of control.

There were some additional concerns about attitudes toward failure. While experts agree there is little understanding of what actually motivates individuals to take risks, it is clear a culture that rewards risk taking is more inclined to support higher levels of entrepreneurial activity. A willingness to accept failure also tends to be associated with higher levels of risk taking. Countries where the people understand and value innovation and risk taking have learned that benefiting from entrepreneurship means being willing to accept some failures along the way.

Financial Support

The overriding issue that dominated the global landscape concerning financial support for entrepreneurial efforts is the perception of an inadequate supply of risk capital. This includes issues associated with too little capital (i.e., the *funding gap*), access systems difficult to navigate,

inappropriate structures for different stages of venture development and a lack of understanding of how to determine financial needs. Two additional patterns identified in the experts' opinions involve the reluctance of many financial providers to invest in start-up entrepreneurship activities and the level of ignorance of financial matters on the part of entrepreneurs.

Experts around the world believe that the burden of proof is on the investment community to efficiently track and do deals. The entrepreneurs in these countries, while they would prefer easier, quicker and cheaper access to funds, believe the investment community (equity and debt) has difficulty assessing risk in early-stage deals. The traditional approach is not appropriate for many new economy deals. Experts agree that the investment community needs to develop more effective ways of evaluating and doing deals. In addition, the investment community needs to address issues of minimum capital requirements, exit strategies, an over-reliance on debt and a general unwillingness on the part of entrepreneurs to share equity.

Experts from all countries consider the cost of capital to be too high. Rather than lowering the cost of capital directly, experts from countries with high levels of entrepreneurial activity wanted to see more direct tax relief that would keep the earnings of the business in the business during its growth phase. Experts from the countries with lower levels of activity expressed greatest concern about costs of capital itself. Across all countries there was a general concern among the experts that their country lacked an investment philosophy that rewarded and encouraged savings and wealth accumulation. All experts expressed equal concern about weakening equity markets around the world and the impact it would have on the entrepreneurial sector.

Government Policies

Experts in all of the GEM 2001 countries identified government regulations as a top priority limiting the level of entrepreneurial activity. Regulatory demands burden burgeoning businesses with respect to (a) the time and cost of compliance, (b) excessive intrusion into personal and business affairs and (c) an enormous learning curve to understand what policies apply to their business situation. Taxation, as a specific form of regulation, was mentioned frequently. Experts were particularly adamant about the negative effects of excessive taxation on options, profits and personal distributions.

Other specific areas frequently identified included the government's direct support for entrepreneurship and the impact of broad national policy on the level of entrepreneurial activity. Though few policies directly relate to entrepreneurship, those that do are believed to have significant impact. When governments lack support for small business and entrepreneurship in a general policy context it suggests that the government is not aware of the significant contribution entrepreneurship makes. When the national government is supportive through its policies, there tends to be a higher overall level of recognition and support across the country. As such, government policy can play a strong advocacy role for increasing the level of entrepreneurial activity.

It is also evident to the national experts that general policies on business practices have a significant impact on the level of entrepreneurial activity and the ability of new firms to survive and prosper. In particular are policies on health care, industry deregulation, competition and fair trade, intellectual property, minimum wage and other labor practices, and export trade. It is the opinion of experts in most GEM countries that governments enact policies and legislation around these types of issues with little or no regard for how those policies impact the small business and entrepreneurship sectors.

Patterns Between Countries

GEM 2001 incorporated an in-depth, qualitative assessment of the individual issues in each area to identify thematic differences between countries with high levels of entrepreneurial activity and countries with low levels of activity. For this analysis we separated the countries into two groups based on their overall level of entrepreneurial activity. Countries with entrepreneurial activity equal to or above the median TEA 2001 prevalence rate were labeled "high entrepreneurial activity," while countries below the median prevalence rate were labeled "low entrepreneurial activity." High entrepreneurial activity countries included Australia, Brazil, Hungary, Italy, Mexico, New Zealand and the United States. Low entrepreneurial activity countries included Belgium, Denmark, France, Germany, Ireland, Japan, the Netherlands, Portugal, Sweden, Spain, South Africa and the United Kingdom.[33] Table 9 depicts the major findings in this assessment.

Culture and Social Norms

As summarized in Table 9, the perceived need for role models is greater in the least entrepreneurially active countries. Experts agree that role models become particularly important with respect to overcoming the limitations of ethnic and gender discrimination. While the more entrepreneurially active countries were looking for ways to encourage women and minorities to be more entrepreneurial, experts in the least entrepreneurially active countries were focused on efforts to get society to simply accept diversity.

The most entrepreneurially active countries are adept at encouraging an advanced mindset toward creativity and

Table 9: Expert Evaluations: Culture, Financial Support and Government Policy

	Differences	Common Themes
Culture and Social Norms		
More entrepreneurial activity	• Encourage women and minorities to be more entrepreneurial • Create mindset of creativity and innovation	• Increase respect for entrepreneurs • Lower fear of failure • Modify perception of wealth creation
Less entrepreneurial activity	• Need for role models • Instill elementary aspects of entrepreneurial mindset	
Financial Support		
More entrepreneurial activity	• Improving risk investment culture in the financial community	• Improving ability of lending institutions and equity investors to assess entrepreneurial opportunities • Lower cost of capital for entrepreneurs • Modify inadequate regulation by government of the supply of capital
Less entrepreneurial activity	• Improving banking and access to debt capital • Improving entrepreneurs' ability to assess capital needs	
Government Policy		
More entrepreneurial activity	• Increase long-term focus in government support of entrepreneurship • Deepen government understanding of entrepreneurship	• Reduce administrative burden of regulatory compliance • Increase fiscal incentives to stimulate entrepreneurial initiatives
Less entrepreneurial activity	• Increase coordination in governmental support initiatives • Change government negative perception of entrepreneurship	

innovation. Those less active have to struggle to even instill the more elementary principles, such as overcoming a social system that breeds dependence and disrespect for self-reliance. Those living in societies with generous welfare benefits may become dependent and lack personal initiative and reduce the level of entrepreneurial activity. More entrepreneurially active countries, on the other hand, encourage people to act independently and to pursue opportunities for personal gain.

Financial Support

Experts in countries with lower levels of entrepreneurial activity argued that banking and access to debt capital were of special concern. This concern included the impersonal nature with which the banking industry evaluates investments in new start-ups, the strong reliance on asset-based lending, and the widely shared, risk-averse investment philosophy. Of particular concern was the inability of banks to appropriately evaluate business deals. In one country this was viewed as the most significant issue contributing to the capital gap for new and promising start-ups, particularly in combination with the "zero tolerance rule" under which any terminated business was viewed as a major banking failure. In less entrepreneurial countries, the experts were also negative about the ability of entrepreneurs to assess capital needs, to identify potential sources of funds and to negotiate deals. Entrepreneurs are, by necessity, more sophisticated in countries with more active entrepreneurial sectors.

Another key difference is the role that new venture performance plays in creating the investment culture of a country. Experts from the countries with high levels of entrepreneurial activity were clearly concerned with the ability to provide investors exit mechanisms and the ability to earn money on investments even when the deals are initially over valued. The experts from the least entrepreneurially active countries argue that there should be more formal controls over the entrepreneurial firms to improve performance. The investment communities in the countries with low levels of entrepreneurship appear to place unreasonable expectations on new firm

performance, even while these investors are unwilling or unable to provide the level of management expertise that investors in the highly entrepreneurial countries typically provide.

Government Policies

In countries with more entrepreneurial activity, the experts contend that government lacks a long-term focus and could benefit from a more strategic approach to policy planning (Table 9). The experts from less entrepreneurial countries contend that government policies need to be more closely aligned to the immediate situation and that there needs to be better coordination between programs. The focus for experts from countries with low levels of activity was on what government is doing, while the focus of those from high activity countries was on the underlying philosophy or strategic approach to government's role in creating the best climate for entrepreneurship. Experts in the more entrepreneurially active countries expressed concern about the permanence of government political power, economic stability and the lack of economic and business skills in the government ranks. Experts from the less entrepreneurial countries worried about better coordination between various regions and programs.

While experts in both types of countries agreed that government needed to deepen and extend its understanding of entrepreneurship and its impact on the economy, they differed as to how such an understanding would be beneficial. Experts from less entrepreneurial countries argued governments need to deepen their understanding of entrepreneurship in order to change the attitudes toward the entrepreneurial sector for a more positive image. Experts from the highly entrepreneurial countries were much more concerned the government understands the impact of its policies on entrepreneurial activity. For experts in the less entrepreneurial countries the issue is image and awareness, attempting to overcome the general sense of distrust and disrespect policy makers have for entrepreneurs. For experts in the more entrepreneurial settings, the issue is more about policy effectiveness, including policies that reduce the barriers to growth for young emerging entrepreneurial companies.

Variation in the national context, then, is well captured by the systematic personal interviews with national experts. While experts from all countries seem to agree on many topics, the problems identified in countries with high levels of entrepreneurial activity are somewhat different compared to those with lower levels of entrepreneurial activity. While this should not be a surprise, it certainly suggests that universal “one-size-fits-all” or “best practice” solutions may not be an optimum strategy for policy development. The following country summaries reinforce the image of substantial diversity among the GEM 2001 countries.

Despite similarities in the level of entrepreneurial activity, the climate for entrepreneurship is quite different from country to country. GEM provides a brief summary of the *State of Entrepreneurship* for most of the countries participating in the 2001 assessment. Each country summary (presented in alphabetical order) provides an excellent overview of (a) the level of entrepreneurial activity, (b) the unique national features that influence the overall business climate, and (c) the key issues challenging the effort to build an entrepreneurial support infrastructure.

