



GLOBAL ENTREPRENEURSHIP MONITOR

2003 Executive Report

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GEM 2003 GLOBAL REPORT

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NOTE: The primary author of this report is the Coordinating Principal Investigator, Paul Reynolds. While the views and suggestions of a wide range of those associated with GEM have been solicited, the conclusions and recommendations have not been formally endorsed by the host institutions, the global sponsors, or the GEM national teams. They are not responsible for any errors of commission or omission.



The fifth global assessment of national entrepreneurial activity was completed in 2003. Surveys of the adult population were again used to locate those active in creating new firms. The national average prevalence rate—the Total Entrepreneurial Activity (TEA) index—was 9 per 100 of those 18-64 years old. The addition of new countries increased the range of activity from 2% to 29%—a factor of 15. There has been considerable year-to-year stability in this measure for individual countries. Among 40 GEM countries there are 2.4 billion in the working years (18-64 years old); it is estimated that 300 million nascent entrepreneurs are attempting to establish 192 million new firms.

The newly created Firm Entrepreneurial Activity (FEA) index reflects those established firms that expect to have an innovative impact on the market and grow. There is less variation among countries with the FEA index; the range is from 2% of existing firms and jobs in entrepreneurial firms to more than 20% of existing firms and jobs in entrepreneurial firms—factor of 10. Within 40 GEM countries about 57 million are managing 37 million entrepreneurial firms.

The two indices can be used to classify 40 GEM countries into five groups, the most entrepreneurial includes Chile, Korea, New Zealand, Uganda, and Venezuela. The next most active are Brazil, China, India, and Mexico. The intermediate group includes Argentina, Australia, Canada, Denmark, Hong Kong, Hungary, Iceland, Ireland, Slovenia, Spain, Singapore, Thailand, the United

Kingdom and the United States. The below average group includes Belgium, Finland, Germany, Greece, Israel, Italy, Norway, South Africa, Sweden, and Switzerland. The least entrepreneurial countries are Chinese Taipei (Taiwan), Croatia, France, The Netherlands, Japan, Russia, and Poland. The most entrepreneurial group of countries is three to six times higher than the least entrepreneurial group on all measures of entrepreneurial activity.

New firms appear to provide from 2% to 15% of the current jobs in the GEM countries; this job creation is highly correlated with the level of start-up activity. There is a positive, statistically significant association between national economic growth and national level of entrepreneurship (either the group classification or the level of the TEA index) in prior years. This association is higher for the TEA necessity index, reflecting those that pursue start-ups because they have “no better choices for work.” Necessity entrepreneurship is much greater in poorer countries, which have higher growth rates than richer countries.

Over the 2000 to 2003 period, about four in five new firms expect to create jobs and once they are established, one in five expect to provide 20 or more new jobs. New firms are created in all economic sectors but only one in 33 expects to have a substantial innovative impact on the market. About two-thirds are implemented by men and 60% by those 25-44 years old; 66% are starting a new firm to pursue an opportunity, 27% out of necessity, and 7% for other reasons.



EXECUTIVE SUMMARY

Men are twice as likely to pursue start-ups than women, and younger adults (25-34 years old) are the most active. A positive personal context—knowing entrepreneurs, seeing good business opportunities, and having the skill to create a business—has a major impact on participation in firm start-ups. A cultural context that is positive toward entrepreneurship—reflected in social acceptance of entrepreneurial careers, respect for new business success, and positive media coverage—tends to increase participation in start-ups, but has less effect than a positive personal context. Educational attainment and household income affects the motives for entrepreneurship—the poor and uneducated are more likely to be responding to necessity—than the absolute level of participation.

Informal funding of business start-ups was responsible for US\$360 billion in resources to new firms, 11 times more than the US\$32 billion provided by venture capital firms to start-ups within their own countries. About 80 percent of all venture capital support in the world is provided within the United States. Except for Israel, venture capital is not a major source of entrepreneurial financial support in most other countries.

While many national factors affect entrepreneurial processes in all countries, some factors seem to have a different impact in rich countries compared to poor countries. The higher level of necessity entrepreneurship in poor countries implies that government policies in these countries can be more effective if a range of approaches is developed for different types of entrepreneurial activity. Women in poor countries can benefit from special attention.

On the other hand, providing systematic training in entrepreneurship and firm management skills; reducing the scope of government control of national economic activities; reductions in social and economic

security programs; reducing the costs for registering new firms (rich country impact); and improving the efficiency and effectiveness of government functioning as well as establishing official respect for property rights may well enhance business start-ups. The potential impact on entrepreneurship among existing firms is less clear. Assessments of more than 800 national experts in all GEM countries suggest that most governments are not considered very effective in sponsoring programs or policies to enhance entrepreneurship.

A number of factors associated with more entrepreneurship may not be easy for governments to control. For example, it is difficult to imagine governments being willing and able to increase the percentage of young adults in the population, reduce long-term employment, increase income disparity, or expand the agricultural sector—all to increase the level of participation in entrepreneurship.

High potential new firms, those expecting or planning for substantial job growth, appear to be more prevalent in countries with a substantial research and development infrastructure. While the presence of such an infrastructure is likely to have a major long-term influence on technically based entrepreneurship, it can sometimes take decades for a significant, measurable impact.

One thing is clear, a formal national coordination mechanism is unlikely to be able to adjust a national economy fast enough to be competitive in a fast-changing, complex global marketplace. Decentralization of this social function to the private entrepreneurial sector—where new start-ups are created and existing firms are re-oriented—is likely to provide a faster, more effecting adaptation of the national economy. The government may have a major role in helping to minimize transition costs as people and regions adapt to new economic structures.

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The Global Entrepreneurship Monitor (GEM) program is a unique, unprecedented effort to describe and analyze entrepreneurial processes within a wide range of countries. GEM focuses on one of the most fundamental forces associated with economic change—entrepreneurship. Understanding these mechanisms has remained elusive for researchers and policymakers due to lack of reliable, internationally comparable data. Even though many influential scholars have, for well over a century, maintained that entrepreneurship is one of the most important dynamic forces shaping the economic landscape, the causes and impacts of the phenomenon are still only poorly understood. Consequently, policymakers have lacked the means of shaping effective and appropriate policies to nurture this phenomenon for national advantage.

The major focus of the GEM program has been on four objectives: How much do countries differ in terms of entrepreneurial activity? What are the national consequences of differences in entrepreneurship? What accounts for national differences in entrepreneurship? What can governments do to affect the level of entrepreneurship? The major research focus has been on harmonized measures of entrepreneurial activity.

The distinctive benefits of the GEM measures are direct indicators of individual- and firm-level entrepreneurial processes. This represents a revolutionary development in data collection because individuals and the businesses they create and manage are the primary agents of entrepreneurial activity. No other measures exist that can be used as a basis for reliable international comparisons. No other measure can be used to determine and analyze the motivations driving individual economic agents. No other measure can be used to inform policymakers on how to foster the development of entrepreneurial human capital.

This is the fifth annual GEM cross-national assessment of entrepreneurship. The program has expanded from 10 countries in 1999 to more than 30 in 2002 and 2003—a total of 41 countries have been involved for one or more years. National teams have been in operation in 39 of these countries; their host institutions, membership, and sponsors are listed below. GEM is a collaborative effort in every sense of the word, in terms of financial resources, intellectual advancements, as well as design and analysis. A GEM consortium assessment and planning meeting is held early in January of each year. The coordination team is assisted by more than 150 scholars from the various national teams. The primary data collection is the adult population surveys; these involve trained professionals in survey firms in the participating countries.

The research program would not have developed without the support and encouragement of the three institutions that have played critical roles from the beginning. Babson College and London Business School have provided an optimal context for a complex research project emphasizing entrepreneurship. The Ewing Marion Kauffman Foundation has been a major source of financial support and strategic advice from the inception of the project.

As the GEM program expands and improves it should continue to provide new insights into the scope and significance of the entrepreneurial processes and how public policy can facilitate entrepreneurial contributions to national economic well-being. New developments, and all national reports, can be found at www.gemconsortium.org.

Paul Davidson Reynolds
Coordinating Principal Investigator



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One of the major features of modern life is the change and adaptation of economic systems. The Global Entrepreneurship Monitor (GEM) project was developed in 1998 to explore in detail the role of entrepreneurship in these change processes. The primary focus has been to understand the impact of entrepreneurship, broadly defined, on national economic growth. (The conceptual model for the project is outlined in Appendix I.) Given the value of having a reliable empirical base for this assessment, data collection has emphasized harmonized cross-national measures of entrepreneurial activity, the national consequences of entrepreneurship, those factors that distinguish the countries that are more or less entrepreneurial, and the implications for public policy.

The annual GEM assessment involves four major types of data collection. Surveys of the adult populations are completed in each country. This involves locating a representative sample of the adult population to create two indices. One, the Total Entrepreneurial Activity (TEA) index—provides a measure of those active in starting a new business. The other—the Firm Entrepreneurial Activity (FEA) index—is an indicator of entrepreneurial activity among established firms. These standardized surveys—for 2003 more than one hundred thousand interviews were completed in 31 countries—are the basis for harmonized comparisons of national entrepreneurship. The firms and the sample sizes are presented in Appendix II. The national teams completed interviews with national experts on

entrepreneurship in each country, over eight hundred were completed in 2003. Experts also completed a 10-page questionnaire that provides a standardized measure of their assessments. The fourth source of information is the data on national features assembled by a variety of international research organizations—World Bank, International Monetary Fund, UN, International Labour Organization, and others. Details on these activities are available from the GEM coordination team.

This report begins with a review of the current level of entrepreneurship in the 31 countries participating in the 2003 cycle in Section B. The stability in the most critical measure, the TEA Index, from 2000 to 2003, suggests that business start-ups may be a basic structural characteristics of a given country. This allows much of the analysis to use data on all 41 countries that have participated in the project. There was, however, a major changes in the adult population interview schedule in 2002 and Portugal was involved only for 2001. As a result, some analyses are only possible for 40 countries. A complete listing of all national surveys completed since 1998 is provided in Appendix III.

A new measure of firm entrepreneurship, the Firm Entrepreneurial Activity (FEA) index, has been developed. This provides information on a new dimension reflecting innovation and growth within established businesses, providing a more complete characterization of national entrepreneurship. Based on these two indices, each GEM country can be placed into one of five categories in terms of the level of entrepreneurship.

INTRODUCTION

Three consequences of entrepreneurial activity for a country are reviewed in Section C. The first is the scope of effort within a country, indicated by the numbers of individuals involved in firm creation—almost 300 million among the GEM countries—and the 57 million owner-managers guiding the entrepreneurial efforts of existing firms. Estimates of the annual proportion of jobs provided by new firms to the national economy, the second consequence, range from 2 to 15%. The role of entrepreneurship in national economic growth is reflected in the persistent positive correlations between the TEA Index and national economic growth in 2-3 years in the future. The causal mechanism remains obscure.

The types of business activity, the growth aspirations of new firms, and the expected impact on the markets are reviewed in Section D. Very few new firms expect to provide no jobs, new firms are emerging in all economic sectors, and a small proportion expect to change the market structure. The gender and ages of those involved in start-ups and entrepreneurial firms are reviewed in Section E, along with their primary motivations. About one-third of nascent entrepreneurs implementing new firms are doing so because they have no better choice for work—the necessity entrepreneurs. The pursuit of opportunities, however, is the dominant motivation for four of five owner-managers of entrepreneurial firms.

Those individuals with a tendency to participate in entrepreneurship—the probability that a person in their working years will become involved in starting a new firm—are considered in Section F. A number of factors have a major impact, including age (those who are 25 to 44 are the most active) and gender (men are twice as active as women). Personal background as represented by educational attainment, relative household wealth, and current participation in the labor force are all associated with greater levels of some types of entrepreneurial activity. The extent to which individuals are in a supportive personal context—reflected by contact with others starting

firms, perceptions of good business opportunities, and possessing the skills and ability to create a new business—has a substantial impact on pursuing firm start-ups. These features can be summarized by an entrepreneurial context index. Measures of social or cultural support for entrepreneurship are also combined into a separate index; the effect is clearly significant, but less so than the impact of individual contextual factors.

A wide range of factors appear to have some impact on the national level of entrepreneurial activity, their assessment is reviewed in Section G. The assessment is complicated by the classification of GEM countries into two categories. Those that with high per capita income—most of Europe, the Group of Seven (G-7), and most Organization for Economic Co-Operation and Development (OECD) countries—and those that have lower per capita income—developing countries in Latin America and Asia. While some factors have the same impact in both groups of countries, other factors seem to have an influence only among one group; the impact of a few potent factors actually reverses for the two types of countries. This substantially complicates the development of policy recommendations, as entrepreneurial processes appear under different conditions in these two types of countries—wealthy and poor.

Four topics are of such importance they received attention from special teams within the GEM consortium; their assessments are provided in Section H. While new firms are created by people, they generally required financial support. The level, scope, and nature of informal investments and venture capital support for new ventures during the 1999-2003 period are reviewed in Section H-1, prepared by William Bygrave. The impact of the recent dramatic decline in venture capital investments is quite prominent; the net impact on firm creation is less obvious.

INTRODUCTION

While women are less involved in entrepreneurship than men, they are a major source of new activity. While some of the same factors affect the participation of men and women in the same way, there are special situations where women appear to respond to a different set of national characteristics; Pia Arenius and Maria Minniti consider women in entrepreneurship in Section H-2. While the GEM research program has assembled data on tens of thousands of new businesses, only a very small proportion appear to have potential for strong growth and high impact on the markets. As it is well known that a small proportion of high growth firms are a major source of job creation, a separate assessment on high-growth firms has been implemented by Erkko Autio and appears in Section H-3. Part of the GEM data collection effort involves interviews and questionnaires completed by national experts in entrepreneurship in each

GEM country. A review in Section H-4, prepared by Paula Fitzsimons, Sinead Murray, Colm O’Gorman and Frank Roche of these experts’ assessment of their own government’s efforts to encourage entrepreneurship indicates there is much scope for improvement.

The final section, I, reviews the major conclusions and considers selected implications for public policy.

This report is designed to provide a global overview and general assessment. More complete national assessments are provided in the individual country reports completed by each GEM national team. In addition, teams of scholars from within the GEM consortium will be providing more detailed assessments on a range of special topics, such as that summarized in Section H. All are made available, without charge, on the GEM Web site, www.gemconsortium.org.



Entrepreneurship is associated with adaptation and change of economic systems, which often contributes to national economic growth. Three mechanisms may lead to such adjustments: creation of new businesses, reorientation of existing businesses toward entrepreneurial goals, and the redirection of the national institutional infrastructure that is seen as the core organizing elements in most societies.

Perhaps the most visible entrepreneurial activity is the first, the creation of new business entities. The entrepreneurial processes emphasized in the GEM project and measured by the Total Entrepreneurial Activity (TEA) Index focus on new business creation. A second mechanism would be market changes and plans for growth among existing small- and medium-sized businesses as they attempt to adapt and change in response to new circumstances. A third source of national economic innovation, adaptation, and growth could be changes introduced by or with the support of existing institutional structures and their elements—networks and consortia of major business corporations, research universities and institutions, the financial sector, and government agencies. This third group would encompass the high-profile, high-potential efforts receiving attention from the venture capital sector.

The relative impact of these three national adjustment mechanisms is unknown. Serious assessment would require harmonized measures of the

three activities, so their presence and potential impact could be tracked across countries and over time. Data from the GEM program can now provide direct evidence related to the first two mechanisms—new firm start-ups and entrepreneurial activity in the existing small and medium enterprise (SME) sector. The procedures have been harmonized across countries and can be implemented over time. Measures of national institutional entrepreneurship may be among the most difficult to develop; no useful indicators of this sector are available at this time.

Business Start-Ups

Individual efforts to create new firms are reflected in the Total Entrepreneurial Activity (TEA) index. The creation of new firms is a process, they do not emerge instantaneously. The process can be considered to have two phases: 1) the start-up phase where resources are assembled, products or services defined, a team is organized, and the strategy for implementing the new firm is developed, and 2) the new firm phase, the initial period after trading begins when a new initiative is in the market competing for customers with existing firms.

The TEA index is a measure that identifies individuals that are active in either the start-up phase or managing a new business. It is developed as a prevalence rate, reflecting the number of individuals among all those 18–64 years old in the human population involved in either of these first two phases of the entrepreneurial process.¹



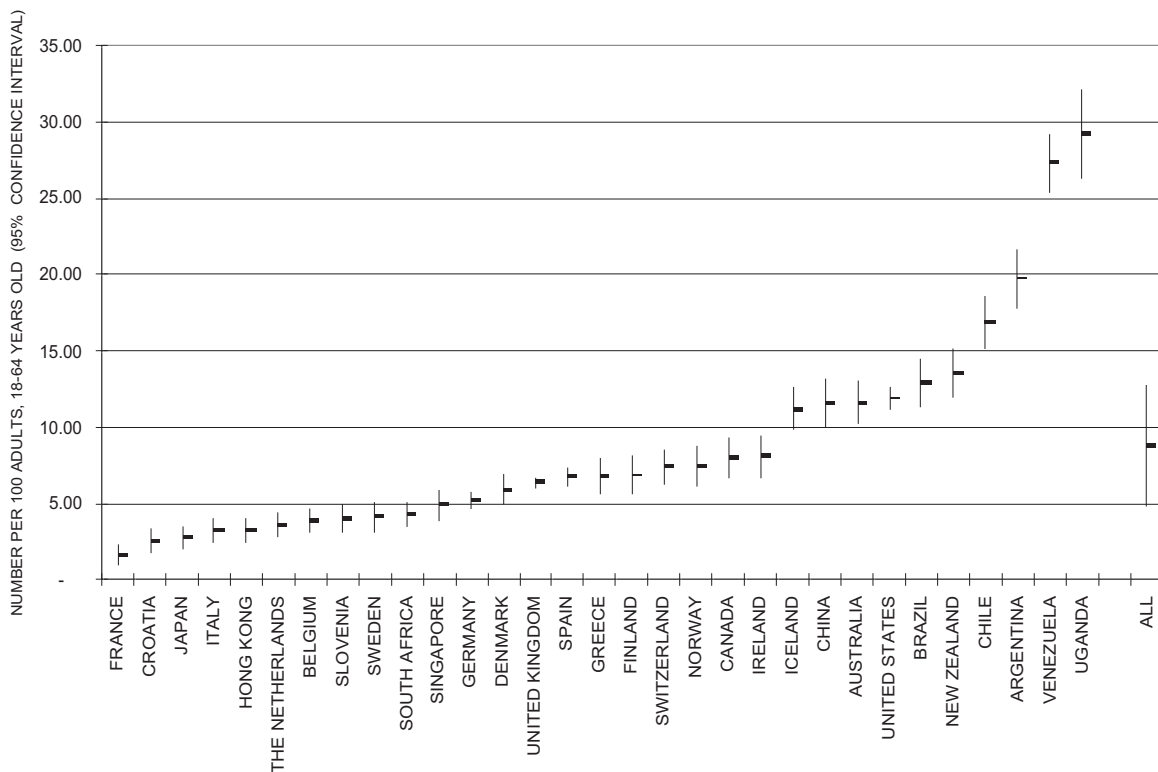
WHICH COUNTRIES ARE MORE ENTREPRENEURIAL?

The results of the 2003 assessment among 31 countries are presented in Figure 1. The expected prevalence rate is the number per 100 individuals 18-64 years old involved in either the start-up phase or managing a new business less than 42 months old. The precision of the estimates, or lack of precision, is presented as vertical bands representing the margin of error.² If these bands overlap for two countries, there is no statistically significant difference between the countries. There is, then, no statistically significant difference between the prevalence of individuals involved in start-up activities in Uganda and Venezuela, although both are clearly higher than Argentina. In a similar fashion, there is no statistically significant difference among the bottom four countries (France, Croatia, Japan, and Italy). The TEA rate for Germany may be statistically significantly higher than the TEA rate for Italy or lower than the TEA rate for Canada,

but there is no statistically significant difference from the adjacent countries, Singapore and Denmark.

Data from the GEM project for the past four years can be compared to determine the stability in the TEA measure of start-up activity. Year-to-year correlations are presented in Table 1 for four years of data on the TEA overall measure as well as for a TEA average measure, computed for all years in which data was available. All correlations are highly statistically significant. The three year-to-year correlations are 0.81, 0.74, and 0.93 and provide strong evidence that it is appropriate to consider the TEA measure of business start-up activity as a relatively stable national characteristic. Much of the analysis that follows will be based on consolidated data using as many of the 41 GEM countries as possible.

FIGURE 1 - TOTAL ENTREPRENEURIAL ACTIVITY BY COUNTRY: 2003



WHICH COUNTRIES ARE MORE ENTREPRENEURIAL?

TABLE 1 STABILITY IN THE TEA INDEX FROM 2000 TO 2003

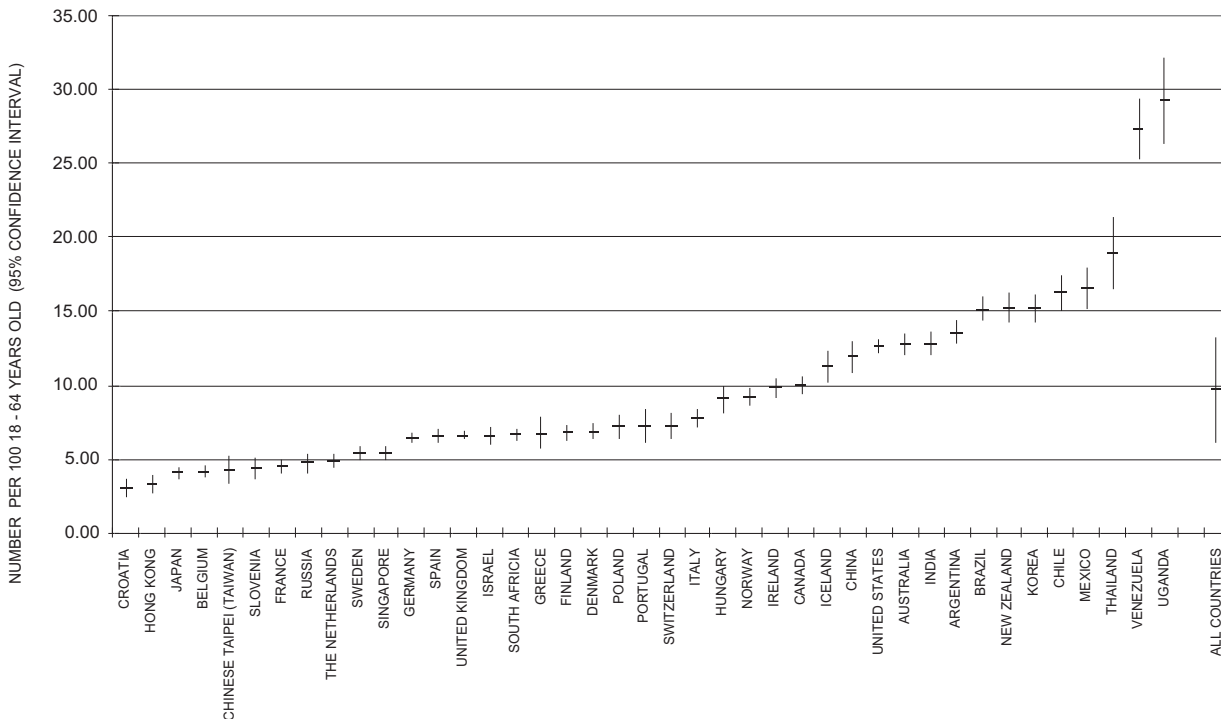
Overall	TEA 2000	TEA 2001	TEA 2002	TEA 2003
TEA 2000	1.00			
TEA 2001	0.81(20)****	1.00		
TEA 2002	0.65(20)***	0.74(28)****	1.00	
TEA 2003	0.64(17)**	0.72(21)****	0.93(28)****	1.00
TEA Average(2)	0.86(20)****	0.91(29)****	0.94(37)****	0.97(31)****

(1) No. of countries in parentheses; Stat Sign (1-tailed): ** < 0.01, *** < .001, **** < 0.000
 (2) TEA Average computed for 1-4 years, depending on number of years country was in the project. As it was later determined to be in error, the year 2000 Ireland TEA measure was excluded.

For example, by consolidating the data for different years for all GEM countries, the pattern for 41 countries can be presented in Figure 2.³ The combination of samples substantially increases the precision of the estimates, as indicated by the narrow confidence intervals. The total sample size varies from 1,000 cases (for Thailand and Uganda)

to over 45,000 (for the United Kingdom). Many of the following analyses will take advantage of the benefits of increased national precision by consolidating samples across the relevant years and the greater diversity of countries by maximizing the set to be included in the analysis.

FIGURE 2 - TOTAL ENTREPRENEURIAL ACTIVITY BY COUNTRY: 2000-2003 AVERAGES



Firm Entrepreneurship⁴

Adjustments in the national economic structure may also occur when existing businesses provide new goods or services. Such firms may, if successful, also grow. Nokia, now a world leader in telecommunications, is one spectacular example of an existing firm that shifted product lines from safety matches and rubber boots to sophisticated, high technology products. Firm entrepreneurship may be present when an existing business is introducing new products and services in the marketplace and has expectations of growth. A country with a high proportion of such activity among existing businesses may be considered a country with more entrepreneurial activity. Programs and policies to promote entrepreneurship among existing firms are a major feature of the efforts by both national and international government organizations (EU, UN, OECD, World Bank) to promote economic adaptation and growth.

The GEM adult population survey identifies, in addition to nascent entrepreneurs implementing new firms, those that are owner-managers of existing firms. In fact, more than 10% of all respondents report they are actively managing a firm in which they are a full- or part-owner. These individuals are then asked a series of questions related to this ongoing business, including the number of owners, the number of current jobs, the jobs to be provided in five years, and a series of three questions that help determine if the firm is providing goods or a service that is new to the marketplace—an innovation that provides new choices for customers. While some of these market innovations may have an impact in global markets—such as a new mobile phone or a new life-style pharmaceutical—the large majority are innovations only in the context of a local or regional market. This can expand consumer choice or improve efficiency in the local setting, but may not be considered a dramatic change from a global perspective.

Given the importance of the issue—understanding entrepreneurial impacts on national adaptation and economic growth—it seems worthwhile to consider an exploratory measure designed to provide an indicator of the extent to which existing businesses might be considered entrepreneurial. This assessment requires measures of potential market impact, which are available for data collected in 2002 and 2003 in 40 countries. About 1.3% of 211,619 respondents reported they were owner managers of firms that would have a major impact on the market. Considering the firms with multiple owners, these 2,809 individuals were representing less than two thousand entrepreneurial firms.⁵

The extent to which a country has entrepreneurial firms can be measured in terms of the proportion of such firms among all firms in the country. If the average size of firms was the same for all countries, this would provide a suitable basis for comparison. There is, however, some variation in the average size of existing firms among countries. Another measure would be the proportion of all jobs provided by entrepreneurial firms, which would adjust for the difference in the average size of firms. As both measures provide a reasonable indicator of entrepreneurial activity among existing businesses, they have been combined into a single index, the Firm Entrepreneurial Activity (FEA) index.⁶ It is created to have an average value of two (to avoid negative numbers) and gains its meaning from comparisons between countries.

Table 2 provides the values of the FEA index and the two aspects of firm entrepreneurship on 40 countries. As can be seen, those with higher index values have a larger percentage of entrepreneurial firms and employment in entrepreneurial firms—as many as three or four times higher. The index clearly reflects a major difference in growth expectations and market innovation among existing businesses.

WHICH COUNTRIES ARE MORE ENTREPRENEURIAL?

TABLE 2 FIRM ENTREPRENEURSHIP DIMENSIONS AND INDEX VALUES

COUNTRY	FIRM ENTREPRENEUR- SHIP INDEX	PERCENT EMPLOYMENT IN ENTREPRENEURIAL FIRMS	PERCENT ENTREPRENEURIAL FIRMS
CHILE	6.06	39.38	37.88
KOREA	4.02	28.98	21.73
MEXICO	2.80	15.35	18.76
NEW ZEALAND	2.79	17.30	16.82
UGANDA	2.78	19.23	15.04
VENEZUELA	2.72	15.33	17.72
SLOVENIA	2.70	17.10	15.88
HONG KONG	2.56	18.85	12.64
CHINA	2.56	17.83	13.49
UNITED STATES	2.37	12.14	16.22
SINGAPORE	2.35	9.06	18.71
CANADA	2.33	13.39	14.66
DENMARK	2.27	14.60	12.79
BELGIUM	2.22	14.23	12.49
ICELAND	2.19	16.05	10.55
UNITED KINGDOM	2.09	12.17	12.78
ITALY	2.05	13.21	11.28
FINLAND	1.93	15.77	7.55
SPAIN	1.89	13.60	8.99
SWEDEN	1.88	14.28	8.24
BRAZIL	1.87	13.07	9.14
IRELAND	1.85	8.38	13.13
AUSTRALIA	1.84	9.62	11.96
HUNGARY	1.81	12.17	9.29
INDIA	1.78	14.80	6.53
FRANCE	1.54	7.64	9.93
GERMANY	1.46	7.38	9.17
THE NETHERLANDS	1.44	8.27	8.17
ARGENTINA	1.39	9.44	6.39
ISRAEL	1.36	5.37	9.75
JAPAN	1.36	6.24	8.89
SWITZERLAND	1.29	4.57	9.54
GREECE	1.27	9.88	4.60
NORWAY	1.24	5.82	7.83
THAILAND	1.17	7.39	5.51
CROATIA	1.12	4.46	7.60
SOUTH AFRICA	1.12	7.84	4.46
CHINESE TAIPEI (TAIWAN)	1.08	2.46	8.83
RUSSIA	1.02	8.37	2.85
POLAND	0.41	1.21	1.64
AVERAGE	2.00	12.31	11.49

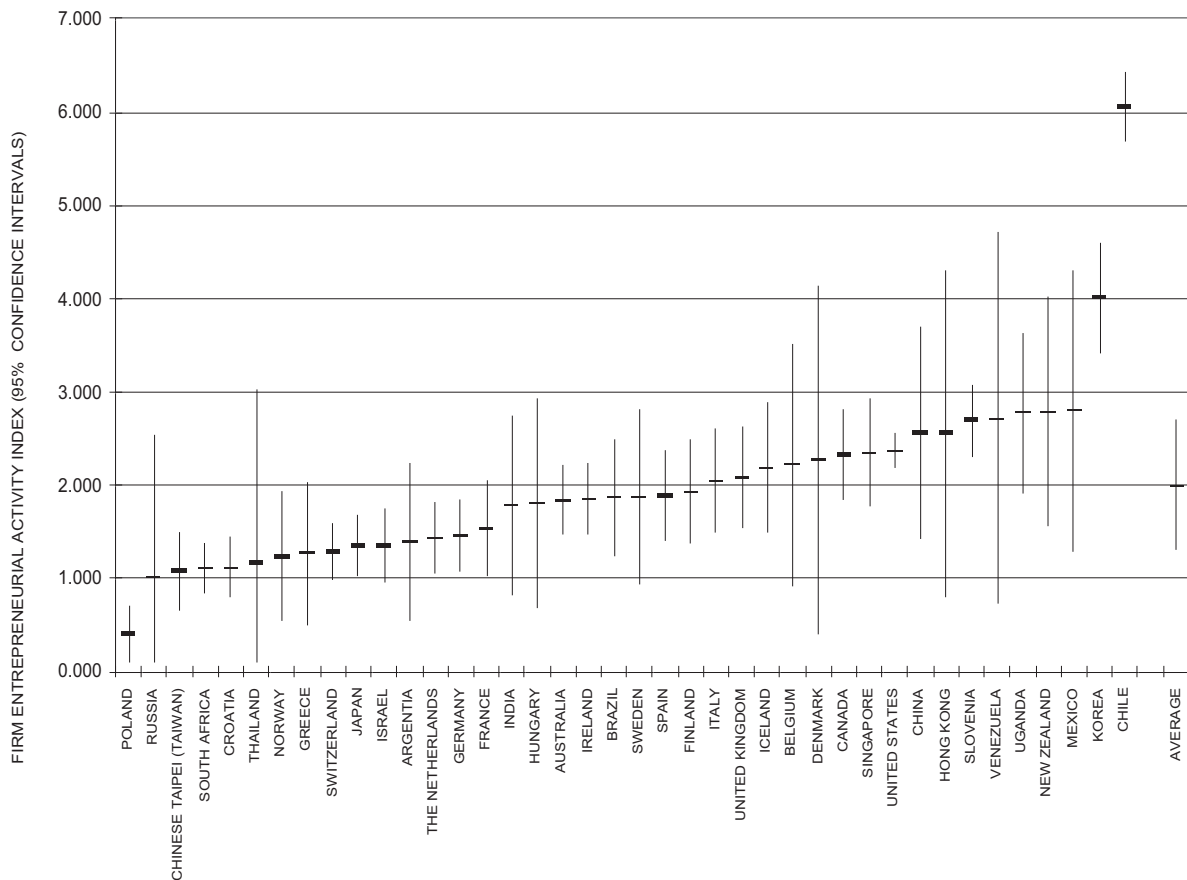
WHICH COUNTRIES ARE MORE ENTREPRENEURIAL?

The pattern of the FEA index among the 40 GEM countries participating in the 2002 and 2003 cycle is presented in Figure 3. Confidence intervals are estimated for the index⁷ presented as vertical bands; the procedure is described in Appendix IV. As there is more variation in the prevalence of business owners among the adult population in each country—which leads to variation in the confidence intervals—the margins of error are much wider than with the TEA index.

As before, there is substantial variation among countries, although differences between most adjacent countries are not statistically significant. The major factor that affects the

confidence intervals is the number of respondents reporting that they were owner-managers of new firms. Larger numbers of owner-managers may result from large samples or higher prevalence rates in the population. It is clear from this presentation that while Chile may be higher than other countries on this measure, there is clearly something unique about this extreme value. It seems to reflect a distinctive use of the survey items related to perceived market impact of the business, one of the indicators used to identify entrepreneurial firms; Chile is unlikely to be three times the country average.

