



GLOBAL ENTREPRENEURSHIP MONITOR

2002 SUMMARY REPORT

30 November 2002

PAUL D. REYNOLDS • WILLIAM D. BYGRAVE • ERKKO AUTIO • MICHAEL HAY

Babson College
Ewing Marion Kauffman Foundation
London Business School

PREFACE

GEM is a unique, unprecedented effort to describe and analyze entrepreneurial processes within a wide range of nations. By so doing, GEM focuses on one of the most fundamental forces driving and carrying economic change, one that has hitherto remained elusive for researchers and policy makers due to lack of reliable, internationally comparable data. Even though many influential economists 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, policy makers have lacked the means of shaping effective and appropriate policies to nurture this phenomenon for national economic benefit.

The distinctive benefits of the GEM measures are that they are the only ones in existence to provide a direct measure of individual-level, grassroots entrepreneurial processes. This represents a revolutionary development in data collection because individual persons are the primary agents of entrepreneurial activity. No other measure exists that could 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 policy makers on how to foster the development of entrepreneurial human capital.

This is the fourth annual GEM cross-national assessment of the level of entrepreneurship. The program has expanded from 10 countries in 1999, 21 in 2000, and 28 in 2001, to 37 for 2002. National teams operate in 34 of these countries; their host institutions, membership, and sponsors are listed below. Another 10 national teams are expected to join the GEM consortium for 2003.

GEM is a collaborative effort in every sense of the word, in terms of financial resources [national teams provide 60% of the financial resources] and intellectual resources as well as design and analysis. A GEM-wide assessment and planning meeting is held early in January of each year. The 10-person coordination team is assisted by more than 150 scholars from 34 countries. The primary data collection associated with the adult population surveys is done by survey research firms in each country, which involved 37 more sets of trained professionals.

The research program would not have developed without the support and encouragement of the three institutions that have played a key role 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 provided substantial start-up funding and continues to be a major source of financial support and strategic advice.

As GEM 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 Reynolds
Coordinating Principal Investigator

SUMMARY

HOW MUCH ENTREPRENEURIAL ACTIVITY IS THERE IN 2002?

About 286 million individuals, or 12% of 2.4 billion adults 18-64 years of age in the 37 GEM 2002 countries, were either actively engaged in the start-up process or managing a business less than 42 months old in Spring 2002. As these countries include 62% of the world population, this would be about 460 million worldwide.

DOES THE LEVEL OF ENTREPRENEURIAL ACTIVITY VARY BETWEEN COUNTRIES?

Yes, and substantially—from less than 3 per 100 adults 18-64 years of age in Japan, Russia, and Belgium to more than 18 per 100 in India and Thailand. This range is slightly greater than found among the 21 GEM 2000 countries and the 28 GEM 2001 countries.

The level of entrepreneurial activity was lowest in the developed Asian countries (Chinese Taipei, Hong Kong, Japan, and Singapore) and Central Europe (Russia, Croatia, Poland, Slovenia, and Hungary), slightly higher in EU Europe plus Israel, substantially higher in former British Empire Anglo countries (Australia, Canada, New Zealand, South Africa, and the US), higher still in Latin America (Argentina, Brazil, Chile and Mexico), and highest in the developing Asian countries (China, Korea, India, and Thailand).

DOES THE LEVEL OF ENTREPRENEURIAL ACTIVITY CHANGE OVER TIME?

Yes. There has been a 25% drop in the level of entrepreneurial activity among the GEM 2001 countries in 2002. There was little change among GEM 2000 countries in the GEM 2001 assessment. These shifts appear to reflect global stability in economic growth from 2000 to 2001 and a universal decline in the rate of national economic growth from 2001 to 2002.

Among the G-7 countries, which have a slowly growing labor force of over 400 million, there has been a decline in entrepreneurial participation from 45 million in 2000, and 40 million in 2001, to 30 million in 2002.

Despite the drop in entrepreneurship among most GEM 2001 countries in 2002, the relative standings among countries are quite stable over time.

WHY DO PEOPLE BECOME ENTREPRENEURS?

About two-thirds, 174 million in the GEM 2002 countries, are voluntarily pursuing an attractive business opportunity; about one-third, 107 million, are engaged out of necessity—they can find no suitable work; the remainder (3 million) report other motives. Opportunity entrepreneurs dominate in the developed countries; necessity opportunities are up to half of those involved in the developing countries.

WHO ARE THE ENTREPRENEURS?

While some factors—age and gender—have a very stable relationship to entrepreneurial activity, the actual decision to pursue a new firm start-up reflects a complex interaction between the individuals' personal background, family and personal context, and trends in regional or national economic situation. Most involved in entrepreneurship are working and have completed their basic education.