ARGENTINA

Level of Entrepreneurial Activity

- The level of entrepreneurial activity in Argentina is just above the average for the GEM 2001 countries and is slightly higher in 2001 than in 2000. A significant minority (42.8 percent) of entrepreneurs is motivated by necessity — one of the highest proportions among the 29 GEM countries.
- The prevalence of informal angel investors, at 1.9 percent of the adult population, is substantially below the GEM 2001 average of 3.1 percent.
- The ratio of female to male entrepreneurs in Argentina is below the GEM 2001 average with just more than 1 woman to every 3 men involved in some form of entrepreneurial activity.

Unique National Features

- Argentina, as Latin America's second largest economy, has experienced a period of recession and slow growth during recent years. This has raised particular concern about the ability of the country to service its hard currency debt.
- The government is trying to restore confidence by means of drastic cuts to public spending. Reform of the tax system and continued deregulation of the labor market are also designed to further ease structural constraints on competitiveness.
- The volume of venture capital, especially for Internet and technology businesses, rose sharply in 1999 and 2000. Since the summer of 2000, however, it has all but disappeared.

Key Issues

- Government policy is the most important issue facing entrepreneurship. Employment regulation, the tax structure and the lack of a supportive environment for new businesses are all identified as main impediments to entrepreneurial activity. Government policies toward entrepreneurship should reduce the high level of tax evasion and lower the tax, legal and administrative burden on start-ups.
- Financing remains a major obstacle. This includes a shortage of risk capital available for new ventures, its high cost and the lack of expertise of entrepreneurs in raising external capital and of investors in evaluating new ventures.
- Education and training specifically related to entrepreneurship is critical. Substantial change is required throughout the education system to improve understanding of entrepreneurship and to inspire and guide future entrepreneurs. There are a number of private initiatives in this direction, at the high school and university level, in response to growing interest among younger people in starting their own businesses.

AUSTRALIA

Level of Entrepreneurial Activity

- In 2001, Australia maintained its position among countries with the highest levels of entrepreneurial activity, ranking second with New Zealand, both coming after only Mexico. There was an increase in entrepreneurial activity between 2000 and 2001. Opportunity rather than necessity motivates a very high proportion of Australian entrepreneurs (77 percent).
- Australia also has a high level of informal angel investment activity, with 3.8 percent of the adult population investing in start-ups.

- Australia ranks higher in terms of entrepreneurial activity among men than it does among women.

Unique National Features

- Following financial deregulation in the 1980s, the Australian economy has opened to international capital markets. In 2001, the Australian dollar fell to the lowest value ever against the U.S. dollar. In this climate of global exposure, the pressure to develop world-class entrepreneurial ventures is greater than ever.
- Cultural attitudes are viewed as the biggest impediment to entrepreneurship in Australia. These include the social legitimacy of entrepreneurship and aversion to risk. Negative perceptions are becoming less prevalent, but positive perceptions are slow to emerge. A career as an employee in a large corporation or professional firm is still more valued than starting a business. The consequences of failure remain a major disincentive. Success, rather than meeting with social approval, often attracts envy.

Key Issues

- Culture, education and government support are regarded as being the most important impediments to entrepreneurial activity in Australia.
- There is concern about a decline in the quality of education generally and about the lack of skills needed to turn an idea into a viable business in particular. Education is considered important in developing these skills, particularly through specialized skills training, celebration of positive role models and involving more successful entrepreneurs in mentoring.
- Government awareness of the importance of entrepreneurship has increased dramatically. The question remains as to whether this is permanent and whether governments really understand the entrepreneurial process.
- Following a record year for venture capital investment and further government programs to stimulate investment, shortage of capital is considered less of an impediment in 2001. However, access to early-stage capital remains a concern, especially in light of the recent problems in the technology sector.

BELGIUM

Level of Entrepreneurial Activity

- Entrepreneurial activity in Belgium remains low (4.6 percent) compared with other GEM 2001 countries. Only 1 out of every 125 adults in Belgium starts a business out of necessity, partly due to the country's extensive welfare system.
- Only 2 percent of Belgian adults invest personal funds in new business start-ups. This is significantly higher than in 2000 but below the GEM 2001 average of 3.1 percent.
- The entrepreneurial activity rate in Belgium is low for both men and women, with the ratio of women to men similar to the 1:3 average for the GEM 2001 countries.

Unique National Features

- Belgium is a country with an open economy, characterized by high levels of international trade and foreign direct investment. Experts agree that this contributes to the low level of entrepreneurial activity.
- Belgium has a complex federal political system. Both regional and national governments have responsibility for parts of the entrepreneurial process. This can lead to inconsistencies between regulations at the different levels.
- Belgium's generous welfare system has suppressed entrepreneurial activity among those who benefit from it by raising the cost of moving outside the social security system.

Key Issues

- Lack of financial support is regarded as the main impediment to entrepreneurship in Belgium. This includes both equity and debt financing and applies to technology and non-technology businesses. There also appears to be reluctance among entrepreneurs to raise equity from third parties.
- Lack of coherent government policies is also considered an important barrier. Starting a business also remains complex, time consuming and expensive despite efforts from local government to decrease the administrative burden.
- Cultural norms are not conducive to entrepreneurship. Failure as an entrepreneur continues to be stigmatized in Belgium despite recent reforms to the bankruptcy laws. Starting a new business after a previous failure is not only difficult but is also regarded as suspicious.

- Entrepreneurship training programs are emerging at the undergraduate and graduate levels, but pre-university education lags behind. Primary and secondary education does not stimulate attitudes that are conducive to an entrepreneurial mindset and fails to address specific entrepreneurship issues.

BRAZIL

Level of Entrepreneurial Activity

- Brazil has a relatively high level of entrepreneurial activity. At 14.2 percent, Brazil's rate is equal to that of the United States. However, a higher proportion of entrepreneurs (41 percent) are involved through necessity rather than opportunity.
- Investment by individuals in start-ups is very low. Brazil's business angel rate of 0.9 percent is the lowest of all the GEM 2001 countries.
- Women are relatively active as entrepreneurs in Brazil. The proportion of women among entrepreneurs, at 38 percent, is among the highest among the 29 countries.

Unique National Features

- A high level of government intervention in Brazil is regarded as a double-edged sword. The overarching presence of government has diminished in recent decades, but government intervention manifests itself in burdensome bureaucratic procedures.
- The availability of capital in Brazil has improved. But many Brazilian entrepreneurs still view capital as costly and cumbersome to obtain. In addition, funding programs are not well publicized.
- The country's extensive and diverse geography calls for decentralized and locally designed programs. Regional differences in culture and infrastructure also necessitate a localized approach to venture capital provision and education.

Key Issues

- Lack of a tradition in venture capital and overall access to capital continue to be the main impediments to entrepreneurial activity in Brazil. There is an urgent need to nurture a local venture capital culture and practice.
- Inadequate physical infrastructure and an insufficient pool of professional workers have hampered programs designed to foster new businesses outside the main urban areas.
- The economic and political environment has raised the level of risk and uncertainty about future stability and growth.
- There is a need for further improvements to the general education system that foster an entrepreneurial culture among younger adults. Existing programs are seen as detached from reality, with little integration with graduate and undergraduate study.
- Inadequate legal protection of intellectual property rights, high costs of patent registration at home and abroad and poor technology transfer mechanisms add to a dependence on imported technology and impede indigenous efforts. Universities remain isolated from the entrepreneurial community and engage in projects of little commercial relevance.

DENMARK

Level of Entrepreneurial Activity

- Entrepreneurial activity in Denmark, at 8.1 percent, is below the most active GEM 2001 countries. However, it is above the average for European countries.
- A relatively high proportion of those engaged in entrepreneurial activity in Denmark (83 percent) do so because of perceived business opportunities. Only 5 percent are involved for reasons of necessity.
- Denmark ranks higher among the GEM 2001 countries in terms of involvement in entrepreneurial activity by men than it does for its level of female participation. More than twice as many men are involved than women in this country.

Unique National Features

- There are signs of changing social values among young Danes in particular. Entrepreneurship is accorded a higher status than has traditionally been the case. A desire for autonomy and lower levels of concern about income differentials are leading to changes in both employment conditions and interest in entrepreneurial activity.
- Danes generally have a desire to retain control of ideas they perceive as their own. There is a reluctance to raise finances from professional investors who may have an interest in influencing the start-up process.
- Denmark has suffered a "brain drain." As a small country with a high level of general education, many people go

abroad to pursue greater opportunities and gain wider experience. This has reduced the pool of potential entrepreneurs.

Key Issues

- The venture capital market in Denmark has become more cautious. A string of failed investments has reduced the level of financial support for start-ups. Proposals at all stages are now subject to more stringent assessment by investors.
- A high administrative burden and high levels of taxation continue to act as disincentives to new business creation.
- The Danish education system prepares people for employment rather than entrepreneurship and is often criticized for a number of shortcomings. These include (a) a lack of focus on entrepreneurship, (b) a concentration on large firms and (c) a tendency to teach discrete subject areas rather than taking a more integrated approach. However, there have been recent improvements in these areas.

FINLAND

Level of Entrepreneurial Activity

- The entrepreneurial activity rate in Finland is 9.3 percent, just above the average of all GEM 2001 countries. The rate recorded in 2001 is lower than that for 2000, indicating a fall in entrepreneurial activity.
- As in other Scandinavian countries, opportunity rather than necessity is the motive for the vast majority of entrepreneurs in Finland. Only 8 percent of those involved in entrepreneurial activities do so out of necessity.
- Investment by individuals in new start-up businesses is more prevalent in Finland than in the other European GEM 2001 countries.