FIGURE 3 - FIRM ENTREPRENEURIAL ACTIVITY INDEX FOR 40 GEM COUNTRIES: 2002-2003



WHICH COUNTRIES ARE MORE ENTREPRENEURIAL?

Comparing Countries

The TEA index and the FEA index provide two ways to characterize countries in terms of entrepreneurial activity, one reflects the prevalence of start-up efforts among the population in their working years and the other the presence of entrepreneurial activity among existing businesses. These two measures have a low, positive marginally statistically significant correlation of 0.42. Characterization of individual countries might give emphasis to both aspects, accepting the possibility that two different sets of processes may affect the emergence of new firms

and the reorientation of existing firms toward growth and market innovation.⁸

The most reliable classification would reflect categories based on the joint distribution of countries on the two indices. The first step in this process was to classify countries into three groups on each measure of national entrepreneurial activity; approximately one-third of the countries are in each group.⁹ The result is the presentation in Table 3, which locates each country in this joint distribution.

TABLE 3 TEA INDEX AND FIRM ENTREPRENEURSHIP INDEX: JOINT DISTRIBUTION

High Entrepreneurial Firm Index	Hong Kong [3.3;2.56]* Slovenia [4.3;2.70]	China [12.0;2.56] Mexico [12.4;2.80]	Chile [16.3;6.06] Korea [14.5;4.02] New Zealand [13.8;2.79] Uganda [29.3;2.78] Venezuela [27.3;2.72]
Medium Entrepreneurial Firm Index	Belgium [3.4;2.22] Italy [4.6;2.05] Sweden [4.1;1.88]	Australia [9.9;1.84] Canada [8.5;2.33] Denmark [6.2;2.27] Finland [5.7;1.93] Hungary [6.6;1.82] Iceland [11.3;2.19] Ireland [8.6;1.85] Singapore [5.4;2.35] Spain [6.3;1.89] United Kingdom [6.0;2.09] United States [11.3;2.37]	Brazil [13.2;1.87] India [17.9;1.78]
Low Entrepreneurial Firm Index	Chinese Taipei [4.3;1.08] Croatia [3.1;1.12]* France [2.4;1.54] Japan [2.27;1.36] The Netherlands [4.1;1.44] Poland [4.4;0.41]* Russia [2.5;1.02]*	Germany [5.2;1.46] Greece [6.8;1.27] Norway [8.1;1.24] Israel [7.1;1.36] South Africa [5.7;1.12] Switzerland [7.3;1.29]	Argentina [17.0;1.39] Thailand [18.9;1.17]
	Low TEA Rate	Medium TEA Rate	High TEA Rate
Note (1): First number in parentheses is the TEA index; the second the FEI index, data are the averages for 2002 to 2003.			
Note (2): * = Indicates less than 100 owner-managers in the sample, very tentative estimate.			

WHICH COUNTRIES ARE MORE ENTREPRENEURIAL?

Countries with the highest level of activity on both distribution—Chile, Korea, New Zealand, Venezuela, and Uganda—represent a mixture of low income developing countries and high income countries with unique economic structures. In particular, New Zealand is a country with an economy dominated by large numbers of small businesses. Venezuela and Uganda are countries with either considerable level of recent “dislocation” or emerging from a very low base of economic activity.

The high entrepreneurship rating in developing countries reflects both a high level of firm creation and the classification of existing firms as entrepreneurial. The FEA index is based, in part, on a measure of potential market impact that is suited to any type of economic sector or market. Those who are the first to provide modern services or business activity in the rural area of a developing country may be correct in saying that the firm is, for that immediate geographic region, using technology new to that region to provide a product the customers may not recognize with no competitors for this market. That the goods or service were available in Europe

or North America 15 years ago is a secondary issue; this firm is producing innovation and adaptation in the immediate local market. If that market is in a remote location or a developing country, the firm is providing market innovation relative to what currently exists.

Based on the patterns in Table 3, it is possible to classify these 40 countries into 5 groups, based on their placement in this joint distribution. This is presented in Table 4.

The average value of the major components and entrepreneurial indices for each group are summarized in Table 5. The differences across groups are highly statistically significant for all six measures and the group A averages are from three to six times higher than the group E averages. While there may not be major differences among the countries in each group, there are substantial differences between the groups on all measures of national entrepreneurial activity. This would appear to provide a reliable classification of countries in terms of national measures of entrepreneurial activity.

TABLE 4 CLASSIFICATION OF COUNTRIES BY PRESENCE OF ENTREPRENEURIAL ACTIVITY

Group	Count	Countries
A	5	Chile, Korea, New Zealand, Uganda, Venezuela
B	4	Brazil, China, India, Mexico
C	15	Argentina, Australia, Canada, Denmark, Finland, Hong Kong, Hungary, Iceland, Ireland, Slovenia, Spain, Singapore, Thailand, United Kingdom, United States
D	9	Belgium, Germany, Greece, Israel, Italy, Norway, South Africa, Sweden, Switzerland
E	7	Chinese Taipei, Croatia, France, The Netherlands, Japan, Russia, Poland

WHICH COUNTRIES ARE MORE ENTREPRENEURIAL?

TABLE 5 MEASURES OF ENTREPRENEURSHIP [AVERAGE VALUES] BY COUNTRY GROUPS

Group	Countries	Start-up Prevalence Rate	New Firm Prevalence Rate	TEA Prevalence Rate	% Entre Firms	% Entre Firm Jobs	Firm Entre Index
A	Chile, Korea, New Zealand, Uganda, Venezuela	11.9	9.5	20.2	21.8	24.0	3.6
B	Brazil, China, India, Mexico	7.8	6.4	13.9	12.0	15.3	2.3
C	Argentina, Australia, Canada, Denmark, Finland, Hong Kong, Hungary, Iceland, Ireland, Slovenia, Spain, Singapore, Thailand, United Kingdom, United States	5.2	3.9	8.6	11.8	12.6	2.0
D	Belgium, Germany, Greece, Israel, Italy, Norway, South Africa, Sweden, Switzerland	3.3	2.8	5.8	8.6	9.2	1.5
E	Chinese Taipei, Croatia, France, The Netherlands, Japan, Russia, Poland	1.9	1.5	3.3	6.8	5.5	1.0
	High/Low Ratio	6.3	6.3	6.1	3.2	4.4	3.6
	Statistical significance	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

The answer to the question, “Which countries are more entrepreneurial?” depends on the concept of entrepreneurship. If national entrepreneurship reflects efforts to create new businesses, then there is a clear rank order based on the TEA index, Venezuela and Uganda are at the high end, Finland and Italy at the low end, and Switzerland, Norway, and Canada are in the middle. If national entrepreneurship reflects innovation and growth among existing businesses, then Chile, Korea, New Zealand and China are at the high end of the scale; Poland, Russia, and Japan are at the low end; and Finland, Hungary, and Ireland are in the middle.

If the focus is on a single measure, it seems best to consider groups of countries, with a small group (Chile, Korea, New Zealand, Venezuela, and Uganda) high on both measures, another group (Chinese Taipei, Croatia, France, Japan, The Netherlands, Russia, and Poland) that are low on both measures, the majority—the other 28 countries, have different mixtures of entrepreneurship as measured by these two indices. They can be placed in intermediate categories.

The third major source of national economic innovation—coordinated institutional entrepreneurship—is not yet covered in the GEM assessment.



There are at least three ways national entrepreneurial activity may have consequences for a country. One is the absolute scope of effort devoted to entrepreneurial initiatives. How many individuals are mobilizing resources to implement change and growth in a country? Another is the impact on job creation, what proportion of the existing jobs are provided by new firms as they become active businesses. This is often considered one of the primary mechanisms by which new firms enhance national economic well-being. Since it was discovered that new and growing firms were the major source of job creation in the United States, this result has since been confirmed in a range of developed countries. This has led to a focus on new firm creation in public policy initiatives all over the world. A third impact is the relationship between entrepreneurial activity and national economic growth. While several assessments regarding the association between entrepreneurship and growth are possible, strong inferences regarding the nature of the causal mechanisms are not yet justified.

Scope of Activity

The amount of human effort devoted to either entrepreneurial arenas—creating new businesses or firm entrepreneurship—is substantial. Table 6 provides the total population of 40 GEM countries as well as estimates of the total number of individuals and business entities considered involved in the entrepreneurial process (measured by the TEA rate), established operating businesses, and entrepreneurial firms (providing market innovation and hoping for growth).

Total human population of 40 GEM countries is almost 4 billion out of a world population of 6.3 billion;¹⁰ 63% of the world population is represented in this assessment. Among these 4 billion, 2.4 billion are in the age range of 18-64 years, which approximates the working years in most countries. Among this 2.4 billion, about 12% or 297 million are active in trying to get 192 million businesses past the initial launch and through the initial three years of operation.

The country variation is substantial, from the 19 thousand people in Iceland trying to establish about 8,000 businesses to 107 million in India trying to establish 85 million businesses. The countries in Table 6 are rank-ordered by the total number of persons active in entrepreneurship, so some large countries with low prevalence rates—such as Russia—may be higher on the list than expected and some small countries with high rates of activity—such as New Zealand—may be lower on the list.

The adult population survey inquires about any ownership of an existing business. By adjusting for the size of the ownership group it is possible to estimate the total number of active businesses in each country. The total for the 40 GEM countries is about 347 million, from 15 thousand in Iceland to 142 million in China.¹¹ Using the same procedures, the number of existing firms that may be considered entrepreneurial can be estimated at 37 million for all 40 countries, from 1,000 in Iceland to 19 million in China. While these estimates could be off as much as 20-30%, they have the advantage of being standardized across a wide range of countries at different levels of development.



TABLE 6 GLOBAL SCOPE OF ENTREPRENEURIAL ACTIVITY: 40 GEM COUNTRIES IN 2003

COUNTRY	Total Population: 2003	Total Population: 18-64 Years Old	TEA Rate (2002-200)	Number of Persons Involved in Start-ups	Number of start-ups	Number of owner- managers of existing firms	Number of owner- managers of entrepreneurial existing firms	Number of managers of entrepreneurial existing firms	Number of owner- managers of entrepreneurial firms	Number of entrepreneurial firms
INDIA	1,049,700,118	598,149,636	17.9	106,930,898	85,380,114	133,730,500	10,047,929	122,102,850	7,972,283	19,088,484
CHINA	1,286,975,468	828,234,620	12.0	99,498,849	56,324,692	202,448,324	28,151,823	141,500,776	19,088,484	2,436,506
UNITED STATES	290,342,554	181,340,397	11.3	20,502,795	11,067,154	25,864,251	4,987,114	15,026,142	2,436,506	1,308,995
BRAZIL	182,032,604	111,914,745	13.2	14,782,485	4,981,277	22,023,678	2,222,620	14,321,251	413,665	880,485
THAILAND	64,265,276	41,142,139	18.9	7,774,876	4,981,277	10,100,884	1,450,761	7,508,979	1,145,579	311,164
MEXICO	104,907,991	58,634,254	12.4	7,270,079	3,905,636	8,697,117	1,887,621	4,694,624	200,961	353,686
KOREA	48,289,037	32,536,775	14.5	4,723,376	2,803,791	7,474,430	529,010	5,270,977	1,145,579	311,164
VENEZUELA	24,654,694	14,338,222	27.3	3,916,163	2,004,250	3,085,137	430,820	1,756,080	200,961	353,686
ARGENTINA	38,740,807	22,559,921	29.3	3,003,249	1,991,912	4,791,409	303,619	3,144,703	200,961	353,686
UGANDA	25,632,794	10,265,560	5.2	2,726,907	1,422,563	5,281,607	515,434	3,251,125	303,619	353,686
GERMANY	82,398,326	52,646,370	2.5	2,381,785	1,160,536	3,674,074	174,746	1,973,337	56,161	1,145,579
RUSSIA	144,526,278	94,359,896	2.5	2,224,850	1,273,217	4,579,446	727,015	2,858,523	365,376	1,145,579
UNITED KINGDOM	60,094,648	37,375,347	6.0	2,224,850	1,273,217	4,579,446	727,015	2,858,523	365,376	1,145,579
JAPAN	127,214,499	81,024,667	2.3	1,836,561	903,858	8,733,699	624,450	5,226,273	464,364	217,069
CANADA	32,207,113	20,813,726	8.5	1,767,870	931,420	2,642,554	474,904	1,481,184	217,069	181,912
ITALY	57,998,353	37,283,355	4.6	1,703,261	890,021	3,445,254	383,254	1,612,528	181,912	131,972
CHILE	15,665,216	9,536,646	16.3	1,550,864	732,190	1,501,728	617,789	842,345	319,105	35,088
SOUTH AFRICA	42,768,678	24,982,327	5.7	1,419,260	864,352	1,152,937	62,507	786,768	35,088	160,116
SPAIN	19,731,984	12,408,149	9.9	1,227,096	726,541	2,251,137	307,980	1,338,836	160,116	15,772
AUSTRALIA	38,622,660	25,083,471	4.4	1,114,879	800,094	1,425,627	22,436	962,288	15,772	160,057
POLAND	10,665,989	36,909,133	2.4	889,533	529,062	2,324,355	1,611,836	1,611,836	160,057	72,090
FRANCE	22,603,000	14,930,804	4.3	637,582	315,349	2,270,114	119,538	1,111,696	98,130	44,848
GREECE	6,770,427	6,556,833	6.8	458,608	309,069	2,192,299	80,359	1,565,499	72,090	44,848
HUNGARY	10,045,407	6,556,833	6.6	435,153	251,961	819,234	482,761	482,761	44,848	38,790
THE NETHERLANDS	16,150,511	10,419,034	4.1	428,480	236,435	922,094	105,073	474,721	38,790	35,601
SWITZERLAND	7,318,638	4,758,122	7.3	345,804	151,641	676,331	75,249	373,116	35,601	46,036
NEW ZEALAND	3,951,307	2,484,399	13.8	340,110	179,159	521,796	90,378	273,665	46,036	16,343
ISRAEL	6,116,533	3,550,406	7.1	250,745	141,168	446,555	45,064	293,154	28,576	30,087
NORWAY	4,546,123	2,807,047	8.1	226,950	92,559	445,681	92,241	365,055	27,759	26,712
SWEDEN	8,878,085	5,489,345	4.1	222,761	89,603	763,326	46,447	365,055	27,759	26,712
BELGIUM	10,289,088	6,413,922	3.4	214,939	119,900	378,976	55,178	222,262	27,759	26,712
IRELAND	3,924,140	2,465,742	8.6	212,181	116,133	344,980	60,193	214,166	26,712	22,915
DENMARK	5,384,384	3,399,867	6.2	211,130	101,214	390,085	68,651	208,867	16,461	16,345
FINLAND	5,190,785	3,284,006	5.7	187,757	86,201	591,639	303,406	303,406	16,461	8,460
SINGAPORE	4,608,595	3,313,692	5.4	180,496	75,964	189,847	87,959	87,959	16,461	8,460
HONG KONG	7,394,170	5,026,726	3.3	167,806	68,046	273,436	129,335	129,335	23,643	9,287
CROATIA	4,422,248	2,751,235	3.1	85,114	45,473	153,472	12,079	111,370	23,643	9,287
SLOVENIA	1,935,677	1,275,871	4.3	55,338	23,234	124,513	4,561	58,500	23,643	9,287
ICELAND	280,798	171,523	11.3	19,352	7,878	34,031	4,561	15,013	4,561	1,584
Totals	3,970,872,518	2,443,374,419	9.0	297,399,800	192,263,662	472,991,405	56,711,281	347,659,820	37,091,572	37,091,572
Country prevalence			12.2							
Population average										

Notes: (1) 2002 data; (2) 2003 data; all other averaged for 2002-2003.

Extrapolation to the other 37% of the world population not covered by GEM assessments, most in developing countries, would suggest a total of 472 million nascent entrepreneurs are trying to start 305 million firms; another 89 million owner-managers of 58 million existing businesses are emphasizing an entrepreneurial focus.

Given two possible mechanisms for affecting the national economic structure—new start-ups or entrepreneurial efforts among existing firms—which might have the greatest potential for influence? A gross estimate of the relative potential for impact may be inferred from the relative numbers of people and firms in these two categories of entrepreneurial activity. The number of entrepreneurial start-ups dramatically exceeds the number of entrepreneurial firms in every country; the overall ratio is about 5 to 1. While some countries with usually high ratios of start-ups to entrepreneurial firms—it exceeds 10 to 1 in India, Thailand, Russia, South Africa, and Poland—have rather special situations, there is no question that the efforts devoted to start-ups are far greater than those associated with existing firms that have an entrepreneurial orientation. For the 40 GEM countries, the 56 million working with entrepreneurial firms are outnumbered six to one by the 297 million nascent entrepreneurs working with start-ups.

Considering that a very liberal definition was used to identify the entrepreneurial firm—even a small amount of job growth and any modest impact in terms of providing new goods and services in the marketplace was acceptable—this suggests that policies to encourage economic adaptation by existing firms may have a great challenge. On the other hand, there is much room for more activity among existing firms, as the overwhelming majority (more than 95%) are content to replicate existing activity and are not very entrepreneurial.

Job Creation

The job creation potential of new firms has been a major justification for public attention to entrepreneurship for some time. If the estimates of national entrepreneurial activity are an indicator of business start-ups, they should be related to the proportion of new jobs created by new businesses. Such estimates have been developed with the information from the adult population surveys.

The procedure is relatively straightforward and described in Appendix V. Data from the surveys on the prevalence of those owning and managing new businesses (having paid salaries for 3-42 months) and the size of the owner-manager group is used to estimate the total number of new businesses in each country. The number of jobs provided for others is added to the size of the owner manager team to estimate the total number of jobs provided by these new businesses. Although these firms are identified as from 3 to 42 months in age, the average age is 18 months after meeting the criteria of providing wage payments for 3 months—a total of 21 months. Hence, the total employment estimate is divided by 12/21 to arrive at an annual figure.

The estimated number of annual jobs is presented in Figure 4. To allow all countries to be placed on the same figure, a logarithmic scale is used for the vertical axis; each horizontal line represents a tenfold increase in the numbers. The range of estimates is from 18,000 new jobs provided each year by new start-up firms in Iceland to 167 million for China. India, with a large proportion of very small firms, appears to receive 33 million jobs a year from new firms.

FIGURE 4 - ANNUAL JOBS PROVIDED BY NEW FIRMS: 2003 ESTIMATES

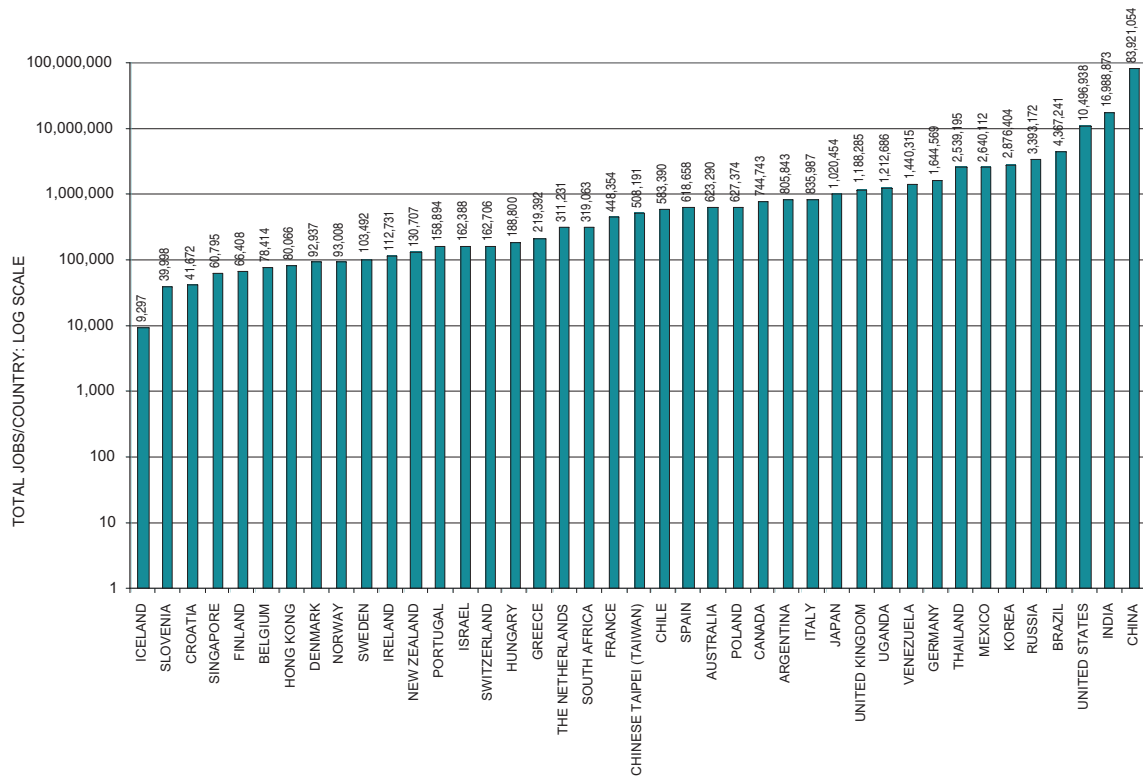
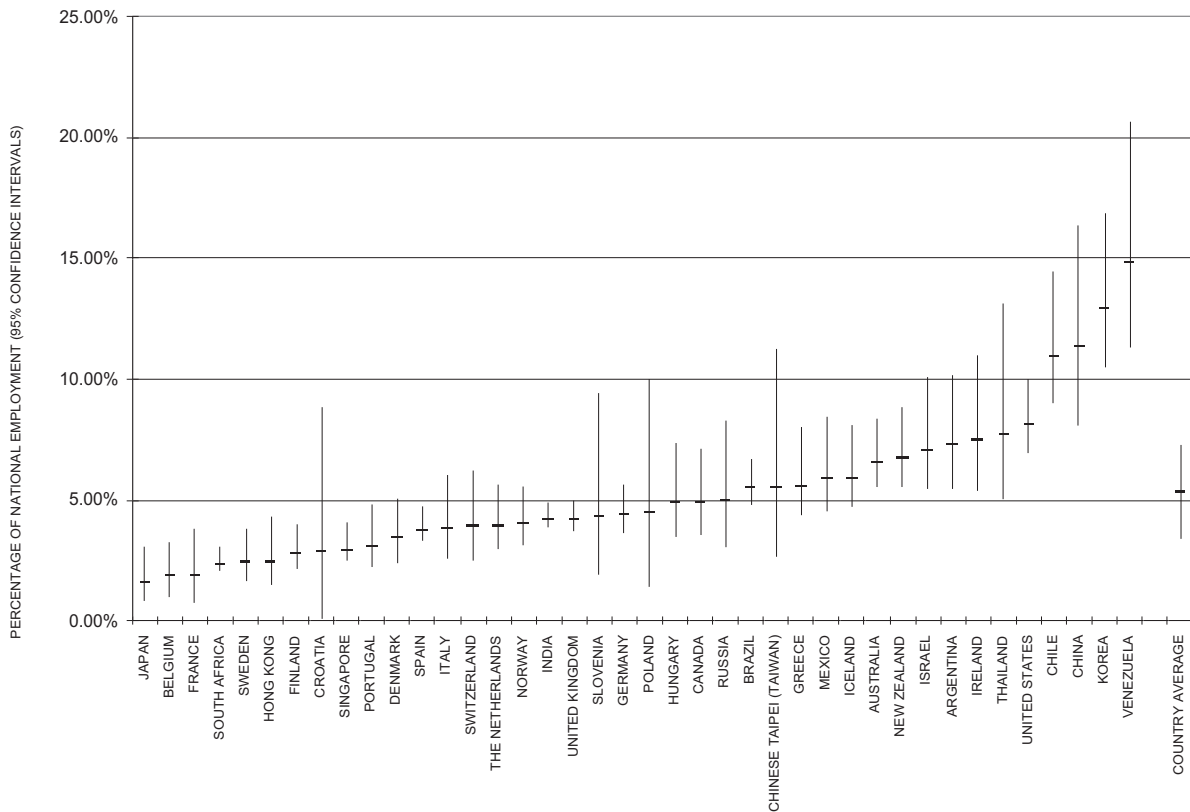


FIGURE 5 - ANNUAL NEW FIRM JOBS AS A PERCENTAGE OF EXISTING JOBS



NATIONAL CONSEQUENCES

The annual contribution in relation to all employment (public and private) is provided in Figure 5.¹² In this case, the 95% confidence interval is provided, which makes clear substantial differences in the precision of the estimates. Those countries with smaller adult population samples and smaller samples of business owners tend to have less precise estimates. The average contribution of new firms to the national job pool varies from less than 2% in Japan and Belgium to more than 15% in Korea and Venezuela—a sevenfold difference. Despite the high number of new firm jobs that appear to be created in China, this is only 12% of the current number of employed individuals—but 50% higher than the 8% in the United States.

Economic Growth

There are two ways to access the relationship of entrepreneurship to national economic growth. The most robust combines (or pools) GEM data collected over four years to provide 117 annual measure of the TEA index value. A number of these data points, however, may represent the same country at different

years. A summary of the simple correlations is provided in Table 7, for TEA and national growth measured in the same year, and with a one-, two- and three-year lag. Assessments are provided for the overall measure of start-up activity as well as that motivated by opportunity and necessity; this distinction is discussed in more detail below. The number of cases available for analysis drops with increases in the lag between the TEA measure and measures of national economic growth.¹³

The results are similar to those found in previous GEM analyses. The correlations in the same time period are positive, but close to zero. There is an increase in correlations with a one-year time lag for all three measures. But when the lag is increased to two and three years, the correlation with opportunity entrepreneurship declines while that for necessity entrepreneurship increases to a high level of statistical significance. Largely because of the impact of necessity entrepreneurship, the overall TEA values also increase and are statistically significant, but the correlations are more modest than those associated with necessity entrepreneurship.

**TABLE 7 TEA MEASURES AND NATIONAL ECONOMIC GROWTH:
0- to 3-YEAR TIME LAGS**

	Concurrent	1 Yr Lag	2 Yr Lag	3 Yr Lag
TEA Overall	0.10 (n=117)	0.37 (n=117****)	0.26 (n=86**)	0.34 (n=49**)
TEA Opportunity	0.11 (n=97)	0.36 (n=97****)	0.15 (n=66)	0.21 (n=29)
TEA Necessity	0.06 (n=97)	0.44 (n=97****)	0.43 (n=66****)	0.62 (n=29****)
Base Years: Overall	2000-2003	2000-2003	2000-2002	2000-2001
Predictive Years: Overall	2000-2003	2001-2004	2002-2004	2003-2004
Base Years: Oppor, Neces	2001-2003	2001-2003	2001-2002	2001
Predictive Years: Opp, Neces	2001-2003	2002-2004	2003-2004	2004
No of cases in parentheses; Stat Sign (1-tailed): ** < 0.01; *** <.001; **** <0.000				
National Growth in GDP in local currency at constant prices from Sept 2003 IMF World Economic Outlook Web site.				

NATIONAL CONSEQUENCES

The story associated with the TEA index has not changed as more GEM countries, and years, are incorporated into the project. Necessity entrepreneurship, which reflects those starting a business because they cannot find a satisfactory job, is greater in poor countries; poor countries have greater economic growth than rich countries. It is hard to avoid the conclusion that necessity entrepreneurship is a causal factor influencing national economic growth in poor countries.

An example of the relationship is the pooled data for four years of GEM data and for a one year lag shown in Figure 6. For the 2003 GEM countries, economic growth is predicted from 2003 to 2004. Argentina is excluded due to the extremely negative annual growth rates in the 2000 to 2002 period. The overall correlation, 0.37, is moderately positive and highly statistically

significant. Moreover, as it is clear in Figure 6, the relationship is a good reflection of the overall pattern, not a consequence of one or two extreme cases. The patterns for the relationship with a two- or three- year lag are similar, only with fewer cases reflecting the smaller national samples in the early years of the project.

While there are a number of data points in the lower right hand corner, which reflect national growth and low levels of entrepreneurship, there are few data points in the upper left hand quadrant. The three that are present are, from top to bottom, Brazil in 2000, Mexico in 2001 and the United States in 2000. Countries in this quadrant would be those where there is a high level of entrepreneurship but relatively low national economic growth in the following year. That is, apparently, a rare event.

FIGURE 6 - TEA OVERALL AND NATIONAL ECONOMIC GROWTH: 1 YEAR LAG

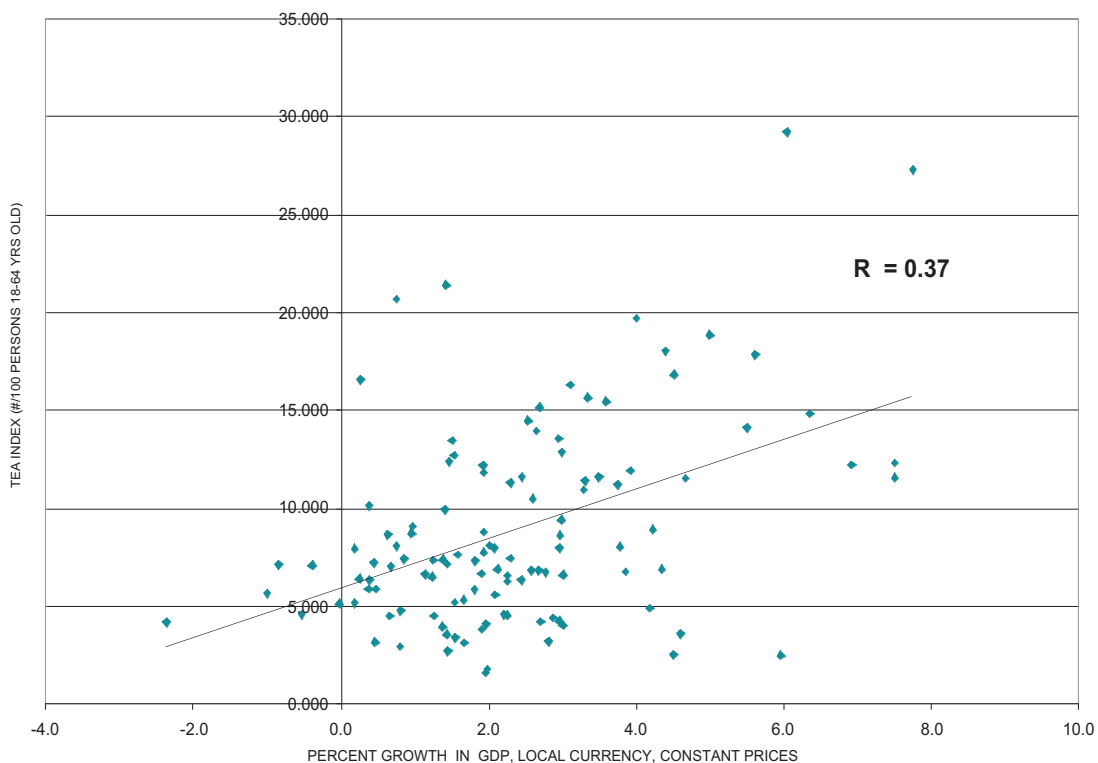


TABLE 8 TEA INDEX AND FIRM ENTREPRENEURSHIP INDEX AND SUBSEQUENT ECONOMIC GROWTH

	Growth 2001-2002	Growth 2002-2003	Growth 2003-2004
TEA Index: 2002-2003 Combined	-.12	-.15	0.69**
Firm Entrepreneurship Index: 2002-2003 Combined	0.10	-.08	0.25
** One tailed test of statistical significance at 0.01 level, n=40.			

The relationship of the two measures of national entrepreneurship activity—the TEA index pooled for 2002 and 2003 and the Firm Entrepreneurship Index—is presented in Table 8. As with the measures used above, national economic growth is taken from the IMF World Economic Outlook projections provided in September 2003 and is based on annual estimates in constant prices using the local currency. This avoids the additional complications of adjustments to a standard international currency, such as the US dollar or Euro. The measures based on changes between 2003 and 2004 are, of course, projections and do not represent measures of actual growth in 2004.

It is clear that there is virtually no relationship between national economic growth and either entrepreneurship index in the same time periods. But with the one-year projection into the future—for GDP growth from 2003 to 2004—both have a positive relationship to economic growth. The relationship for the individually based

TEA index is substantially higher and clearly statistically significant; the measure of firm entrepreneurship is positive, but too low to be statistically significant with 40 cases.

Given the substantially greater scope of effort associated with new firm start-ups—with five times as many nascent entrepreneurs as entrepreneurial firm owner-managers in 40 GEM countries—it is no surprise to discover that start-up activity has a greater impact on future GDP growth than the presence of entrepreneurial firms. This differential relationship may have substantial implications for policy initiatives to enhance national economic growth; a focus on start-ups would seem to have more potential for impact than a focus on enhancing entrepreneurship among existing firms.

The average levels of economic growth for the five groups of entrepreneurial countries are presented in Table 9.

TABLE 9 NATIONAL ENTREPRENEURIAL CATEGORIES AND NATIONAL ECONOMIC GROWTH

Group	Count	Percent GDP Growth 2001-2002 (Group average)	Percent GDP Growth 2002-2003 (Group average)	Percent GDP Growth 2003-2004 (Group average)**
A	5	2.1 %	-0.6 %	5.2 %
B	8	3.7 %	4.0 %	4.9 %
C	11	1.9 %	2.3 %	3.3 %
D	9	1.1 %	1.1 %	2.2 %
E	7	2.3 %	2.6 %	3.2 %
NOTE: ** = statistically significant difference at the 0.01 level.				

NATIONAL CONSEQUENCES

There is no clear pattern of relationships when entrepreneurship and growth are measured in the same time periods; 2001-2002 and 2002-2003. The results are similar to those presented in Table 8 related to the association between the two different measures of entrepreneurship and national economic growth. There seems to be a positive relationship between the entrepreneurship group and growth projects for one year into the future. The top group (A) has the highest level of expected average economic growth (5.2%); the second (B) and third (C) groups follow with slightly lower levels of expected growth (4.9% and 3.4% respectively). The average for the bottom two groups (D and E) is 2.7%, although the bottom group (E) is slightly higher than the adjacent group (D). The largest expected economic growth for the A group (5.2%) is about twice that of the average of the D and E groups (2.7%). While not a strong pattern of impact, it is in the expected direction and statistically significant. Confidence in the

relationships would be greater if there were 5–10 years of continuous, harmonized data on both types of indicators—national levels of entrepreneurship and national level of economic growth—for the full set of countries. The current patterns suggest that such an investment in data collection may be justified.