Across the world, women are about one-third of those involved in entrepreneurial activity, but the processes leading to participation may be different than for men. In developed countries, women

are more involved where there is equality in career opportunities; in developing countries, women's participation may reflect the lack of jobs and an inadequate education.

WHAT TYPES OF BUSINESSES ARE BEING CREATED?

All economic sectors are reflected in the types of new businesses that are being developed. Most, 265 million or 93%, consider their business to be a replication of existing business activity. A small minority, 20 million or 7%, expect their new firms to create a significant new market niche or economic sector. A very small proportion expect to create new market niches, provide 20 or more jobs in five years, and have exports outside their own country. Most high-potential new ventures reflect the pursuit of opportunity, although many necessity entrepreneurs hope for high impact of their firms.

WHAT IS THE RELATIONSHIP BETWEEN ENTREPRENEURSHIP AND ECONOMIC GROWTH?

Evidence continues to accumulate that the national level of entrepreneurial activity has a statistically significant association with the national level of economic growth in the following years. The precise nature of the causal mechanisms has not yet been determined.

HOW DO NATIONAL EXPERTS ASSESS THE ENTREPRENEURIAL CLIMATE IN THEIR OWN COUNTRIES?

A thousand national experts provided their views on the unique features of the entrepreneurial sectors in their countries. Three of nine features—government policies, cultural and social norms, and education and training—are among the aspects generally discussed as both a national strength and weakness. Presence of financial support for start-ups was given intermediate attention as either a strength or weakness. National experts seemed to be working with and well-informed about similar types of entrepreneurial sectors in countries with quite different levels of development. None were well-informed about necessity entrepreneurship.

HOW IMPORTANT IS VENTURE CAPITAL AND INFORMAL FINANCE?

The aggregate amount of 2001 venture capital for start-up activities was US\$ 59 billion for the 37 GEM 2002 countries; informal funding provided to new firms was US\$ 298 billion, five times greater. Venture capital is provided to a very small number of new start-ups, less than one in 10,000. Country averages range from US\$ 400,000 to US\$ 12 million of venture capital per start-up. Informal funding is provided by 1 to 7% of the adult population to tens of millions in the start-up process—but in very small amounts. Country averages range from US\$ 100 to US\$ 30,000.

The majority of new firms appear to be implemented with substantial family support.

WHAT CAN GOVERNMENTS DO TO PROMOTE ENTREPRENEURSHIP?

Government policies and procedures should reflect an acceptance of the continuing change among populations of businesses. Barriers to business creation or terminations could slow the processes of economic adaptation and could reduce growth.

In addition to universal basic education, all entering the work-force should be aware of the basic issues and procedures associated with the development of a new business.

Countries with higher levels of investment in scientific and technical infrastructures seem to have higher proportions of high-potential new firms.

Attention to facilitating the informal flow of funds to new ventures, equal to the attention given to facilitating the formal venture capital sector, may be justified.

Major changes in a country's relative standing in terms of entrepreneurial activity will not be easy or occur quickly. The national acceptance and popularity of entrepreneurial career options appears to change, but slowly.

TABLE OF CONTENTS

Preface	iii
Summary	v
Table of Contents	ix
List of Figures	xi
Lists of Tables	xiii
National Teams and Sponsors	xv
A Introduction	1
B Scope of Activity	3
C Comparisons among countries	9
D Types of Entrepreneurial Activity	13
E Temporal Stability	19
F Association with Economic Growth	23
G Who Are Entrepreneurs?	27
Age and Gender	27
Conditions Leading to Entrepreneurial Action	29
H Entrepreneurial Contextual Structure	43
Expert Observations	45
Expert Assessments of Entrepreneurial Framework Conditions	47
I Financial Support	51
Venture Capital Flows in 2001	51
Informal Investments	53
J Special Topics	57
National Technology and Science Base and High-Potential Entrepreneurship	57
Women and Entrepreneurship	63
Family-Sponsored Entrepreneurship	67
K Commentary	73
Implications for Policy	75
Appendix I: Model	77
Appendix II: Data Collection, National Survey Firms	79
Endnotes	83