Unique National Features

- World Economic Forum ranked Finland as the most competitive economy globally in 2001 for both "current" and "growth" competitiveness. With its advanced technological infrastructure and its sophisticated telecommunications and infocom industries, Finland is well positioned to take advantage of developments toward the Information Society.
- The Finnish Government has made the promotion of entrepreneurship a top priority. In an effort to raise the level of awareness, it launched an "Entrepreneurship Initiative" in 2000. This has brought together nine ministries and other interest groups to promote entrepreneurship through various policy programs ranging from financial packages to help-lines and promotional courses.
- High tax rates and an extensive social security system continue to hinder the overall level of new business creation.

Key Issues

- A lack of experienced entrepreneurial teams is emerging as a key bottleneck for growth in the entrepreneurial sector in Finland. Teams with experience in managing international growth are in short supply.
- With a relatively small home market, technology start-ups in Finland tend to expand internationally quite rapidly. This requires expertise and strong international networks. It represents a demanding challenge for the Finnish support system.
- Strengthening the entrepreneurial culture remains a key challenge for the more peripheral regions in Finland. The task is made harder by the fact that different municipalities and regions often compete for European Union and government funds.
- Fostering an entrepreneurial mindset and culture remains a key challenge for the Finnish educational system at all levels.

FRANCE

Level of Entrepreneurial Activity

- At 7.2 percent of the adult population, entrepreneurial activity in France is below the average for the 29 GEM 2001 countries. An increase of 2 percentage points over 2000 indicates a rise in entrepreneurial activity.
- Only 1 in 60 individuals in France invests personal funds in new start-ups. Although a higher proportion than in 2000, this remains among the lowest of the GEM 2001 countries.
- France was typical among GEM 2001 countries in terms of entrepreneurial activity of men and women. While low, this represents an improvement in the involvement of women since 2000.

Unique National Features

- In 2001, the French government instituted a number of measures to facilitate entrepreneurship. These included new legislation to ease the capital requirements for new business formation, reductions in the top rate of income tax and the rate of corporation tax for small and medium-sized enterprises. These broad initiatives testify that entrepreneurship is high on the political agenda.

- France is nevertheless also characterized by a strong regulatory framework, particularly in areas such as labor. This tends to impede the growth of new businesses.

Key Issues

- Socio-cultural norms continue to act as a barrier to entrepreneurship in France. There have been improvements recently, in part due to the New Economy boom. The image of the entrepreneur has improved, and entrepreneurship has become a popular topic among politicians, commentators, students and academics. Negative attitudes toward business failure persist. Starting a business is still considered an unusual career choice.
- There is an abundant supply of funds seeking good investment opportunities and interest rates are low. Venture capital investors still have large funds at their disposal but are more cautious in selecting investments, particularly in technology sectors.
- The education system does not promote entrepreneurial values such as creativity, risk taking and personal responsibility. There is a need to heighten youth awareness of entrepreneurship, especially at primary and secondary school levels.

GERMANY

Level of Entrepreneurial Activity

- Entrepreneurial activity in Germany, at 7.0 percent, is below the GEM 2001 average and significantly below comparable countries such as the United States, Canada and Italy. Germany does have a higher proportion of opportunity-based entrepreneurship than it does of necessity-based entrepreneurship.
- At 3.6 percent of the population, business angel activity in Germany is above the average of 3.1 for the GEM 2001 countries. It is among the highest in Europe.
- Entrepreneurial activity among women in Germany is below that of men but is broadly in line with the GEM 2001 average.

Unique National Features

- Germany is generally regarded as a highly regulated country. However, opinion is divided as to the extent to which this applies to business start-ups. Some regard regulations as a major barrier to new business creation. Others consider the perception of the effect of regulations to be greater than their actual impact.
- Germany is unique among the 29 GEM 2001 countries in having a relatively comprehensive and effective network of support agencies for start-ups. Professional support services of a high quality are available, but market transparency is low. Many entrepreneurs are unwilling to spend time and resources on these services.
- Although the financing available for start-ups has improved, venture capital companies and banks are now more cautious. Financing is particularly difficult for smaller businesses because banks are reluctant to make small loans.

Key Issues

- The framework conditions for entrepreneurship in Germany have generally improved in recent years. However, attitudes toward entrepreneurship are more realistic in 2001 than in 2000. Both investors and entrepreneurs are now more cautious. There are concerns that the decline in the New Economy may adversely affect entrepreneurship in general.
- Federal and state government could do more to support entrepreneurship. Although small business support is on the agenda of every political party, there is no coherent approach to entrepreneurship, and some recent political changes are perceived as negative for entrepreneurship.

HUNGARY

Level of Entrepreneurial Activity

- The entrepreneurial activity rate in Hungary, at 11.6 percent, is higher than the average of the GEM 2001 countries and the highest of all European countries. At 29 percent, necessity entrepreneurship is higher in Hungary than all other European GEM 2001 countries except Poland.
- Approximately 2.2 percent of the adult population invests in new businesses. This is below the GEM 2001 average but not significantly different from that of other European countries.
- The participation of men in entrepreneurial activity is higher than that of women, but the female participation rate is higher than the GEM 2001 average.

Unique National Features

- From 1948 to 1989, Hungary had a centrally planned economy, which favored large firms and public forms

of ownership. Reforms following the New Economic Mechanism of 1968 provided the basis for the transition toward a market economy. This began in earnest after 1989, and since then, the small business sector has flourished.

- Hungary has created a business environment that is supportive of inward investment in manufacturing, banking and retailing. Exports from these companies fuel Hungary's economic growth.
- Hungary has an industrious, educated population. Business culture and management skills are less developed among small businesses, hindering entrepreneurship.
- The small business sector is characterized by a large number of firms that have neither the desire nor the capacity to become entrepreneurial, high-growth businesses.

Key Issues

- Despite private sector growth, Hungarian culture still does not fully support entrepreneurship. However, respect for entrepreneurs is improving.
- There is a shortage of capital available to entrepreneurial businesses in Hungary, with limited access to equity capital from venture capital firms and business angels. Banks supply loans to the business sector, but most new businesses are either ineligible or unable to afford them.
- Over the last few years, numerous government programs have been created with the objective of supporting entrepreneurship. However, these programs have had limited success and have not successfully promoted new business creation.
- Because of the lack of business skills and experience, there is a need to develop entrepreneurship education at all levels of society.

INDIA

Level of Entrepreneurial Activity

- The level of total entrepreneurial activity in India, at 11.2 percent, is high relative to other GEM 2001 countries. Approximately two-thirds of this activity is driven by necessity.
- Less than 1 percent of the adult population invests in start-up businesses. This is among the lowest of the GEM 2001 countries.
- Entrepreneurial activity in 2001 among men is more than twice that of women, a similar pattern to that observed in 2000 and similar to the average for all GEM 2001 countries.

Unique National Features

- The economic reform process set in motion a decade ago continues, and small firms are still adjusting to changes in the business environment. Government support for the small firm sector — funding, infrastructure and protection from competition — has been withdrawn.
- An unwieldy and inefficient administrative machinery and poor regulatory enforcement further compound the problems facing the entrepreneur.
- Social and cultural norms in India favor stability and security. Risk taking in general is not encouraged. However, there is considerable regional variation in this respect.
- India, well endowed in human capital, is competitive in knowledge-intensive industries such as software and information technology despite an inadequate infrastructure, high cost of equipment, restricted access to foreign resources and limited domestic demand.

Key Issues

- Access to capital, particularly for early-stage development, is a major hurdle faced by entrepreneurs in India. Growth is hampered due to the scarcity and high cost of working capital. Financial institutions do not appreciate the specific nature of entrepreneurs' needs.
- Government is beginning to play a more supportive role but is doing so slowly. There is a lack of coordination between the various arms of central and regional government, and often the administration hinders rather than helps the entrepreneurial process.
- The physical infrastructure in the country is inadequate, as is the supply of professional and commercial services. This has improved in some regions, but the pattern is uneven.
- There is a need to incorporate skill-based learning and the principles of the market economy early in the education cycle. While government agencies and educational institutions carry out quality research and development, there is little focus on the commercial aspects of business. Industry investment in research and development is low.

ISRAEL

Level of Entrepreneurial Activity

- The entrepreneurial activity rate in Israel in 2001 (6.0 percent) is below the average for GEM 2001 countries. It is slightly lower than the rate in 2000.
- The proportion of individuals investing in new businesses is among the highest of the GEM 2001 countries and is similar to the proportion in the United States.
- Entrepreneurial activity in Israel among men is twice the rate among women, which is broadly consistent with the GEM 2001 average.

Unique National Features

- Israel's competitive advantage lies in its technology sector, which has experienced rapid growth characterized by many technology start-ups and new venture capital funds.
- Increasingly violent conflict with the Palestinian National Authority (PNA) has destabilized the region. This has increased the perceived risk and reduced feelings of personal security. Tourism, foreign trade and overall economic performance have suffered.
- The marked downturn in information and communication technology markets and share prices has had an impact on Israel's technology sector. A large number of start-ups have been unable to raise additional capital and have been forced to close down or lay off staff.

Key Issues

- The ongoing conflict in the region causes continued feelings of personal threat and uncertainty in starting new businesses. It also diverts government attention to defense and to social and economic issues outside the entrepreneurial process. The Israeli government is criticized for a focus on short-term interventions rather than long-term solutions.
- Rising public expenditure, the growing fragmentation of the public administration and its heavily bureaucratic nature are believed to discourage entrepreneurship. These factors are also likely to delay reforms that are needed to the taxation system.
- Adverse movements in financial markets in 2000 and 2001 are unfavorable for entrepreneurship. The volume of capital flowing into Israel's technology sector has fallen dramatically from the record levels in 2000. Venture capital funds in Israel are concentrating on supporting existing portfolio companies or less risky later-stage ventures.
- Education continues to be an important issue, although it is felt unlikely that real reform will materialize given current government priorities. However, the government continues to invest in R&D as a long-term investment policy.