In summary, it would appear that there is continuing evidence that entrepreneurial activity is associated with economic growth. Efforts devoted to business start-ups seem to have more impact than the entrepreneurial activity of existing firms. Necessity entrepreneurship, which emerges as a major source of business start-ups in relatively poor countries, continues to be associated with higher levels of subsequent economic growth. The causal role of entrepreneurial activity is unclear, but a vigorous start-up sector would seem to be a necessary condition for high levels of national economic growth.

Two types of businesses are emphasized in this assessment of national entrepreneurship. First, and most numerous, are the start-ups, either in the gestation phase or a new firm less than 42 months old. Second are the entrepreneurially oriented established businesses, those having an innovative impact on their market and expect to grow. Because of a large amount of data that has been gathered over the past four years, relatively detailed information can be provided on the nature of start-ups businesses, country by country. The entrepreneurial firms, however, are less numerous in the sample and can only be considered as a group in relation to other types of business firms.

Start-up Businesses

Perhaps the major concern about the start-ups identified in the GEM adult population surveys is the extent to which these may all be small scale efforts reflecting self-employment, perhaps even part-time self-employment. One measure of the intended scope of operations is the number of employees expected in five years. Given that two-thirds of the TEA index firms are not operational, only the intended scope can be determined. While these nascent entrepreneurs are probably optimistic about the future growth of their new start-up, it does provide one indication of the proportion that would be considered self-employment.

For this assessment, data is available for four years and 41 countries. The number of jobs expected in firms in the next five years are placed

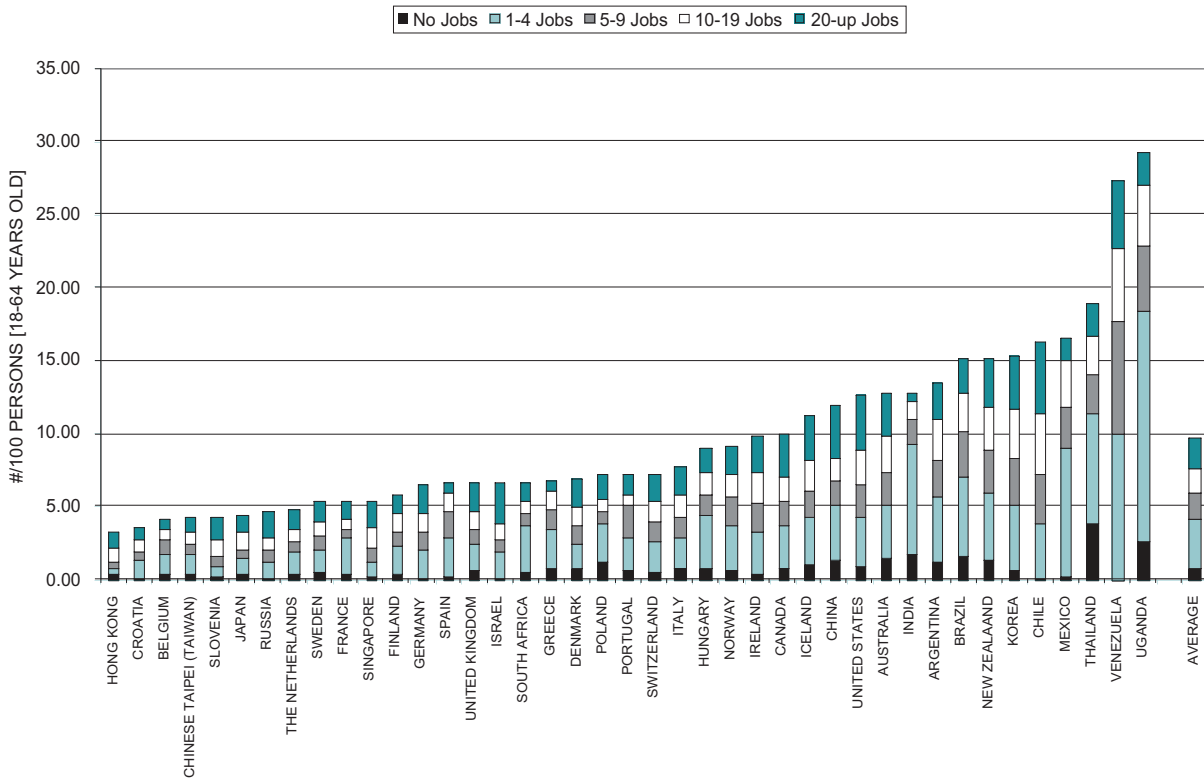
in five categories. Across the 41 countries about 8% never expect to provide any jobs; 35% expect to provide 1-4 jobs; 18% expect to provide 5-9 jobs; 18% expect to provide 10-19 jobs; and 21% expect to provide 20 or more jobs. The patterns by GEM country are provided in Figure 7. A substantial proportion of start-ups in every country are expecting to provide 20 or more jobs in five years.

The types of business activity were coded in terms of the International Standard Industry Codes (ISIC) using the procedures developed by the United Nations.¹⁴ Rather than try to analyze over 500 different types of business activity, the categories were consolidated into four major types of activity. The “extractive” sector includes agriculture, forestry, fishing, and mining (all involved extraction of products from the natural environment). The “transformation” sector includes construction, manufacturing, transportation, and wholesale distribution (all involved the physical transformation or relocation of goods or people). The “business service” sector includes all activity where the primary customer is another business. The “consumer oriented” sector includes all activity where the primary customer is a human person—retail, restaurants and bars, lodging, health, education, and social services, recreation, and the like.

The national average across all countries was about 8% in the extractive sector, 27% in the transformation sector, 17% in the business service sector, and 48% in the consumer oriented sector.



FIGURE 7 - START-UPS EXPECTED JOB CREATION IN FIVE YEARS: 2000-2003



The patterns for the GEM countries are provided in Figure 8. It is apparent that there are start-ups in all countries in each sector, but that the level of development probably affects the relative emphasis, with more extractive (agricultural) in less developed countries and more business services in the more advanced countries.

As mentioned above in the discussion of the FEA index, the extent to which the new business would have an innovative impact on the market was inferred from responses to three items in the interview related to (1) customer awareness of the product, (2) the extent of competition, and (3) the newness of the critical technology or product. The results were placed in four categories, and across the GEM countries about 37% expected to have no innovative impact on the market, about 31% expected to have a little or modest impact, 29% expected to have some

impact (perhaps noticeable), and 3% expected to have a substantial impact. In short, two of three expect to have little or no impact on the goods or services in the marketplace and only 1 in 30 a major influence.

The data on expected market impact is available for the years 2002 and 2003 and is presented in Figure 9. As might be expected, the majority of start-ups in almost all countries appear to expect to have no innovative impact on the market; these businesses will replicate existing business activity. Conversely, the proportion of the TEA rate accounted for by new start-ups expecting to have a major innovative impact on the market is small in all countries. The rather unusual pattern for Chile, and perhaps Thailand, suggests that either the questionnaire or its administration was not consistent with the other countries.

WHAT KIND OF BUSINESSES?

FIGURE 8 - TEA BUSINESS BY ECONOMIC SECTOR: 2001-2003

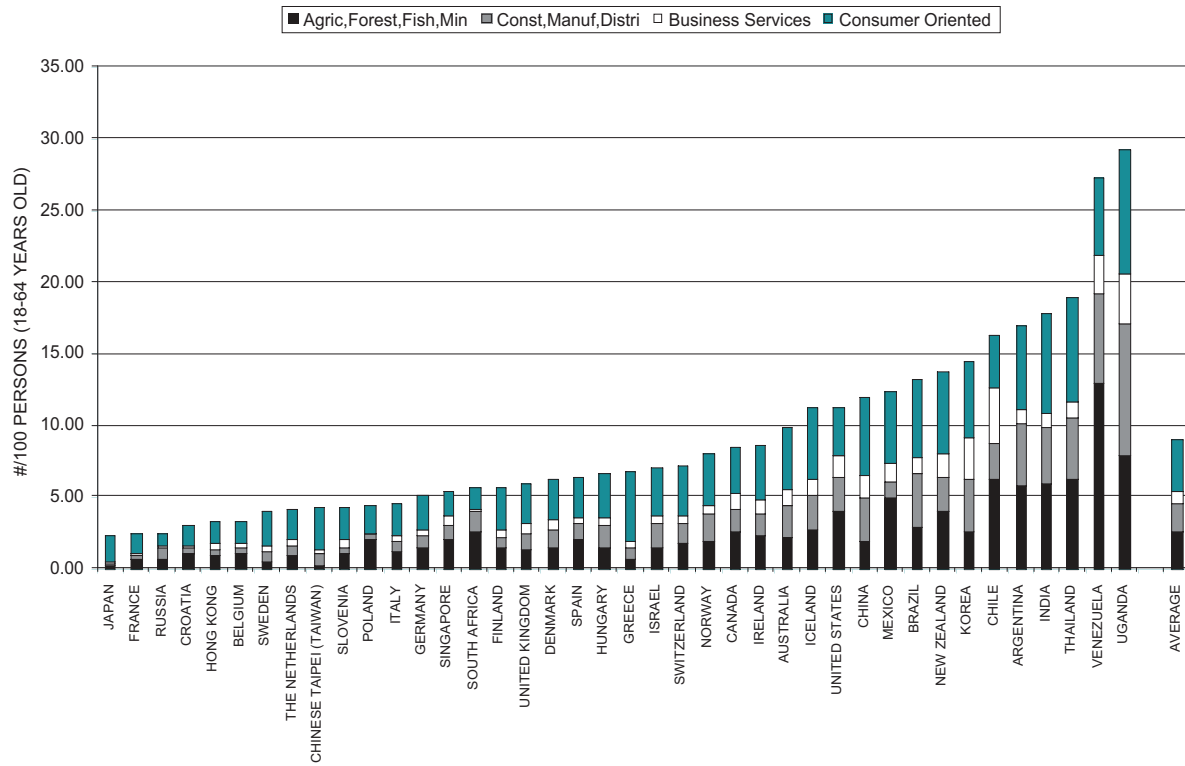
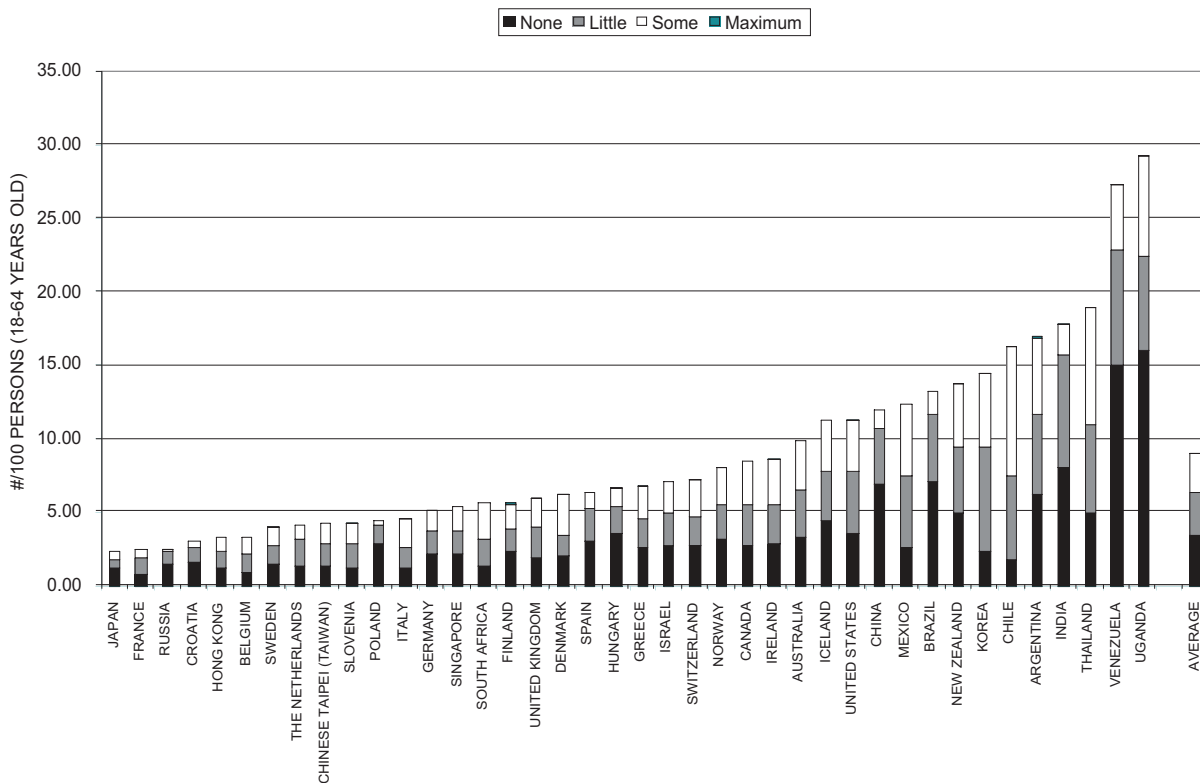


FIGURE 9 - START-UP BUSINESS AND EXPECTED MARKET INNOVATION: 2002-2003



WHAT KIND OF BUSINESSES?

Entrepreneurial Firms

Because of the small number of entrepreneurial firms in each country sample, it is not useful to develop country comparisons based on entrepreneurial firm characteristics. It is, however, possible to compare entrepreneurial firms with three other types of businesses: start-ups, new businesses (up to 42 months old and not entrepreneurial), and operating firms not considered entrepreneurial. They can be considered in terms of the economic sector in which they operate; their current size; expected impact as an innovator in the market; and the

number of owners—a reflection of the diversity of talent available for the entrepreneurial firm.

The focus of the entrepreneurial firms in terms of these four broad economic sectors is presented in Table 10. Compared to the other three types of business, they are much more likely to be involved in the transformative sector, which includes manufacturing as well as transportation and wholesale, and business services. They tend not to be in extractive sectors and have less of a presence in consumer-oriented activities, such as restaurants or personal services.

TABLE 10 ENTREPRENEURIAL FIRMS: COMPARED BY ECONOMIC SECTOR

	Start-Up Firms	New Firms, Not Entrepreneurial	Entrepreneurial Firms	Established Businesses
Extractive (Farms, Forestry, Fishing, Mining)	5.3 %	4.7 %	1.8 %	9.2 %
Transformative (Construction, Manufacturing, Transportation, Wholesale)	23.3 %	25.8 %	38.3 %	28.9 %
Business Services	10.2 %	8.4 %	15.6 %	8.8 %
Consumer Oriented	61.2 %	61.1 %	44.3 %	53.0 %
Total	100.0 %	100.0 %	100.0 %	100.0 %
Number	6,434	7,094	2,567	10,294
Stat Sign at 0.00000.				

A comparison of the current firm sizes are presented in Table 11, where it is clear that entrepreneurial firms tend to be somewhat larger than those in the other categories with a very low

proportion, 12%, reporting no employees and almost one in five, 18%, reporting 20 or more employees.

TABLE 11 ENTREPRENEURIAL FIRMS: COMPARED BY CURRENT SIZE

	Start-Up Firms	New Firms, Not Entrepreneurial	Entrepreneurial Firms	Established Businesses
No Employees	53.1 %	37.1 %	11.9 %	37.7 %
1-4 Employees	35.4 %	47.1 %	41.3 %	45.4 %
5-9 Employees	5.0 %	6.1 %	16.3 %	6.7 %
10-19 Employees	3.1 %	3.1 %	12.4 %	5.0 %
20 or more Employees	3.3 %	6.6 %	18.1 %	5.2 %
Total	100.0 %	100.0 %	100.0 %	100.0 %
Number	896	7,438	2,988	11,720
Stat Sign at 0.00000.				

WHAT KIND OF BUSINESSES?

TABLE 12 ENTREPRENEURIAL FIRMS: COMPARED BY NUMBER OF OWNERS

	Start-Up Firms	New Firms, Not Entrepreneurial	Entrepreneurial Firms	Established Businesses
One owner	60.5 %	69.6 %	56.4 %	79.0 %
Two owners	21.3 %	16.1 %	20.7 %	11.8 %
3-5 owners	15.6 %	12.1 %	16.7 %	7.8 %
6 or more owners	2.6 %	2.2 %	6.2 %	1.4 %
Total	100.0 %	100.0 %	100.0 %	100.0 %
Number	8,135	7,943	2,945	12,774
Stat Sign at 0.00000.				

This size effect is reflected in the number of owners associated with the entrepreneurial firms, presented in Table 12. Not only do they have the lowest proportion of one owner firms, but they are over twice as likely as any other category to report six or more owners. Almost one in four report three or more owners. The presence of a large diverse ownership group may be associated with more opportunity recognition as well as a wider base of managerial talent to take advantage of the situation.

Finally, as might be expected, entrepreneurial firms are quite distinctive in terms of expected impact on the markets, as shown in Table 13. None of them report they expect to have no impact, but then they were classified as entrepreneurial, in part, because they claimed to

have a unique product for the market. The major difference, however, is not in the percentage that expect to have a maximum impact on the market, but the substantial proportion that anticipate some noticeable difference, 34.3% or more than one in three. This is to be compared to less than one in five among nascent entrepreneurs and start-up firms. Entrepreneurial firms are clearly expected to have a substantial impact on the market.

In summary, entrepreneurial firms are clearly distinctive when compared to start-ups, new firms, or established firms. They tend to be bigger, have more owners, are more likely to be in the transformative and business service sectors, and expect to have a noticeable effect on the structure of the market.

TABLE 13 ENTREPRENEURIAL FIRMS: COMPARED BY MARKET IMPACT

	Start-Up Firms	New Firms, Not Entrepreneurial	Entrepreneurial Firms	Established Businesses
None	45.0 %	61.8 %	0.0 %	61.2 %
Little	33.7 %	28.0 %	64.0 %	31.0 %
Some	19.4 %	9.2 %	34.3 %	7.6 %
Maximum	1.8 %	1.0 %	1.7 %	0.2 %
Total	100.0 %	100.0 %	100.0 %	100.0 %
Number	8,364	7,839	2,988	12,706
Stat Sign at 0.00000.				



New firms are created by people. Firms pursue innovation and growth because of people. Knowing more about the background of those involved in entrepreneurship has many advantages. As with the characteristics of businesses, it is possible to consider the patterns among start-ups by country and a comparison of entrepreneurial firms with existing businesses. Among the more important factors to consider are the age, gender, and motivation of the individuals as well as their reaction to their immediate situation.

Start-ups

The age and gender is available for all samples where the TEA index has been computed, more than 336,000 interviews since 2000. The overall patterns by age and gender have been quite stable over time; there is some variation among countries on both variables.

About 64% of start-ups are reported by men and 36% by women. The pattern across countries is presented in Figure 10. It suggests that men are reporting the majority of start-ups in all countries. Women are involved in a significant number and any country that was to suddenly lose all participation by women would experience a significant drop in its TEA rate. There is, however, some variation in the ratios, with a larger proportion of women in the developing countries—Uganda, Venezuela, Argentina, Brazil,

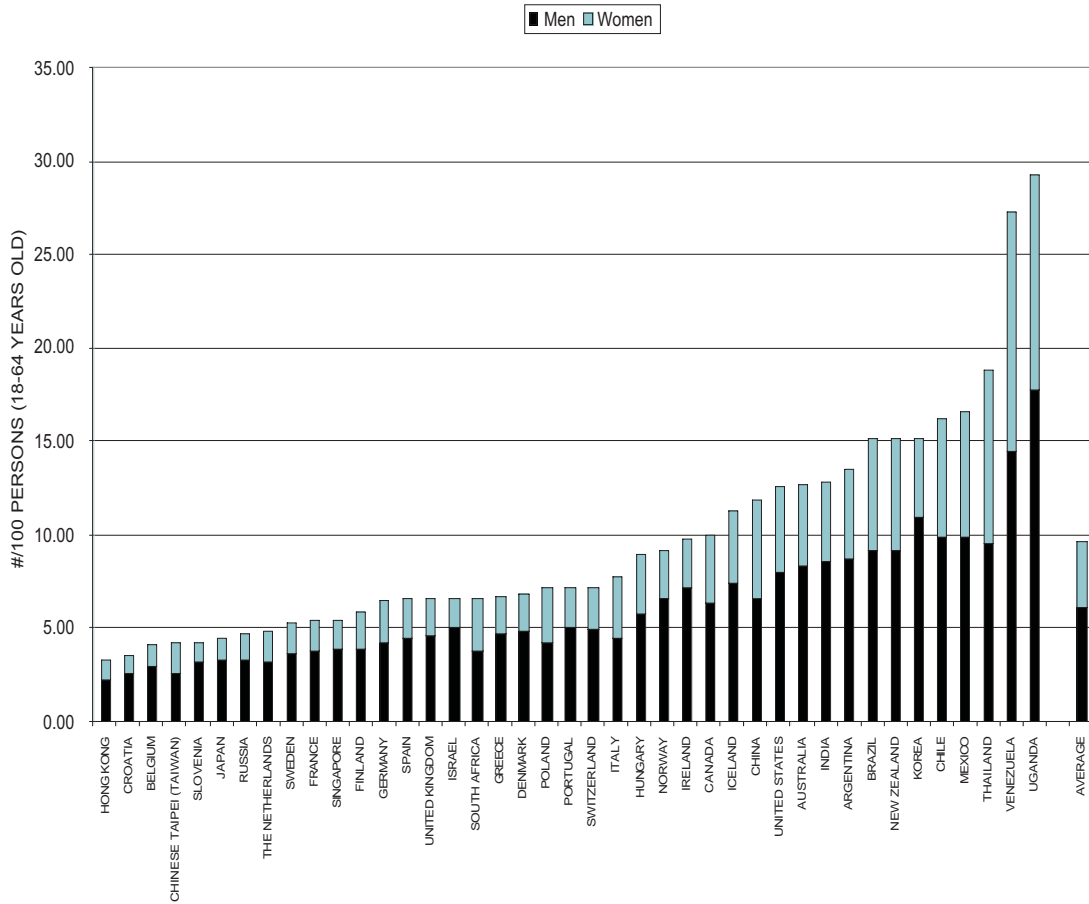
China—when compared to countries in Eastern and Western Europe. This analysis is, however, based on assessments of the reports on start-ups and existing firms. The prevalence rate—the proportion of all men or women active in entrepreneurship, may be quite different; it is discussed below.

In terms of age, the same issues apply. When considering those reporting start-ups, about 16% are 18-24 years of age; 32% are 24-34 years old, 27% are 35-44 years old, 18% are 45-54 years old, and 8% are 55-64 years of age. Those involved in entrepreneurship after they pass 65 years of age are too few to estimate with accuracy with small samples.

As seen in Figure 11, individuals from all age ranges are active in all countries, with a substantially higher proportion of start-ups reported by younger people in the developing countries. Again, the tendency to get involved in start-ups, based on the total population, can provide quite different patterns. A high proportion of younger people involved in start-ups in India, Uganda, and Venezuela may reflect a larger proportion of young people in the population, rather than a higher level of interest in entrepreneurial career options. Conversely, the lack of young people among the Japanese nascent entrepreneurs probably reflects the absence of young people in the population itself and not a lack of interest in entrepreneurship among Japanese young adults.



FIGURE 10 - START-UPS BY NASCENT ENTREPRENEUR GENDER: 2000-2003



People get involved in starting new firms for a number of reasons. One of the most basic distinctions is between those who seek to take advantage of unique business opportunities and those who cannot find suitable work and start a business to survive. The first may be considered “opportunity entrepreneurs” and the second “necessity entrepreneurs.” They were identified across all GEM countries beginning in 2001. Based on a single question in the interview schedule, 93% of all respondents could be classified as opportunity or necessity entrepreneurs. Averaged across countries, 66% reported the attraction of

an opportunity, 27% the necessity for a better, more suitable work option, and about 7% some combination or other primary motivation.

The patterns for 41 countries from data collected in 2001, 2002, and 2003 are presented in Figure 12. While the amount of all start-up activity increases in the developing countries to the far right of the figure, the major difference is related to dramatic increases in the amount of necessity entrepreneurship. Necessity entrepreneurship, either in absolute or relative terms, is quite low in most developed countries.

WHO IS INVOLVED IN ENTREPRENEURSHIP?

FIGURE 11 - START-UPS BY NASCENT ENTREPRENEUR AGE: 2000-2003

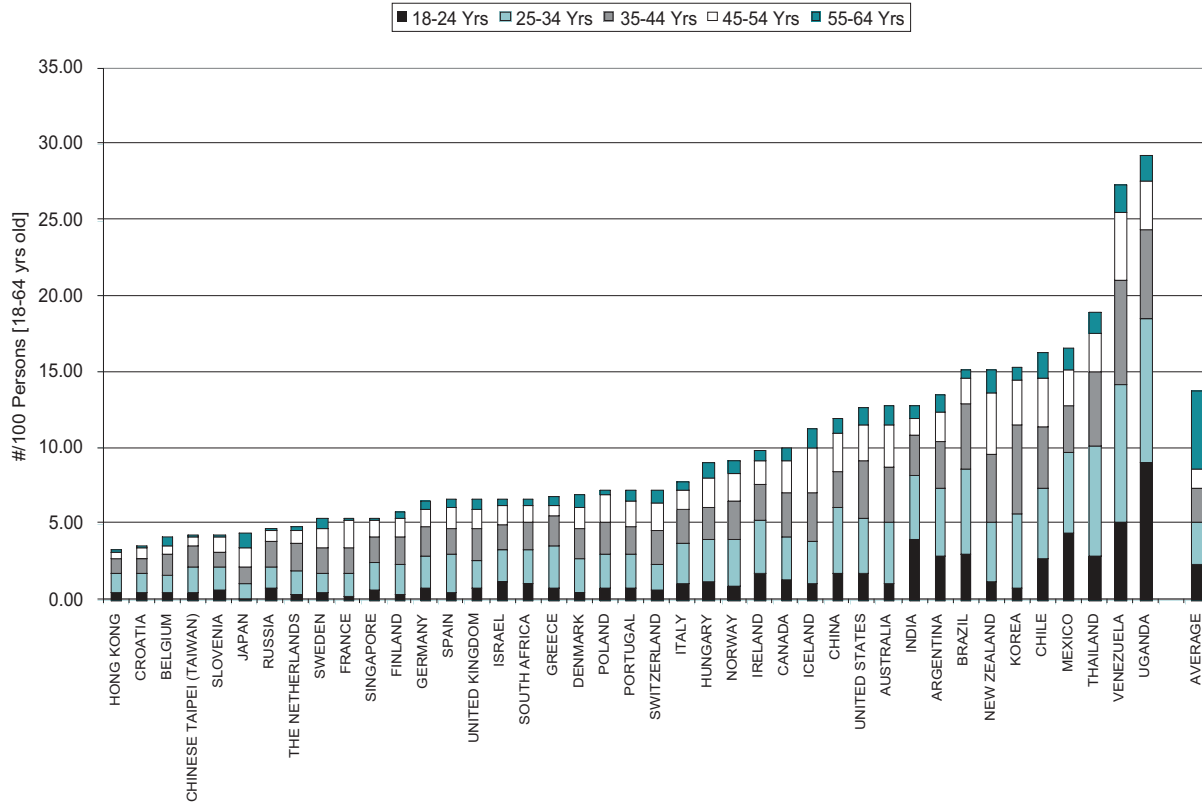
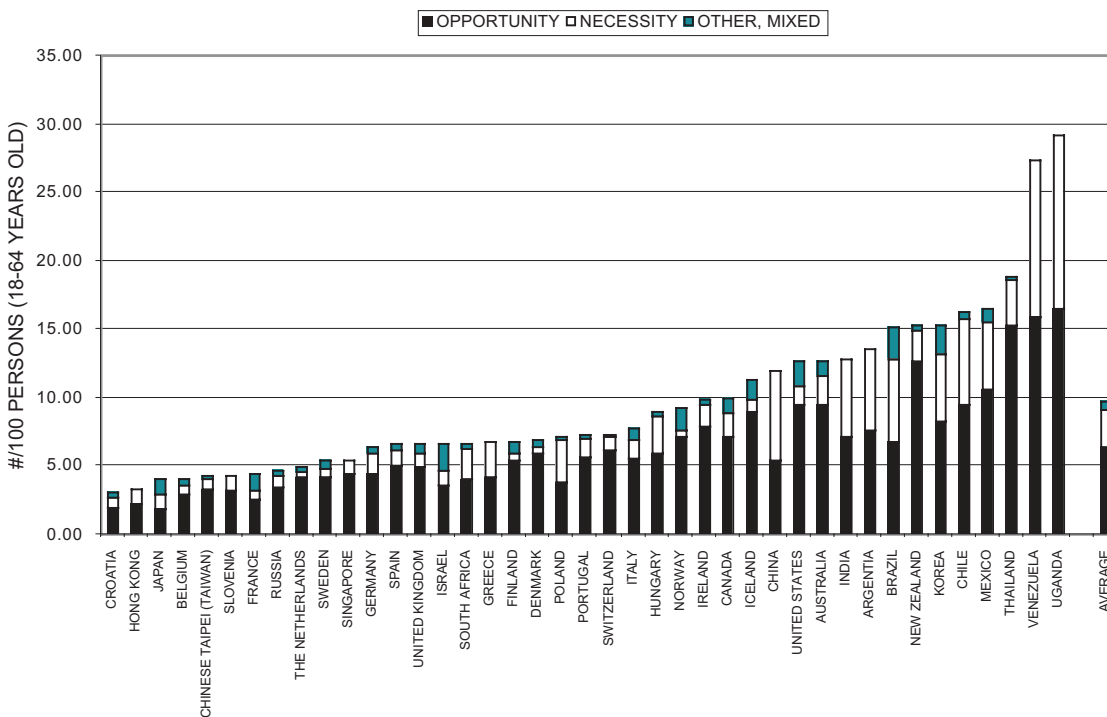


FIGURE 12 - START-UPS BY NASCENT ENTREPRENEUR MOTIVATION: 2001-2003



WHO IS INVOLVED IN ENTREPRENEURSHIP?

Entrepreneurial Firms

Again, because they are rare in the sample, the personal background associated with those involved with entrepreneurial firms cannot be compared across countries. They can be compared in relation to the other types of business entities. Gender and age comparisons are presented in Table 14. The results are rather straightforward. Women are less likely to report involvement in entrepreneurial firms; 72% of all entrepreneurial firms were identified in interviews with men. This compares to men reporting 58-61% of the other three types of business entities.

In terms of the age pattern, there seems to be a concentration of entrepreneurial firms among those 25-44 years of age. Two of three are in this age group. Those reporting start-ups and new businesses are about the same age as entrepreneurial firm owners; those reporting established businesses tend to be older than those

with entrepreneurial firms. Entrepreneurial firm owner-managers are old enough to have experience but young enough to have the energy to launch new initiatives.

The tendency of those reporting entrepreneurial firm ownership to indicate they are responding to an opportunity is the highest of any firm type; this is more than 70% as shown in Table 15. Another 9% report mixed motives and less than 20% a response to necessity. The percentage reporting necessity entrepreneurship as a primary motive is half that for those pursuing start-up firms, or managing a new firm or an established business.

In summary, those reporting responsibility for an entrepreneurial firm tend to be men, in the 25-44 year old age range, and pursuing business opportunities.

TABLE 14 ENTREPRENEURIAL FIRMS: GENDER AND AGE OF OWNERS

	Start-Up Firms	New Firms, Not Entrepreneurial	Entrepreneurial Firms	Established Businesses
Men	57.9 %	58.3 %	71.9 %	61.3 %
Women	42.1 %	41.7 %	28.1 %	38.7 %
	100.0 %	100.0 %	100.0 %	100.0 %
18-24 Years Old	12.0 %	11.5 %	10.9 %	3.4 %
25-34 Years Old	32.3 %	34.6 %	36.0 %	22.4 %
35-44 Years Old	30.6 %	28.0 %	29.5 %	34.4 %
45-54 Years Old	17.4 %	18.2 %	15.9 %	26.1 %
55-64 Years Old	6.7 %	6.9 %	6.5 %	11.1 %
65-up Years Old	1.0 %	0.8 %	1.1 %	2.5 %
Total	100.0 %	100.0 %	100.0 %	100.0 %
Number	8,450	8,022	2,988	13,259
Stat Sign at 0.00000.				

WHO IS INVOLVED IN ENTREPRENEURSHIP?

TABLE 15 ENTREPRENEURIAL FIRMS: COMPARED BY OWNER MOTIVATION

	Start-Up Firms	New Firms, Not Entrepreneurial	Entrepreneurial Firms	Established Businesses
Opportunity	51.8 %	41.9 %	71.9 %	46.1 %
Mixed	15.2 %	12.0 %	9.3 %	13.8 %
Necessity	33.0 %	46.1 %	18.8 %	40.1 %
Total	100.0 %	100.0 %	100.0 %	100.0 %
Number	8,150	7,801	2,936	12,333
Stat Sign at 0.00000.				



People start new businesses. People decide that existing firms should emphasize new goods or services and grow. In short, people are at the core of entrepreneurial activity. No issue is more basic for enhancing national entrepreneurship than determining what kinds of people in what kinds of situations elect to engage in an entrepreneurial endeavor.

As a preliminary exploration, several features of the lives of individuals can be considered: basic socio-demographics, aspects of their immediate social and personal context, perceptions and experiences in their world of work, and cultural support for entrepreneurial careers. The basic question is the same for all these analyses, how much impact does any given factor have on the decisions of

individuals to engage in entrepreneurship—start-ups or the strategy of existing business.