LIST OF FIGURES

Figure 1	Total Entrepreneurial Activity Prevalence Rate by Country: 2002	9
Figure 2	Total Entrepreneurial Activity Prevalence Rate: Countries by World Region 2002	10
Figure 3	Global Distribution of Labor Force: GEM 2002 Countries	12
Figure 4	Global Distribution of Entrepreneurially Active Persons: GEM 2002 Countries	12
Figure 5	Opportunity Total Entrepreneurial Activity Prevalence Rate by Country: 2002	16
Figure 6	Necessity Total Entrepreneurial Activity Prevalence Rate by Country: 2002	16
Figure 7	Total Entrepreneurial Activity Prevalence Rate by Country: 2001 and 2002	19
Figure 8	Entrepreneurial Activity and Subsequent Growth in GDP: 2 year-lag	25
Figure 9	Entrepreneurial Prevalence Rates by Age, Gender, and Type of Activity: 2002	28
Figure 10	Entrepreneurial Prevalence Rates by Gender by Country: 2002	29
Figure 11	Domestic Classic Venture Capital Invested: Percent of GDP 1999-2001	52
Figure 12	Number of Companies Receiving Domestic Classic Venture Capital: 1999-2001	52
Figure 13	Amount of Domestic Classic Venture Capital Invested per Company: 2001	53
Figure 14	Informal Investor Prevalence Rates: 2001-2002	54
Figure 15	Domestic Informal and Classic Venture Capital Investments as Percent of GDP: 2002	55
Figure A-I 1	GEM Conceptual Model	78
Figure A-II 1	Structure of GEM 2002 Adult Population Interview Schedule	80

LIST OF TABLES

Table 1	Prevalence Rate of Entrepreneurial Activity and Estimated Counts: GEM 2002	4
Table 2	Correlation of TEA Index with Other Measures of Entrepreneurial Activity: 2002	5
Table 3	GEM Countries over Time: Aggregate Changes	7
Table 4	Entrepreneurial Motivation and Business Activity	14
Table 5	Average Change in Growth in GDP 1998/1999 to 1999/2000, Prior to Change in TEA Rates, 2000-2001	20
Table 6	Average Change in Growth in GDP 1999/2000 to 2000/1001, Prior to Change in TEA Rates, 2001-2002	21
Table 7	Year-to-Year Correlations of Entrepreneurial Activity	22
Table 8	Tea Index Rates and National Economic Growth	23
Table 9	Selected Socio-Demographic and Contextual Characteristics and Participation in Entrepreneurial Activity	30
Table 10A	Global Labor Force Groups by Level of Entrepreneurial Activity	32
Table 10B	Global Labor Force Groups by Level of Overall Entrepreneurial Activity and Type of Country	34
Table 10C	Global Labor Force Groups by Level of Opportunity Entrepreneurial Activity [Top 14 of 38 Groups]	36
Table 10D	Global Labor Force Groups by Level of Opportunity Entrepreneurial Activity and Type of Country [Top 14 of 38 Groups]	37
Table 10E	Global Labor Force Groups by Level of Necessity Entrepreneurial Activity [Top 15 of 54 Groups]	40
Table 10F	Global Labor Force Groups by Level of Necessity Entrepreneurial Activity and Type of Country [Top 15 of 54 Groups]	41
Table 11	Country Experts in Entrepreneurship: Selected Descriptive Characteristics	44
Table 12	Experts Emphasis on National Strengths	46
Table 13	Experts Emphasis on National Weakness	47
Table 14	Expert Questionnaire Indices	48
Table 15	Expert Questionnaire Indices and Entrepreneurial Activity: Correlations	49
Table 16	Characteristics of High-Impact, Export-Oriented TEA Entities	58
Table 17	Correlations Between Selected National Competitiveness Indices and Entrepreneurial Activity	59
Table 18	Various Science and Technology Indicators and Entrepreneurial Activity	60
Table 19	Correlations Between National Entrepreneurial Framework Condition Indices and Entrepreneurial Activity	61
Table 20	Selected Factors Affecting Women's Participation in Entrepreneurship	64
Table 21	Distribution of Family Ownership: TEM GEM 2002 Countries	67
Table 22	Distribution of Family Ownership TEA Entities: 10 GEM 2002 Countries	69
Table 23	Character of Family and Non Family Entrepreneurial Entities	70
Table 24	Scope of Family Entrepreneurial Entities: Selected GEM Countries	72
Table A-II 1	Survey Research Firms, Sample Size by Country	81

TEAMS AND SPONSORS

Unit	Location	Members	Financial Sponsor
GEM Project Directors	Babson College London Business School	William D. Bygrave Michael Hay	The Ewing Marion Kauffman Foundation
GEM Project Coordinator	Babson College London Business School	Paul D. Reynolds	The Laing Family Charitable Settlement
GEM Coordination Team	Babson College London Business School	Paul D. Reynolds Erkko Autio Marc Cowling Michael Hay Steven Hunt Isabel Servais Natalie De Bono Michelle Hale Kola Azeez Veronica Ayi-Bonte Matthew Freegard Anwen Garston Ruth Lane Shu Lyn Emily Ng Thomas Baily	David Potter Foundation Fellow Anonymous Foundation Fellow
Family Business Special Topic	Alfred University Oregon State University	Carol Wittmeyer Mark Green	Raymond Family Business Institute