ITALY

Level of Entrepreneurial Activity

- An entrepreneurial activity rate of 10.2 percent places Italy twelfth among the 29 GEM 2001 countries, well ahead of all other European countries except Ireland and Hungary. It also represents a significant increase over 2000.
- Italy's business angel rate, at 2.8 percent, is below the GEM 2001 average (3.1 percent).
- Women are particularly active as entrepreneurs in Italy. The country has the highest proportion of women entrepreneurs among the GEM 2001 countries and is unique in having as many women entrepreneurs as men.

Unique National Features

- Italy has a well-rooted entrepreneurial tradition, especially in those sectors, such as textiles, telecommunications and the automotive sector, where it has been competitive on an international scale.
- Geographical discrepancies continue to characterize Italy's entrepreneurial landscape. However, there is increasing acceptance of entrepreneurship as a respectable, even desirable, occupation in all regions.
- A greater sense of creativity and entrepreneurial spirit among younger Italians is a notable example of this more supportive social environment. A further example is provided by the re-election of Silvio Berlusconi, a well-known entrepreneur, as Prime Minister in May 2001.

Key Issues

- Insufficient mechanisms to promote technology transfers to new firms and poor commercialization of research are key factors hindering the development of technology businesses in particular.
- Shortage of capital, from early stages through to an initial public offering (IPO), is an important constraint, especially for businesses in technology sectors. It is blamed for encouraging many Italian start-ups to achieve financial self-sufficiency rather than maximize potential growth.

- Inflexibility in the labor market and the high cost of full-time labor act as further constraints. This problem has been exacerbated by labor shortages in the north of the country.
- There is growing concern about the lack of emphasis on creativity and independence in Italy's primary and secondary education system.

JAPAN

Level of Entrepreneurial Activity

- Japan has the second lowest rate of entrepreneurial activity (5.1 percent) among the GEM 2001 countries. There is a relatively low proportion of opportunity-based entrepreneurs and a correspondingly higher proportion of entrepreneurs driven by necessity.
- Consistent with the relatively low level of entrepreneurial activity, there are few business angels in Japan. Only 1.4 percent of the adult population invests in new business start-ups, compared with the GEM 2001 average of 3.1 percent.
- The involvement of Japanese women in entrepreneurial activities is also low. The ratio of 1 woman to every 2.4 men is lower than the GEM 2001 average.

Unique National Features

- Japanese culture is generally not supportive of entrepreneurship. Recently, however, young people have been more motivated to start new businesses rather than opting to work in large established companies or in the public sector.
- Adverse market and share price developments in 2000 and 2001 have increased the level of risk for many young companies as a result of lower sales growth and stronger competition.

Key Issues

- Because of significant structural changes in the financial sector in Japan, many banks are reluctant to lend to entrepreneurs. In addition, banks often lack the capability to assess new business ventures.
- Japan's tax system and regulatory structure tend to discourage entrepreneurship. A high rate of taxation on capital gains and stock options penalizes entrepreneurial success.
- Continued active involvement by government agencies in several business sectors, such as postal services, limits the opportunities for new business ventures in those sectors.

KOREA

Level of Entrepreneurial Activity

- Korea has the fourth-highest level of entrepreneurial activity among the GEM 2001 countries. An entrepreneurial activity rate of 15 percent places Korea behind Mexico, Australia and New Zealand. There is a modest reduction from the prevalence rate in 2000. A relatively high proportion (38.7 percent) of entrepreneurial activity is motivated by necessity.
- Consistent with the high level of entrepreneurship, business angel activity is also prevalent in Korea, with 3.8 percent of individuals investing in start-ups.
- Entrepreneurial activity is particularly high among men. The proportion of women entrepreneurs remains below the GEM 2001 average.

Unique National Features

- The Asian financial crisis of 1997 led to concerted efforts by the Korean government to overcome the country's foreign exchange problems and restructure the economy. It initiated reforms designed to instill market mechanisms throughout the economy and reduce reliance on the small number of large conglomerates. These included specific measures to promote new businesses and touched many areas from research and development to direct support for new businesses and tax concessions to investors.
- However, the Korean economy is currently experiencing a slowdown due to the global downturn and uncertainties with ongoing economic restructuring.
- The information technology sector, including semiconductors, was instrumental in the export-driven recovery that took place after 1997. However, the sector recorded a 7.2 percent decline in the first quarter of 2001.

Key Issues

- Falling interest rates have not improved the financial constraints faced by start-up businesses. Venture capital investment in new ventures fell sharply in 2001. In the current climate, banks are also showing a strong preference for lending to low-risk clients. Businesses with low credit ratings are expected to have difficulties in obtaining bank financing.
- In the face of slower growth and declining exports, the government is being urged to come up with comprehensive monetary and fiscal policy measures to boost exports, while stepping up efforts to continue corporate and financial restructuring.

- A strong university education system has left little room for entrepreneurship. The growing popularity of entrepreneurship among students has faltered, with employment in larger corporations or financial institutions now being preferred to new ventures as uncertainty continues and conditions in the labor market weaken.

MEXICO

Level of Entrepreneurial Activity

- The level of entrepreneurship in Mexico (18.7 percent) is the highest of the GEM 2001 countries. Almost 1 in every 5 adults is involved in entrepreneurial activity. Levels of both opportunity and necessity entrepreneurship are high; however the proportion of necessity entrepreneurs is lower than in other developing countries.
- The proportion of adults who invest in start-up businesses is also high. Mexico's business angel rate of 4.3 percent compares favorably with the GEM 2001 average of 3.1 percent.
- Involvement in entrepreneurship is particularly prevalent among Mexican men. Just less than 1 in every 3 men is involved in some way, compared with 1 in every 7 women.

Unique National Features

- During the last 50 years, the Mexican economy has shifted away from the once dominant sectors of agriculture and mining toward more industrial activities, especially in the major urban centers of Mexico City, Monterrey and Guadalajara where entrepreneurs have concentrated. With this shift, a new class of entrepreneurs arose with the support of the government.
- Government support took the form of financial incentives, protectionist economic policies and a rigid legislative framework. Government, however, expected support from entrepreneurs in return, which led to a growing level of distrust.
- The Mexican economy has been open to international competition since 1986. Public and private monopolies, however, remain in sectors such as steel, glass, telecommunications and construction. These monopolies subcontract much of their work to small independent businesses.

Key Issues

- The education system in Mexico has prepared students for employment rather than encouraging creativity and entrepreneurship. Research and development has been the preserve of larger corporations and most technology is imported. As a result, Mexican firms largely depend on other countries for new technology.
- The large and complex bureaucracy facing those starting a business is a challenge even for those with ample motivation and financial resources. Several governmental programs to support start-ups exist but were poorly designed. They are generally regarded as wasting resources and offering little real support.
- However, there is a common perception that the new federal government will bring the changes needed for a renewed entrepreneurial environment.

THE NETHERLANDS

Level of Entrepreneurial Activity

- Approximately 1 in 16 adults in the Netherlands (6.4 percent) is involved in entrepreneurial activity. This is below the GEM 2001 average but is comparable to most other European countries. The Netherlands has a high proportion of entrepreneurs motivated by the pursuit of opportunity.
- Angel investment activity in the Netherlands is the lowest of the European GEM 2001 countries. Only 1 in every 83 adults invests funds in someone else's new business.
- With a ratio of women to men involved in entrepreneurial activity of around 1 to 2, the level of participation of women in the Netherlands is broadly in line with the GEM 2001 average.

Unique National Features

- In the last decade, the Netherlands has successfully worked on improving its business environment. Attitudes toward entrepreneurship are also more positive than 10 years ago. During this period, the number of enterprises has grown by nearly 50 percent.
- The shift from traditional toward more advanced technology sectors and the high rate of economic growth from 1995 to 2000 has led to a widespread shortage of skilled labor.

- The Netherlands is characterized by a strong, generous social security system and a highly protected employee status. This may provide an additional explanation for the relatively low number of nascent, necessity-based entrepreneurs in the Netherlands.
- Venture capital investment at the early and expansion stages as a percentage of GDP was third highest among OECD countries between 1995 and 1999. However, the Dutch venture capital market needs to become more transparent, particularly with respect to start-ups.

Key Issues

- Dutch economic policy during the last decade has been generally successful in increasing competition and lowering barriers to entrepreneurship. Crucial points of attention are now to (a) evaluate existing programs and make them more focused, transparent and consistent, (b) lower the legal and administrative barriers for start-ups and (c) improve knowledge transfer from universities to new and small businesses.
- Education still pays little attention to entrepreneurship at most stages and lacks practical application. In 2000, the Ministry of Economic Affairs and the Ministry of Education, Culture and Science launched a Commission on Entrepreneurship and Education. Education is now a major part of the government's entrepreneurship policy.
- There is a lack of good locations for new enterprises in some areas, particularly in the western part of the Netherlands.

NEW ZEALAND

Level of Entrepreneurial Activity

- New Zealand has the second highest rate of entrepreneurial activity of the GEM 2001 countries. More than 1 in every 6 adults (15.6 percent) is engaged in some form of entrepreneurial activity, and the country has the highest proportion of opportunity entrepreneurs.
- New Zealand also has the highest level of business angel activity among the GEM 2001 countries. About 1 person in 16 invests in the start-up businesses of other people.
- New Zealand also ranks high in terms of women entrepreneurs and the intensity of corporate venturing.

Unique National Features

- New Zealand's high entrepreneurship rate may be due to the country's isolation and a resulting "can-do" attitude as well as selective immigration of highly entrepreneurial Maoris and Europeans.
- Fifteen years of reform have led to a high degree of privatization, liberalization and deregulation of the economy. The commercial and professional infrastructure and the physical resources that entrepreneurs require are abundant and inexpensive.
- There is a high level of government awareness of the needs of entrepreneurs, and there is a growing interaction between government and entrepreneurial leaders.
- Due to New Zealand's extreme geography, there are regional disparities in access to capital, R&D transfer, commercial and professional services, and physical infrastructure.