Age and Gender

The impact of age and gender is very predictable; the basic patterns are found in all countries and change little over the years. Data from several hundred thousand interviews completed in 2002 and 2003 in 40 countries can be organized to illustrate the basic patterns; they are provided in Figure 13. The left side presents the patterns for women, the right side for men. The top sets of bars are for participation in business start-ups (TEA prevalence rates) and the bottom for owner-managers of entrepreneurial firms. The sample has been weighted to represent the global population.¹⁵



FIGURE 13 - TEA AND ENTREPRENEURIAL FIRM OWNER PREVALENCE RATES BY AGE AND GENDER

	Women	Women	Men	Men
	#/100			#/100
TEA All				
All Ages	8.5	[XXXXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	13.3
18-24 yrs	8.4	[XXXXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	12.6
25-34 yrs	13.1	[XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	XX]	20.3
35-44 yrs	10.2	[XXXXXXXXXXXXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	14.4
45-54 yrs	6.8	[XXXXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	11.5
55-64 yrs	4.4	[XXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXX]	7.4
FEA Owners				
All Ages	1.0	[XX	XXXXX]	2.6
18-24 yrs	1.3	[XXX	XXXXX]	1.8
25-34 yrs	1.0	[XX	XXXXXXXXXX]	4.7
35-44 yrs	1.4	[XXX	XXXXX]	2.7
45-54 yrs	0.7	[X	XXXXX]	2.0
55-64 yrs	0.4	[X	XXX]	1.4

* Sample weighted in relation to national sampling ratios, prevalence base total population.

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The most obvious difference is between the top and bottom of Figure 13; the prevalence rates for those involved in start-ups is four to eight times higher than those involved as the owner-manager of an entrepreneurial firm. This is consistent with the assessment of the scope of activity as presented in Table 6. The second obvious difference is between men and women; as a general rule men are about 60% more likely to be involved than women. For every two women involved, there are three men involved. A third pattern—again a regular occurrence, is the impact of age. Those 25-44 years of age are more likely to engage in business start-ups than any other age group. This is clearly true for men identified as owners of entrepreneurial firms, much less so for women owners of such firms.

The joint impact of age and gender is substantial. It would appear that across 40 GEM countries, one of five men 25-34 years of age are involved in a business start-up. At the opposite

extreme, one in 25 women 55-64 years of age are involved in start-ups. This suggests that precise comparisons between countries in terms of other factors should always use age- and gender-adjusted measures of entrepreneurial activity.

There are some gender differences among countries. A country-by-country comparison of the TEA rate for men and women is provided for 41 countries with data from four years in Figure 14. They are ranked in terms of the TEA gender ratio—the male TEA rate divided by the female TEA rate. The ratio ranges from more than three to one for Israel to almost one to one for Thailand. Equality of participation seems to occur more frequently in developing countries.

The rate of men that are owners of entrepreneurial firms is about 10 times higher than for women (2.1 to 0.2 per 100). The sample sizes, however, are too small for stable comparisons across countries.

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FIGURE 14 - TEA PARTICIPATION RATE BY GENDER: 41 GEM COUNTRIES 2000-2003

COUNTRY	Female TEA Rate	Females	Males	Male TEA Rate	Male/Female Ratio
ISRAEL	2.88	[XX	XXXXXXXX]	9.86	3.42
SLOVENIA	2.26	[XX	XXXXXX]	6.37	2.82
CROATIA	1.63	[XX	XXXXX]	4.55	2.80
JAPAN	1.93	[X	XXX]	5.06	2.62
PORTUGAL	4.09	[XXXX	XXXXXXXXXX]	10.54	2.58
NORWAY	5.16	[XXXX	XXXXXXXXXX]	13.14	2.55
IRELAND	5.51	[XXXX	XXXXXXXXXX]	14.02	2.54
SINGAPORE	3.14	[XXX	XXXXXXX]	7.82	2.49
RUSSIA	2.75	[XXX	XXXXXX]	6.84	2.49
BELGIUM	2.20	[XX	XXXXX]	5.38	2.45
GREECE	3.98	[XXXX	XXXXXXXXXX]	9.55	2.40
DENMARK	4.07	[XXXX	XXXXXXXXXX]	9.68	2.38
KOREA	8.75	[XXXXXXXX	XXXXXXXXXXXXXXXXXXXX]	20.50	2.34
FINLAND	4.27	[XXX	XXXXXX]	9.29	2.17
UNITED KINGDOM	4.16	[XXXX	XXXXXXX]	9.01	2.17
SWITZERLAND	4.61	[XXXX	XXXXXXXXXX]	9.85	2.14
HONG KONG	2.19	[XX	XXXXX]	4.52	2.07
SWEDEN	3.49	[XXX	XXXXXX]	7.18	2.06
SPAIN	4.34	[XXXX	XXXXXXXXXX]	8.79	2.03
INDIA	9.62	[XXXXXXXX	XXXXXXXXXXXXXXXXXX]	19.46	2.02
GERMANY	4.38	[XXXX	XXXXXX]	8.46	1.93
ARGENTINA	9.29	[XXXXXXXX	XXXXXXXXXXXXXXXXXX]	17.82	1.92
ICELAND	7.74	[XXXXXXXX	XXXXXXXXXXXXXXXXXX]	14.84	1.92
HUNGARY	6.30	[XXXX	XXXXXX]	11.88	1.89
THE NETHERLANDS	3.37	[XXX	XXXXXX]	6.35	1.88
MEXICO	11.88	[XXXXXXXXXX	XXXXXXXXXXXXXXXXXX]	21.55	1.81
AUSTRALIA	9.08	[XXXXXXXX	XXXXXXXXXXXXXXXXXX]	16.35	1.80
CANADA	7.27	[XXXX	XXXXXX]	12.72	1.75
UNITED STATES	9.33	[XXXXXXXX	XXXXXXXXXXXXXXXXXX]	16.05	1.72
FRANCE	3.29	[XX	XXXXX]	5.62	1.71
CHILE	12.73	[XXXXXXXXXX	XXXXXXXXXXXXXXXXXX]	19.86	1.56
UGANDA	22.93	[XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	35.64	1.55
CHINESE TAIPEI	3.34	[XXX	XXXXX]	5.18	1.55
NEW ZEALAND	11.93	[XXXXXXXXXX	XXXXXXXXXXXXXXXXXX]	18.50	1.55
POLAND	5.76	[XXXX	XXXXXX]	8.68	1.51
BRAZIL	12.14	[XXXXXXXXXX	XXXXXXXXXXXXXXXXXX]	18.27	1.50
SOUTH AFRICA	5.38	[XXXX	XXXXXX]	8.08	1.50
ITALY	5.47	[XXXX	XXXXXX]	7.84	1.43
CHINA	11.06	[XXXXXXXXXX	XXXXXXXXXXXXXXXXXX]	12.92	1.16
VENEZUELA	25.66	[XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	28.97	1.13
THAILAND	18.46	[XXXXXXXXXX	XXXXXXXXXXXXXXXXXX]	19.35	1.05

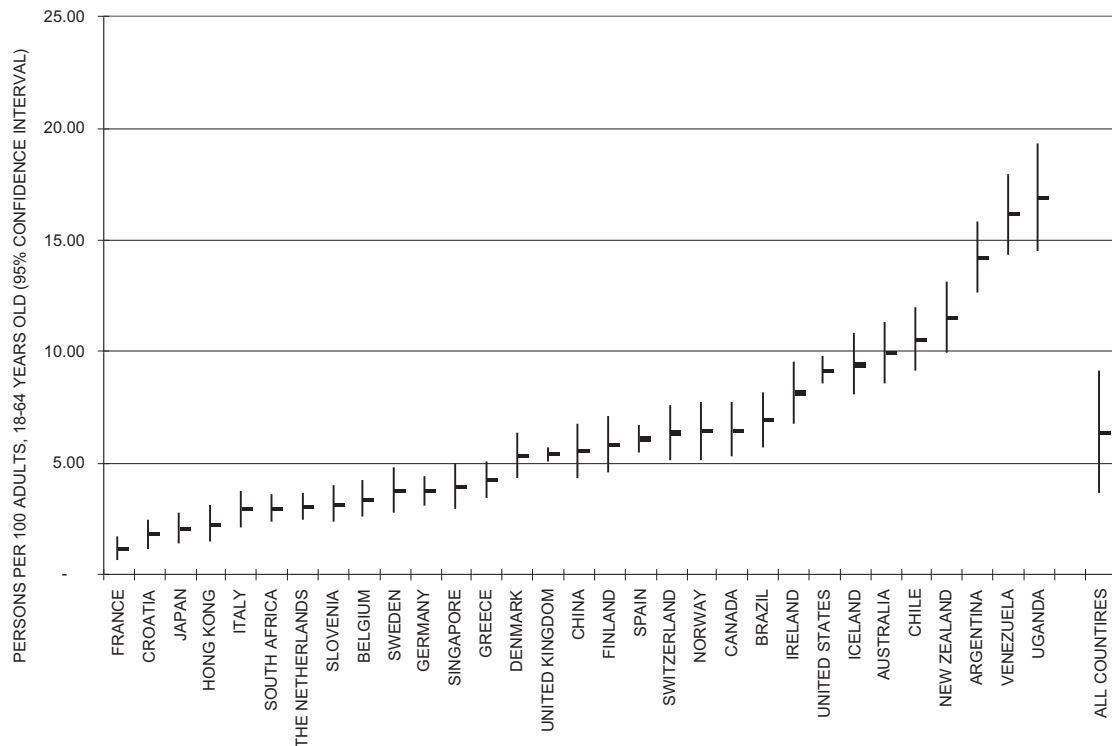
Motivation: Opportunity versus Necessity

As mentioned earlier, people become involved in business start-ups for a number of reasons, but the primary motives are related to opportunities or out of necessity. Opportunity entrepreneurship reflects the desire to take advantage of a business opportunity by creating a new firm or new venture focused on a particular market opportunity. Necessity entrepreneurship reflects the absence of work opportunities, or at least satisfactory work opportunities, which leads the individual to develop a new business out of necessity. In the adult population surveys all those reporting business activity, including start-ups, were asked if they were involved to pursue a business opportunity or because they had “no better options for work.” The former are attracted toward an opportunity, while the latter are pushed into the activity out of necessity. More than 90% of the business-active respondents could be classified as one or the other; the remainder reported a mixture of motives or other factors—such as involvement in a family business.

The percentage of business start-ups associated with these different motivations was presented in Figure 12; this figure showed the proportion of start-up firms reflecting each motivation. The presence of these motives in the population is reflected in motive specific TEA rates; that is, the number of persons per 100 involved to pursue opportunities or out of necessity, among those 18-64 years of age. The TEA patterns across the 31 GEM 2003 countries are presented for opportunity entrepreneurs in Figure 15 and necessity entrepreneurs in Figure 16.

These results, the overall level, range, and rank order of the countries are quite similar to GEM assessments in past years. As with the overall TEA index, these patterns appear to be relatively stable, as indicated in Table 16, which presents the year-to-year correlations. When a three-year average is computed, the year-to-year correlations are very high, four of six exceed 0.90.

FIGURE 15 - TEA OPPORTUNITY PREVALENCE RATES BY COUNTRY: GEM 2003



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Just as the relative level of individual participation in entrepreneurship appears stable over time, the motivations that lead individuals to

pursue entrepreneurship appear stable within the different countries.

FIGURE 16 - TEA NECESSITY PREVALENCE RATES BY COUNTRY: GEM 2003

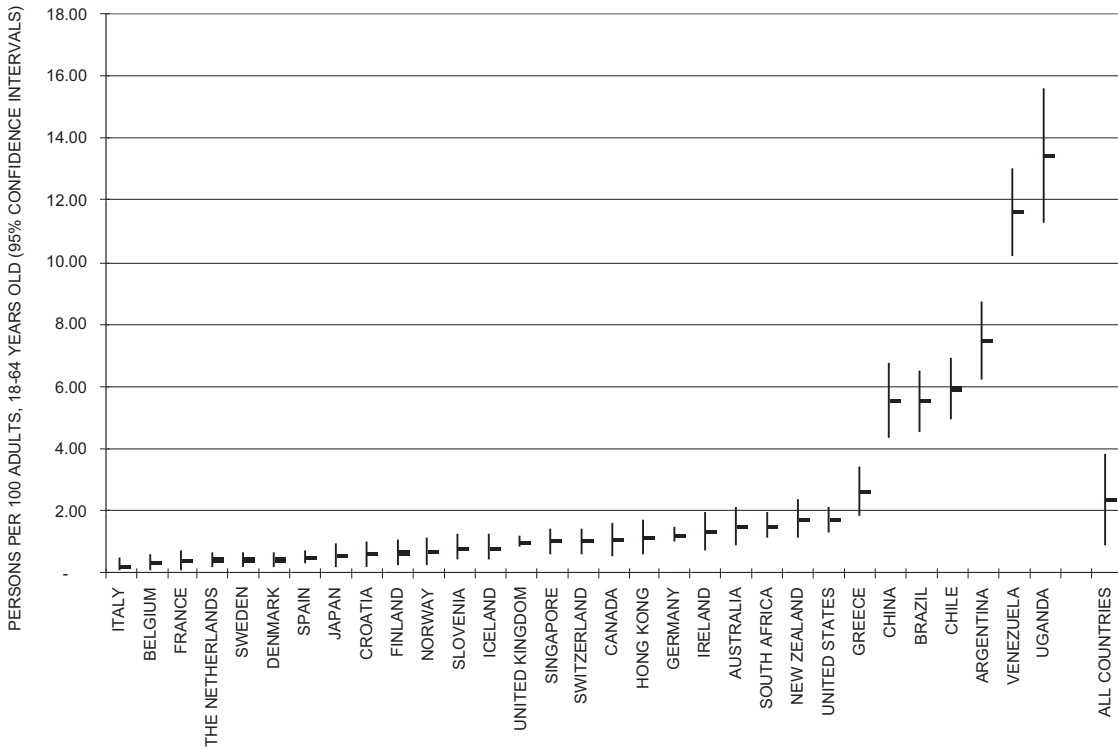


TABLE 16 YEAR-TO-YEAR CORRELATIONS IN OPPORTUNITY AND NECESSITY
TEA VALUES

	TEA 2001	TEA 2002	TEA 2003
Opportunity			
TEA 2001	1.00		
TEA 2002	0.60(28) ^{****}	1.00	
TEA 2003	0.76(21) ^{****}	0.88(28) ^{****}	1.00
TEA Average	0.88(29) ^{****}	0.93(37) ^{****}	0.97(31) ^{****}
Necessity			
TEA 2001	1.00		
TEA 2002	0.74(28) ^{****}	1.00	
TEA 2003	0.80(21) ^{**}	0.98(28) ^{****}	1.00
TEA Average	0.92(29) ^{****}	0.95(37) ^{****}	0.99(31) ^{****}
(1) Number of countries in parentheses; Stat Sign (1-tailed): ** < 0.01; *** < .001; **** < 0.000			
(2) TEA Average computed for 1-3 years, depending on number of years country was in the project.			

Personal Context

A number of other situational factors may affect the tendency to participate in entrepreneurial activities, including the current educational attainment, current labor force status, and relative household income. These measures are based on harmonizing the socio-demographic interview items used by over 50 different survey research firms in 41 countries. The result is a set of data with partial harmonization on these factors. For example, household income has been harmonized by allocating respondents to three categories relative to others in their own country: highest third, middle third, or lowest third. It has not been possible to separate those with full- and part-time jobs in many countries, so they have been consolidated into a single “currently working” category. Harmonizing the wide range of national educational systems to a common metric for educational attainment is a major

challenge. Nonetheless, the empirical patterns are so robust that disparities in the measurement procedure do not preclude some initial assessments and conclusions. More precise cross-national harmonization of these measures is desirable, but would probably not change the major patterns.

The relationship of these three personal factors to the levels of opportunity and necessity participating in start-ups is shown in Figure 17. The interaction with motivation is significant for two of the three personal factors. While the overall level of participation in start-ups is not greatly affected by education—those with little education are as active as those with graduate experience—the motivations vary systematically. Necessity entrepreneurs are half of those with little education participating in start-ups, but less than one-quarter of those with post-secondary education or more.

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In a similar fashion, more than half of those from low income households are involved in necessity entrepreneurship, compared to less than 25% of those in high income households. Except that those working are from three to seven times more likely to be involved in any kind of start-ups, opportunity or necessity, there is no obvious impact of motivation. This is related to one of the least understood features of nascent entrepreneurs—80% implement a start-up while they have a job.

The patterns are quite different for the prevalence of entrepreneurial firm owners, as shown in Figure 18. Both educational attainment and relative household income have a strong relationship. Those with post-secondary or graduate education are twice as likely to be involved in an entrepreneurial firm as those with less education; those with the highest level of household income are six times as likely to be involved. Needless to say, entrepreneurial firm owners are more likely to be found among those working.

FIGURE 17 - EDUCATION, HOUSEHOLD INCOME, AND LABOR FORCE PARTICIPATION AND START-UP PARTICIPATION

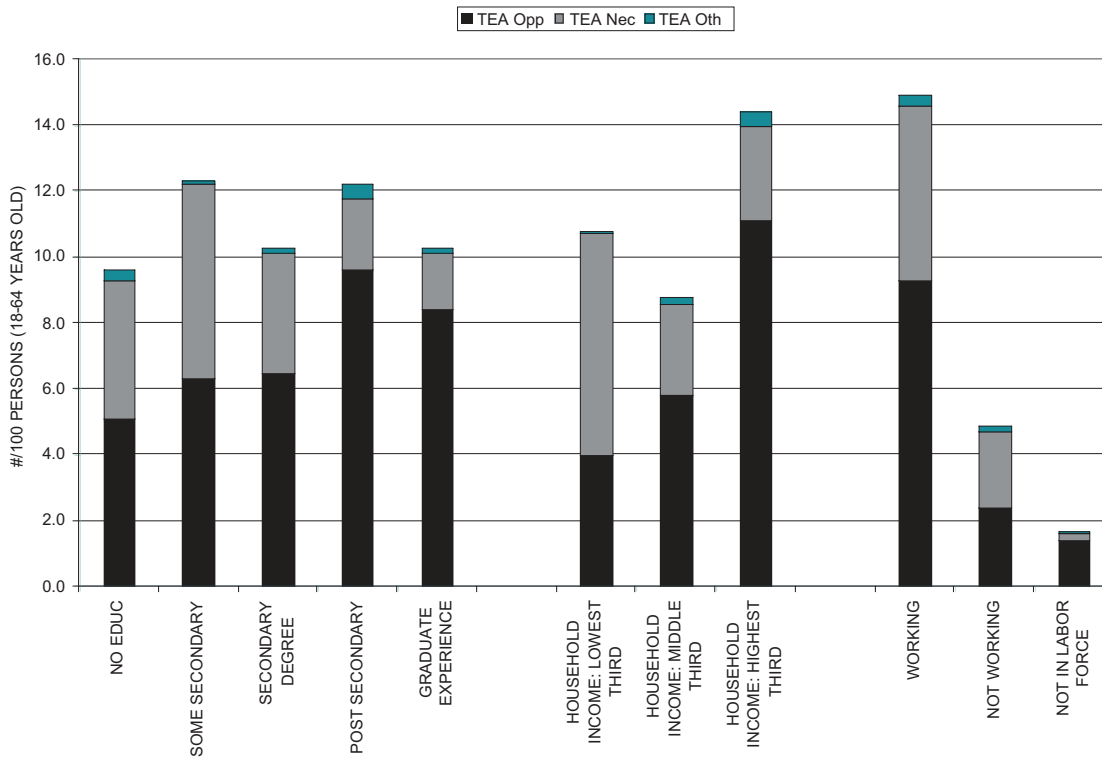
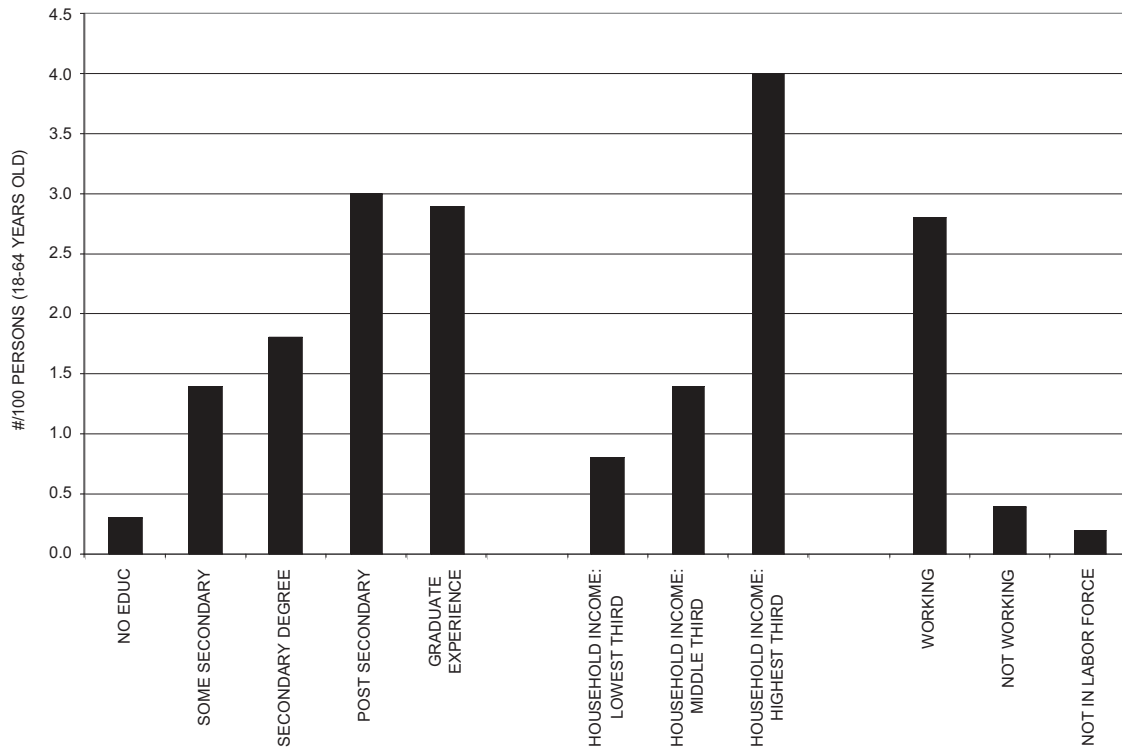


FIGURE 18 - EDUCATION, HOUSEHOLD INCOME, AND LABOR FORCE PARTICIPATION AND ENTREPRENEURIAL FIRM OWNERSHIP



Social Context

Individuals in situations where 1) they know others that are starting businesses, 2) see good business opportunities, 3) consider they have the skills to start and manage a new business, and 4) are not concerned about the consequence of failure might be more likely to become involved in the creation of a new firm. Questions related to three of these issues have been asked of every survey respondent for the past four years—all 340,000, and the fourth (skills to start a business) for the past three years. All four questions required a simple “yes” or “no” response.

The major patterns are presented for opportunity and necessity entrepreneurship in Figure 19. Each pair of bars indicates the level of participation in start-ups reported by those that answered yes and no to these four items. The effect on owners reporting they had an entrepreneurial firm is presented in Figure 20.

Because of the enormous number of cases, all differences are statistically significant well beyond all conventional levels of acceptability (the probability that these patterns were generated at random is less than one in 10,000).

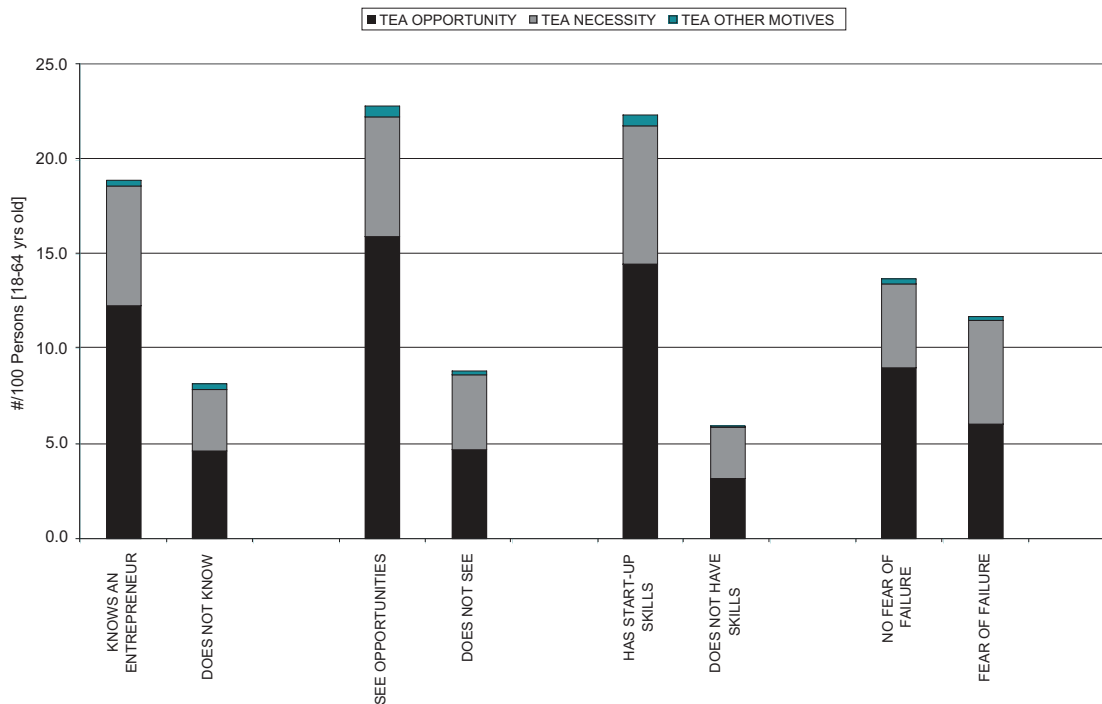
The relative impact appears to be the same for both those involved in start-ups and entrepreneurial firm owners. All the impact is in the expected direction, the only issue is the magnitude of the influence. The strongest impact comes from a self-perception that the individual has the skills to implement and manage new business activity. Compared to those who do not think they have these skills, those confident of their skill are four to six times more likely to be engaged in entrepreneurship. Next most critical is perception of business opportunities. Those who see good opportunities are three times more likely to be engaged in entrepreneurial activity.

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Those who know someone that started a business in the past six months are two to three times more likely to engage in entrepreneurial activity. While the absence of fear of failure is associated with a higher level of entrepreneurial

activity, the difference is not as significant as for the other three measures; albeit it has a larger impact on entrepreneurial firm owners than on start-ups.

FIGURE 19 - SOCIAL CONTEXT AND PARTICIPATION IN START-UPS



Given the strength of these patterns, it is reasonable to expect that those with several factors in their favor will have an increased likelihood of entrepreneurial activity. Because of their substantial impact on the start-up participation, an “entrepreneurial context” index was created in the simplest possible form. Those that reported they knew an entrepreneur, saw opportunities, and were confident they had the skill to implement a new business were assigned a value of 4. If they responded “yes” to any two of these items, they received a value of 3; if they responded “yes” to any one of the items a value of 2; and if they responded “no” to all three, a value of 1.¹⁶ The results can be determined in relation to participation in start-ups or identification as an entrepreneurial firm owner, for 2003 data only, as presented in Figure 21.

Those at the highest level of the Entrepreneurial Context Index are 10 times more likely to be involved in entrepreneurship—start-ups or entrepreneurial firms—than those at the lowest levels. Among those reporting the presence of the three positive factors, more than 30% are participating in business start-ups and 7% are owners of entrepreneurial firms. This immediately leads to a significant policy implication as to how can governments increase the probability that individuals will have positive responses to these three issues: those who know a recent entrepreneur; perceive good business opportunities; and have confidence in their skills for implementing a new or entrepreneurial business.

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FIGURE 20 - SOCIAL CONTEXT AND IMPACT ON ENTREPRENEURIAL FIRM OWNERSHIP

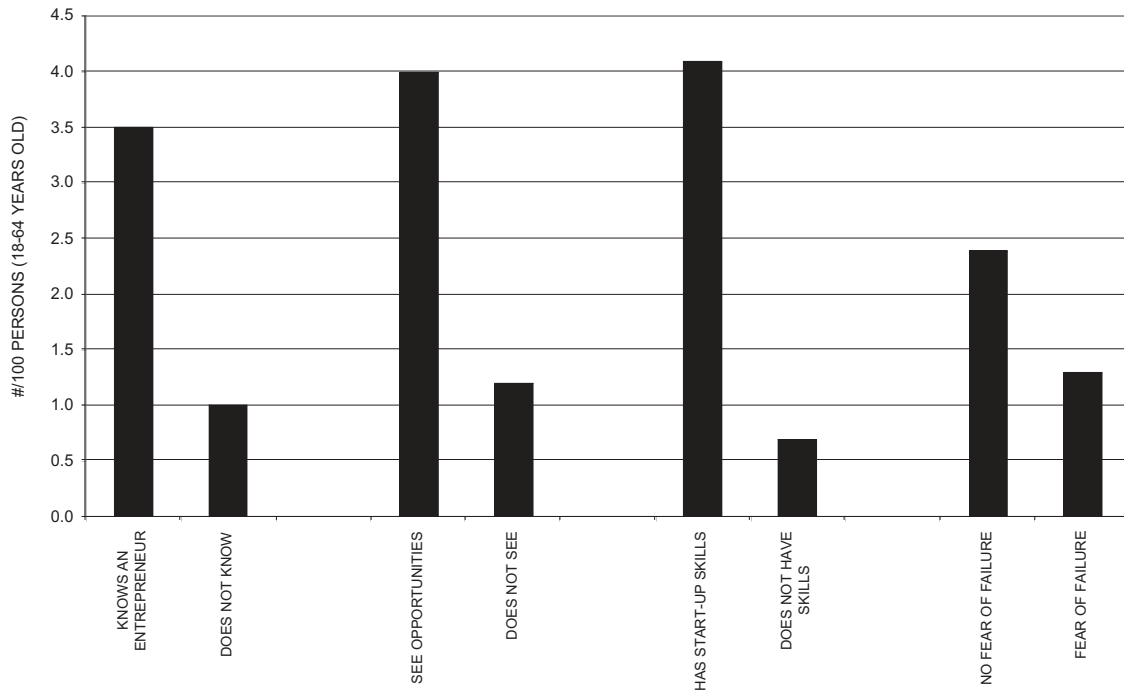
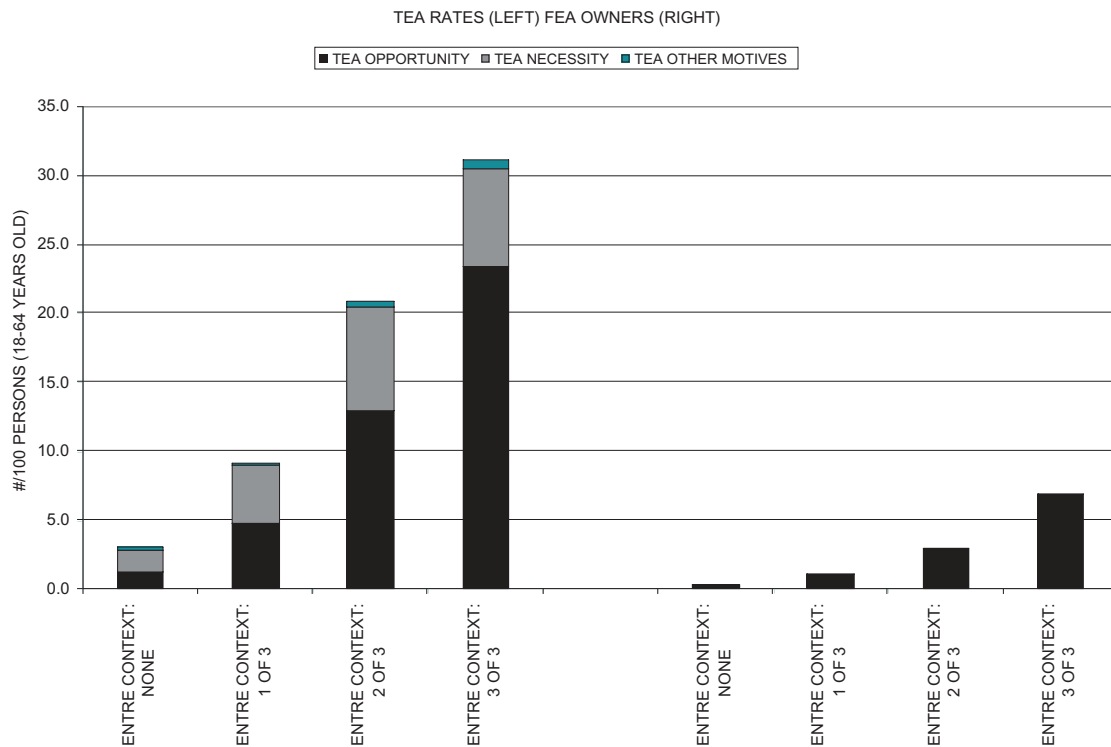


FIGURE 21 - ENTREPRENEURIAL CONTEXT INDEX AND ENTREPRENEURIAL ACTIVITY

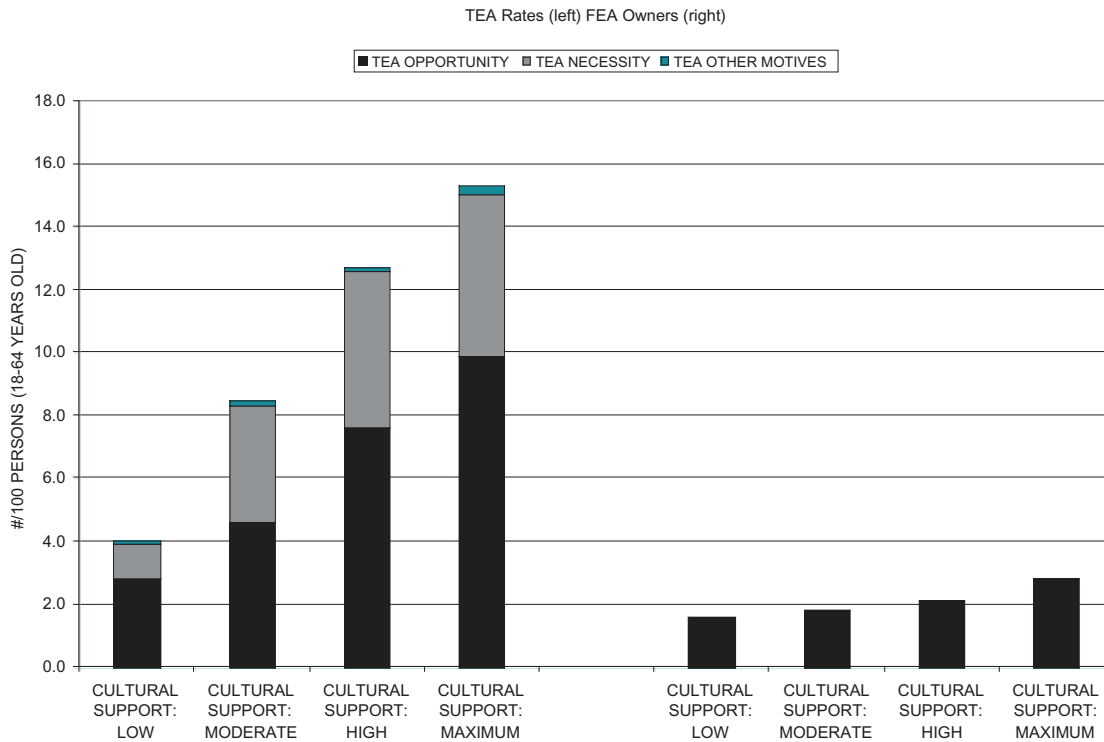


Cultural Support

A similar measure of broad cultural support for entrepreneurship was developed in 2003 and based on three yes/no items asked in the adult population interview: 1) In your country, most people consider starting a new business a desirable career choice, 2) In your country, those successful at starting a new business have a high level of status and respect, and 3) In your country, you will often see stories in the public media about successful new businesses. Various combinations of positive responses were combined to create a four-point index in the same way as for the personal context index.¹⁷

The relationship to the level of entrepreneurial activity is presented in Figure 22. The impact is in the expected direction, those that perceive the cultural context as very supportive are almost four times more likely to be engaged in a business start-up. The relationship to owners reporting an entrepreneurial firm is in the expected direction, but the impact is less. It would be reasonable to assume that firm owners are more responsive to their immediate personal context and the market context for their firm than to national cultural norms.