Team	Institution	Members	Financial Sponsor
Argentina	Center for Entrepreneurship IAE Management and Business School Universidad Austral	Silvia Torres Carbonell Hector Rocha Florencia Paolini	IAE Management and Business School HSBC Private Equity Latin America
Australia	Australian Graduate School of Entrepreneurship Swinburne University of Technology	Kevin Hindle Susan Rushworth Deborah Jones	Sensis Pty Ltd
Belgium	Vlerick Leuven Gent Management School Universiteit Gent	Sophie Manigart Bart Clarysse Hans Crijns Dirk De Clercq Nico Vermeiren Frank Verzele	Vlerick Leuven Gent Management School Steunpunt Ondernemerschap, Ondernemingen en Innovatie (Vlaamse Gemeenschap) Walloon Ministry of Economic Affairs
Brazil	IBQP - Instituto Brasileiro da Qualidade e Produtividade do Paraná	Fulgêncio Torres Viruel Marcos Mueller Schlemm Simara Maria S. S. Greco Joana Paula Machado Nerio Aparecido Cardoso Daniele de Lara Maria José R. Pontoni	IBQP - Instituto Brasileiro da Qualidade e Produtividade do Paraná SEBRAE- Serviço Brasileiro de Apoio às Micro e Pequenas Empresas
Canada	York University École des Hautes Études Commerciales de Montréal (HEC-Montréal)	Rein Peterson Nathaly Riverin Robert Kleiman	Développement Économique Canada, Québec Industry Canada, Small Business Policy Branch Anne & Max Tanenbaum Chair, Schulich School of Business, York University Chaire d'entrepreneurship Maclean Hunters, HEC Montréal

Team	Institution	Members	Financial Sponsor
Chile	ESE - Universidad de Los Andes	Alfredo Enrione Jon Martinez Alvaro Pezoa Gerardo Marti Nicolas Besa Fernando Suarez	ESE Business School - Universidad de los Andes ADIMARK ING Group Price Waterhouse Coopers Banco de Crédito e Inversiones
China	Tsinghua University	Yanfu Jiang Jian Gao Yuan Cheng Biao Jia Fang Liu Qung Qui Zhiqiang Chen Zhenglei Tang Hejun Xu Jun Yang Jianfei Wang Tan Li Robert Ng (Babson)	National Entrepreneurship Research Center of Tsinghua University Asia Institute of Babson College
Croatia	SME's Policy Centre - CEPOR Zagreb and Faculty of Economics; University of J. J. Strossmayer, Osijek	Slavica Singer Sanja Pfeifer Natasa Sarlija Suncica Oberman	Ministry of Crafts, Small and Medium Enterprises, Zagreb SME's Policy Centre – CEPOR Zagreb Faculty of Economics, University of J.J. Strossmayer Osijek Open Society Institute, Croatia
Denmark	University of Southern Denmark Centre for Small Business Studies	Mick Hancock Torben Bager Lone Toftild	Erhvervs-og Boligstyrelsen Ernst & Young (Denmark) Karl Petersen og Hustrus Industrifond Danfoss Vækstfonden
Finland	Helsinki University of Technology, Turku School of Economics and Business Administration	Erkko Autio Pia Arenius Anne Kovalainen	Ministry of Trade and Industry
France	EM Lyon	Daniel Evans Isabel Servais Aurélien Eminent Loic Maherault	Chaire Rodolphe Mérieux Entreprendre
Germany	University of Cologne	Rolf Sternberg Heiko Bergmann	Deutsche Ausgleichsbank (DtA) Ernst & Young
Hong Kong	The Chinese University of Hong Kong	Bee-Leng Chua David Ahlstrom Kevin Au Cheung-Kwok Law Chee-Keong Low Shige Makino Hugh Thomas	Trade and Industry Department, SME Development Fund, Hong Kong Government SAR; Asia Pacific Institute of Business of The Chinese University of Hong Kong Chinese Executives Club of Hong Kong Management Association
Hungary	University of Pécs University of Baltimore (USA)	László Szerb Zoltán Acs Attila Varga József Ulbert Éva Bodor	University of Pécs Ministry of Economic Affairs University of Baltimore (USA) REORG Gazdasági és Penzugyi Rt
Iceland	Reykjavik University	Agnar Hansson Ludvik Eliasson Guðrún Mjöll Sigurðardóttir Halla Tomasdóttir Gylfi Zoega Rognvaldur Saemundsson	Reykjavik University Central Bank of Iceland The Confederation of Icelandic Employers New Business Venture Fund Prime Minister's Office