Key Issues

- Widespread cultural and social attitudes hinder the growth of entrepreneurship in New Zealand. The media and the public regard entrepreneurs as dishonest and opportunistic. For such a large minority, New Zealand's entrepreneurs and their needs are largely invisible. New Zealanders have no regard for failed entrepreneurs. Fear of failure is listed as a major reason for not becoming an entrepreneur.
- Although New Zealand has a conservative financial sector, there has been considerable growth in the amount of venture capital available. At issue is not the availability of capital so much as the paucity of investment-ready companies.
- New Zealanders generally undervalue education. Entrepreneurship is not part of the compulsory curriculum, while standard tertiary business education focuses more on employees and managers than on employers and job creators. Universities are generally not entrepreneurial and do not focus on the needs of entrepreneurs.

NORWAY

Level of Entrepreneurial Activity

- The proportion of the adult population involved in entrepreneurial activity in Norway (8.7 percent) remains relatively high compared with other European countries but is below the GEM 2001 average. It is also lower in 2001 than it was in 2000.
- Entrepreneurship in Norway is almost entirely opportunity driven. The country has the lowest rate of necessity entrepreneurship among the GEM 2001 countries. Business angel activity is close to the average of all 29 countries.
- The involvement of women in entrepreneurship is relatively low in Norway, with the proportion of women slightly below the GEM 2001 average.

Unique National Features

- Norway has experienced considerable improvement in living standards in recent years. By 2001, the country had risen to the top of the United Nations' rankings of standards of living.
- Norway's increased wealth is, to a large extent, due to North Sea oil activities. Non-resident multinational oil companies account for a large proportion of the revenue from the oil industry in Norway. Whether or not a greater proportion of this income should be spent domestically is a subject of intense political debate in Norway.
- Attitude surveys have revealed a marked aversion to self-employment in Norway. While the proportion of self-employed in the work force has increased slightly since 1996, Norway still has the lowest proportion of self-employed workers among OECD counties.

Key Issues

- Norway shares the problems that have affected information and communication technologies with accompanying declines in share prices and company valuations.
- There now seems to be a political willingness to change the taxation regime that has disadvantaged those who own more than two-thirds of their businesses. However, stock options are still heavily taxed and there are few incentives for private investors.
- Norway's rate of unemployment (2.6 percent) is very low by international standards. There is a shortage of skilled labor in many professions. At the same time, entrepreneurship and the principles of the market economy receive little attention in the education system.
- The partial privatization of large government controlled companies such as Telenord and Statoil and the increased willingness to purchase welfare and others services from the private sector is likely to create new entrepreneurial opportunities, as is the increased emphasis on aqua-cultural research.

PORTUGAL

Level of Entrepreneurial Activity

- In Portugal, 7.1 percent of the adult population is involved in entrepreneurial activity, placing the country among the least active of the GEM 2001 countries. The rate, however, is relatively close to those of Portugal's nearest European neighbors.
- Portugal has relatively few business angels. Only 1.4 percent of the adult population invests in new ventures, a rate that, among European GEM countries, is only higher than the Netherlands.
- Less than 5 percent of women in the adult population are involved in the creation of new businesses, in comparison to more than 10 percent of men. The ratio of women to men is lower in Portugal than in most GEM 2001 countries.

Unique National Features

- Portugal's accession to the European Union has brought the participation of external interests in the country's economic stability and development. This is a positive step toward establishing consistency in public and economic policy.
- Although isolationist policies came to an end in the 1970s, some of the same cultural mindset persists. The ability to compete and innovate in a global business environment is still lacking. The problem is aggravated by the country's peripheral position in Western Europe and its small domestic market.

Key Issues

- The prevailing social attitude in Portugal is one of dependence upon established corporations and the public sector for jobs and security. Entrepreneurship is neither an expected nor respected career choice, and failure is deemed unacceptable.
- A financial system that can provide sufficient support for entrepreneurship continues to develop, but further progress is needed. Risk aversion still dominates the banking industry, which has traditionally controlled the supply of venture

capital in Portugal. The financial sector is generally not an accessible source of seed capital for entrepreneurs.

- The educational system is widely regarded as key to shifting cultural attitudes in Portugal. It is believed that improved education will remove many of the social, political and structural obstacles to new business creation.

SINGAPORE

Level of Entrepreneurial Activity

- Singapore had one of the lowest rates of entrepreneurial activity among the GEM 2001 countries (5.2 percent). Rates were lower only in Belgium and Japan. The country ranked significantly higher, however, in terms of the proportion of entrepreneurs motivated by opportunity.
- Business angel activity among the adult population, at 1.8 percent, is significantly below the GEM 2001 average of 3.1 percent.
- The balance between men and women involved in entrepreneurial activities is very similar to the average for the GEM 2001 countries.

Unique National Features

- Singapore's economy experienced recession in the first half of 2001, due to a sharp fall in manufacturing exports, especially electronics exports to the United States. As a result, unemployment among the less skilled has increased.
- In 2001, the Singapore government continued to promote technology entrepreneurship through the Technopreneurship 21 initiative, launched in 2000, and a new Life Science program aimed at promoting the development of the life sciences sector.
- Falling share prices and sluggish growth in the United States and world economy have dampened enthusiasm in technology start-ups. Although a significant amount of venture capital was raised in 2000 and 2001, venture capital funding to new start-ups has fallen sharply.
- The small size of Singapore's domestic market and the general weakness in the economies of the region has made it more difficult for start-ups to grow without exporting. Those seeking funding therefore have to demonstrate an ability to penetrate global markets.

Key Issues

- The business angel prevalence rate in Singapore remains low despite the high household savings rate and availability of venture capital. Government policy has promoted the development of formal venture capital and should now focus on informal investments.
- The bursting of the Internet bubble has highlighted the need for Singapore not only to encourage entrepreneurship in general but entrepreneurship based on real technological innovation. The ratio of R&D expenditure to GDP has increased steadily to more than 1.8 percent. However, a large proportion is dedicated to incremental development rather than basic research and the development of intellectual property.
- At the same time, management and global marketing capabilities of start-ups need to be strengthened to enable start-ups from Singapore to compete globally.

SOUTH AFRICA

Level of Entrepreneurial Activity

- In terms of the proportion of adults engaged in entrepreneurship, South Africa ranks in the middle (9.4 percent) among GEM 2001 countries. A relatively high proportion of entrepreneurship (31 percent) is motivated by necessity.
- More than 1 person in 25 has invested in a start-up business in South Africa. This is a relatively high proportion and ranks third among the GEM 2001 countries.
- The ratio of women to men involved in entrepreneurial activity in South Africa is very similar to the GEM 2001 average.

Unique National Features

- South Africa's economy has been dramatically liberalized following several decades of isolation and protection. Although the economy is stable, growth remains weak.
- Historically, the economy has been highly concentrated, dominated by a handful of large state-owned enterprises and corporations, and relying heavily on commodities in mining and agriculture. Until the 1990s, policy makers largely neglected smaller entrepreneurial enterprises.
- South Africa is a country of stark contrasts, socially, economically and geographically. In urban areas, sophisticated industrial centers contrast with informal settlements. In rural areas, commercial agriculture contrasts with communities

lacking the most basic services and relying on remittances from migrant workers. A highly educated, globally mobile minority contrasts with the majority who faces poverty and high unemployment.

Key Issues

- Previous apartheid policies prevented black people from owning and running businesses, and many black South Africans have little business experience. Despite a recent explosion of entrepreneurial activity, successful entrepreneurs do not receive wide recognition. Professional or corporate careers are held in greater esteem than business ownership.
- In the past, the education system and an authoritarian society actively discouraged creativity and independence, leading many South Africans to have a negative view of their ability to succeed on their own. The new school curriculum has a strong focus on entrepreneurship and management skills. However, lack of basic literacy and numeracy, as well as more technical skills, continues to exert a serious constraint.
- Access to micro-enterprise finance is limited. Poverty, a lack of resources and a lack of business skills and experience make it difficult for many potential entrepreneurs to access financial resources.
- The administrative burden placed on small firms by the requirements of legislation is substantial and discourages many entrepreneurs from formalizing their businesses.

SPAIN

Level of Entrepreneurial Activity

- The level of entrepreneurial activity in Spain (7.8 percent) is around the average of all European GEM 2001 countries. There is a greater prevalence in Spain than in most other European countries of entrepreneurs who are involved through necessity.
- A relatively high and growing proportion of individuals in Spain (3.6 percent) invest in new start-up businesses.
- Entrepreneurship among women is high in Spain relative to that of men. Whereas, on average, twice as many men are involved in entrepreneurial activities, in Spain there is almost gender equality.

Unique National Features

- It was not until the late 1990s that an entrepreneurial culture really began to take root in Spain, especially among young adults. However, there continues to be a high level of risk aversion and a preference for a stable income in a state-owned company or in the public sector.
- Social and cultural norms continue to hinder entrepreneurship. There is still little acceptance of entrepreneurial success.
- Government policies in Spain are becoming more conscious of the importance of entrepreneurship. But short-term attitudes within both government and the financial system still hinder the development of an entrepreneurial culture.

Key Issues

- Access to financing continues to act as a restraint on entrepreneurial activity in Spain. Retail and savings banks, in particular, are criticized in this respect.
- Government policies still concentrate on the short term, often neglecting longer-term issues such as the fostering of entrepreneurship. There has been a recent improvement in the degree of support for entrepreneurship, but an excessive regulatory burden and differences between regional governments persist.
- University education in Spain is criticized for its failure to address real business issues in general and for its lack of focus on entrepreneurship in particular.