FIGURE 22 - ENTREPRENEURIAL CULTURAL SUPPORT AND ENTREPRENEURIAL ACTIVITY



Commentary

Individuals start businesses; individuals differ in many ways. Age and gender are obvious, but their motivation, personal context, and perception of societal support for entrepreneurship can vary dramatically. Consistent with past GEM analyses, it is found that men are more active than women and that those 25-34 years of age are more active than those older or younger. Two major motivations lead individuals into business start-ups, about two-thirds pursue opportunities and about one-third out of necessity. The relative level of opportunity and necessity entrepreneurship across the GEM countries is relatively stable over time. The personal situation or life context of individuals—reflected in their education, household income,

and work force status—has more impact on existing firm entrepreneurship than participation in start-ups. It has a major impact on the motivations—with the poor and those with less education more likely to pursue necessity entrepreneurship, while those with more money and education pursue opportunity entrepreneurship. The immediate social context of individuals—related to their perception of business opportunities, contact with entrepreneurs, and perceived skill for a start-up—has a major impact on both initiating new businesses or moving an existing firm in an entrepreneurial direction. Perceived social support for entrepreneurship—as a measure of national cultural support—has a positive impact, but less influence than the immediate social context.

There is substantial diversity in the extent to which countries have entrepreneurial activity—defined as either the creation of new firms or reorientation of existing firms in an entrepreneurial direction. The impact of this entrepreneurial activity is substantial: entrepreneurship absorbs vast amounts of talent and resources; there is a clear association between entrepreneurial activity and national economic growth; and the new firms that emerge from the entrepreneurial process are a major source of new jobs.

But why is there such variation among countries in the level of entrepreneurial activity? This variation may be as high as sixfold in terms of business start-ups or fourfold in terms of existing firm entrepreneurial activity. One of the major purposes of the GEM program is to make progress on this issue, for an understanding of the source of the differences can lead to policy initiatives to assist the less entrepreneurial countries enhance their indigenous entrepreneurial activities.

With four years of harmonized data on the level of business start-ups—the TEA index—in 41 countries, it is possible to make some headway on this critical issue. However, there are a number of processes and factors that

may affect national entrepreneurial activity; identifying the most likely processes is a considerable challenge. One strategy is to consider the enduring and current characteristics of a country and assess those that appear to have a persistent relationship to entrepreneurial activity. In this case, the major mechanisms are assumed to be related to a variety of national processes, processes reflected in a variety of national measures.

The correlations between these measures and four indicators of entrepreneurial activity are presented in Table 17. The four measures of national entrepreneurial activity are the FEA index reflecting existing firm entrepreneurial activity and three measures reflecting firm start-ups—the TEA overall, TEA opportunity, and TEA necessity indices. These measures reflect entrepreneurial activity over the years 2000 to 2003, when national patterns were relative stable.¹⁸ Given the slow rate of change in both the independent variables and the level of entrepreneurial activity, precise time lags are not a critical aspect of this initial assessment. Nevertheless, potential independent variables—the national features—have been measured in the same or prior periods.



TABLE 17 - FACTORS ASSOCIATED WITH VARIATIONS IN NATIONAL ENTREPRENEURIAL ACTIVITY

	Year	Notes	EFA	TEA 2000-2003	TEA 2001-2003 Opportunity	TEA 2001-2003 Necessity
Other Measures of National Economic Potential						
Global Competitive Report Index	2001	1	0.11	-.31*	-.12	-.65**
World Competitive Yearbook Index	2002	2	0.22+	-.22+	-.02	-.56**
Index of Economic Freedom (reversed)	2002	3	0.20	-.27*	-.09	-.49**
Population Structure						
Percent of 20-64 yrs that are 25-34 Yrs: Men	2002	4	0.22+	0.69***	0.58***	0.73***
Percent of 20-64 yrs that are 25-34 Yrs: Women	2002	4	0.25+	0.66***	0.56***	0.69***
Percent of 20-64 yrs that are 55-64 Yrs: Men	2002	4	-.24+	-.59***	-.48**	-.66***
Percent of 20-64 yrs that are 55-64 Yrs: Women	2002	4	-.28*	-.56***	-.47**	-.61***
Net immigration, per 1,000 population	2002	5	0.03	-.26+	-.15	-.27+
Relative Economic Status						
Recent economic growth, average annual growth over 5 years	1996-2001	6	0.20+	0.02	-.02	0.04
Real GDP per capita, current, [PPP adj] to US\$:	1999	7	-.03	-.47**	-.30*	-.69***
Real GDP per employed person [PPP]	2002	8	-.13	-.53***	-.37***	-.73***
Unemployment, overall, both genders rate	2001	9	-.10	-.15	-.19	0.03
Long term unemployment, both genders rate	2001	10	-.32*	-.62***	-.56**	-.34*
Economic Organization and Structure						
Percent government employment of all employment	2000	11	-.20	-.30*	-.30*	-.23+
Total taxes collected as percent of GNP	2001	12	-.15	-.41*	-.33*	-.53***
Informal Economy as % Gross National Income:	2003	13	-.09	0.42**	0.34*	0.44**
Average hours worked per year	2002	14	0.41**	0.33*	0.23*	0.46**
Per cent males working in agriculture:	1998-01	15	0.01	0.58**	0.54**	0.47**
Employers social security, % GDP per capita	2001	16	-.29*	-.43**	-.50**	-.32*
Total social security costs, % GDP	2001	17	-.29*	-.55***	-.60***	-.41**
Government Operation, Economic Rights						
Corruption Index, 1 = clean	1999	18	0.04	-.46**	-.29*	-.65***
Government Effectiveness Index	1999	19	0.04	-.49**	-.32*	-.66***
Protection of property rights	1999	20	0.10	-.33*	-.17	-.54***
New firm registration: no of procedures	1999	21	-.07	0.15	-.03	0.37**
New firm registration: days to complete	1999	22	-.13	0.06	-.11	0.33*
New firm registration: total cost/GDP/capita	1999	23	-.14	0.05	-.12	0.32*
Social Equality, Educational Structure						
Income inequality: Gini Index	1995-02	24	0.30*	0.40**	0.31*	0.44**
Income inequality: Top 10% /bottom 10% income	1995-02	24	0.25+	0.42**	0.28*	0.45**
% Secondary sch enrolled/total age appropriate	2000	25	-.14	-.63***	-.54**	-.70***
% Post-secondary sch enrolled/total age appropriate	2000	26	0.00	-.41**	-.26+	-.62***
Cultural, Social Context						
National Cultural Support for Entrepreneurship\	2003	27	0.30+	0.57**	0.50**	0.56**
Entrepreneurial Context Support	2001-03	27	0.40**	0.69***	0.72***	0.51***
Notes: Sources in endnotes. ¹⁹						
One-tailed statistical significance: + = 0.10, * = 0.05, ** = 0.01, *** = 0.001.						

The first set of measures, "Other Measures of National Economic Potential," on the top rows of Table 17, are taken from other programs attempting to assess the potential of countries for economic growth. Two provide measures designed to reflect relative national competitive potential: the Global Competitiveness Report Index and the World Competitive Yearbook Index. The third is a measure of the

national level of economic freedom, reversed so a higher value indicates more economic freedom. The only correlations that are statistically significant are the negative correlations related to TEA necessity. These indices tend to give high rankings to rich, developed countries that have low levels of necessity entrepreneurship; there are low positive correlations with firm entrepreneurship.

WHY ARE SOME COUNTRIES MORE ENTREPRENEURIAL?

The second sets of variables, “Population Structure,” are related to population structure and immigration, and show a clear and strong pattern related to population structure. Countries with a larger percentage of the workforce in the 25-34 years of age and a smaller percentage in the 55-64 years of age categories are much more likely to have high levels of entrepreneurial firms, and all types of business start-ups. These correlations are high and clearly statistically significant. If all other factors were held constant, difference in the presence of young adults would account for almost half of the variation in start-up activity.

Higher levels of net population in-migration are associated with slightly lower levels of entrepreneurship, although the relationship is marginally statistically significant. This may reflect migration from highly entrepreneurial (developing) countries to rich countries with less start-up activity; the developing countries may have a net out-migration, the advanced countries a net in-migration.

Various measures of the national economic situation, “Relative Economic Status,” suggest rather stable patterns. First, the average level of economic growth in the previous five years has little relation to business start-ups, but may increase entrepreneurial activity by existing firms. Existing firms may be responding to an expansion in demand associated with steady national economic growth. On the other hand, the relative level of economic development has a major impact on business start-ups. Whether measured by GDP per capita or GDP per employed person, there is a strong negative association with the level of business start-up activity. Short-term unemployment does not have a statistically significant relationship to entrepreneurial activity, but high levels of long-term unemployment are associated with lower levels of all entrepreneurial

activity. It may be that long-term unemployment is associated with a decline in consumer demand which, in turn, would reduce the presence of attractive opportunities for both established firms and new start-ups.

“Economic Organization and Structure” begins with indicators reflecting the relative size of the government itself. Measured by the percentage of all employment in government positions or the total tax collected as a percentage of GDP, a greater government presence is associated with a reduced level of all entrepreneurial activity.

The informal or unregistered or “black” economy varies substantially across different countries. Most unregistered firms are providing legal, legitimate economic activities, but are not listed in official registries. [The GEM model makes no distinction between firms that are or are not listed in official registries.] A larger percentage of the gross national income generated in the “informal” economy is positively associated with higher levels of business start-ups and, in particular, necessity start-ups. It is quite likely that the level of “unregistered business activity” and the TEA necessity prevalence rate are two different measures of the same phenomenon—necessity driven business start-ups.

The average number of hours worked per year in a country has a positive association with necessity entrepreneurship and it has the highest level of association with entrepreneurship among existing businesses. The higher the percentage of males engaged in agriculture, the higher the level of business start-ups; while there is no relationship to the presence of entrepreneurial businesses. This probably reflects the larger scope of the agricultural sector in developing countries, where there are higher levels of business start-ups.

Two measures of the presence of social and economic security programs—the employers' social security costs as a percentage of GDP and the total social security costs as a percent of GDP—show a clear negative effect on firm entrepreneurship and business start-ups. This no doubt reflects not only the increased cost of doing business but a relatively generous social and economic security program for the unemployed. The negative association is the largest for opportunity based start-ups.

Several indicators reflecting the functioning of national governments have been included in "Government Operations, Economic Rights." Measures of relative corruption, increased effectiveness, and greater protection of property rights are all associated with reductions in business start-ups, the strongest negative association is related to necessity based start-ups. Again, the problem is that high levels of necessity entrepreneurship occur in countries that are not particularly well managed because many citizens in these countries have no choice but to create a business. Exactly the same pattern is found among "costs to register" a business; countries placing greater burdens on those registering new firms have higher rates of necessity entrepreneurship; presumably by unregistered start-ups considered part of the informal economy.

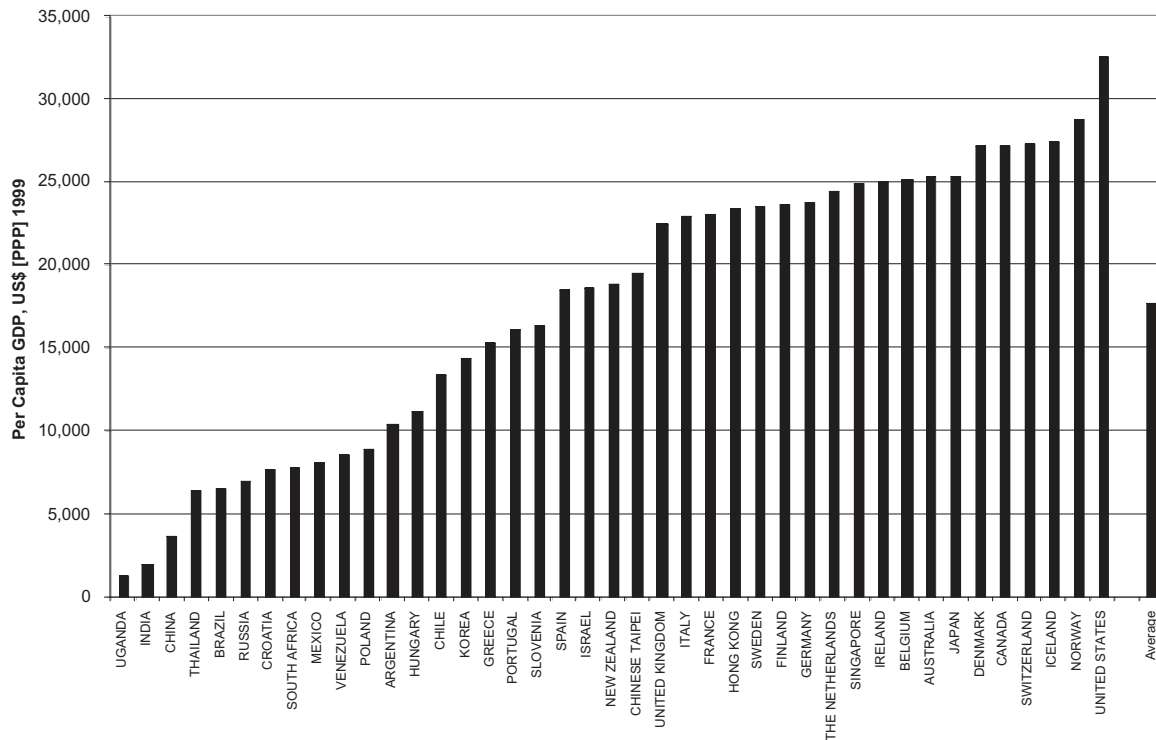
Reflections of the "Social Equality, Educational Structure" include the extent and basis for income disparity; this is a major political issue in many countries. Consistent with other assessments, higher levels of income disparity are associated with more entrepreneurial activity. Higher levels of participation in secondary and post-secondary educational programs are systematically related to lower levels of business start-ups.

Two indicators of "Cultural, Social Support" are derived from the GEM adult population interviews and discussed above. Both have a systematic positive association with both firm and start-up entrepreneurial activity; the associations are statistically significant for measures of start-ups. But the index that represents the presence of a positive personal context for entrepreneurship—those who know entrepreneurs, perceive opportunities, and think they have the skills to start a business—shows a strong positive and statistically significant relationship to all types of entrepreneurial activity, among existing firms and start-ups.

Country Classification

There is no question that the GEM project involves countries across a wide range of development. Economic wealth appears to be associated with substantial development on a wide range of national characteristics. The most straightforward basis for classification is per capita GDP, and this measure in US dollars, adjusted for purchasing power parity (PPP) for 1999, is shown in Figure 23. The range is from about US\$1,200 for Uganda to 27 times higher or about US\$32,500 for the United States. As there is a slight gap in the distribution at about US\$20,000 and a split at this point would create two approximately equal subgroups of 19 and 22, this break has been chosen for the next analysis.

FIGURE 23 - GEM COUNTRIES PER CAPITA GDP IN 1999, US\$ (PPP)



The high per capita income group includes all of the G-7 (but not all of the G-8 as Russia is not included) and most of the EU (except for Greece, Portugal and Spain). All five Central and East European countries (Croatia, Hungary, Poland, Russia, and Slovenia) are in the low income group, as are all Latin American countries. The four “Asian Tigers” are split, with two in the high income group (Hong Kong and Singapore) and two in the upper end of the low income group (Chinese Taipei and South Korea). The most populated countries, India and China, are in the low income group. In short, the high income group appears to be more homogeneous in terms of basic institutional features, the low income group is clearly more heterogeneous. Until a wider range of countries are involved in the GEM assessment, this exploratory assessment must suffice.

Factors Affecting Entrepreneurship in Advanced and Developing Countries

For these two groups, it is possible to consider the association between measures of entrepreneurship and the same set of national features reviewed above. A summary of the correlations is provided in Table 18; wealthier countries on the left, less wealthy on the right. The variables and the order of presentation are the same as in Table 17. As the number of cases is reduced, one-tailed statistical significance at the 0.10 level is indicated. Some very high correlations with low levels of statistical significance reflect a small number of cases due to missing data on the national characteristics.

A summary of the effects of 17 possible factors on entrepreneurship in these two groups of countries is provided in Table 19. For several factors the impact appears to be the same.

WHY ARE SOME COUNTRIES MORE ENTREPRENEURIAL?

More young workers and fewer older workers; a reduced government role in the economy; more workers in agriculture; less participation in secondary education; less long long-term unemployment; a supportive national culture; and a positive personal context appear to be associated with more business start-ups in both wealth and poorer countries.

Considering only the wealthy countries, higher measures of association with entrepreneurship are associated with net human in-migration, higher recent national economic growth, reduced levels of social and economic security expenditures, and higher participation in post-secondary education.

Considering only the less wealthy countries, there are higher measures of necessity entrepreneurship when other competitiveness measures are lower (but a reverse pattern for firm entrepreneurship) and higher measures of the informal economy.

But for several aspects the relationship are different, depending on the wealth of the country.

- Higher per capita GDP is associated with greater opportunity entrepreneurship in wealthy countries, but substantially lower levels of all types of entrepreneurship among countries with less wealth.
- Among wealthy countries an efficient, corruption-free government with well

established recognition of property rights has no relationship to any entrepreneurial activity. There is, among wealthy countries, little variation on these measures of "good government." Among countries with less wealth, there is substantial variation on these measures, and when governments are more corrupt, inefficient, and property rights are not well recognized there seems to be more necessity entrepreneurship.

- Among wealthy countries, reduced "barriers to registration" have a strong association with higher levels of firm and start-up entrepreneurship; among countries with less wealth the relationship is either weak or reversed, more procedures required to register a business is associated with more necessity entrepreneurship.
- Among wealthy countries higher levels of income equality are associated with higher levels of firm and necessity entrepreneurship. There is no relationship among countries with less wealth.

It appears that different sets of processes are affecting entrepreneurial activity in these two types of countries.

TABLE 18 - FACTORS ASSOCIATED WITH VARIATIONS IN NATIONAL ENTREPRENEURIAL ACTIVITY FOR DIFFERENT SETS OF COUNTRIES

	Year	Notes	Wealthy Countries (n=19)			Poor Countries (n = 22)			
			EFA	TEA0_3	TEA1_3	EFA	TEA0_3	TEA1_3	
Other Measures of National Economic Potential									
Global Competitive Report Index	2001	1	0.23	0.27	0.28	0.24	-0.13	0.03	-0.42*
World Competitive Yearbook Index	2002	2	0.36+	0.36+	0.45*	0.50*	0.04	0.15	-0.22
Index of Economic Freedom (reversed)	2002	3	0.56*	0.04	0.13	0.30+	-0.03	0.12	-0.27
Population Structure									
Percent of 20-64 yrs that are 25-34 Yrs: Men	2002	4	0.17	0.11	0.08	0.23	0.73**	0.67**	0.66**
Percent of 20-64 yrs that are 25-34 Yrs: Women	2002	4	0.25	0.00	0.03	0.25	0.72**	0.66**	0.67**
Percent of 20-64 yrs that are 55-64 Yrs: Men	2002	4	-0.50*	-0.18	-0.19	-0.30+	-0.65**	-0.53**	-0.67***
Percent of 20-64 yrs that are 55-64 Yrs: Women	2002	4	-0.51**	-0.11	-0.13	-0.25	-0.67***	-0.56**	-0.66***
Net immigration, per 1,000 population	2002	5	0.35+	-0.11	-0.08	0.20	-0.38+	-0.24	-0.46*
Relative Economic Status									
Recent economic growth, average annual growth over 5 years	1996-2001	6	0.23	0.40*	0.46*	0.25	0.18	-0.26	0.09
Real GDP per capita, current, (PPP adj) to US\$	1999	7	0.07	0.63***	0.63***	0.07	0.10	-0.44*	-0.58**
Real GDP per employed person (PPP)	2002	8	0.17	0.40+	0.37+	0.22	-0.13	-0.58**	-0.64**
Unemployment, overall, both genders rate	2001	9	0.30	-0.18	-0.14	0.01	-0.39+	-0.38+	-0.09
Long term unemployment, both genders rate	2001	10	0.00	-0.54*	-0.53*	-0.11	-0.54+	-0.61*	-0.54+
Economic Organization and Structure									
Percent government employment of all employment	2000	11	-0.19	0.02	0.10	-0.57***	-0.28	-0.53**	-0.30
Total taxes collected as percent of GNP	2001	12	-0.30+	0.00	0.04	-0.50**	-0.10	-0.47**	-0.48**
Informal Economy as % Gross National Income	2003	13	0.22	-0.08	-0.08	-0.16	-0.27	0.30+	0.21
Average hours worked per year	2002	14	0.52***	-0.06	-0.06	0.30+	0.47*	0.21	0.26
Per cent males working in agriculture	1998-01	15	-0.28	0.51**	0.54**	0.20	-0.06	0.48*	0.23
Employers social security, % GDP per capita	2001	16	-0.29	-0.50**	-0.54**	-0.39+	-0.32+	-0.44*	-0.27
Total social security costs, % GDP	2001	17	-0.44*	-0.58***	-0.62***	-0.41*	-0.27	-0.53**	-0.41*
Government Operation, Economic Rights									
Corruption Index, 1 = clean	1999	18	-0.02	0.20	0.33+	-0.16	0.17	-0.37*	-0.51**
Government Effectiveness Index	1999	19	-0.06	0.11	0.24	-0.20	0.17	-0.40*	-0.52**
Protection of property rights	1999	20	0.08	0.20	0.25	0.15	0.24	-0.13	-0.32+
New firm registration: no. of procedures	1999	21	-0.33+	-0.51**	-0.59**	-0.19	-0.06	0.06	-0.07
New firm registration: days to complete	1999	22	-0.42*	-0.61**	-0.62*	-0.39*	-0.18	-0.05	-0.21
New firm registration: total cost/GDP/capita	1999	23	-0.47*	-0.60**	-0.57**	-0.39*	-0.17	-0.10	0.13
Social Equality, Educational Structure									
Income inequality: Gini Index	1995-02	24	0.44*	0.08	0.07	0.40*	0.24	0.33+	0.28
Income inequality: Top 10%/bottom 10% income	1995-02	24	0.51**	0.12	0.11	0.38+	0.19	0.34+	0.31+
% Secondary school enrolled/total age appropriate	2000	25	0.08	-0.61**	-0.51*	-0.71**	-0.12	-0.58**	-0.73***
% Post-secondary school enrolled/total age appropriate	2000	26	0.41+	0.40+	0.39+	-0.14	0.08	-0.35+	-0.52**
Cultural, Social Context									
National Cultural Support for Entrepreneurship\	2003	27	0.09	0.42*	0.43*	0.38+	0.30	0.56*	0.61*
Entrepreneurial Context Support	2001-03	27	-0.22*	0.71**	0.76**	0.00	0.45*	0.80**	0.76**

Sources listed in endnote.¹⁹ One-tailed statistical significance: + = 0.10, * = 0.05, ** = 0.01, *** = 0.001.

TABLE 19 - COMPARISONS OF MAJOR FACTORS AFFECTING ENTREPRENEURIAL ACTIVITY IN TWO MAJOR GROUPS OF COUNTRIES

	Countries	
	Countries with more wealth	Countries with less wealth
Other Measures of National Economic Potential	Positive association with firm entrepreneurship and opportunity based start-ups.	Positive association with firm entrepreneurship; strong negative correlation with necessity start-ups.
Population Structure	Younger workforce modest positive correlation with business start-ups.	Younger workforce has strong positive correlation with business start-ups.
	Older workforce negative correlation with firm and necessity start-ups.	Older workforce negatively correlated with all start-up activity.
	Net in-migration positive association with firm entrepreneurship.	Net in-migration has no significant impact.
Relative Economic Status	Higher average growth more opportunity entrepreneurship.	Recent average growth has no significant impact.
	Higher GDP per capita, more opportunity entrepreneurship.	Lower GDP per capita has strong association with more start-up activity of all kinds.
	Long-term unemployment associated with less opportunity start-ups.	Long-term unemployment strongly related to less firm and start-up entrepreneurship.
Economic Organization and Structure	Greater government role in economy strongly associated with less necessity start-ups.	Greater national wealth absorbed in taxes, less start-ups of all kinds.
	Greater informal economy has no significant impact.	Greater informal economy associated with more start-ups of all kinds.
	More hours worked per year more firm and necessity entrepreneurship.	More hours worked per year has no significant impact.
	More workers in agriculture, more opportunity start-ups.	More workers in agriculture, more opportunity start-ups.
	Higher levels of social and economic security costs and benefits, much less firm and start-up entrepreneurship.	Higher levels of social and economic security costs and benefits, less start-up entrepreneurship.
Government Operation, Economic Rights	Corruption-free, effective government with property right recognized has no effect on any entrepreneurial activity.	Much less start-up activity where corruption-free, effective government with property right recognition are in place.
	Reduced requirements, time, and costs to register new businesses associated with high levels of firm and start-up entrepreneurship.	Higher levels of start-up entrepreneurship where there are more procedures to register a new businesses.
Social Equality, Educational Structure	Higher levels of income inequality associated with higher levels of firm and necessity entrepreneurship.	No relationship between income inequality and entrepreneurial activity.
	Higher age appropriate participation in secondary education associated with LESS start-up activity.	Higher age appropriate participation in secondary education associated with LESS start-up activity.
	Higher age appropriate participation in post-secondary education associated with MORE firm entrepreneurship and opportunity start-ups.	Higher age appropriate participation in post-secondary education associated with less necessity start-ups.
Cultural, Social Context	National cultural support associated with higher levels of opportunity and necessity start-ups.	National cultural support associated with much higher levels of opportunity and necessity start-ups.
	More positive personal entrepreneurial context associated with higher levels of firm entrepreneurship and opportunity start-ups.	More positive personal entrepreneurial context associated with higher levels of firm entrepreneurship and much higher levels of all start-ups.

WHY ARE SOME COUNTRIES MORE ENTREPRENEURIAL?

The factors affecting relatively wealthy countries can be considered in several categories, listed in the order of the magnitude of influence:

- The most influential factors would be lower levels of national wealth devoted to social and economic security payments, and a positive personal entrepreneurial context.
- The second group of factors would include a younger workforce, net immigration, recent economic growth, higher relative levels of individual wealth, and longer work hours as well as a large agricultural sector, less onerous business registration procedures, greater income inequality, higher levels of post-secondary school enrollment, and national cultural support for entrepreneurship.
- The third category in terms of impact might include general national competitiveness—as reflected in less long-term unemployment, and a reduced scope of government managed activities in the economy.

There is no doubt that some of these factors are highly correlated, but with a small number of cases it is difficult to estimate the individual direct effects with such a large number of significant independent variables.

The major factors affecting the less wealthy countries have some similarities:

- The most important factors that seem to lead to more entrepreneurship are lower national wealth, higher prevalence of young adults in the workforce, and higher levels of personal contextual support for entrepreneurship.
- In the second group would be a larger agricultural sector, reduced social and economic welfare benefits, more corrupt

and inefficient governments that do not recognize property rights, less participation in secondary and post-secondary education, and national cultural support for entrepreneurship.

- The major elements in the third group would be general national competitiveness—as reflected in a reduced scope of government managed activities in the economy.

The same problems determine the relative impact of different factors, which may be interrelated, apply to this group of countries.

What can government affect?

Knowing what is associated with more entrepreneurial activity and taking steps to make a difference are two different things. Some factors are beyond government control, such as the age structure of the population.

All countries may be able to improve the level of start-up entrepreneurship and entrepreneurship among existing firms by taking the following steps:

- Adjusting social and economic benefits such that they do not discourage citizens from making an effort to contribute to the economy.
- Provide a more positive personal context by increasing training in business start-ups (including capacity for opportunity recognition) and increase contact with existing entrepreneurs.
- Increase net in-migration, particularly that of younger adults who may wish to engage in entrepreneurial behavior.
- Encourage an increase in the annual numbers of hours worked.
- Reduce the complexity and cost of registering a new business.

WHY ARE SOME COUNTRIES MORE ENTREPRENEURIAL?

- Increase national cultural support for entrepreneurial career options.
- Reduce the scope of economic activities managed by the government.

There is some evidence that an improvement in national competitiveness indices

ratings may increase entrepreneurial activity among existing firms, but these indices are a complex combination of dozens of individual items. It is almost impossible to know what effective steps might be taken to improve an overall rating.

A wide range of special issues can be explored with the GEM data. Four are of particular relevance and a summary of the preliminary analysis is provided in this section.

Financial support for new firms is often considered a major influencing factor in the level of entrepreneurial activity. The GEM project assembles two types of information on start-up financing. In the adult population surveys all respondents are asked about recent informal investments in new firms, other than their own. This can be used to estimate the total amount of informal financing provided to the new firms sector. A special GEM team supplements this information with a complete census of all venture capital investments in the prior year in the GEM countries; these are screened to identify those provided to new start-ups within the country (classic venture capital). This information is the basis for the discussion in Section H-1 regarding the level, scope, and nature of informal investments and venture capital support for new ventures.

While women are less involved in entrepreneurship than men, they are a major source of new activity. Although some of the same factors affect the participation of men and women in the same way, there are special situations where women appear to respond to a different set of national characteristics, reviewed in Section H-2.

As it is well known that a small proportion of high growth firms are a source of the majority of job creation, a separate assessment of national factors associated with high growth firms appears in Section H-3.

Part of the GEM data collection effort involves interviews and questionnaires completed by national experts in entrepreneurship in each GEM country; more than 800 completed personal interviews and 1,300 questionnaires in 2003. The expert's assessments of their own government's efforts to promote entrepreneurship are presented in Section H-4.

Financing Entrepreneurs and Their Ventures • *William Bygrave*

Two of the most remarkable findings of the global entrepreneurship monitor are the scope and the scale of informal investment in all GEM nations. In 2002, the most recent year for which data exists for both informal investment and classic venture capital, it is estimated that informal investors funded 99.962% of all businesses and supplied 91.8% of the total amount invested in the GEM nations; or put differently, fewer than 38 out of every 100,000 companies were backed by classic venture capital, which amounted to 8.2% of the total sum invested.

Of course, professional venture capitalists target a tiny, but extremely important sector of the entrepreneurship spectrum: innovative companies with the potential to grow very rapidly. Informal investors, on the other hand, spread their money all over the entrepreneurial landscape. Figure 24 is a conceptual framework for looking at investment in entrepreneurial companies, which are classified according to their growth rate and degree of innovativeness (Kirchhoff, 1964).



In general, classic venture capital flows only to companies with superstar potential in the top right-hand corner, while informal investment flows to companies in all segments including the superstars. Furthermore, whereas essentially every company begins with informal investment from the founders as well as family, friends, and foolhardy investors (the 4Fs), very few companies have formal venture capital at the outset. Of the 37 of every 100,000 companies that received classic venture capital in 2002, fewer than 10 of them were seed-stage companies, and in turn, only a few of those 10 were newly created companies.

Hence, if there was no informal investment there would be virtually no new ventures. In contrast, if there was no venture capital there would be no perceptible drop in the number of new ventures; there would, however, be a drop in the rate of growth of superstar companies because the bulk of classic venture capital goes to accelerate the growth of companies that are already in business.