Team	Institution	Members	Financial Sponsor
India	Indian Institute of Management, Bangalore	Mathew J. Manimala Malathi V. Gopal Mukesh Sud Ritesh Dhar	N.S Raghavan Centre for Entrepreneurial Learning, IIM Bangalore
Ireland	University College, Dublin	Paula Fitzsimons Colm O'Gorman Frank Roche	Enterprise Ireland
Israel	Tel Aviv University	Miri Lerner Yehushua Hendeles	HTMS - The High-Tech School at the Faculty of Management, Tel-Aviv University Robert Faktor The Evens Foundation
Italy	Babson College (USA)	Maria Minniti	William F. Glavin Center for Global Management at Babson College
Japan	Keio University University of Marketing & Distribution Sciences	Tsuneo Yahagi Takehiko Isobe	Monitor Company
Korea	Soongsil University	Yun Jae Park Hyun Duck Yoon Young Soo Kim	BK21 Ensb Program
Mexico	ITESM-EGADE	Marcia Campos Elvira E. Naranjo Priego	EGADE ITESM Graduate School of Business Administration and Leadership
New Zealand	New Zealand Centre for Innovation & Entrepreneurship UNITEC Institute of Technology	Howard Frederick Peter Carswell Helen Mitchell Ella Henry Andy Pivac Paul Woodfield Judy Campbell Vance Walker	Ministry of Economic Development Venture Taranaki Enterprise Waitakere Manukau City Council Te Puni Kokiri / Ministry of Maori Development North Shore City Enterprise North Shore Espy Magazine-The Entrepreneur's Bible UNITEC School of Management & Entrepreneurship Bartercard New Zealand Ltd
Norway	Bodø Graduate School of Business	Lars Kolvereid Erland Bullvåg Svenn Are Jenssen Eirik Pedersen Elin Oftedal	Ministry of Trade and Industry Bodø Graduate School of Business Kunnskapsparken AS Bodø, Center for Innovation and Entrepreneurship
Singapore	National University of Singapore	Poh Kam Wong Finna Wong Lena Lee	Economic Development Board of Singapore
Slovenia	Institute for Entrepreneurship and Small Business Management, Faculty of Economics & Business, University of Maribor	Miroslav Rebernik Matej Rus Dijana Močnik Karin Širec - Rantaša Polona Tominc Miroslav Glas Viljem Pšeničny	Ministry of Education, Science and Sports Ministry of the Economy Small Business Development Center Finance - Slovenian Business Daily
South Africa	Graduate School of Business, University of Cape Town	Mike Herrington Mary-Lyn Foxcroft Jacqui Kew Nick Segal Eric Wood	Liberty Group Standard Bank South African Breweries Khula Enterprise Finance Ntsika Enterprise Promotion Agency
Spain	Instituto de Empresa	Alicia Coduras Martinez Rachida Justo Julio DeCastro Joseph Pistrui	NAJETI Chair of Entrepreneurship and Family Business

Team	Institution	Members	Financial Sponsor
Sweden	ESBRI Entrepreneurship and Small Business Research Institute	Magnus Aronsson Helene Thorgrimsson	Confederation of Swedish Enterprise Ministry of Industry, Employment and Communications Swedish Business Development Agency (NUTEK) Swedish Institute for Growth Policy Studies,(ITPS)
Switzerland	HEC-Lausanne Switzerland IMD CERN-Geneva St Gallen University	Bernard Surlemont Benoit Leleux Georges Haour Erkko Autio Thierry Volery	Chambre Vaudoise de Commerce et d'Industrie (CVCI) Renaissance PME Réseau Suisse d'Innovation (RSI-SNI)
Taiwan (Chinese Taipei)	National Taiwan University	Chen-en Ko Jennifer Hui-ju Chen Hsiu-te Sung Chien-chi Tseng	Small and Medium Enterprise Administration, Ministry of Economic Affairs
Thailand	College of Management Mahidol University (CMMU)	Brian Hunt Thanaphol Virasa Sirin Chachitsophon Rossukhon Numdeang Supannee Leardviriyasak	College of Management Mahidol University
The Netherlands	EIM Business & Policy Research	Sander Wennekers Niels Bosma Arnoud Muizer Ro Braaksm Heleen Stigter Roy Thurik	Dutch Ministry of Economic Affairs
United Kingdom	London Business School	Rebecca Harding Niels Billou Michael Hay	Small Business Service Barclays Bank The Work Foundation South East of England Development Agency One North East InvestNI Entrepreneurial Working Party Ernst & Young
United Kingdom, Scotland Unit	University of Strathclyde Heriot Watt University	Jonathan Levie Colin Mason Wendy Brown Laura Galloway	Hunter Centre for Entrepreneurship
United Kingdom, Wales Unit	University of Glamorgan University of Wales, Bangor	David Brooksbank Dylan Jones-Evans	Welsh Development Agency
United States	Babson College	Heidi Neck Andrew Zacharakis William D. Bygrave Paul D. Reynolds	The Ewing Marion Kauffman Foundation