SWEDEN

Level of Entrepreneurial Activity

- Approximately 1 in 14 adults (6.7 percent) is engaged in entrepreneurial activities in Sweden, somewhat below the GEM 2001 average. About 82 percent of Swedish entrepreneurs are opportunity driven.
- Sweden's business angel rate of 3 percent is close to the GEM 2001 average and similar to the levels seen in the other Scandinavian countries of Denmark, Finland and Norway.
- The level at which women are involved in entrepreneurial activities relative to that of men is higher in Sweden than the majority of GEM 2001 countries.

Unique National Features

- The Swedish economy continues to depend strongly on exports. It is very open and influenced by changes in global economic conditions. The slowdown in the world economy and the adverse movement in share prices, especially in information and communications technologies, have put pressure on the Swedish currency.
- The public sector in Sweden accounts for a significant proportion of GDP. This can act as a barrier to entrepreneurial activity, especially among women who are more highly represented in the public sector workforce than in the private sector.
- Sweden's business environment is generally favorable. However, the climate for entrepreneurs is less positive due to factors such as the high level of personal income tax.

Key Issues

- There are a number of historical impediments to entrepreneurship in Sweden. Notable among them are (a) owner-managers' reluctance to share equity, (b) the lack of attention given to entrepreneurship in education, (c) negative attitudes toward entrepreneurial failure and a lack of positive role models and (d) an egalitarian bias reflected in sustained efforts to narrow income differentials.
- Structural constraints include high income tax rates and high wage costs, excessive regulation and the existence of a strong social security system that provides better support for employees than it does for entrepreneurs.
- Entrepreneurship education has become more common at all levels in the Swedish education system. Many initiatives have been launched in recent years at both high school and college levels. However, many students still do not have the opportunity to take any entrepreneurship courses.

UNITED KINGDOM

Level of Entrepreneurial Activity

- The United Kingdom has a level of entrepreneurial activity (7.7 percent) that is slightly below the average for the 29 GEM 2001 countries and little changed from the level in 2000.
- In the United Kingdom, 2.6 percent of the adult population invests in start-up businesses. This is below the GEM 2001 average of 3.1 percent.
- The participation of women in entrepreneurial activities relative to that of men is low in the United Kingdom. The rate for women is less than one-third that for men.

Unique National Features

- In terms of the general business and regulatory environment, conditions in the United Kingdom are conducive to entrepreneurship. The United Kingdom ranks lowest in the OECD index of barriers to entrepreneurship, which measures factors such as permits, licenses, the complexity of rules and administrative burdens.
- The United Kingdom has the most highly developed venture capital market in Europe, representing 37 percent of total funds raised in Europe.
- The government has put entrepreneurship at the heart of its business policy agenda with a focus on reducing regional disparities in start-up rates and removing barriers so that opportunities are available to all regardless of background. Policy proposals include reform of bankruptcy and insolvency laws, changes to capital gains tax and the encouragement of entrepreneurship through education.
- There remain relatively wide regional variations in entrepreneurial activity throughout the United Kingdom.

Key Issues

- The main issue of concern expressed by industry experts is that of cultural and social attitudes to entrepreneurship. Despite an improvement over recent years, partly due to the "dot-com" phenomenon and positive government rhetoric, prevailing attitudes remain negative toward wealth creation, self-employment and business failure.
- Other barriers to entrepreneurship are the availability of financing, particularly for certain groups in society, individual risk aversion and government regulation. There is also concern about a lack of skills and growth aspirations among entrepreneurs, a non-supportive education system and low levels of basic education.
- Areas in which the United Kingdom is seen as successfully supporting entrepreneurship are the development of the venture capital industry, macroeconomic stability and increased levels of technology transfer from universities.

UNITED STATES

Level of Entrepreneurial Activity

- In the United States, 11.7 percent of the adult population is involved in the creation and growth of start-up businesses, lower than the rate in 2000, but still among the highest of the GEM 2001 countries. The United States has the highest proportion (89 percent) of opportunity-based entrepreneurs.
- Business angel activity is high in the United States, with 5.3 percent of adults investing informally in start-ups.
- Entrepreneurial activity among women in the United States is among the highest of the GEM 2001 countries.

Unique National Features

- American culture embraces change and opportunity seeking. Entrepreneurship is an accepted occupation. Failure is accepted as a learning experience, and entrepreneurs often repeat their efforts to launch new businesses.
- The sudden and sharp decline in information and communications technology sectors is having a severely negative effect on entrepreneurs seeking venture capital in those sectors.
- Venture capital funding, particularly in technology sectors, declined dramatically between 2000 and 2001. Total venture capital investment through the second quarter of 2001 was $22.8 billion, 58 percent below the same period in 2000.
- Women are increasingly active in entrepreneurship in the United States, and there are a variety of initiatives under way to enhance the managerial and leadership skills of female entrepreneurs.

Key Issues

- There is growing concern over gaps in the range of funding available for start-ups. Experts indicate that it is becoming increasingly difficult to fund projects between $500,000 and $5 million. Therefore, there may be just cause for expanding the business angel network to fill the gap. Given the recent slowdown in the economy, equity resources have tightened, exacerbating the seed capital gap.
- Women and minorities continue to have difficulty in raising capital. This is most prevalent in many “non-traditional” and service industries. Women create 70 percent of jobs and own 26 percent of privately-held companies, but they receive only 4.4 percent of venture capital.
- There may exist an underlying distrust between the scientific and business communities to the detriment of the technology transfer process.
- Rural areas need improvements in the communications infrastructure. The divide between urban and rural entrepreneurship will increase without such an infrastructure.

It is clear that entrepreneurial activity, through its contributions to growth and adaptation, is an important feature of modern economic life. The evidence that new and growing firms are a major source of net job creation in developing countries assures us that the entrepreneurial process makes a significant and systematic difference. But given what we know, what can national governments do to accelerate the entrepreneurial process?

Determining the priority issues and developing recommendations for national policy is complicated by several of the leading findings from GEM 2001. First, many of the factors associated with higher levels of entrepreneurial activity, like the age distribution of the adult population, are difficult to affect. Second, factors associated with higher levels of opportunity and necessity entrepreneurship form a complicated set of inter-relationships. Some factors, such as the level of high-tech imports, have the same association with both opportunity and necessity entrepreneurship. Many factors affect one form of activity but not the other, and a few affect one form in the opposite way they affect the other. Lastly, any resulting policy implications, if they are to be effective, will be different for countries at different levels of economic development. This scenario is particularly complicated for developing countries where a number of factors associated with national economic development also have a negative association with necessity entrepreneurship.

Despite these limitations, the GEM initiative has added tremendous insights to our understanding of the role of entrepreneurship and the contextual and personal factors that lead to higher levels of entrepreneurial activity. Obviously, more work is needed. However, clear and direct policy implications are evident in the findings. The following propositions seem to apply to all countries regardless of their level of economic development.

- *Enhance education — general and entrepreneurship-specific*. A strong commitment to education, both general and entrepreneurship-specific, is clearly justified across all national contexts. Not only are those with limited education less likely to participate in entrepreneurial initiatives, those that do tend to match their business aspirations to their skills and knowledge. As a consequence, those with less education tend to emphasize less ambitious business-formation activities. The resulting businesses often make relatively little economic contribution beyond employing the entrepreneur. There has consistently been a high level of association between educational attainment, confidence in one's skills to implement a start-up business and participation in entrepreneurial initiatives.
- *Simplify government regulations.* The GEM 2001 assessment clearly identified government regulatory burdens as a major deterrent to higher levels of entrepreneurial activity. When national policies are developed in consideration of only large established firms, those policies can become disproportionately expensive for entrepreneurial firms to understand and follow. Despite the entrepreneurial community's perception of many government policies as overly intrusive, successful entrepreneurs are concerned about the difficulty in understanding how a specific policy applies to their business. Given the GEM 2001 findings, the greatest negative impact of a burdensome regulatory system may be the time and cost these regulations place on starting new businesses, a critical element in any healthy economy.
- *Strike a balance between economic security and self-sufficiency.* GEM 2001 revealed a strong negative association between the level and duration of unemployment benefits and the prevalence of necessity entrepreneurship. National policy should strive to balance the need to protect the unemployed with the need to encourage higher levels of individual self-sufficiency. If a country is to fully realize its potential for entrepreneurial activity, its government should avoid creating a welfare state where everyone is provided for regardless of personal initiative. However, policy makers should be equally aware of the fact that not everyone can, will or should choose to be an entrepreneur. Thus, the goal of any social security initiative

should be to provide the context in which individual citizens are motivated to recognize and pursue entrepreneurial opportunities.

- *Compensate for gaps in the population age structure.* Across the 29 GEM 2001 countries, participation of adults in entrepreneurship is highest between the ages of 25 and 44. For men, the level of participation overall drops off rapidly after age 44. For necessity entrepreneurship, however, the drop in male participation begins as early as 25 years of age. Countries with a relative shortage of these mid-career adults or a projected decline in adults in these age ranges, particularly males, should explore ways to encourage their older citizens to become more active in entrepreneurial efforts.

- *Facilitate greater levels of female participation.* Women participate in entrepreneurship at about one-half the rate of men across all GEM 2001 countries. As such, there is perhaps no greater initiative a country can take to realize higher levels of entrepreneurial activity than to encourage more of its women to participate. However, the solutions are not that simple. Why women don't currently participate at higher levels most likely involves their career pursuits as well as cultural norms and beliefs about the appropriate role of women in society. Changing a country's core value system is not easy. Such efforts would likely need to begin during younger years when the factors that ultimately influence career choices are molded. For those women already predisposed to entrepreneurship but in sectors (e.g., education and social service) where opportunities for entrepreneurship are limited, proper training, strong incentives and celebrated role models may also be effective.