Informal Investment

Informal investors abound. They are located in the GEM countries by asking every respondent if they had made a recent informal investment in business start-up not their own.²⁰ As shown in Figure 25, the median prevalence rate for all the GEM countries is 3% with a range from 13% in Uganda to 1% in Brazil. Across all GEM countries about three in every 100 adults have invested in someone else’s business during the last three years. Of those investors, 43.7% report that they invested in a close family member’s business, 8.9% in a relative’s, 29.2% in a friend or neighbor’s, 8.9% in a work colleague’s, and 9.3% in a stranger’s. The mean amount that they invested per year ranged from \$89 in Uganda to \$32,912 in Chinese Taipei (Taiwan). The median amount for all the GEM countries was \$1,904; the 25th percentile was \$379; the 75th percentile was \$6,667; the 90th percentile was \$18,941; the 95th percentile was \$37,883; and the 99th percentile was \$117,787.²¹

FIGURE 24 - COMPANIES CLASSIFIED BY INNOVATION AND GROWTH AND SOURCES OF FINANCIAL SUPPORT

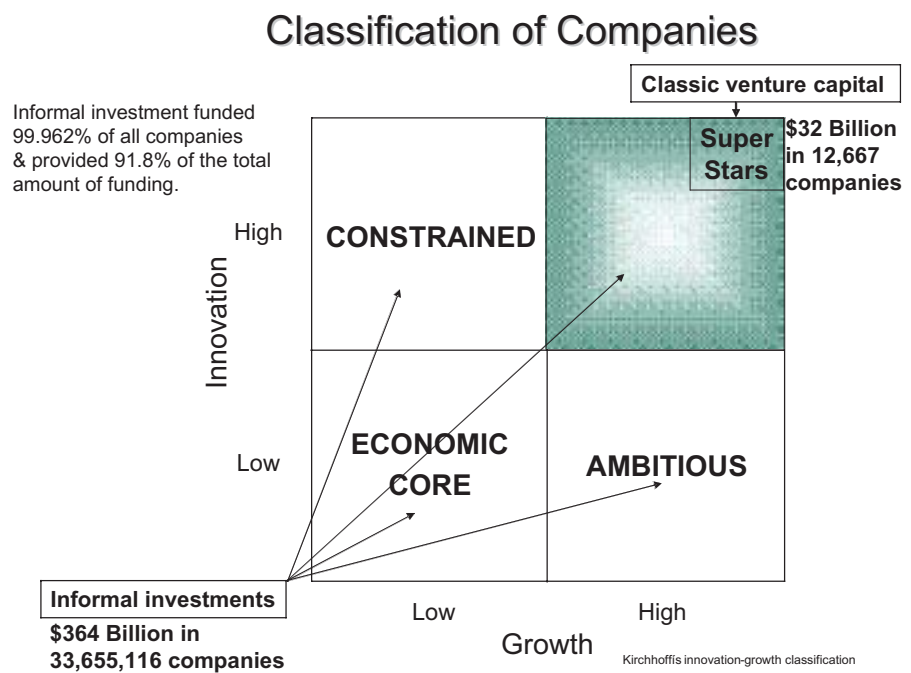
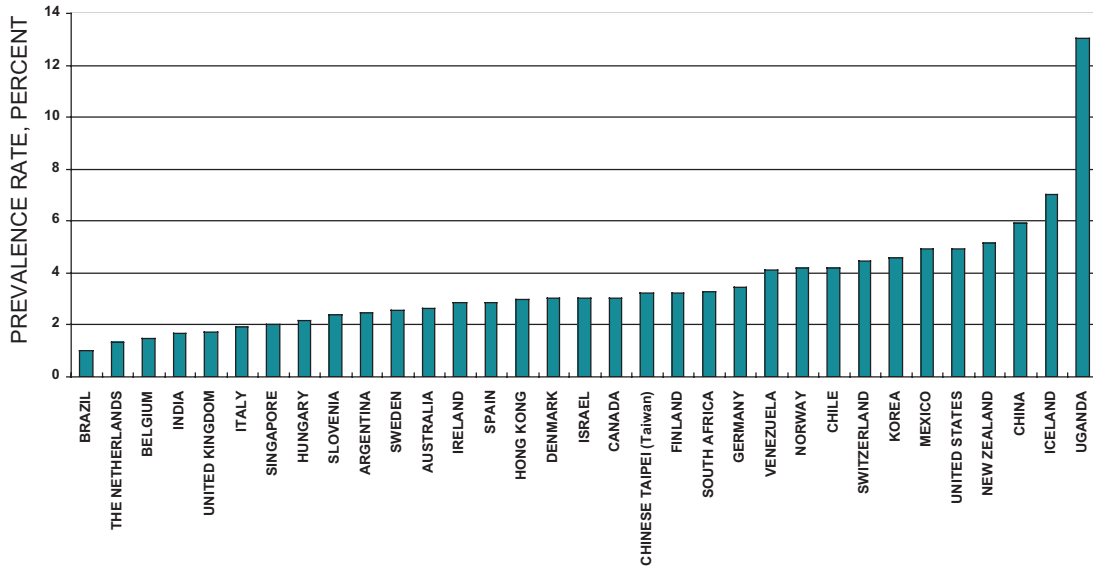


FIGURE 25 - INFORMAL INVESTOR PREVALENCE RATE: SELECTED GEM COUNTRIES 2002-2003

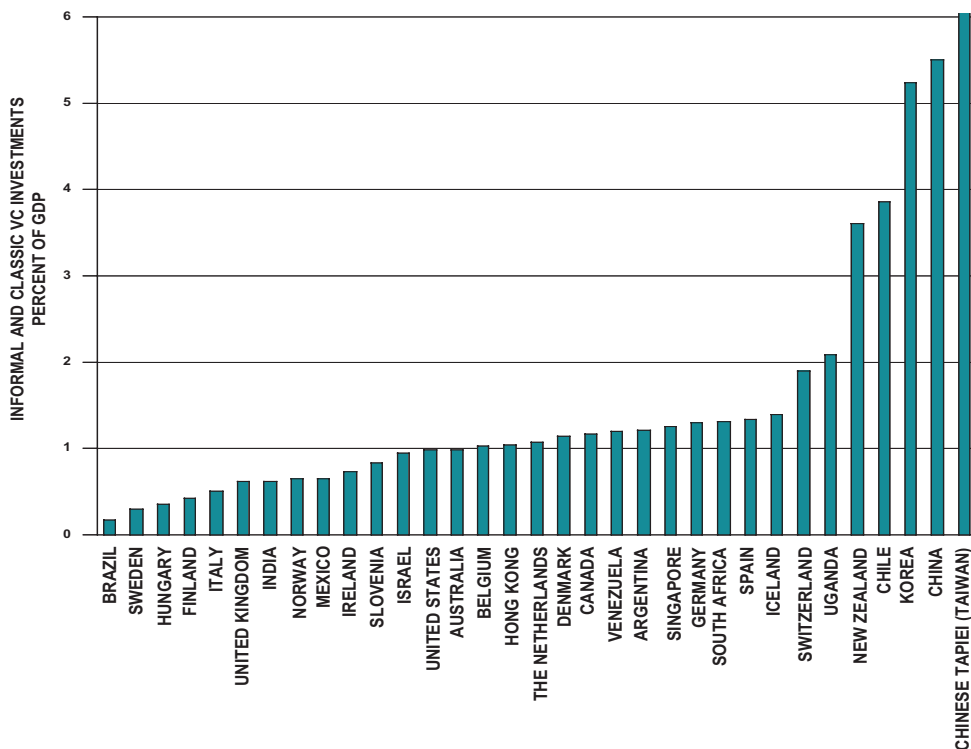


CLASSIC VENTURE CAPITAL COMPRISES INVESTMENTS IN SEED, EARLY, START-UP, AND EXPANSION STAGE COMPANIES

To judge how important any form of investment is for a given country it is helpful to express that total annual amount of that investment as a percent of the GDP; Figure 26 shows the informal investment percentage for all

the GEM countries where valid data was obtained. It shows that relative to GDP, Chinese Taipei (Taiwan) has the highest percentage of informal investment, 6.10%, and Brazil the lowest, 0.17%; and the median is 0.94%.

FIGURE 26 - DOMESTIC INFORMAL INVESTMENT AS A PERCENT OF GDP: 33 GEM COUNTRIES



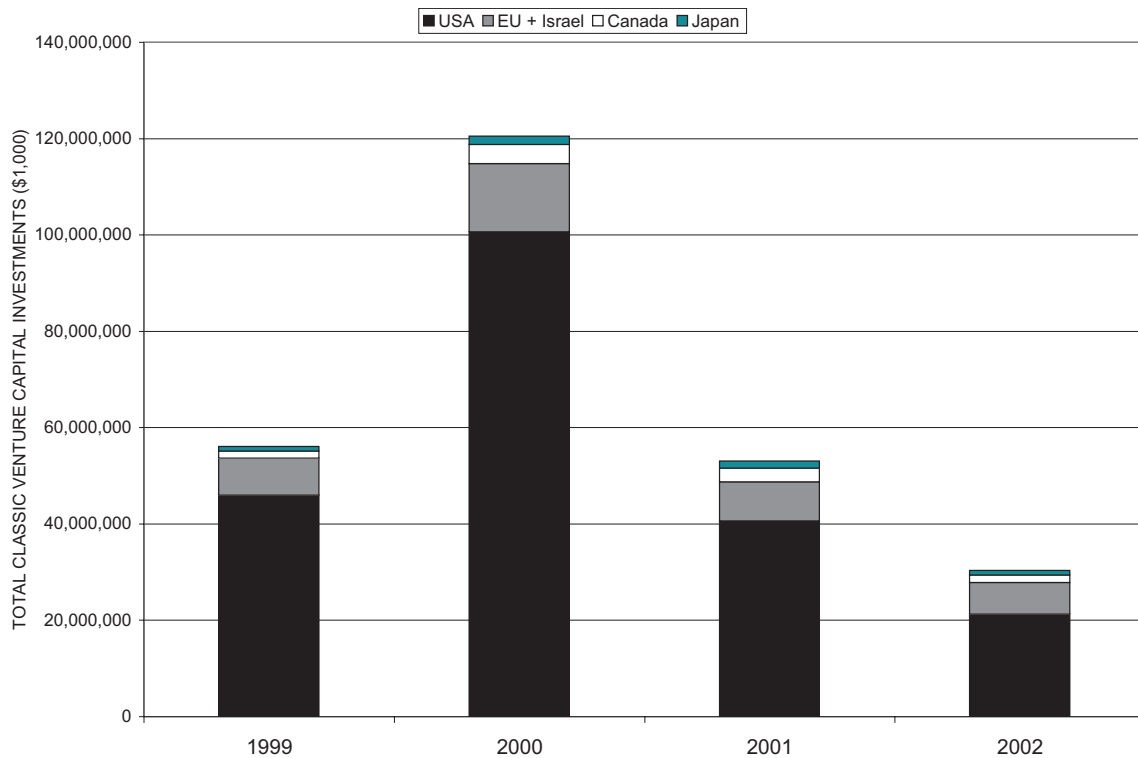
Classic Venture Capital

Although the amount of classic venture capital is much smaller than the amount of informal investment, its impact is disproportionately much greater. Companies that have changed the global economy such as Intel, Microsoft, Apple, Dell, Genentech, FedEx, Cisco, Netscape, Google, ebay, and amazon.com were backed by venture capital in the United States. Is it any wonder that almost every developed country and many developing nations are striving to emulate the success of the United States venture capital backed industries?

How well are other countries doing when it comes to classic venture capital? GEM has been tracking classic venture capital for four years for all

the G7 countries, Australia, Belgium, Denmark, Finland, Ireland, Israel, Norway, Spain, and Sweden. As shown in Figure 27, the amount of venture capital invested in those 16 countries was \$56.1 billion in 1999, peaked at \$120.4 billion in 2000, fell to \$53.1 billion in 2001, and fell again to \$30.3 billion in 2002. So the amount of venture capital in those 16 nations declined by almost 75% from its peak in 2000—the year the Internet bubble burst—to 2002. The proportion of classic venture capital in the 15 nations outside the United States dropped from 18% to 16% between 1999 and 2000, but since then has steadily increased to 23% in 2001 and 30% in 2002. So while the total amount of classic venture capital has been declining since 2000, the proportion outside the United States has been increasing.

FIGURE 27 - TRENDS IN DOMESTIC VENTURE CAPITAL SUPPORT 16 GEM COUNTRIES: 1998-2002



SPECIAL TOPICS

But how are other countries faring in comparison with the United States when it comes to high-tech investment? An analysis of the computer hardware and software industries in the G7 nations was completed to determine the proportion of venture capital invested in computer hardware and software companies at all stages, including acquisitions and buyouts, for these seven countries. The United States was the source of the large proportion of these investments, receiving 75.7% in 1999, 78.7% in 2000, 85.4% in 2001, and 82.8% in 2002. Hence the United States continues its predominance of venture capital investment in computer hardware and software. What's more, this country is even more predominant when it comes to classic venture capital investment because almost all venture capital in the United States was invested in seed, early, startup, and expansion stage companies. In the other G7 nations, excluding Canada, a relatively large proportion of venture capital investments financed acquisitions and buyouts of mature

companies; in 2002, for instance, 61% of all venture capital invested in Europe financed buyouts.

Classic venture capital investment as a percentage of GDP continued the downward trend that began when the Internet bubble burst in 2000. Comparing the percentage change in domestic classic venture capital there were only three countries, shown in Figure 28, with an increase. But none of the three—Denmark, Finland, and South Africa—have a continuous pattern of growth. Six countries have a modest decline in this period of less than 50%. Shown in Figure 29. In one—Sweden—there was a sharp increase in 2001 but the overall pattern is one of decline. In thirteen others, as shown in Figure 30, there is a decline that is greater than 50%. Some of the countries with the largest proportion of VC as a proportion of GDP—Canada, Israel, and the United States—are in this “major decline” group.

FIGURE 28 - DOMESTIC CLASSICAL VENTURE CAPITAL INVESTMENTS AS PERCENT OF GDP: GROWTH 2000-2002

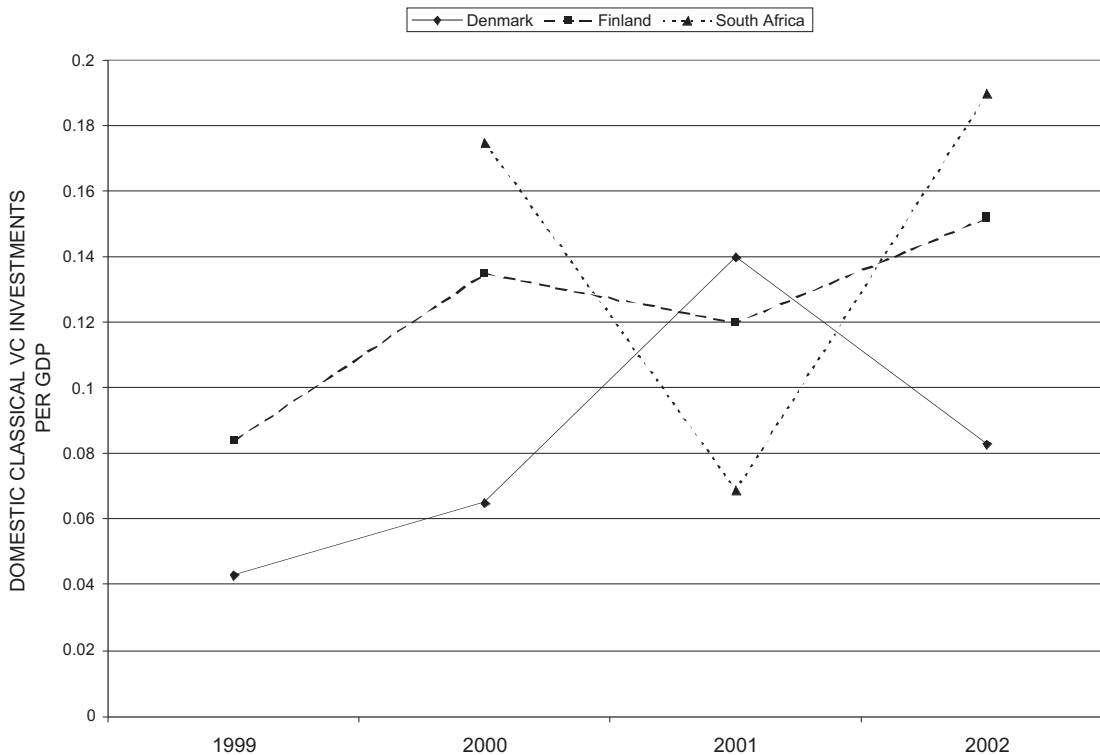


FIGURE 29 - DOMESTIC CLASSICAL VC INVESTMENTS AS PERCENT OF GDP 1999-2002, MODERATE DECLINE: 2000-2002

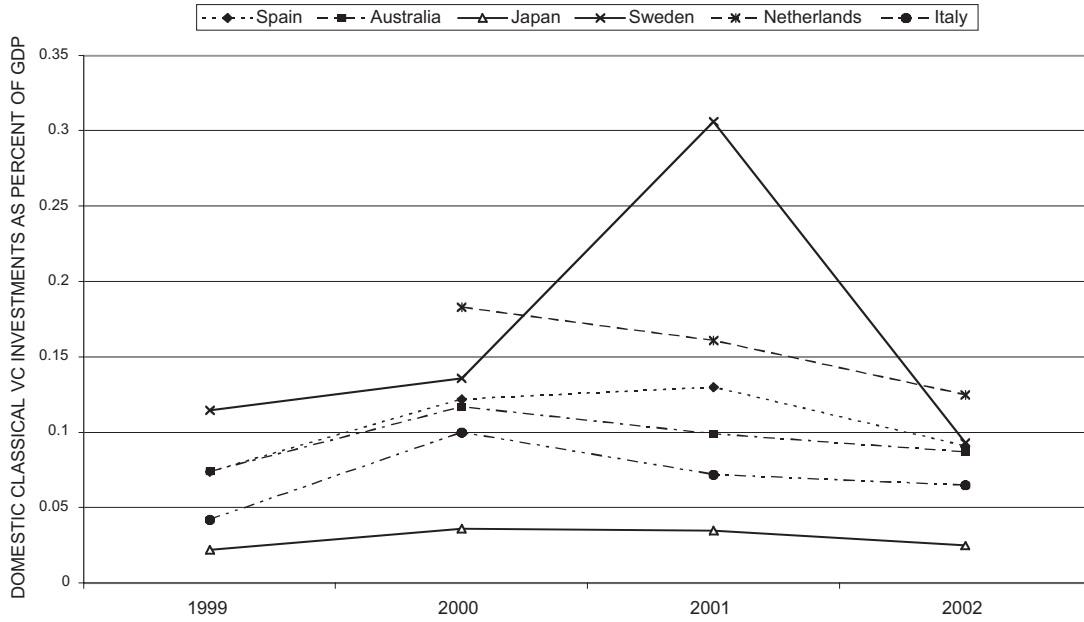
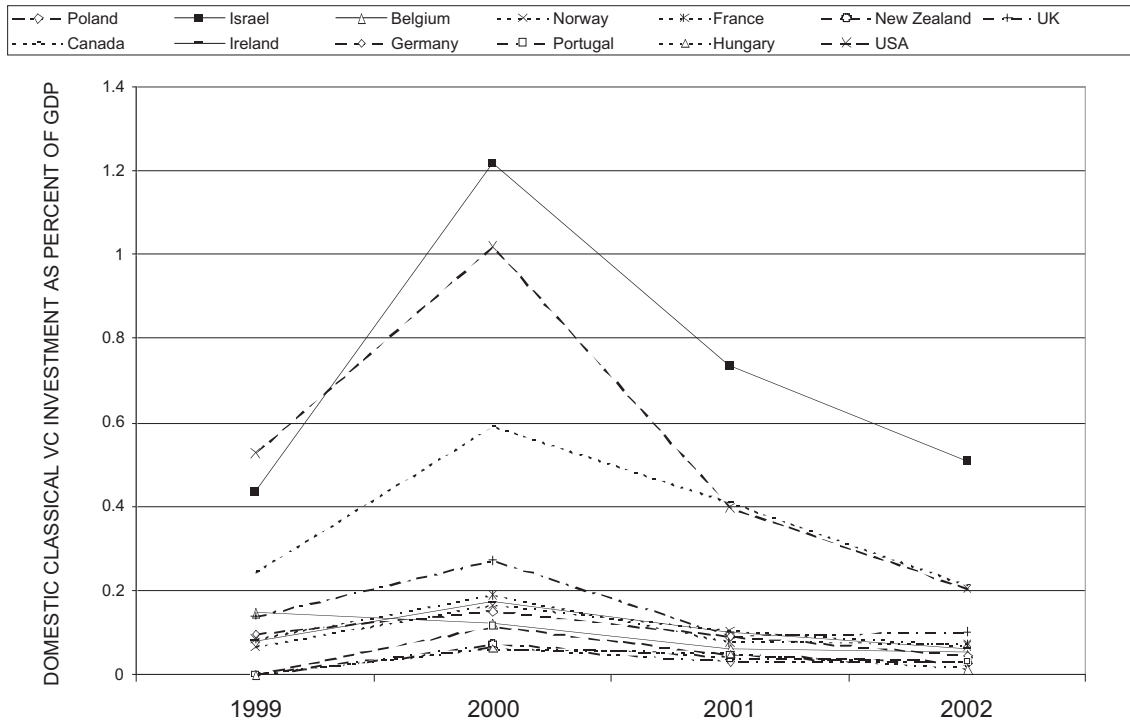


FIGURE 30 - DOMESTIC CLASSICAL VC INVESTMENTS AS PERCENT OF GDP: MAJOR DECLINE 2000-2002

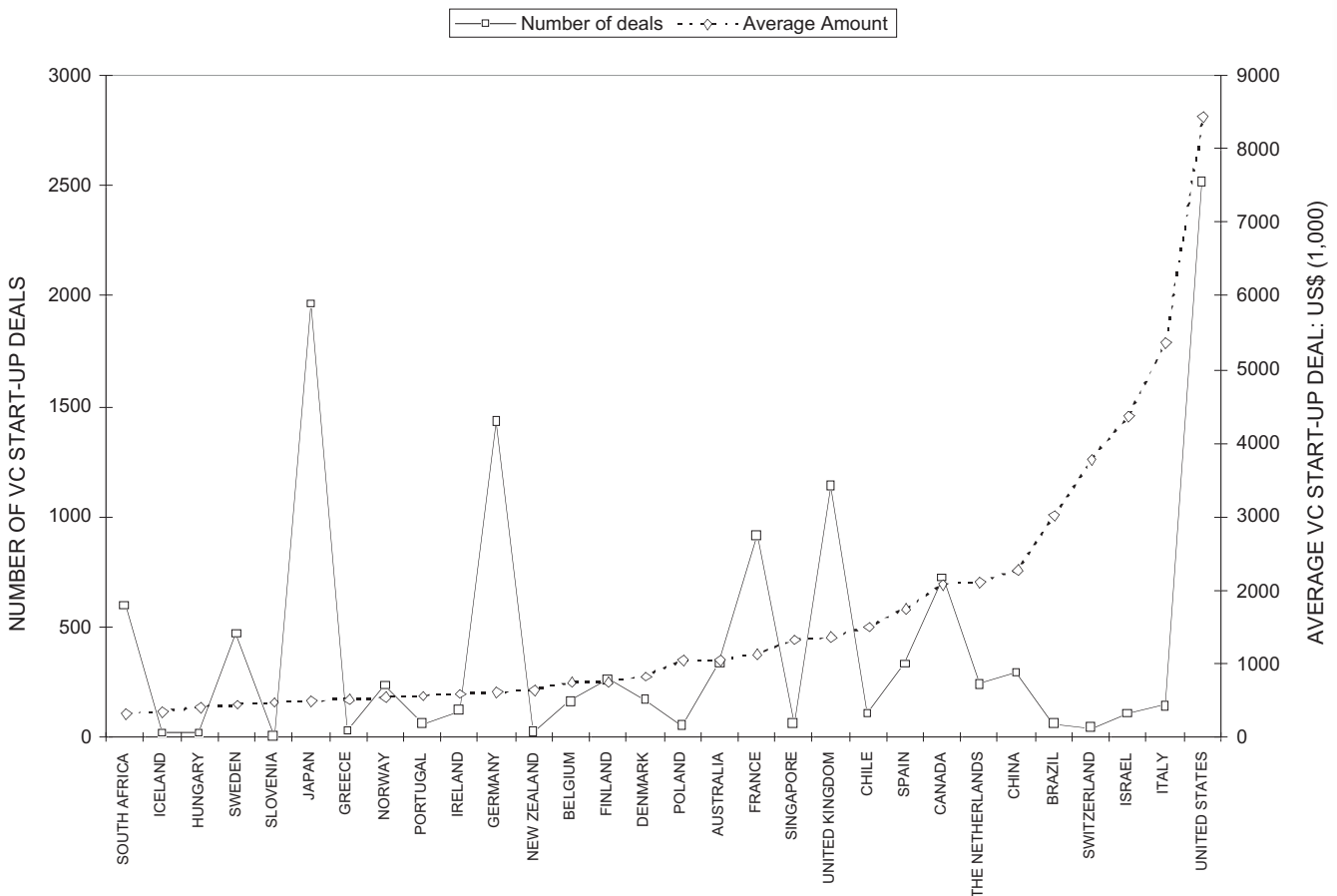


The total amount of venture capital support in each country is related to both the numbers of companies that receive support as well as the average amount provided to each company—the size of the typical deal. Both aspects appeared to decline in 2002 in most countries. The only G7 country with an increase in the number of start-up deals was the United Kingdom; the average size of the start-up investment declined for every country except of Italy, Switzerland, and Finland.

But more dramatic was the continued variation in the average amount of financing provided by venture capital deals across the GEM countries. Figure 31 shows both the number of

deals and the average size for 28 GEM countries in 2002. While the number of deals and the average size is the highest in the United States this would be expected for a country that is the host for 75% of all venture capital start-up investments. But there are a number of countries with a large number of very small deals—such as Germany, where venture capital supported almost 1,500 start-ups, with an average investment of approximately \$625,000. This would suggest that in a number of countries it is hard for the venture capital community to provide large amounts of funds for a single start-up. Clearly, a start-up receiving US\$8 million in venture capital funds has a better chance to grow in world markets than one receiving half a million.

FIGURE 31 - NUMBER AND AVERAGE VALUE OF DOMESTIC CLASSICAL VC INVESTMENTS: 2002

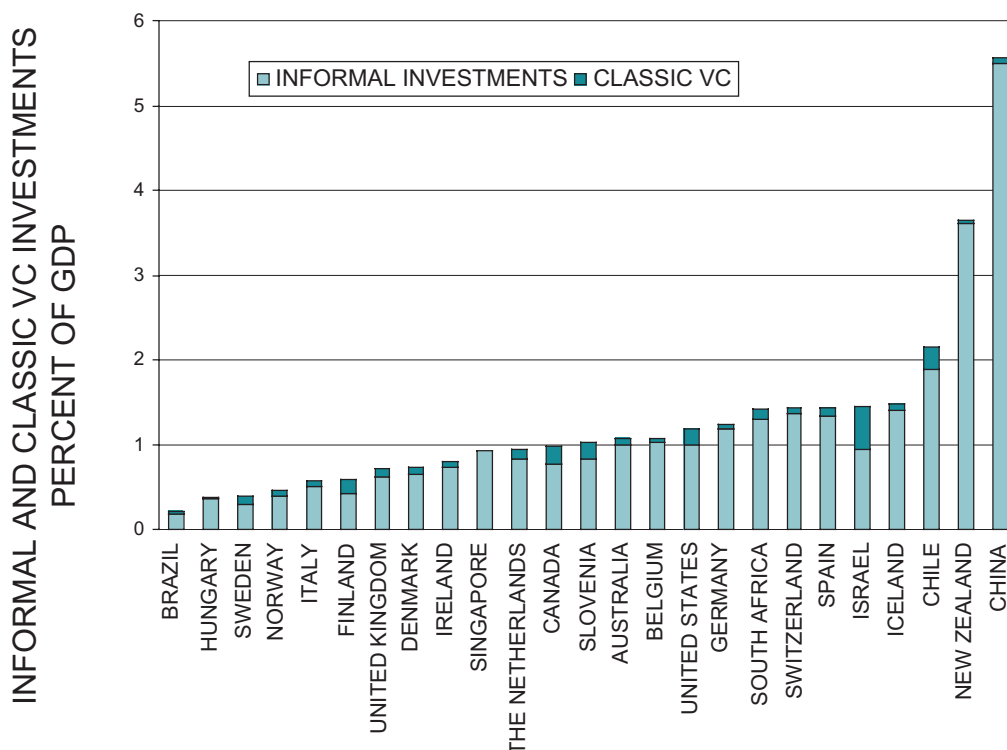


Relative Impact of Informal and Venture Capital Financial Support

The relative importance of informal investment and venture capital to entrepreneurship overall is demonstrated in Figure 32. It shows that in every nation, the amount of

informal investment is greater than the amount of classic venture capital invested domestically in 2002. The proportion of the total investment that was classic venture capital ranged from 0.8% in China to 35.1% in Israel; the median was 8.0%.

FIGURE 32 - DOMESTIC INFORMAL AND CLASSIC VENTURE CAPITAL INVESTMENTS AS A PERCENT OF GDP: SELECTED GEM COUNTRIES



Classic venture capital comprises investments in seed, early, start-up, and expansion stage companies.

Informal Investing Is Crucial

One of the most important findings from the GEM studies is that grassroots financing is a crucial ingredient for an entrepreneurial society. Before the GEM studies, almost all research on informal investments focused on business angels who invest comparatively large sums of money in entrepreneurial ventures with the potential to become substantial companies. It is probable that studies of investments by business angels misses not only—as expected—micro-companies that are destined to stay tiny, but also many—perhaps most—companies that grow to become superstars.

For instance, according to an analysis of the Inc500 “America’s fastest growing private companies” in 2000, 16% started with less than \$1,000, 42% with \$10,000 or less, and 58% with \$20,000 or less (Inc., 2000). It is very unlikely that companies starting with \$20,000 or less received seed money from business angels. True, when both seed and post-start-up rounds of investment are combined, 12% of the 500 companies received financing from business angels. But looked at another way, 88% of “America’s (500) fastest growing private companies” never received financing from business angels. In contrast, 33% of the same 500 companies raised start-up capital “by tapping assets of family and friends.”

Fewer than 0.01% of nascent entrepreneurs launch their new ventures with formal venture capital or business angel investments. But in most developed nations, formal venture capitalists get a disproportionate amount of attention from policy makers, whereas informal investors—other than business angels—are almost ignored. Therefore, it seems as if public policy initiatives aimed at various sources of seed-stage financing are inversely related to their importance for nascent entrepreneurs raising funds to launch their ventures.

Classic Venture Capital

Since the mid-1990s, venture capital has grown rapidly as most of the GEM nations strived to emulate the impact that classic venture capital was having on the United States economy. It has happened before. At the end of the 1960s when the United States was enjoying a boom in classic venture capital; and again at the start of the 1980s as the rest of the world marveled at the success of the personal computer industry and the emerging biotech sector in the United States. Unfortunately, in both instances it turned out to be a false dawn. Returns on classic venture capital outside the United States were disappointing and classic venture capital floundered. One of the principal reasons for the failure of classic venture

capital in Europe at the start of the 1990s was the failure of the secondary markets after the general stock market crash of October 1987. The launch of the Unlisted Securities Market in London, the Second Marché in Lyon, the Marché Hors-Côté in Paris, the Mercato Restretto in Milan, and the Secondary Market in Brussels have been significant contributors and enabling factors for the introduction of venture capital in those European countries in the early 1980s.

This is because they provided ready markets for floating the Initial Public Offerings (IPOs) of venture-capital-backed companies. Unfortunately, those European secondary markets, unlike the NASDAQ in the United States, did not recover and they withered, which left European venture capitalists without their favorite and bountiful exit route from their investments: IPOs.²²

In the late 1990s, markets for IPOs in Europe started to prosper, especially the AIM in the United Kingdom, but just as in the United States since 2001, it is again very difficult to float venture-capital-backed IPOs in Europe, consequently classic venture capital returns have fallen, and investments have declined. Again, it demonstrates that classic venture capital cannot do well without a robust IPO market.

Women and Entrepreneurship • Pia Arenius and Maria Minniti

Across the 41 GEM countries, about 7 in every 100 women 18-64 are involved in business start-ups; for men it is about 12 per 100. As shown previously in Figure 14, in most countries, women participate in entrepreneurship at about two-thirds the rate of men. In no country the female TEA rate exceeds that of men. Also, the correlation among the overall measure of entrepreneurial activity for men with the overall measure for women is 0.96 (highly statistically significant), suggesting that women are influenced by many of the same factors that affect men in participating in entrepreneurial activity.

Although entrepreneurial behavior for both men and women is influenced by similar factors, there is not a perfect correspondence. Further, the participation of women in entrepreneurial activity varies significantly across the GEM countries, ranging from 1.6 per 100 in Croatia to 25.7 per 100 in Venezuela. This suggests that some differences may be present in the entrepreneurial processes across genders. As discussed above, the level of wealth in a country seems to have a systematic impact on various measures of start-up activity: TEA overall, TEA opportunity and TEA necessity. This pattern is so strong as to suggest that the factors affecting the start-up processes may take a different form in rich compared to poor countries.

In order to explore the different nature of the causal factors affecting female participation in start-ups, the sample of 41 countries was divided

into a rich and poor group. The same procedure used above, reflecting the patterns in Figure 23, is employed in this analysis. Countries in the sample are divided into two groups: wealthy countries with a per capita GDP (adjusted by PPP in 1999) of at least US\$21,000 and poorer countries with per capita GDP (adjusted by PPP in 1999) between US\$1,000 and US\$20,000.

The analysis of the socio-economic role of women often begins with their level of education, participation in the labor force, and involvement in public life. These variables, in turn, depend on a country's level of development and income distribution. The level of female involvement in starting a new business is, of course, influenced by many factors, although the significance of the correlations as well as the direction of causality are not always clear; these factors may vary for different types of countries. A number of aspects of women's role in these two types of countries are worthy of attention.

Indicators of the educational status of women as related to start-up activity are reviewed in the top three rows of Table 20. One major index is illiteracy, as two-thirds of the world's 876 million illiterates are women, and the number of illiterates is not expected to decrease significantly in the next 20 years.²³ In poor countries, there exists a positive correlation between all women (and men) TEA rates and the percentage of illiterate women. For the same group of countries, there is also a negative correlation between all TEA indices for women and the number of women enrolled in primary and secondary education.