A

INTRODUCTION

Over four hundred and sixty-one million across the globe were engaged in entrepreneurial activity in 2002. This dramatic, unexpected finding reflects the scope of the fourth Global Entrepreneurship Monitor [GEM] assessment of entrepreneurial activity. The 37 countries involved in GEM 2002 cover three-fifths of the world's population with 286 million active in the entrepreneurial process; the other two-fifths probably contain an additional 174 million that are entrepreneurially active. This report reflects—then—the activity and contribution of 460 million individuals. A global assessment that reflects a global phenomenon.

While the original focus of the GEM research program was on cross-national comparisons in entrepreneurial activity, the current global level of activity suggests that the phenomenon is considerably more significant than expected. Not only may entrepreneurship be a major feature of national economic growth, but it also appears to involve a substantial portion of adults at some time in their work career. The capacity to compare countries at different levels of development and in different types of transitions suggests multiple roles for and diverse consequences of entrepreneurial activity.

The major objectives of the GEM research program are:

- Is it possible to measure a difference in the level of entrepreneurial activity among different countries?
- Are these differences systematically related to national economic growth?

- What leads some countries to have higher levels of entrepreneurship than others?
- What can be done to enhance the national level of entrepreneurial activity?

This report focuses on the first two objectives, with an expanded discussion of the phenomena. The latter two will be the focus of an assessment to be provided in Spring 2003.

The 37 GEM 2002 countries represent, in addition to 62% of the world population, about 92% of the world gross domestic product [GDP]. Based on a conceptual model summarized in Appendix I, four types of data collection were developed to form a basis for assessment.

First, surveys with representative samples of adults in each country are critical for providing harmonized measures of the prevalence of participation in entrepreneurial activities; from 1,000 to 16,000 individuals were interviewed in each GEM 2002 country. Second, each GEM national team identifies and completes personal interviews with up to 50 national experts chosen to represent nine entrepreneurial framework features of the country. Third, at the completion of these interviews, the experts completed a standardized questionnaire that provides a precise measure of their judgments about the country as a suitable context for entrepreneurial activity. Finally, a large amount of standardized national data is obtained from international data sources such as the World Bank, International Monetary Fund, United Nations, and the like. A longer summary appears in Appendix II; details are available in the project operations manuals.

The GEM project is an ongoing program, with expanding coverage and improving procedures as it develops. There have been a continuing series of enhancements to both the intellectual framework as well as the methodologies employed in the data collection. The 2002 effort is a substantial enhancement of the initial assessment and analysis in 1999; additional improvements can be expected in future years.

This summary report will review aspects of the first two topics—national differences and some aspects of national economic growth—as well as a variety of features of global entrepreneurial activity in 2002, including the level of

venture capital support provided to start-ups in 2001. Summaries of several special topic assessments—research and development and science infrastructure, the situation of women, and presence of family start-up businesses—are also included. As more is known about the topic, careful analysis requires time for both modeling the data and thinking about some of the patterns. A number of detailed special topic reports, as well as assessments of the factors affecting national levels of entrepreneurial activity and policy implications, are planned for release in spring 2003.

B SCOPE OF ACTIVITY

Of the 62% of the world population covered by the GEM 2002 assessment, 286 million or 12.0% of the 2.4 billion in the labor force are either actively involved in a start-up effort or are owner-managers of a new business. The amount of participation for each individual country is presented in Table 1. The estimated total population for 2002 is provided in the first column of figures, the estimated number 18-64 years old¹—those eligible for the labor force in 2002—in the second column, and the Total Entrepreneurial Activity [TEA] prevalence rate—number per 100 in the labor force—in the third. The fourth column provides the estimated number of the entrepreneurially active individuals in each country. The last three columns indicate those countries involved in previous GEM assessments.