- *Encourage technology commercialization.* Entrepreneurship is the means by which societies extract value from innovations. As such, an increased investment in technology development is positively associated with higher levels of opportunity entrepreneurship. In addition, the many connections between technology development and the level of necessity entrepreneurship suggest a clear wealth creation effect. The greater a country's technology investment, the smaller the number of necessity start-ups. Investments in technology development appear not only to create new wealth, but also to provide the job creation effect that cuts the level of necessity entrepreneurship in the more technologically sophisticated GEM countries.

A more difficult but equally important task involves increasing the social acceptance of entrepreneurship. This is especially challenging in those societies where individuals are not encouraged to think and act independently in the pursuit of personal economic gain. Some of the more challenging propositions include:

- *Emphasize economic adaptation as a collective responsibility.* Governments at all levels can promote the view that all citizens share responsibility for change in the economic system. Modern societies are too complex and change too rapidly for any centralized coordination mechanism to provide timely adaptation. The role of government may be to supervise the adaptive process carried out by private initiatives and to provide incentives for all members of society to get involved.

- *Encourage toleration of diversity in personal income and wealth.* As GEM has indicated, greater diversity in household and personal income is consistently associated with higher levels of entrepreneurial activity. As long as this diversity reflects appropriate contributions to national economic growth, it should be recognized and accepted. Envy of success and resentment of wealth should not be so strong as to discourage those who may choose to contribute to national economic adaptation by implementing a new firm for personal gain. Governments can ensure that policies reflect a recognition and acceptance of diversity in wealth (e.g., a tax structure that does not penalize successful firms.)

- *Accept the inevitability of business failures.* A key feature of such a shift in social norms is the acceptance of business termination as a normal, appropriate feature of modern societies. Business failure should never be confused with personal failure. At the macro-level, business failures are necessary for the efficient operation and adaptation of the economy. When one firm goes out of business, its resources are acquired and reallocated to productive uses in other businesses. Thus, the constant births and deaths of business entities has a positive net influence on the national economy, ensuring an efficient market for moving resources to the most productive and beneficial entrepreneurial activity.

The GEM 2001 assessment, involving 29 countries and an enhanced methodology to explore different rationale for pursuing entrepreneurial activity, has clearly led to dramatic new information regarding entrepreneurial phenomena — who gets involved, why and under what conditions. Also, many new questions have surfaced. As the GEM program expands the range of participating countries in the coming years and builds up a longitudinal portrayal of entrepreneurship and its relationship to economic growth, more precise answers will be forthcoming.

Global Entrepreneurship Monitor: The Model and Methodology

GEM is one of the leading international research programs intended to enhance understanding of the role of entrepreneurship in national economic growth. The GEM research program was derived from an underlying conceptual model summarizing the major causal mechanisms affecting national economies. The model has three primary features. First, it is entirely focused on explaining why some national economies are stronger and growing more rapidly than others. Second, it assumes that all economic processes take place in a relatively stable political, social and historical context. Finally, and perhaps most unique to GEM, two distinct but complementary mechanisms are considered to be the primary sources of national economic progress (Figure 15).

The first major mechanism, as illustrated in the top portion of Figure 15, reflects the role of large established firms that provide national representation in international trade. It is assumed that as the general national conditions are appropriately developed, the international competitive posture of large firms is enhanced. As these firms mature and expand, they create significant demand for goods and services in their host national economies. This increase in demand signifies market opportunities for many micro, small and medium-sized firms. This scenario is particularly robust when international exchanges are restricted to stable commodities with little change in markets or production technology.

The second primary mechanism driving economic growth, as illustrated in the lower portion of Figure 15, emphasizes the role of entrepreneurship as the creation and growth of new firms. In this process, another set of contextual factors, referred to as "Entrepreneurial Framework Conditions," intervenes between the social/cultural context and the emergence and expansion of new firms. In addition, two critical features in the entrepreneurial process are specified: 1) the emergence or presence of market opportunities and 2) the capacity (i.e., motivation and skill) of the people to initiate new firms in pursuit of those opportunities. The entrepreneurial process is particularly robust in dynamic market settings where success is dictated by higher levels of creativity, innovation and speed to market.

Perhaps the greatest value in the GEM model is the focus on the complementary nature of the underlying mechanisms, both of which have been empirically linked to national economic growth. Indeed, large established firms, through technology spillovers, spin offs and increasing demand for goods and services, often provide opportunities for new business initiatives. Entrepreneurial firms, through lower costs and accelerated technology development, can provide a competitive advantage for established firms in global competitive arenas. Though previous GEM findings have supported this complementary perspective, it is also clear that these processes are extremely complex. The GEM model will continue to be adjusted to reflect future insights derived from the research effort to understand the impact of these mechanisms on economic growth.

Methodology

Four types of data have been assembled for the GEM 2001 assessment: 1) representative population surveys of adults in each GEM 2001 country; 2) detailed personal interviews with national experts on entrepreneurship; 3) standardized questionnaires completed by the experts in each country; and 4) standardized data assembled on each country. Professional survey research firms in each country administered the adult population surveys. The firms and the size of each sample are presented in Table 10. Four international survey research firms supervised a number of countries; about half involved direct supervision by the GEM coordination team.

Sampling procedures varied somewhat, but all of the research firms were able to provide samples that were, when properly weighted, representative of the adult population in each country — urban and rural. Telephone interviews were utilized in the more developed countries where most households have a telephone. Face-to-face interviews were employed in the

GEM Conceptual Model

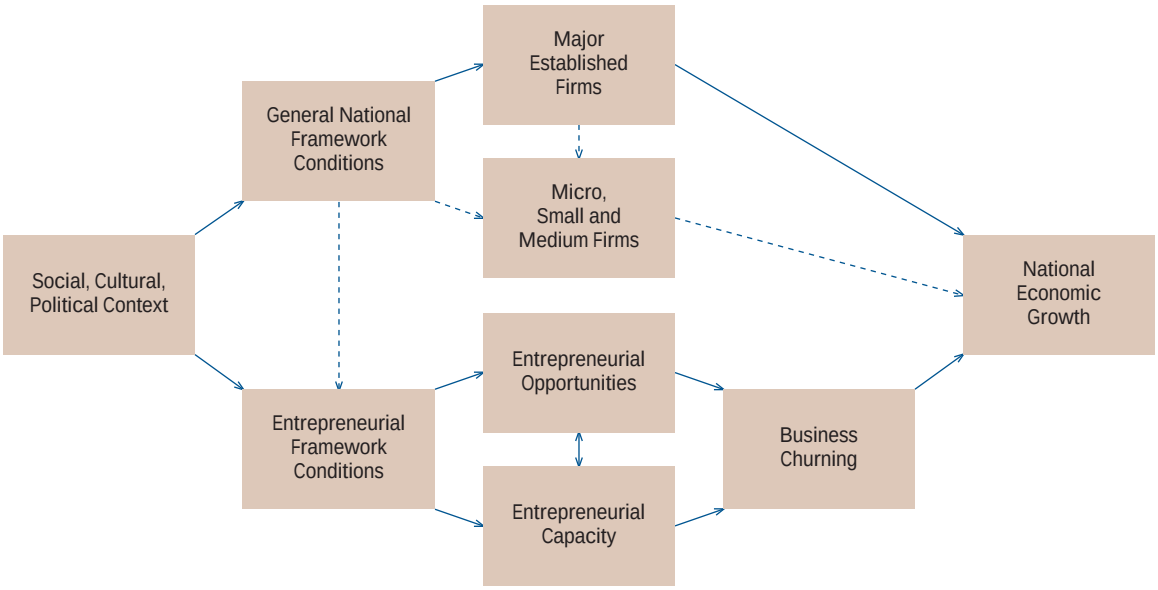

Figure 15

more developing countries to minimize any bias toward higher income households.

The actual GEM interview is conducted in the native language of each country and the average time is less than two minutes. The completion time ranges from a low of 60 seconds to a high of 15 minutes, depending on the extent of the respondent's involvement in entrepreneurial activity. The first four items are related to participation in entrepreneurial activities — starting a new firm, owning and managing a new firm and informally investing in another's new firm. Anyone engaged in any of these activities is asked for additional selected details about that activity. The last six items are for assessing attitudes toward and knowledge of the entrepreneurial climate.

Expert informants were chosen by reputation and referrals to represent the nine entrepreneurial framework dimensions in the GEM model. The framework dimensions are: financial support, government policies, government programs, education and training, R&D transfer, commercial and legal infrastructure, internal market openness, and access to physical infrastructure. Countries that were new to GEM in 2001 were asked to complete four interviews in each of the nine dimensions, while countries that have been in the GEM consortium for more than one year were asked to complete at least two interviews for each dimension.

More than 950 interviews were completed around the globe to ascertain the perspective of national experts on the factors that have been shown to influence the level of entrepreneurial activity. The expert questionnaire, like the adult population survey, was translated into each country's native language. The interview guide included the adult population survey items, 69 five-point scale items covering 13 topics and several socio-demographic items. Sixteen multi-item scales were developed from the 69 fixed response items, all with acceptable levels of reliability.

Standardized cross-national data on a variety of national characteristics and attributes (e.g., growth in GDP) were assembled from a wide range of harmonized international sources. Sources included the United Nations, Eurostat, ILO, U.S. Census International Data Base, World Bank, and International Monetary Fund, among others. The GEM coordination team consolidated the adult population survey data and the final total data set. The data were then distributed to the national teams for their use in preparing individual national reports.