**TABLE 20 - FACTORS ASSOCIATED WITH VARIATIONS IN NATIONAL ENTREPRENEURIAL ACTIVITY
AMONG WOMEN FOR WEALTHY AND POOR COUNTRIES**

	Year	Notes	Wealthy Countries (n=19)			Poor Countries (n = 22)		
			Women TEA Overall	Women TEA Opportunity	Women TEA Necessity	Women TEA Overall	Women TEA Opportunity	Women TEA Necessity
National Educational Aspects								
Illiterate females (Percent, 15 yrs and older)	2000	1	--	--	--	0.39*	0.58**	0.50**
Females Enrolled in Primary Education (Percent)	2001	1	-53*	-55**	-75***	-21	0.03	-21
Females Enrolled in Secondary Education (Percent)	2001	1	0.05	0.02	-0.2	-48*	-40+	-50*
National Institutional Environment, Income Distribution								
Real per capita GDP	2002	2	0.13	0.23	-0.17	-48*	-31+	-61**
Unofficial economy as percent of GDP	2002	3	-0.09	-0.24	-0.22	0.34+	0.12	0.20
Government employment as percent of total employment	2000	4	-0.2	0.01	-49*	-44*	-48*	-23
Employers social security contributions as percent of GDP	2001	5	-0.28	-0.31	-0.18	-34+	-50*	-28
Share of total income by bottom 20% of households	1990-2000	6	-37+	-40*	-68**	-40*	-31	-40*
Share of total income by top 20% of households	1990-2000	6	0.09	0.13	0.59**	0.34+	0.27	0.35
Participation in Labor Force, Public Decision Making Roles								
Female labor force participation/male labor force participation ratio	1999	7	0.19	0.24	-0.36+	-28	-60***	-57**
Female labor force participation/male labor force participation ratio	2001	8	0.29	0.33+	-0.24	-19	-31+	-32+
Parliament seats, percent held by women	2000	9	0.28	0.26	-0.26	-24	0.14	0.24
Legislators, senior officials, & managers, percent women	2000	9	0.18	0.25	0.24	-11	-22	-60**
Professional and technical workers, percent women	2000	9	0.17	0.25	0.21	0.06	0.08	-35+
National Economic Sector Emphasis: Women								
Female labor force: percent in agriculture	2001	10	0.01	-0.6	-0.23	0.41*	-31	-12
Female labor force: percent in industry	2001	10	-33+	-42*	0.00	-39+	-53*	-54*
Female labor force: percent in services	2001	10	0.24	0.34+	0.05	-17	0.55*	0.43+
Female labor force: percent unemployed	2001	10	-0.0	-0.23	-0.05	-42*	-43*	-0.7
National Economic Sector Emphasis: Men								
Male labor force: percent in agriculture	2001	10	0.38+	0.37+	-0.05	0.65**	-12	0.19
Male labor force: percent in industry	2001	10	-21	-30	-14	-77***	-61**	-58**
Male labor force: percent in services	2001	10	-0.1	0.06	0.11	-23	0.36	0.29
Male labor force: percent unemployed	2001	10	0.03	-0.14	-0.03	-44*	-49*	-10
Sources of variables in endnotes. ⁶² One-tailed statistical significance: + = 0.10; * = 0.05; ** = 0.01; *** = 0.001.								

This suggests that entrepreneurial activity is highest in countries where more of the population cannot read and write. Previous assessments, however, make clear that it is not the illiterate that are starting the businesses in these countries, but those with the education and skills to profit from an increase in demand. These puzzling facts might be explained by considering the type of organization that can use illiterate workers profitably. Illiterate women are less able to perform in large, well-established businesses whose work rules may be difficult for them to understand and obey. Literate entrepreneurs, however, can employ such women profitably by creating small organizations with a more personal approach to managing work. The same measures for the other groups of countries, where almost everybody finishes basic education, are not useful.

Measures of national institutional environment and income distribution as related to women's start-up activity are presented in the next set of six rows in Table 20. There are a number of statistically significant correlations in the poorer countries. Among poorer countries, higher per capita GDP, greater levels of government employment, greater social security contributions, and a greater share of wealth among the poorest households appears to be associated with lower levels of start-up activity among women. A larger informal economy and a greater share of the income in the wealthiest households appear to increase overall start-up activity. Thus, in poorer countries greater economic security is associated with less opportunity and necessity entrepreneurship. This suggests that a woman's decision to start a new business is often an economic choice, which depends on the options available to her rather than a life-style choice—a voluntary decision to pursue an attractive option.

In wealthier countries, only a few significant correlations are related to women's start-up activity. A higher proportion of

government employment seems to reduce necessity entrepreneurship; a larger proportion of income found among low income households seems to depress all forms of start-ups by women, and a larger share of income among wealthy households seems to increase necessity entrepreneurship by women.

Previous assessments have shown the existence of a positive correlation between involvement in the creation of new businesses and income inequality. Perhaps the existence of such inequalities creates economic niches that can be exploited more effectively by women.

Correlations between measures of female participation in the job market, politics, and the professions with female entrepreneurial activity are provided in the middle five rows of Table 20. The proportion of women active in the economy, compared to men, seems to have different effects in rich and poor countries. In wealthy countries, it is associated with more opportunity entrepreneurship and less necessity entrepreneurship. In poor countries, however, both opportunity and necessity entrepreneurship decline as the women become more active in the labor force. An increase of women in positions of influence—in politics, organizations, or professional arenas—appears to be associated with an increase participation in opportunity start-ups in wealthy countries; but there is either no impact or a negative impact among poorer countries, particularly with regards to necessity entrepreneurship. It would appear that women in poorer countries may prefer a role in established firms and institutions if they have a choice.

This fact suggests that female entrepreneurship is not a function of the role of women in public life and that the variables influencing female entrepreneurship may be of a more material and directly economic nature.

The distribution of the labor force across different economic sectors is often used to gauge a country's development. It is in the correlations between TEA indices for women and men, and the relative distribution of women and men across sectors that differences between genders with respect to entrepreneurship become more apparent. The last two sets of rows in Table 20 shows that the proportion of women in different economic sectors has dissimilar impacts on entrepreneurial activity for rich and poor countries and often across genders.

The participation of women in agriculture (which includes forestry and fishing) seems to be associated with more female entrepreneurship in poor countries and is very similar to the patterns for men. In wealthy countries, on the other hand, the participation of women in agriculture is negatively related to entrepreneurship while that of men correlates positively with all TEA indices.

In all countries, the greater the proportion of women working in industry (construction, manufacturing, wholesale, and such), the lower the level of entrepreneurial activity. Work in services (restaurants, hotels, repair, personal services, and such), on the other hand, seems to be generally associated with an increase in female opportunity entrepreneurship in both rich and poor countries; the correlations are much greater than those for men. Finally, unemployment is associated with reduced levels of female (and male) entrepreneurial activity for both rich and poor countries, but the impact is much greater among the poor countries. The greater the level of unemployment, the less the demand for goods and services, and the fewer the opportunities for a new start-up.

Overall, the preceding observations suggest that, for women, entrepreneurship is a journey out of poverty and toward equality. A journey that sees women employed in agriculture, then as necessity entrepreneurs in agriculture, then employed in industry, then in services and,

finally, transformed into opportunity entrepreneurs. More important, the movement of women from spectators to active participants in the economic arena mirrors the transformation of nations as they move toward higher standards of living.

Analysis of High-Growth Entrepreneurial Activity in GEM 2003 • *Erkko Autio*

Numerous empirical studies emphasize the importance of high-growth firms. According to various studies, as little as 3-5% of any given cohort of new firms may end up creating up to 80% of all new jobs.²⁴ Conversely, the great majority of all new firms typically end up creating only 1-2 jobs per firm. Thus, when looking at only the median size, the face of entrepreneurship is very much a face of self-employment.

The disproportional impact of high-growth firms makes them a natural focus of policy attention. Some have even suggested that governments should focus on "picking the winners", and focus support policies on those firms that have the greatest potential to grow. As most venture capitalists would agree, however, picking the true high-potential firms is extremely difficult.

Because high-potential new firms are so rare, there exists little empirical data on them. Even the few studies in existence have tended to study growth after the fact; that is, they are retroactive studies of firms that have already grown without the benefit of a comparison group or an assessment during their start-up phase. There have been few studies of nascent firms with ambitions for high growth. With the large data sets collected by the GEM consortium, such an analysis has now become possible.

For the analysis of high-growth firms, two new indices were created to complement the GEM indices of overall, opportunity-driven, and necessity-driven entrepreneurial activity.

First, an index was created to indicate the prevalence of start-up attempts that expected to employ more than 19 employees within five years' time. Second, an index was created for start-up attempts that: 1) expected to create 19 or more jobs within five years; 2) had any plans for export sales. Here, plans for exports are used as a sign of distinctiveness in the new firm's products and services. Such distinctiveness can be achieved, e.g., through the application of novel technologies.

Correlations between the different indices of entrepreneurial activity are provided in Table 21. While all correlations are quite strong and positive, it is noteworthy that the correlation between the TEA (necessity) and TEA (high-growth, export orientation) indices is not statistically significant. These two indices will behave quite differently also in the following analyses.

TABLE 21 - CORRELATIONS BETWEEN GEM TEA INDICES OF ENTREPRENEURIAL ACTIVITY

	TEA 2003 Overall	TEA 2003 Opportunity	TEA 2003 Necessity	TEA 2003 High-Growth
TEA High growth: 2003	0.98***	0.91***	0.94***	1.00
TEA High growth, export: 2003	0.32*	0.44**	0.13	0.26+
Two tailed significance: + p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.0001.				
Source: GEM 2003 adult population survey.				

As the next step, the various TEA indices of entrepreneurial activity were correlated against a number of indices describing each country's national research and technological development system. Altogether 46 such indices were

considered, ranging from various aspects of patenting activity, to the per capita number of scientific articles, and to the volume of investment in R&D and related personnel. The correlations of the most significant 10 factors are shown in Table 22.

TABLE 22 - CORRELATIONS BETWEEN SELECTED NATIONAL R&D SYSTEM INDICES AND GEM TEA INDICES²⁵

	Source	TEA 2003 Overall	TEA 2003 Opportunity	TEA 2003 Necessity	TEA 2003 High-Growth	TEA 2003 High-Growth, Exports
Export of information technology goods, % of GDP: 2001	1	-.11	0.06	-.33+	-.06	0.28
Internet Service provider charges, US\$: 2001	2	0.35+	0.20	0.52**	0.27	-.14
Internet users per capita: 2002	3	-.31	-.01	-.71***	-.43	0.33+
Computer power per capita (MIPS per 1000 persons) 1998	4	-.12	0.13	-.57**	-.21	0.38+
Number of scientific publications per 100,000 persons: 1999	5	-.24	0.03	-.60***	-.36+	0.19
Total R&D personnel (full time equivalent) per 1,000 persons: 2001	6	-.34+	-.12	-.62***	-.45*	0.04
Quality of technology transfer between universities and firms: 2003	7	0.08	0.28	-.29	-.00	0.38+
Number of US patents to individuals per 100,000 persons: 2000	8	0.18	0.28	-.13	0.12	0.40+
Quality of patent and copyright protection enforcement: 2003	9	-.34+	-.07	-.68***	-.39*	0.25
Personal computers per 1,000 persons: 2001	10	-.19	0.07	-.57**	-.32	0.27
Two tailed significance: + p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.0001.						

TABLE 23 - CORRELATIONS BETWEEN NATIONAL ENTREPRENEURIAL FRAMEWORK CONDITIONS INDICES AND TEA INDICES

National Expert Assessments	TEA 2003 Overall	TEA 2003 Opportunity	TEA 2003 Necessity	TEA 2003 High-Growth	TEA 2003 High-Growth, Exports
Availability of funding for new and growing firms	-.51**	-.40*	-.60***	-.55**	0.53
Government policy emphasis on new and growing firms	-.36+	-.26	-.45*	-.38*	0.08
Government policy: ease and speed of government regulations	-.12	-.04	-.22	0.14	0.28
Quality of government support programs for new and growing firms	-.58***	-.46**	-.68**	-.63**	-.04
Primary and secondary educational system supports entrepreneurial skills and attitudes	-.08	0.09	-.31+	-.14	0.35+
Post-secondary educational system supports entrepreneurial skills and attitudes	-.10	0.01	-.26	-.12	0.35+
R&D transfer from research to new and growing firms	-.40*	-.28	-.53**	-.45*	0.12
Availability and quality of commercial services for new and growing firms	-.19	-.04	-.38*	-.23	0.34+
Market changes and dynamism	0.02	-.12	0.18	0.06	-.33+
Market openness for new and growing firms	-.12	0.02	-.31+	-.16	0.39*
Quality of physical infrastructure	-.24	-.15	-.35+	-.23	0.34+
Entrepreneurial orientation in national culture	0.12	0.20	-.04	0.09	0.38+
Availability of opportunities for new and growing firms	-.04	0.08	-.20	-.11	0.26
Population-level entrepreneurial capacity	0.12	0.19	-.03	0.07	0.28
Population-level entrepreneurial motivation	0.20	0.18	0.19	0.23	0.26
Quality of intellectual property protection	-.56***	-.38*	-.74***	-.60**	0.22
Support for female entrepreneurship	-.07	0.02	-.22	-.10	0.31+
Two tailed significance: + p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.0001.					
Source: GEM 2003 adult population survey.					

There are several interesting patterns in Table 22. With only a few exceptions, the correlations for TEA 2003 (necessity) and TEA 2003 (high-growth and exports) indices with national R&D system indicators tend to point to the opposite directions. In general, the *more* sophisticated the national R&D system, the *less* there appears to be necessity-driven entrepreneurial activity. On the other hand, a *more* sophisticated national R&D system appears associated with higher levels of high-growth, export-oriented entrepreneurial activity.

This may suggest that necessity-driven entrepreneurial activity would be predominantly a developing-country phenomenon, whereas high-growth, export-oriented activity may be more prevalent in highly developed countries.

The different TEA indices of entrepreneurial activity were also compared against the GEM indices describing various national entrepreneurial framework conditions. The data describing national entrepreneurial

framework conditions was collected by means of questionnaire interviews of national experts of entrepreneurial activity. The correlations are shown in Table 23. As can be seen, a similar pattern emerges as in Table 22; whereas the correlations between TEA (necessity) and entrepreneurial framework conditions are mostly negative and significant, the correlations between TEA (high-growth, export orientation) are mostly positive and about half are statistically significant. It may thus be that government policy can make a difference for the creation of growth-oriented entrepreneurial activity.

The TEA indices were also compared against various indices of national competitiveness and national economies, see Table 24. The pattern is repeated again: whereas the TEA (necessity) index appears, in general, negatively correlated with national competitiveness indices, the TEA (high-growth, export orientation) index appears positively correlated with these. There are two interesting instances, however, for which all TEA indices point to the same direction.

TABLE 24 - CORRELATIONS BETWEEN NATIONAL COMPETITIVENESS AND ECONOMIC ACTIVITY INDICES AND TEA INDICES²⁶

	Source	TEA 2003 Overall	TEA 2003 Opportunity	TEA 2003 Necessity	TEA 2003 High-Growth	TEA 2003 High-Growth, Exports
Global Competitiveness Index: 2001	1	-.31	-.04	-.68***	-.39*	0.25
World Competitiveness Yearbook Index: 29003	2	-.20	0.01	-.51**	-.25	0.27
Government Quality Index: World Competitiveness Yearbook 2003	3	-.08	0.13	-.41*	0.13	0.40*
Index of Economic Freedom: 2003	4	0.12	-.15	-.53**	0.22	-.41*
Government taxes as % of GDP: 2003	5	-.11	-.24	0.14	-.04	-.24
Prevalence of unregistered market activity in the economy: 2003	6	+.11	-.17	0.53**	0.21	-.48*
Average working yours per worker, 2000	7	0.43*	0.29	0.54**	0.46*	0.48*
GDP per capita, US\$: 2003	8	-.50**	-.32+	-.69***	-.58***	0.06
Two tailed significance: + p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.0001.						

First, the tax-intensity of the national economy (greater taxes as percent of GDP) appears negatively correlated with all forms of entrepreneurial activity. Second, greater average working hours appear *positively* correlated with all forms of entrepreneurial activity.

In summary, the analysis presented above suggests that entrepreneurship may come in many forms, not all of which behave in a similar fashion. The correlation analysis presented in Table 24 suggests that necessity entrepreneurship appears to be more prevalent in less developed economies, which have less sophisticated national R&D systems. On the other hand, high-growth and export-oriented entrepreneurial activity appear to be more prevalent in more developed economies. Even though nothing can be said about causality, the several positive correlations between high-growth, export-oriented activity and the various indicators of national entrepreneurial framework conditions should make encouraging reading for entrepreneurial policymakers. While these correlations do not prove that policies work, the

correlations are similar to those reported for the 2003 GEM assessment with 37 countries.²⁷ Finally, the correlations reported in Table 24 appear to suggest that more competitive national economies may be more apt in producing high-growth, export-oriented entrepreneurial companies.

Overall, the correlation analysis reported here provides encouraging, even if tentative, evidence that high-growth entrepreneurial activity may be different from other forms of entrepreneurial activity, in the sense that it may respond to different national and economic conditions. Because of the limitations of the GEM data, and the elusive nature of high-growth entrepreneurial activity, further data collection and analysis is required to provide stronger evidence on this. Nevertheless, given the important role of high-growth entrepreneurial activity for job creation, the analysis reported here gives a strong signal of the importance of further research into this important phenomenon.

Government Policies, Programs, and Entrepreneurship • *Paula Fitzsimons, Sinead Murray, Colm O’Gorman and Frank Roche*

The results of the GEM research for 2003 contain a wake-up call for many departments and development agencies expected to stimulate and support entrepreneurship.

Governments frequently want to know if their policies and actions have a beneficial effect on encouraging entrepreneurial activity. Recognizing this interest on behalf of policy makers, two new questions were introduced into the GEM national expert questionnaire in 2003. Over 1,300 national experts and entrepreneurs were asked for their opinion or completed a questionnaire regarding the extent to which (1) government policies and (2) government programs within their country, aimed at supporting new and growing firms, were effective.

With very few exceptions, the national experts considered that this was not the case. In no country did the majority of the experts and entrepreneurs consulted consider either a “Completely True” (5) or even a “Somewhat True” (4) to be the appropriate response to items related to either of these topics; they were asked to use a five point scale from “Completely True (5)” to “Completely False (1).”²⁸ Overall, the experts and entrepreneurs in 25 countries considered both government policies and government programs, specifically targeted at new and growing firms, to be ineffective.

Only in Ireland (average score of 3.6), the US (3.4), Thailand (3.4), Singapore (3.2), China (3.2), and Hong Kong (3.0) did the experts indicate a response that was not negative. But even in these countries, the experts’ response indicates an ambivalent or neutral stance.

Government Policy

Probing aspects of government policy in relation to new and growing firms in more detail, GEM interviewers asked the experts a range of questions focused on obtaining their opinion as to their national government’s degree of support and orientation toward new and growing firms. The questions ranged across public procurement policies, relative priority given to entrepreneurship at national and local level, speed of access to necessary permits and licences, relative tax burden and the consistency and predictability with which government regulations and taxation are applied. The answers to these questions contain many stark messages for governments, particularly those that consider themselves committed to encouraging entrepreneurship.

- Only in Finland (4.0) and Thailand (4.3) do the majority of national experts consulted consider that support for new and growing firms is a high priority at national government level. In no country is it clearly perceived to be a priority at local government level.
- In no country did the majority of national experts consider that government policies (e.g., public procurement) consistently favor new firms. The most positive was Spain (3.0) where the national experts were certainly not convinced that this was the case.
- Only in Iceland (4.5) did the experts and entrepreneurs consulted consider that new and growing firms could obtain the permits and licences that they needed in about a week.
- The majority of national experts in 21 of the 31 countries consider that the amount of taxes in their countries are a burden for new and growing firms. Hong Kong (4.4) is the only clear exception. In a further nine countries, the national experts are ambivalent.

- Hong Kong again stands alone in the opinion of the national experts and entrepreneurs consulted (4.6) for the predictable and consistent manner in which taxes and other government regulations are applied to new and growing firms.

Government Programs

In general, government programs, aimed at supporting new and growing firms, are not considered effective by the 1,300 national experts and entrepreneurs consulted as part of the GEM research in 2003. In no country did the experts give a clearly positive response and in those five countries in which the experts were most positive about the effectiveness of government programs, their response was very tempered. Ireland (3.5) was first among these countries, closely followed by the United States (3.3) and Thailand (3.3), with Germany (3.2) and Singapore (3.1) completing this group.

The experts and entrepreneurs were questioned about a range of aspects related to government support programs for entrepreneurs. Their answers to these questions were very forthright and challenge national governments to improve their support services to entrepreneurs.

For example, many countries have adopted a policy of establishing science parks and business incubators as a means of supporting new and growing firms. In the majority of countries the national experts were neutral or clearly negative in their view that these were providing effective support to entrepreneurial firms. Only in France did the experts clearly believe that these were providing effective support to new and growing firms in their country (4.1).

No national group of experts clearly believed that within their respective country:

- A wide range of government assistance for new and growing firms could be obtained through contact with a single agency,
- There was an adequate number of government programs,
- Staff working for government agencies were competent and effective, and
- Anyone who needed help from a government program for a new or growing business could find what he or she needed.

In terms of the latter point, the experts were not asked to clarify whether an entrepreneur's failure to find help from a government program within their country was because no such programs existed within their country or whether the failure to find the appropriate help was as a result of an information deficit. Whichever the correct explanation, it is a serious situation.

In countries in which the policy makers are convinced that the appropriate programs are in place, the urgent need is to bridge the information gap. No country clearly stands out, however, in the view of its experts and entrepreneurs, as offering a best-practice solution to this problem, as their responses are almost all unequivocally negative. Only in four of the 31 countries were the national experts ambivalent in response to this question and, even in these countries, the response was more negative than positive. For example, the Germans, who were the most positive group of national experts in this respect, were very circumspect in their response (3.1) to this question.

Contribution of GEM

GEM research informs national governments on an annual basis how entrepreneurial their country is or is not. GEM research can also assist policy makers in two ways to meet the challenge of improving the effectiveness of their efforts to support entrepreneurship within their countries:

1. A great many of the national experts consulted in each country made specific suggestions about ways in which government policy could be made more effective in supporting entrepreneurial activity in their own countries. In total over 545 separate recommendations were made in this specific area by the national experts consulted. For the most part, these are focused on the following:
 - Improving the fiscal environment for entrepreneurial firms
 - Improving the content and administration of government policies
 - Reducing and simplifying the bureaucratic paperwork for start-ups

The national experts made a range of other recommendations regarding other framework areas under governmental influence, which influence the quality of the entrepreneurial environment within individual countries. Those, for which suggestions for improvement were mentioned most frequently, were education and training (440 separate recommendations), government programs (296 separate recommendations) and the access and availability of finance (237 separate recommendations). More

details of the individual recommendations will be presented in the individual national reports.

2. Instances where the GEM research clearly shows that the experts and entrepreneurs consulted within a particular country are positive that particular aspects of government policy or program implementation work well, countries can learn from each other. For example, the following would appear to warrant further investigation by countries wishing to make improvements in these areas:
 - The fiscal and regulatory environment within Hong Kong
 - The manner in which science parks and business incubators provide support to entrepreneurial firms in France
 - The comprehensive nature of the Intellectual Property (IP) legislation in the United States, Canada, Hong Kong, and Switzerland, and the effective manner in which that legislation is enforced in the United States in particular

A great deal of resources is being focused on the encouragement and support of entrepreneurial activity within individual countries. It should be of major concern to these national governments that neither their policies nor their programs are considered effective by an informed group of national experts within their country. The challenge going forward for these countries is to refocus their efforts on the real needs of entrepreneurs so that their efforts in this area can be seen to be effective.



The fifth GEM assessment of national entrepreneurship has benefited from the substantial expansion of the range of countries and improvements in data collection and analysis. In addition, the year-to-year stability in national entrepreneurial activity allows consolidation of data and increased precision of all measures. It is now possible to have high confidence in many of the basic patterns and more detailed assessments for a wider range of topics.

How Much Do Countries Differ in Entrepreneurship?

National entrepreneurship is often associated with three mechanisms that facilitate national economic adjustment and growth: creation of new businesses, reorientation of existing businesses toward entrepreneurial goals, and the redirection of the national institutional infrastructure. The TEA index provides a harmonized measure of the prevalence of individuals involved in the creation of new firms, and the FEA index provides a measure of the entrepreneurial emphasis among existing firms. The development of harmonized measures of new firm creation and existing firm entrepreneurship represents one of the major technical accomplishments of the GEM program.

There is substantial variation on both measures. The prevalence of those in the working years, 18-64 years of age, involved in firm creation varies from three to 30 per hundred individuals. Across the GEM countries it is about one in ten persons. The entrepreneurial emphasis among existing business reflects a similar range of activity, from 2-3 percent of firms (or jobs associated with entrepreneurial firms) to over 25%.

Based on both factors, the GEM countries can be placed in five categories, with five high on both measures, seven low on both measures, and the largest group—14—intermediate on both measures.

These differences appear to be substantial. It is quite a different situation where one in 33 working adults are creating new firms compared to a situation where it is three in 10—and even higher among young adult men. In the latter case, firm creation is a widely accepted feature of the work experience. In a country where pursuing business start-ups is rare, it is likely to be considered a career choice with unknown complications and or outcomes, avoided because of the uncertainty involved. The same can be said of existing firms adapting their competitive strategies to focus to pursue new products and growth. It is easier to change when many others are pursuing similar adjustments.

What Are the National Consequences of Differences in Entrepreneurship?

There are substantial national consequences for differences in entrepreneurial activity. To start with, across the GEM countries about 300 million are involved in trying to start almost 200 million new firms. Another 57 million are the owner-managers of 37 million established firms attempting innovation and growth. This is accompanied by about US\$360 billion of informal investments and US\$32 billion in venture capital investments in new ventures. As a global phenomenon, entrepreneurial activity absorbs a substantial amount of human and financial resources.



CONCLUSIONS AND IMPLICATIONS

About one-third of business start-ups seem to result in an actual business, one that produces goods or services and creates jobs.²⁹ The new firms created in the GEM countries appear to be responsible for 2% to 15% of the current jobs. This is, moreover, an annual contribution to the job pool offsetting job losses.

Finally, there continues to be positive, statistically significant relationships between the TEA index and national economic growth in subsequent years. These relationships continue to be stronger for necessity entrepreneurship. Poor countries with higher levels of necessity entrepreneurship appear to be growing faster than rich countries where the overall level of entrepreneurship—mostly opportunity based—is somewhat lower. The relationship of existing firm entrepreneurship to subsequent national economic growth is also positive, but more modest. There are few countries with relatively high levels of entrepreneurship that do not have relatively high levels of economic growth.

What Accounts for National Differences in Entrepreneurship?

At the individual level, there are very clear patterns related to pursuit of entrepreneurial activity. Those 25-44 are more likely to be involved; men are generally twice as active as women. Educational attainment and relative household income affect the motivations for entrepreneurship more than the actual level of participation. Those with more education and from households with higher incomes are more likely to pursue opportunity entrepreneurship. Those with less education and from poor households are more likely to pursue entrepreneurship out of necessity. The personal context has a major impact on the pursuit of entrepreneurship; those that know other entrepreneurs, see good opportunities for starting a business, and think they know how to start a business are 10 times more likely to be active than those that do not have positive responses to these

three items. Perception of general cultural and social support for entrepreneurship also has a major impact, but less than a positive personal situation. Women in rich countries appear to be involved in entrepreneurship out of choice; women in poor countries appear to prefer jobs to firm start-ups as career options.

At the national level, this issue is complicated by the two basic types of countries. Almost half of the GEM countries have high levels of income. This includes all G-7 countries, most OECD countries, and most of Western Europe; countries where most entrepreneurship is opportunity based. Almost half of the GEM countries have low levels of income; these are developing countries where up to half of entrepreneurship reflects choices based on necessity.

The factors affecting relatively wealthy countries are considered in three groups, considered in terms of relative impact.

- Reduced levels of national wealth devoted to social and economic security payments and a positive personal entrepreneurial context.
- A relatively younger work-force, net immigration, recent economic growth, higher relative levels of personal wealth, longer work hours and large agricultural sector, less onerous business registration procedures, greater income inequality, higher levels of post-secondary school enrollment, and national cultural support for entrepreneurship.
- The least important factors would seem to be higher levels of general national competitiveness reflected in a well-established national R&D system, less long-term unemployment, and a reduced scope of government managed activities in the economy.

CONCLUSIONS AND IMPLICATIONS

Major features affecting the less wealthy countries can also be placed in three groups, with some similarities to the previous group.

- The most important factors that seem to lead to more entrepreneurship are lower national wealth, higher prevalence of young adults in the workforce, and high levels of personal contextual support for entrepreneurship.
- The second group of factors associated with more entrepreneurship includes a larger agricultural sector, reduced social and economic welfare benefits, more corrupt and inefficient government that does not recognize property rights, less participation in secondary and post-secondary education, and national cultural support for entrepreneurship.
- The least influential group of factors would be general national competitiveness—as reflected in other measures such as the Global Competitive Index, a reduced scope of government managed activities in the economy, and more onerous registration procedures.

What Can Governments Do to Affect the Level of Entrepreneurship?

There are at least three confounding factors associated with a response to this issue. First is identification of those factors with a significant impact on entrepreneurship that governments can and cannot affect. The second is a distinction between general strategies that may affect all types of business start-ups, compared to those that may increase high growth new firms. Finally, there are distinctions related to different types of entrepreneurial activity—start-ups compared to more entrepreneurship among existing firms.

Factors Governments May Be Able To Affect:

There are four general factors associated with government functioning and policies that

may be adjusted to increase the level of entrepreneurial activity: the scope of economic activity managed by the government, the extent of the social and economic welfare schemes, costs of new firm registration, and overall government functioning and protection of individual property rights.

- In countries where the government is directly responsible for a larger share of economic activity, there is less entrepreneurship. Reducing the scope of government—privatizing various activities—may provide more opportunities for start-ups and firm entrepreneurship.
- More elaborate social and economic benefit programs appear to be associated with a reduction in entrepreneurial activity, either because it reduces the supply of necessity entrepreneurs—those that feel forced into starting a firm—or because it increases the overhead cost burdens on firms that might hire more individuals.
- Barriers to registration—the cost in time and money to formally register a business—appear to reduce firm entrepreneurship and start-up activities in wealthy countries. For these countries it is an obvious candidate for adjustment. Such barriers appear to have no effect in poor countries with massive amounts of necessity entrepreneurship; reductions in these barriers would decrease the scope of the “informal”—unregistered—economy.
- Improving government functioning—more efficient, less corruption, better protection of property rights—does not appear to be associated with more entrepreneurship. In wealthy countries there is little variation in government functioning, while in poor countries the level of necessity entrepreneurship that operates outside the formal structures may be unaffected by government policies.

CONCLUSIONS AND IMPLICATIONS

That is not to suggest, however, that governments should not be more effective and efficient. The arguments for an efficient, unbiased system of allocating property rights to encourage investments in firms and facilitate asset based financing of new firms are powerful (de Soto, 2000).

In general, then, at least four government actions may increase the level of entrepreneurship: reduction in the scope of government activity, reduction in social and economic benefit programs, reduction in barriers to firm registration, and improvements in government effectiveness.

Factors Governments May Not Be Able To Affect:

Among those factors associated with higher levels of entrepreneurship that are difficult for a government to affect are a greater proportion of young adults in the workforce, long-term employment, the relative presence of an agricultural sector, levels of income inequality, and the scope and nature of the post-secondary educational infrastructure.

- A shortage of native born young adults, under 40 years of age, reflects decisions made decades earlier by previous young adults. One response to a shortage of potential entrepreneurs would be to encourage older adults to pursue entrepreneurship. Another might be to encourage greater in-migration of younger adults—although it is not clear if they would pursue opportunity entrepreneurship.
- While a reduction in long-term unemployment may increase entrepreneurship, it seems likely that this would be pursued for its own benefit, rather than as a policy to increase business start-ups.

- The relative size of the agricultural sector in the national economy is, of course, a consequence of past and future business opportunities and the cultural history of a country; it is unlikely to be a major focus of entrepreneurship policy.
- Higher levels of income inequality are associated with more entrepreneurship in wealthy countries; creating more inequality is unlikely to be a popular government program. On the other hand, tolerating or accepting greater income disparity may encourage more entrepreneurship.
- There is evidence that less participation in secondary education programs is associated with more start-up activity; particularly in poor countries. But there is no question that to encourage teenagers to leave school and start new businesses may not be a good overall strategy to encourage national economic growth.
- Perhaps more relevant in terms of education policy is the positive impact of greater post-secondary educational activity on increases in opportunity entrepreneurship. These institutional sectors reflect massive public investments in research universities and involve thousands of highly trained individuals. While the impact on entrepreneurship is important, it can take decades for major effects to occur.

While there are a number of factors related to differences in the level of entrepreneurship that may be difficult for governments to affect, there remain a number of other options that could be both politically viable and have a positive impact.

Affecting Individual Factors

The review of factors affecting individual decisions to pursue entrepreneurship suggests several influential features. First is the personal context—knowing an entrepreneur, perceiving a good business opportunity, and having confidence in personal skills to implement a business has a major impact on the decision to pursue a start-up or encouraging a business owner to adopt an entrepreneurial strategy for an existing business. The latter two—identifying business opportunities and having confidence in the personal skills to implement a business—may be enhanced through education and training. Knowing an entrepreneur is related to both the prevalence of entrepreneurs in the community and the scope of the individual's social networks.

There is also evidence that a general perception of positive cultural support for entrepreneurship encourages more people to choose an entrepreneurial career option. Government efforts to portray starting a business as a desirable career, providing respect and appreciation for successful entrepreneurs, and encouraging positive media coverage of entrepreneurship may contribute to a perception of cultural acceptance of entrepreneurship.

The positive impact of education, however, goes beyond programs specific to entrepreneurship. Those with more education are more likely to pursue opportunity entrepreneurship, which may have more overall benefits for national growth.

Women and Entrepreneurship

Women in poor and rich countries appear to enter entrepreneurship under different circumstances. In poor countries they seem to emphasize necessity entrepreneurship and come from lower income households where they cannot find jobs. For these women, education in the basics of business operation would seem to be critical, perhaps along with improved general education. In wealthy countries, women appear to

emphasize opportunity entrepreneurship and respond to the same influences as men.

Financial Support

Perhaps the most critical issue regarding financial support is the overwhelming amount of funds provided through informal investments, approximately ten times greater than that provided to domestic start-ups by the venture capital sector. As a critical factor allowing entrepreneurs to implement start-ups, informal investments may justify more careful attention from government policy makers, who currently give substantial emphasis to the venture capital sector.