The TEA rate—number per 100 in the labor force—is based on surveys of representative samples of the adult population in each GEM 2002 country. The TEA measure is the sum of (1) those individuals involved in the start-up process (nascent entrepreneurs) and (2) individuals active as owner-managers of firms less than 42 months old. Those 5% who qualified for both are counted only once.²

This one measure appears to provide a good index that reflects all types of entrepreneurial activity within a country. Table 2 presents the correlation of the TEA Index across the 37 GEM 2002 countries for a number of alternative measures, all based on the responses

from the representative sample of adults, including the prevalence rate of:

- Start-up or nascent firms,
- New operating firms [up to 42 months old],
- Opportunity-based entrepreneurship,
- Necessity-based entrepreneurship,
- Activity by men,,
- Activity by women,
- Start-up efforts expecting to create new market niches,
- Start-up efforts expecting to create 20 or more jobs in 5 years,
- Start-up efforts expecting to export goods and services outside the country,
- Firms with high potential for making an impact on the national economy, and
- Firms with high potential for making an impact on the national economy and exporting.

High-impact new ventures are those that expect to create both more than 20 jobs in five years and new market niches or sectors; those anticipating any international exports are considered high-impact export new ventures. Potential new high-impact ventures are reported by about 2.3 % (one in 44) of those 18-64 years old; potential high-impact export-oriented new ventures by about 1.0% (one in 100) of those 18-64 years old.

The global TEA index reflects the level or prevalence rate of all of these activities, which are highly intercorrelated. Most seem to be present—or absent—together.

TABLE 1 – PREVALENCE RATE OF ENTREPRENEURIAL ACTIVITY AND ESTIMATED COUNTS: GEM 2002

COUNTRY	Total Population 2002	Total Labor Force 2002	TEA Index 2002	Count of TEA Participants	GEM 1999	GEM 2000	GEM 2001
INDIA	1,046,000,000	591,466,000	17.9	105,872,000		x	x
CHINA	1,284,000,000	814,470,000	12.3	100,179,000			
UNITED STATES	280,000,000	173,911,000	10.5	18,260,000	x	x	x
BRAZIL	176,029,000	106,442,000	13.5	14,369,000		x	x
THAILAND	62,354,000	40,435,000	18.9	7,642,000			
MEXICO	103,400,000	58,331,000	12.4	7,233,000			x
KOREA	48,324,000	32,117,000	14.5	4,656,000		x	x
ARGENTINA	37,812,000	21,987,000	14.2	3,122,000		x	x
GERMANY	83,251,000	53,458,000	5.2	2,779,000	x	x	x
RUSSIA	144,978,000	94,330,000	2.5	2,358,000			x
ITALY	57,715,000	37,102,000	5.9	2,189,000	x	x	x
UNITED KINGDOM	59,778,000	36,927,000	5.4	1,994,000	x	x	x
CANADA	31,902,000	20,565,000	8.8	1,809,000	x	x	x
SOUTH AFRICA	43,647,000	24,886,000	6.5	1,617,000			x
CHILE	15,498,000	9,388,000	15.7	1,473,000			
JAPAN	126,974,000	81,290,000	1.8	1,463,000	x	x	x
SPAIN	40,077,000	25,886,000	4.6	1,190,000			x
FRANCE	59,765,000	36,682,000	3.2	1,173,000	x	x	x
POLAND	38,625,000	24,899,000	4.4	1,095,000			x
AUSTRALIA	19,546,000	12,273,000	8.7	1,067,000		x	x
CHINESE TAIPEI [TAWIAN]	22,548,000	14,708,000	4.3	632,000			
NETHERLANDS	16,067,000	10,348,000	4.6	476,000			x
HUNGARY	10,075,000	6,557,000	6.6	432,000			x
NEW ZEALAND	3,908,000	2,432,000	14.0	340,000			x
SWITZERLAND	7,301,000	4,696,000	7.1	333,000			
ISRAEL	6,029,000	3,485,000	7.1	247,000	x	x	x
NORWAY	4,525,000	2,781,000	8.7	241,000		x	x
DENMARK	5,368,000	3,397,000	6.5	220,000	x	x	x
SWEDEN	8,876,000	5,433,000	4.0	215,000		x	x
IRELAND	3,883,000	2,289,000	9.1	208,000		x	x
BELGIUM	10,274,000	6,376,000	3.0	191,000		x	x
SINGAPORE	4,452,000	3,191,000	5.9	188,000		x	x
HONG KONG	7,303,000	4,955,000	3.4	168,000			
FINLAND	5,183,000	3,274,000	4.6	150,000	x	x	x
CROATIA	4,390,000	2,739,000	3.6	98,000			
SLOVENIA	1,932,000	1,278,000	4.6	58,000			
ICELAND	279,000	172,000	11.3	19,000			
Sum	3,882,068,000	2,374,956,000		285,756,000	10	21	28
Average (country based)			8.0				
Average (population weights)			12.0				

NOTE: Portugal was involved in the GEM 2001 assessment, but was not able to be part of GEM 2002.