Table 10: Survey Research Firms and Sample Sizes

Country	Data Collection Organization	Coordinated by	Sample Size
Argentina	MORI Argentina	GEM Coordination Team	2,000
Australia	AC Nielsen	AC Nielsen, International	2,072
Belgium	Taylor Nelson Sofres	Taylor Nelson Sofres	2,038
Brazil	Instituto Bohilha	GEM Coordination Team	2,000
Canada	Market Facts, Canada	TeleNations Global	2,016
Denmark	GfK Danmark A/S	TeleNations Global	2,022
Finland	Taylor Nelson Sofres-MDC	Taylor Nelson Sofres	2,001
France	AC Nielsen	AC Nielsen, International	1,992
Germany	Taylor Nelson Sofres EMNID	Taylor Nelson Sofres	7,058
Hungary	MEMRB, Hungary	MEMRB Worldwide	2,000
India	AC Nielsen	AC Nielsen, International	2,011
Ireland (1/2)	Taylor Nelson Sofres:	GEM Coordination Team	1,000
Ireland (2/2)	Irish Marketing Surveys	GEM Coordination Team	1,000
Israel	Bandman	GEM Coordination Team	2,055
Italy	Nomesis	GEM Coordination Team	2,002
Japan	Nippon Research Ctre	GEM Coordination Team	2,000
Korea	Hankook Research	GEM Coordination Team	2,008
Mexico	ORC International	GEM Coordination Team	2,014
The Netherlands	Survey@	GEM Coordination Team	2,013
New Zealand	DigiPoll	GEM Coordination Team	2,000
Norway	TeleNations Global	TeleNations Global	2,874
Poland	MEMRB, Poland	MEMRB Worldwide	2,000
Portugal	Metris	GEM Coordination Team	2,000
Russia	MEMRB, Russia	MEMRB Worldwide	2,012
Singapore	Joshua Research Consultants	GEM Coordination Team	2,004
South Africa (1/2)	Markinor	GEM Coordination Team	1,999
South Africa (2/2)	AC Nielson, SA	AC Nielsen, International	3,284
Spain	Dympanel	Taylor Nelson Sofres	2,016
Sweden	SKOP	GEM Coordination Team	2,056
United Kingdom	Taylor Nelson Sofres	Taylor Nelson Sofres	5,528
United States	Market Facts	TeleNations Global	3,012
Total interviews			**72,087**

END NOTES

1 The procedures for calculating the total TEA Index have been revised since the GEM 2000 report was released. Adjustments were made to (a) compensate for failure to properly reclassify nascent firms as new firms and new firms as nascent firms and (b) account for variation among countries in the proportion of respondents that provided "don't know" or "refusal" responses to the screening items related to entrepreneurial activity. The result has been an increase in prevalence rates for a number of countries, although the rank order of countries has not been dramatically affected. TEA prevalence rates for 2000 were recalculated to allow a precise comparison with 2001 TEA rates. Recalculation of 2000 data for Ireland was not possible.

2 The sample weight for each respondent was adjusted by multiplying the weight by the ratio of total population 20 to 64 years of age by the size of the sample. This was done individually for each country. Following this, the sum of the population weight variable was standardized to equal the sum of the cases. The actual weights then varied from 0.02 to 12.00, reflecting the wide range in population sizes found among the GEM 2001 countries.

3 All start-up businesses, new businesses and businesses receiving informal funding were coded by the GEM coordination team using the International Standard Industrial Classification [ISIC], Third Revision, as described in United Nations', International Standard Industrial Classification of all Economic Activities, Third Revision, New York: United Nations' Statistical Papers, Series M, No. 4, Rev 3, 1990.

4 All measures of national economic growth are taken from the International Monetary Fund World Economic Outlook Database, May 2001, found at **http://www.imf.org/extyernal/pubs/ft/weo/2001/01/data/index.htm**.

5 Data on educational attainment was available for all countries except Australia, Brazil, Ireland, Mexico and Spain. The four classifications were designed to emulate those used by OECD in classifying educational programs. A small number of respondents, less than 1 percent, with no education were placed in the not completed secondary education category.

6 Data on household or personal income was available for all GEM 2001 countries except Belgium, Ireland, the Netherlands, Spain and the United Kingdom. Distributions had from two to a dozen categories so the allocation into thirds was approximate for most countries.

7 GDP per Capita is based on measures from the World Economic Outlook Data Base (see End Note 4). Human development index taken from the United Nations Development Program, Human Development Report 2000; NYC, United Nations, 2000.

8 See "Measuring Globalization", Foreign Policy, January/February 2001, pg. 56-65.

9 Data are taken from the World Bank, World Development Indicators, Washington, D.C., 2001, Table 2.3.

10 Data are from the International Labor Organization, World Labor Report 2000: Income Security and Social Protection in a Changing World, Geneva, International Labor Organization, 2000, Table 14.

11 Data are from Organization for Economic Co-operation and Development, Making Work Pay, Paris, France: OECD, 1997, Table 2, pg. 20; single and couple gross replacement rates for 1994/1995 were averaged for this analysis.

12 United Nations Development Program, Human Development Report 2000; NYC, United Nations, 2000.

13 Data are taken from the World Bank, World Development Indicators, Washington, D.C., 2001, Table 1.3.

14 See the World Economic Forum's, The Global Competitiveness Report 2000, N.Y. Oxford U. Press, 2000.

15 Data are taken from Institute for Management Development, World Competitiveness Yearbook: 2001, Laussane, Switzerland; IMD, 2001: Employment, total and government, Table 1.4.01 and 1.4.06; total taxes collected as percent of GDP, Table 2.2.01, and personal income tax collected as a percent of GDP, Table 2.2.03.

16 Discussion and data taken from Djankov, Simeon, Rafael La Porta, Florencio Lopez-Silanes, and Andrei Schleifer. "The Regulation of Entry," National Bureau of Economic Research Working paper 7892, September 2000.

17 Data are from World Development Indicators: 2001, Table 2.8.

18 The specific item, to be answered "yes" or "no," was "In the next six months, there will be good opportunities for starting a business in the area where you live?"

19 The specific item on skills used in GEM 2001 was "You have the knowledge, skill, and experience required to start a new business?" The item on knowing an entrepreneur used in GEM 2000 and GEM 2001 was "You know someone personally who has started a business in the past 2 years?" Both required a yes or no response.

20 The items in both the GEM 2000 and 2001 expert questionnaires included: "In my country … many people know how to manage a small business,"… "Many people can react quickly to good opportunities for starting a new business," and … "Many people have the ability to organize the resources required for a new business." The reliability, Chronbach's Alpha, was 0.79 for both GEM 2000 and GEM 2001 data.

21 Two items are in this index. "In my country, most younger people believe they should not rely too heavily on the government," and "In my country, younger people expect to change jobs and occupations many times before they retire." Reliability, measured by Chronbach's Alpha, is 0.49 for the GEM 2000 data and 0.52 for GEM 2001.

22 The items, taken from the ongoing Survey of Consumer Attitudes at the University of Michigan that is the basis for the consumer confidence index, were as follows: "Looking ahead, do you think that a year from now you and your family with you will be better off financially, or worse off, or about the same as now?" and "In a year from now, do you expect that in the country as a whole business conditions will be better or worse than they are at present, or just about the same?"

23 Data on venture capital were obtained from industry sources, government sources, the National Venture Capital Association, the European Venture Capital Association, the Australian Venture Capital Journal and the Venture Capital Journal.

24 **www.nvca.com/nvca05_02_01.html**

25 The 23 nations listed here were Australia, Belgium, Canada, Denmark, Finland, France, Germany, Hungary, India, Ireland, Italy, Japan, New Zealand, the Netherlands, Norway, Poland, Portugal, South Africa, Korea, Spain, Sweden, the United Kingdom and the United States. Venture capital data for Argentina, Brazil, Mexico, Russia and Singapore were not available for 2000 when this report was written.

26 Creating a standardized estimate of the total amount of annual informal investments involves several steps. The procedure starts with the respondents that said "yes" to the following item: "You have, in the past three years, personally provided funds for a new business started by someone else. This would not include buying publicly traded shares or mutual funds." They were then asked "Approximately how much, in total, have your personally provided to these business start-ups in the past three years?" This total amount was converted to US dollars (using the exchange rate on 31 May 2001) and then divided by three to get an annual figure. The prevalence rate of those that indicate a contribution is multiplied by the number in the country 18 years and older, including those over 64 who are often a major source of such funding. This count of the total of informal investors is multiplied by the average amount of annual funds provided by all investors. The major problem with these estimates is the highly skewed nature of the amount invested, which ranges from a few dollars to millions. In order to minimize the effects of extreme outliers, only countries where at least 40 individuals provided total financial support estimates from either the 2000 or 2001 surveys were included. The result is that some total estimates are not available for low prevalence rate countries.

27 Romer, P. (1990). "Endogenous Technological Change." Journal of Political Economy, 98: 71-102.

28 Schumpeter, J. A. (1996). The Theory of Economic Development. London, United Kingdom, Transaction Publishers.

29 Acs, Z. J. and D. B. Audretsch (1988). "Innovation in Large and Small Firms — an Empirical Analysis." American Economic Review, 78(4): 678-690.

30 Lundvall, B.A. (ed.) (1992). National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning. London: Pinter Publishers.

31 The nine entrepreneurial framework conditions outlined in the GEM model are financial support, government policies, government programs, education and training, research and development transfer, commercial and legal infrastructure, internal market openness, access to physical infrastructure, and cultural and social norms (see Figure 15).

32 The GEM national research teams provided summaries of all face-to-face interviews. These summaries identified the experts' selection of the primary issues facing their country and the three most significant problems challenging the level of entrepreneurship. The summary sheets were coded by the GEM coordinating team and content analyzed to determine (a) how frequently a particular issue was mentioned and (b) how important each issue was for each of the nine framework factors. This systematic approach provided an opportunity to see patterns common to all countries as well as the individual conditions that make a country unique. This rich perspective is unprecedented and one of the many features that makes GEM the premier global platform for debating global policy conditions and practices.

33 Although all countries are included in the TEA index, some countries were not able to compile their data in time for this phase of the research, and, as such, were not included in this comparative analysis.

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