High-Growth Entrepreneurship

The presence of high-growth entrepreneurship, most reflecting efforts to exploit major new business opportunities, is clearly a somewhat different process than the turnover and market replication activities that represent the vast majority of start-up and entrepreneurial firms. It is no surprise to find more high-growth, export oriented firms—which are only a fraction of all new start-ups—concentrated in countries with sophisticated national research and development infrastructure.

Commentary

Perhaps the most dramatic results from the material provided by the national experts in the GEM countries is the universal perception that most governments are not very effective in promoting or assisting entrepreneurship. It is not clear if this is because governments—as a group—are focusing on the wrong policies or programs, are ineffective in their efforts, or are just not devoting enough resources to affect the ongoing entrepreneurial activity. Even in those countries with the lowest levels of entrepreneurial activity, the numbers of individuals and firms are often in the millions, or hundreds of thousands. Most government programs count their “client contacts” in the thousands.

CONCLUSIONS AND IMPLICATIONS

In the United States, the 1,100 federally coordinated Small Business Development Centers served 625,000 individuals in 2002. In 2003 about 20 million persons were involved in business start-ups, suggesting that over 95% did not have contact with this one program—although they may have been helped by hundreds of other federal, state, and local programs.³⁰ In most countries, existing government programs are missing the majority of those engaged in entrepreneurial activity and the counts of client contacts is a very misleading indicator of the actual volume of activity.

As a major feature of the national economic order, increasing the scope of entrepreneurial activities may have substantial benefits, but significant changes could take decades. There are two critical components. First is the sheer mass of the human activity involved, both in terms of human and economic resources. If, for example, France would like to double the TEA rate, from 2.4% to 4.8%, then an additional 900,000 people must get involved in the entrepreneurial process. This might require an additional 0.5% of the annual GDP to be devoted to informal start-up financing. The massive amount of resources involved is one reason for the high level of year-to-year consistency in the TEA indices.

No major social shift is likely to happen unless the citizens are convinced that it is “good for the country.” The change in preparation for and completing a work career with a greater emphasis on entrepreneurship implies a change in well-established norms and values. Most national governments, particularly in democratic societies where the government officials are chosen by the citizens, have a system of programs and policies that reflects widely accepted norms and values. The optimum level of entrepreneurial activity will depend on the tolerance of the citizens for work and career uncertainty, acceptance of income disparity, as well as the mix of economic sectors most appropriate for the nation’s competitive advantage in global markets.

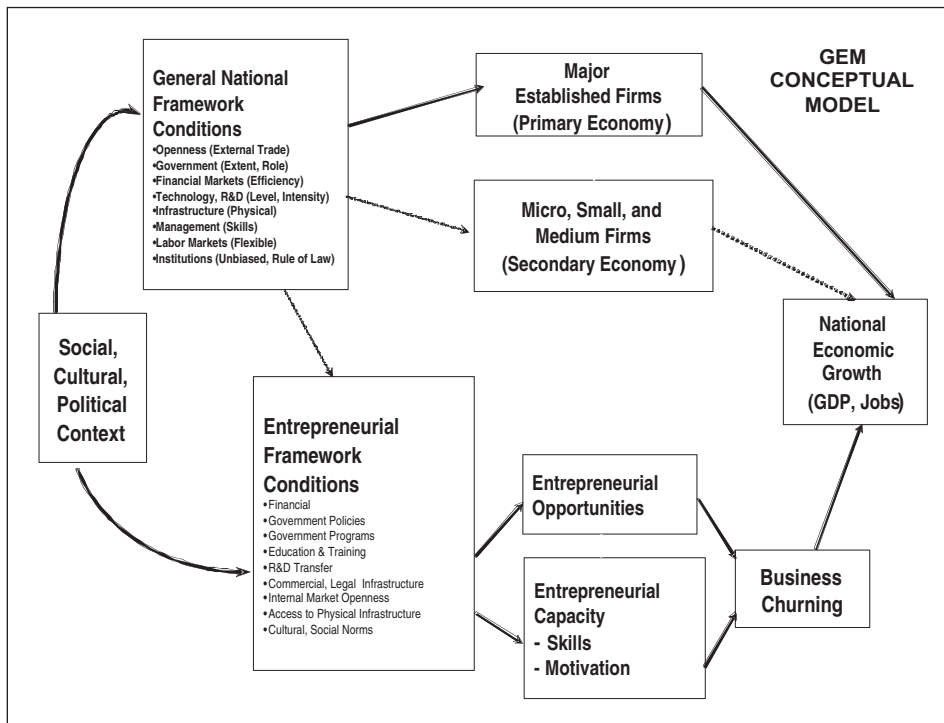
One thing is certain, reaching the optimum mix of entrepreneurial adaptation and established firm stability will be more efficient if private sector mechanisms have a major impact on the adjustments. Centralized planning and formal coordination on a national basis is not well suited to timely reactions to dynamic global changes. National leaders are in the best position to observe the relative emphasis on entrepreneurship and encourage their citizens to help their country adapt and adjust through entrepreneurial career choices; they are not well positioned to micro-manage the details of the adaptation process.

Appendix I – Conceptual Model

The GEM research program was derived from an underlying conceptual model summarizing the major causal mechanisms affecting national economic growth. The model has three primary features. First, it is entirely focused on explaining why some national economies are growing more rapidly than others. Second, it assumes that all economic processes take place in a relative, 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. They are illustrated in Figure AI.1.

The first major mechanism, as illustrated in the top portion of Figure AI.1, 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.

FIGURE AI.1 - GEM CONCEPTUAL MODEL



The second primary mechanism driving economic growth, as illustrated in the lower portion of Figure AI.1, emphasizes the role of entrepreneurship in 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—their major customers—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.

Appendix II – Data Collection - 2003

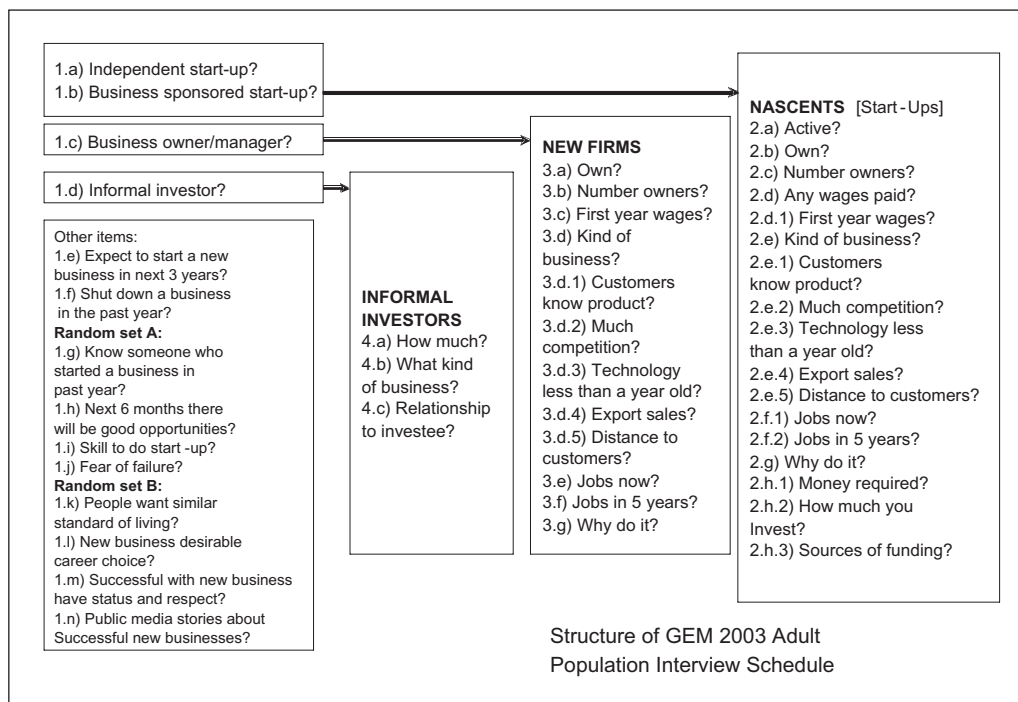
The GEM assessments are based on four major types of data; three are unique to this research program. Most significant are surveys of representative samples of the adult populations completed in each GEM 2003 nation by

indigenous commercial survey research firms. From 1,000 to 22,000 adults in each country were interviewed between May and December 2003 about their participation in and attitudes toward entrepreneurial activity. All interviews were done in the languages appropriate to the respondents in each country. In most countries this is completed by phone and based on a random selection of households with land line phones; in countries where such phone service is infrequent, a geographically stratified sampling procedure is used to locate households and respondents for face-to-face interviews. An overview of the interview schedule is provided in Figure AII.1. It should be noted that all respondents answered at least ten items in the initial screening, portrayed in the column of boxes to the left. They were provided with the first six (1.a to 1.f) and then either randomly selected Set A or Set B. Those providing a positive response to any of the first four items—those active in start-ups or businesses—were asked both Set A and Set B questions.

The research firms and sample sizes in each country are listed at the end of this appendix in Table AII.1. While most survey firms provided samples weighted to represent the population in the country using national population data, the age and gender structure of all samples was compared to the US Census International Database projections for 2003. All respondent weights were adjusted so each national sample matched this standardized source of population structure estimates. Dr. Steve Hunt and Professor Paul Reynolds have managed the development of the adult population interview data sets.

Detailed national assessments were provided by personal interviews conducted with up to 150 national experts in each GEM 2003 country, over 800 in total. They provide their own personal assessments of the unique features of their country’s situation to national team members—the conversations are in the language(s) of the country.

FIGURE AII.1 - OVERVIEW OF 2003 ADULT POPULATION SURVEY INTERVIEW SCHEDULE



One-page summaries of these interviews, in English, were provided to the coordination team, where the material was standardized and coded using common procedures for all countries.

The third source of data is a ten-page standardized questionnaires completed by these experts at the completion of the interview—also in the language of the country. These questionnaires are the source of over a dozen highly reliable scales used to assess and compare features of the national situation that cannot be measured in any other way. Professor Erkkö Autio has managed

this aspect of the data collection since the inception of the program.

The final, or fourth, source of data is assembled from standard international sources to provide a harmonized description of a wide range of basic features—economic growth, population structure, educational attainment, institutional and technical infrastructure, and the like. A special effort has been made to assemble data on the activities of the venture capital sector in each country since 2000; Professor William Bygrave has been responsible for this feature of the program.

TABLE AII.1 - GEM 2003 ADULT POPULATION SURVEY FIRMS AND SAMPLE SIZES

Country	Survey Firm	Total Sample	Interview
Argentina	MORI Argentina	2,004	Phone
Australia	Australian Social Research Infrastructure Network	2,212	Phone
Belgium	Taylor Nelson Sofres	2,184	Phone
Brazil	Instituto Bohilha	2,000	Face-to-face
Canada	Market Facts	2,028	Phone
Chile	Adimark	1,992	Phone
China	Synovate	1,607	Face-to-face
Croatia	Taylor Nelson Sofres	2,000	Face-to-face
Denmark	IFKA	2,008	Phone
Finland	MDC	2,005	Phone
France	AC Nielsen	2,018	Face-to-face
Germany	Taylor Nelson Sofres EMNID	7,534	Phone
Greece	Metron Analysis	2,000	Phone
Hong Kong	Consumer Search	2,000	Phone
Iceland	Gallop - Iceland	2,011	Phone
Ireland	Landsdown Research	2,000	Phone
Italy	Nomesis	2,003	Phone
Japan	SSRI	2,001	Phone
The Netherlands	Survey@	3,505	Phone
New Zealand	DigiPoll	2,009	Phone
Norway	TNS	2,040	Phone
Singapore	Joshua Research Consultants	2,008	Phone
Slovenia	Gral-Iteo	2,012	Phone
South Africa	AC Nielsen ZA	3,262	Face-to-face
Spain	Opinometre	7,000	Phone
Sweden	SKOP	2,052	Phone
Switzerland	Taylor Nelson Sofres	2,003	Phone
Uganda	MUBS/Aclaim Africa Ltd.	1,035	Face-to-face
United Kingdom	IFF	22,010	Phone
United States	Market Facts & Opinion Research	9,195	Phone
Venezuela	Dataanalysis	2,000	Face-to-face
Total		101,738	

A special survey completed in Shen Zehn China was not used in any analysis and is not included in this count.

APPENDIX

APPENDIX III - GEM ADULT POPULATION SURVEYS - 1998-2003: COUNTRIES AND SAMPLE SIZES

Country	1998	1999	2000	2001	2002	2003	All Years
Argentina			2,000	2,000	1,999	2,004	8,003
Australia			2,089	2,072	3,378	2,212	9,751
Belgium			2,029	2,038	4,057	2,184	10,308
Brazil			2,000	2,000	2,000	2,000	8,000
Canada	1,004	1,003	2,003	2,016	3,014	2,028	11,068
Chile					2,016	1,992	4,008
China					2,054	1,607	3,661
China: ShenZhen						2,040	2,040
Chinese Taipei (Taiwan)					2,236		2,236
Croatia					2,001	2,000	4,001
Denmark	1,131	1,002	2,005	2,022	2,009	2,008	10,177
Finland	1,000	1,009	2,002	2,001	2,005	2,005	10,022
France		1,002	2,012	1,992	2,029	2,018	9,053
Germany	997	1,008	2,010	7,058	15,041	7,534	33,648
Greece						2,000	2,000
Hong Kong					2,000	2,000	4,000
Hungary				2,000	2,000		4,000
Iceland					2,000	2,011	4,011
India			2,002	2,011	3,047		7,060
Ireland			2,021	2,000	2,000	2,000	8,021
Israel		1,001	2,621	2,095	2,004		7,721
Italy		1,001	1,998	2,002	2,001	2,003	9,005
Japan		1,383	1,249	2,000	1,999	2,001	8,632
Korea			2,003	2,008	2,015		6,026
Mexico				2,014	1,002		3,016
The Netherlands				2,013	3,510	3,505	9,028
New Zealand				2,000	2,000	2,009	6,009
Norway			2,042	2,874	2,036	2,040	8,992
Poland				2,012	2,000		4,012
Portugal				2,000			2,000
Russia				2,000	2,019		4,019
Singapore			2,120	2,004	2,005	2,008	8,137
Slovenia					2,030	2,012	4,042
South Africa				5,283	6,993	3,262	15,538
Spain			2,019	2,016	2,000	7,000	13,035
Sweden			2,036	2,056	1,999	2,052	8,143
Switzerland					2,001	2,003	4,004
Thailand					1,043		1,043
Uganda						1,035	1,035
United Kingdom	1,013	1,014	2,032	5,528	16,000	22,010	47,597
UK: Scotland			2,056	2,133			4,189
UK: Wales			2,010	2,000			4,010
United States	1,001	1,018	2,006	3,012	7,059	9,195	23,291
Venezuela						2,000	2,000
Total	6,146	10,441	46,365	76,260	116,602	103,778	359,592

Appendix IV—Estimating the Sample Variance for the Firm Entrepreneurial Activity Index • *Dr. Charles Palit, Computer Assisted Survey Sampling, Inc.; Madison, WI*

Computing sampling error often requires complex and time-consuming procedures. Many sample error estimation procedures are specific to the sample design. In most circumstances more complex sample designs require more complex sample error estimation procedures. The data set under consideration contains data from 40 countries. Each country has its own sample design, and while many are similar the designs are certainly not identical. Fifteen countries in the data set either use area probability samples or a mix of area probability and telephone samples. The remaining countries used telephone sampling.

To simplify the variance estimation task we chose to use a procedure for estimating the sample error for the Firm Entrepreneurial Activity (FEA) index that is independent of the sample design. The procedure is based on dividing the sample into random groups and using estimates of the FEA index from each of these random groups to produce a sample error estimate. In doing so we are following the procedures developed by Mahalanobis (1939, 1944, 1946), Hansen Hurwitz and Madow (1953), and Deming (1956). Mahalanobis and Deming used independent random sub-groups imbedded in the sample design, but Hansen, Hurwitz, and Madow describe similar procedures for random sub-groups formed after the design has been implemented. The procedures originally developed by these analysts are now widely used to create variance estimates.

An estimate of the sampling error for the FEA index is produced for each country. The basis of the process is to divide the country's sample

into two random subgroups; compute a value for the FEA index for each subgroup, and then to use these two values to produce an estimate of the variances of the mean of the two values. (The square root of the difference between the means is squared and divided by two; the average computed for all pairs of estimates from each partitioning of the full sample.) While this "mean" may not be exactly equal to the estimate of the FEA index based on the pooled sample it can be expected to be quite close and the variance of the mean provides an approximation to the variance for the pooled sample estimate of the FEA index. The actual variance estimate used is arrived at by repeating this process 50 times for each country using a different random partition each time, and then taking the average value of the 50 estimates of variance.

This procedure is expected to work well for the countries using telephone samples based on random selection of household phone numbers. It is not expected to perform as well for those countries using area probability samples, since for the area probability samples the partitioning into groups takes place without the advantage of knowing the structure of the sample design. As a result the procedure may not adequately reflect the effect of clustering on sampling error. To compensate for this we multiply the variance estimate from the area probability samples by 1.4. The 15 countries affected are: Argentina, Brazil, Chile, China, France, Hungary, India, Japan, Mexico, Poland, Russia, South Africa, Thailand, Uruguay, and Venezuela.

Appendix V—Estimating Annual Job Creation with GEM Adult Population Survey Data •

Paul Reynolds

Estimates of the total number of new jobs created by new firms identified in the GEM adult population surveys were completed as follows:

1. Adult population survey files were consolidated for years 2000, 2001, 2002, and 2003; a total of 336,852 cases (275,603 from 18-64 years of age) representing 41 countries are included.
2. The three important variables were measured and transformed in comparable fashion across the four years of data collection: individual prevalence of new firm ownership/management (BABYBUSO), the number of new firm owners (OMOWNERS), and the number of current jobs provided, not counting the owners (OMNOWJOB).
3. Weights for all countries were centered (set to an average value of 1) for each of the four years. No adjustment for variation in sample size across years was included.
4. The number of owners was truncated to a maximum of 10 by resetting 0.8% (N=72) of the values to 10; previous maximum was 400.
5. For 1,115 cases where the number of business owners was missing, it was set to the average of number of business owners for the respective country.
6. The number of jobs provided was truncated to a maximum of 100 by resetting jobs created to 100 for 1.2 % (N=100) of the cases with values greater than 100; previous maximum was 50,000.
7. Total employment was computed by adding the number of owner managers and jobs created on a case by case basis.
8. The mean (average) and standard error (of the mean) for each country was computed for the prevalence of new firm owners (BABYBUSO) in the population, the number of owners (BBOWN_10), and the total

employment (BBTOT_EM) associated with the business entity.

9. The number of new business entities in each country was computed by multiplying the prevalence of business owners by the number of persons 18-64 years in the population for 2003 and then dividing this number by the average number of business owners. The 95% confidence intervals were computed using both sets of standard errors.
10. The total employment created was computed by multiplying the number of business entities by the average total employment; the 95% confidence interval was calculated based on the total employment standard errors.
11. Annual employment provided was computed by multiplying the estimated counts by 12/21 (baby businesses were defined as those paying salaries for more than three months and were an average of 18 months old at the time of the interview).
12. The percentage of employment provided annually by new firms was based on total labor force (public and private jobs plus unemployed) estimates for the year 2002 from International Labour Organization Web site (<http://laborstat.ilo.org>, accessed 13 March 2003).

NOTES:

- 1) Data for Ireland for 2000 was deleted from the analysis.
- 2) No attempt was made to adjust for full- or part-time employment or part-time participation of firm owners in the management of the business.
- 3) No adjustments were made for private employment in each country.
- 4) Where the lower range of the confidence intervals resulted in negative number, it was reset to 0.1%.
- 5) Current, reliable figures for private sector employment were not available for India and Croatia.



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- ¹ About 1 in 20, 5%, appear to be simultaneously involved in both phases through association with two different business entities.
- ² Technically this is the 95% confidence interval, computed as the average (mean) plus or minus the standard error of the mean times 1.96.
- ³ The average across years was computed for countries with multiple years, even when the sample size varied from year to year. The standard error was estimated by combining all cases to compute a multi-year average. As the data for Ireland for 2000 was known to be gathered incorrectly, it was not included in the Ireland assessment.
- ⁴ A more detailed discussion of the development of the Firm Entrepreneurial Index is available on the public side of the GEM Consortium Web site.
- ⁵ Owner-managers were generally under represented in the sample and received case weights greater than one, so the weighted number of businesses represented is somewhat more than would be expected.
- ⁶ For the 40 GEM countries in this analysis, these two measures have a correlation of 0.72. The Chronbach's Alpha for the index, a measure of reliability, is 0.84. This is very acceptable by current measurement standards.
- ⁷ The confidence interval was estimated by splitting the sample into two random subsets and computing the index for each subset. The difference between the values can be used to estimate the standard error of the mean. To provide more stability to the estimate, the procedure was completed 50 times and the average estimate of the representative sample computed for each countries. Because of very small samples of business firms, data for France, Poland, and Russia should be treated with special caution. Dr. Charles Palit of Madison, Wisconsin helped develop the estimation procedures. See Appendix IV.
- ⁸ These two indices may be combined to create a single measure to characterize entrepreneurship in each country. One might be to develop an overall index based on some algebraic combination of the two indices. The estimated reliability (Chronbach's Alpha) for such an index would be 0.56, consistent with the low correlation of 0.42. This reliability is rather low by contemporary standards and suggests that the two national measures of entrepreneurial activity are capturing a different aspect of the phenomena.
- ⁹ The classification breaks were based on an examination of the actual distributions of the two indices and selecting those breaks where a large gap in the distribution would allow for three groups of countries of about the same size.
- ¹⁰ The US Census World Population is available over the Internet and estimates the world human population at 6.3 billion on 1 December 2003.
- ¹¹ This effort to estimate the total number of business entities may be unique. As the GEM estimate encompasses all business activity—registered or unregistered, with and without employees—great care would be required to make comparisons with national counts of businesses based on administrative data.
- ¹² Total of all persons above a specified age that are either employees (public or private) or self-employed taken from International Labor Organization (ILO) LABORSTA data based accessed on 13 March 2003, (<http://laborsta.ilo.org>). Data for Denmark and Croatia was missing for 2002 so 2001 figures were used as estimates.
- ¹³ Because a small number of cases with extreme negative values for national economic growth were having a major effect on the overall relationship, all negative growth values were reset at three standard deviations below the mean value for that year. Ireland TEA rate data for 2000 considered suspect and not included in the assessment.
- ¹⁴ United Nations. International Standard Classification of All Economic Activities, Revision 3. (<http://esa.un.org/unsd/cr/registry/regist2.asp>).

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- ¹⁵ As the sample sizes are generally similar across countries, this increases the impact of respondents from large countries (China, India) so they have more impact on the patterns; those from Iceland and Singapore have less.
- ¹⁶ When measured at the individual level, the Chronbach Alpha was 0.49 for 2001 data, 0.48 for 2002 data, and 0.45 for 2003 data. But when developed at the national level and based on the average values to the three items, the Chronbach Alpha was 0.74 for 2001, 0.76 for 2002, and 0.76 for 2003—an acceptable level of reliability.
- ¹⁷ At the national level this data was only available for 2003, and the Chronbach Alpha for the 40 countries was 0.53. Clearly marginal in terms of acceptability as a reliable index.
- ¹⁸ The FEA index is measured on 40 countries for the 2002-2003 period, the TEA overall is the average for one to four years for the 2000 to 2003 period, and the TEA opportunity and necessity measures are the average for one to three years from 2001 to 2003.
- ¹⁹ Notes to sources of variables for Tables 17 and 18.
- Note 1)* World Economic Forum (2002), Global Competitiveness Report 2001-2002. Oxford, UK: Oxford U Press, Table 2.
- Note 2)* Institute for Management Development (2002). World Competitiveness Yearbook, Geneva, Switzerland, Institute for Management Development, pg. 30.
- Note 3)* Heritage Foundation (2002). Index of Economic Freedom 2002. Washington, DC: Heritage Foundation and New York City: Wall Street Journal.
- Note 4)* US Bureau of the Census, International Programs Center, International Database (IDB), (<http://blue.census.gov/ipc/www/idbnew.html>) (Table 094, accessed 26 March 2003).
- Note 5)* US Bureau of the Census, International Programs Center, International Database (IDB), (<http://blue.census.gov/ipc/www/idbnew.html>) (Table 008, accessed 26 March 2003).
- Note 6)* World Economic Outlook Database (September 2003). International Monetary Fund (<http://www.imf.org/external/pubs/ft/weo/2003/02/data/index.htm>); average of five years growth in Constant, inflation adjusted, National Currency Units.
- Note 7)* World Economic Outlook Database (September 2003). International Monetary Fund (<http://www.imf.org/external/pubs/ft/weo/2003/02/data/index.htm>); Real GDP, constant prices adjusted for Purchasing Power Parity, US\$, per capita for 2002 total population estimates, see note 4 for source.
- Note 8)* World Economic Outlook Database (September 2003). International Monetary Fund (<http://www.imf.org/external/pubs/ft/weo/2003/02/data/index.htm>); Real GDP, constant prices adjusted for Purchasing Power Parity, US\$, per employed person. Employment based on International Labor Organization data base available at <http://laborsta.ilo.org/> (accessed 13 March 2003). Missing values for 2002 replaced with values for 2001.
- Note 9)* Percentage of total labor force unemployed, 1999-2001. World Bank (2003) World Development Indicators, Washington, DC: International Bank for Reconstruction and Development, Table 2.4.
- Note 10)* Percentage of total labor force unemployed for more than one year, 1999-2001. World Bank (2003) World Development Indicators, Washington, DC: International Bank for Reconstruction and Development, Table 2.4.
- Note 11)* Government employment as percentage of all employment. The World Competitiveness Yearbook (2002); Institute for Management Development, Geneva, Switzerland: Chart 1.4.05).
- Note 12)* Collected tax revenue as percent of GDP. The World Competitiveness Yearbook (2002); Institute for Management Development, Geneva, Switzerland: Chart 2.2.01).

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- Note 13)* Informal economy as percent of Gross National Income, 2002 (<http://rru.worldbank.org/doingbusiness/Snapshot/Reports/Economycharacteristics.aspx>, accessed 24 October 2003).
- Note 14)* Average number of hours worked per year. The World Competitiveness Yearbook (2002); Institute for Management Development, Geneva, Switzerland: Table 3.2.05).
- Note 15)* Percentage of males working in agriculture sector, 1998-2001. World Bank (2003) World Development Indicators, Washington, DC: International Bank for Reconstruction and Development, Table 2.3.
- Note 16)* Employers social security contribution rate as percent of GDP. The World Competitiveness Yearbook (2002); Institute for Management Development, Geneva, Switzerland: Chart 2.2.05).
- Note 17)* Total social security costs as a percent of GDP, computed. The World Competitiveness Yearbook (2002); Institute for Management Development, Geneva, Switzerland: Tables 2.2.05 and 2.2.10)
- Note 18)* Corruption index developed by world bank, 1 = cleanest. Reported in Djankov, S., F. De Silanes, and A. Shleifer (2001), The Regulation of Entry NBER Working Paper S7892 (<http://papers.nber.org/papers/W7892>).
- Note 19)* Measure of government effectiveness. Reported in Djankov, S., F. De Silanes, and A. Shleifer (2001), The Regulation of Entry NBER Working Paper S7892. (<http://papers.nber.org/papers/W7892>).
- Note 20)* Measure of protection of property rights, reported in Djankov, S., F. De Silanes, and A. Shleifer (2001), The Regulation of Entry NBER Working Paper S7892. (<http://papers.nber.org/papers/W7892>).
- Note 21)* No. of procedures to be completed to register a new firm, reported in Djankov, S., F. De Silanes, and A. Shleifer (2001), The Regulation of Entry NBER Working Paper S7892 (<http://papers.nber.org/papers/W7892>).
- Note 22)* No of days to complete new firm registration procedure, reported in Djankov, S., F. De Silanes, and A. Shleifer (2001), The Regulation of Entry NBER Working Paper S7892 (<http://papers.nber.org/papers/W7892>).
- Note 23)* Total cost as a percent of GDP per capita to register a new firm, reported in Djankov, S., F. De Silanes, and A. Shleifer (2001), The Regulation of Entry NBER Working Paper S7892 (<http://papers.nber.org/papers/W7892>).
- Note 24)* Index of Income Inequality (Gini) measured 1995 through 2002. World Bank (2002). World Development Indicators 2002. International Bank for Reconstruction and Development Washington, DC. Table 2.8.
- Note 25)* Percentage of total income provided to top 10% divided by total income provided to the bottom 10% in the population. World Bank (2002). World Development Indicators 2002. International Bank for Reconstruction and Development Washington, DC. Table 2.8.
- Note 26)* Total students enrolled in secondary education programs as a percent of the total number of age appropriate students in the population. World Bank (2002). World Development Indicators 2002. International Bank for Reconstruction and Development Washington, DC. Table 2.12.
- Note 27)* Total students enrolled in post-secondary education programs as a percent of the total number of age appropriate students in the population. World Bank (2002). World Development Indicators 2002. International Bank for Reconstruction and Development Washington, DC. Table 2.12.
- Note 28)* Computed from GEM adult population surveys, described in Section F.

²⁰ The actual question is "Have you, in the past three years, personally provided funds for a new business started by someone else, excluding any purchases of stocks or mutual funds? Those that answer "yes" are asked how much they have invested in the past three years. The average value of this investment is divided by three to get an estimated annual rate.

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- ²¹ About 30 out of a total of 5,904 reported investing over US \$2,000,000 in the past three years. As it is unclear if they understood the question, they represented a tiny proportion of the informal investors, and these cases dramatically skew the results in some countries with small samples. They are deleted from the analysis.
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- Note 2) Real GDP per capita 2002 (current prices) in US\$ per person. World Economic Outlook Database (September 2003).
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- Note 4) IMD (2002). The World Competitiveness Yearbook, 2002. Institute for Management Development, Switzerland, Chart 1.4.050.
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- Note 9) United National Development Program (2002) Human Development Report, Table 3, Gender Empowerment Measure, see also <http://hdr.undp.org/reports/default.cfm>.
- Note 10) World Bank (2003). World Development Indicators 2003. International Bank for Reconstruction and Development Washington, DC. Table 2.3.
- ²⁴ Birch 1979; Birch et al. 1997; Davidsson et al. 1994; Kirchoff, 1994; Storey, 1994; NCE 2001.
- ²⁵ Sources for Table 22.
- Note 1) Institute for Management Development (2002). World Competitiveness Yearbook: 2002. Lausanne, Switzerland: Institute for Management Development, WCY 2002, Table 4.2.18.
- Note 2) World Bank (2002) World Development Indicators: 2002. Washington, DC: International Bank for Reconstruction and Development, Table 5.10. 2001 data.
- Note 3) World Bank (2002) World Development Indicators: 2002. Washington, DC: International Bank for Reconstruction and Development, Table 5.10. 2001 data.
- Note 4) Institute for Management Development (1999). World Competitiveness Yearbook: 1999. Lausanne, Switzerland: Institute for Management Development, Table 5.14.
- Note 5) OECD (2003) OECD Science, Technology and Industry Scoreboard: 2003 Edition Paris, France: OECD, A.13, page 73.
- Note 6) Institute for Management Development (2002). World Competitiveness Yearbook: 2002. Lausanne, Switzerland: Institute for Management Development, Table 4.3.07.
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Note 8) US Patent and Trademark Office, Calendar Year Statistics (<http://uspto.gov/web/offices/ac/ido/oelp/taf/reports.htm>).

Note 9) Institute for Management Development (2003). World Competitiveness Yearbook: 2003. Lausanne, Switzerland: Institute for Management Development, Table 5.14.

Note 10) World Bank (2002) World Development Indicators: 2002. Washington, DC: International Bank for Reconstruction and Development, Table 5.10.

²⁶ Sources for Table 24.

Note 1) World Economic Forum (2002). Global Competitiveness Report 2001-2002. Oxford, UK: Oxford U Press, Table 2.

Note 2) Institute for Management Development (2002). World Competitiveness Yearbook: 2002. Lausanne, Switzerland: Institute for Management Development, pg. 30.

Note 3) Institute for Management Development (2002). World Competitiveness Yearbook: 2002. Lausanne, Switzerland: Institute for Management Development, pg. 33.

Note 4) Heritage Foundation (2003). Index of Economic Freedom: 2003. Washington, DC.: Heritage Foundation and New York City: Wall Street Journal, pg. 22. (Interval scores used, not rank order.)

Note 5) Heritage Foundation (2003). Index of Economic Freedom: 2003. Washington, DC.: Heritage Foundation and New York City: Wall Street Journal.

Note 6) Heritage Foundation (2003). Index of Economic Freedom: 2003. Washington, DC.: Heritage Foundation and New York City: Wall Street Journal. Black market scores.

Note 7) Institute for Management Development (2001). World Competitiveness Yearbook: 2001. Lausanne, Switzerland: Institute for Management Development, Table 3.02.05.

Note 8) World Economic Outlook Database (September 2003). International Monetary Fund, <http://imf.org/External/pubs/ft/weo/2003/02/data/index.htm> (accessed 14 October 2004).

²⁷ Autio, Erkki (2002). "Science Technology and High Potential Entrepreneurship" in Reynolds, Paul D. and others, Global Entrepreneurship Monitor: 2002 Executive Report. Kansas City, MO: Ewing Marion Kauffman Foundation, pp 19-20.

²⁸ The key informants were invited to respond by selecting within a five-point scale as follows: 1: Completely False, 2: Somewhat False, 3: Neither True nor False, 4: Somewhat True, 5: Completely True.

²⁹ These are the major findings from longitudinal studies of those entering into and completing the firm start-up process, such as the US Panel Study of Entrepreneurial Dynamics (<http://projects.isr.umich.edu/PSED>).

³⁰ Data on the US Small Business Development Centers from <http://www.sba.gov/sbdc/> on 9 February 2004; see Table 6 for the estimated number of individuals active in entrepreneurship in each country.



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