The TEA index average across countries—which gives equal weight regardless of size—is 8.0 %; but when the size of the labor force in the GEM countries is taken into account, the prevalence rate is 12.0 %. This reflects of the 1.4 billion in the labor force in China and India, half the population represented by the sample.

Dividing the total count of TEA participants, 286 million, by the proportion of the world population included in the GEM 2002 countries, 62%, gives a worldwide estimate of 461 million. Perhaps the number is higher, as most countries left out of the study are developing countries, some with massive populations such as Egypt, Indonesia, Iran, Nigeria, Malaysia, Pakistan, Philippines, Turkey, and Vietnam.

This scope of the 2002 activity can be compared with earlier GEM assessments. Table 3 presents the changes in scope over time for the 20 GEM 2000 and 28 GEM 2001 countries. For example, among twenty GEM 2000 countries, the number entrepreneurially active has increased from 123 million in 2000 to 133 million in 2001 to 161 million in 2002. A similar pattern is found among the 28 GEM 2001 countries. Even though the average participation rate among countries has fallen, human population increases and increases in participation among developing countries has offset this decline among developed countries, mostly in Western Europe. The same assessment is provided for G-7 countries at the

Table 2 - Correlation of TEA Index with Other Measures of Entrepreneurial Activity: 2002

Measure of Entrepreneurial Activity	Correlation with TEA Overall	Stat Sign (1)
TEA02 Prevalence Rate Overall Index	1.00	--
Start-Up [Nascent] Firm Prevalence Rate	0.94	0.001
New Business [up to 42 months old] Prevalence Rate	0.91	0.001
TEA Opportunity Prevalence Rate	0.91	0.001
TEA Necessity Prevalence Rate	0.75	0.001
TEA Index for Males: 18-64 Yrs of Age	0.98	0.001
TEA Index for Females: 18-64 Yrs of Age	0.96	0.001
TEA02 Index: Firms Expecting any Market Expansion	0.83	0.001
TEA02 Index: Firms Expecting more than 19 jobs in 5 years	0.69	0.001
TEA02 Index: Export 50% or more of sales	0.33	0.02
TEA02 Hi Impact Firms Index: Major Job Growth, Market Creation	0.82	0.001
TEA02 Hi Impact Firms Index: Major Job Growth, Market Creation, Any Exports	0.34	0.02
(1) One tailed test of statistical significance.		

bottom of Table 3. While the overall G-7 population grew from 689 million to 699 million and the labor force grew from 416 million to 440 million between 2000 and 2002, the number entrepreneurially active declined from 45 million to 30 million. While the US and Canada reflected a small decline in this period, other G-7 countries appear to have undergone major shifts, particularly in the 2001-2002 period. More about these temporal changes in the following sections.

Regardless of this pattern among the G-7, the global estimate of participation in entrepreneurial activity is over four hundred and fifty million individuals. What is to be made of

this? One basis of comparison might be the human birth rate. For 2002 the crude human birth rate for the world is 2.2 births per year per 100 in the population, or 135 million births every year for a global population of 6.1 billion. The total estimate of the global count of those entrepreneurially active at 461 million is more than three times the annual number of human births. Participating in business start-ups is clearly a major feature of the work lives of many—affecting many of their family members and friends—and deserves more systematic attention in its own right.

Table 3 - GEM Countries over Time: Aggregate Changes

Data collection year	2000	2001	2002
Number of countries in project	21	29	37
GEM 2002 Countries			
TEA Index (average across countries)			8.0 %
TEA Index (based on total labor force)			12.0 %
Lowest TEA level of activity			1.8 %
Highest TEA level 1			18.9 %
Total Population, all ages (Thousands)			3,882,000
Total Labor Force: 18-64 yrs (Thousands)			2,375,000
Total Active in Entre Process (Thousands)			286,000
GEM 2001 Countries*			
TEA Index (average across countries)		9.6 %	7.6 %
TEA Index (based on total labor force)		10.8 %	11.8 %
Lowest TEA level of activity		4.5 %	1.8 %
Highest TEA level 1		20.7 %	17.9 %
Total Population, all ages (Thousands)		2,453,000	2,476,000
Total Labor Force: 18-64 yrs (Thousands)		1,462,000	1,482,000
Total Active in Entre Process (Thousands)		158,000	175,000
GEM 2000 Countries**			
TEA Index (average across countries)	9.5 %	9.2 %	7.7 %
TEA Index (based on total labor force)	10.8 %	10.7 %	12.8 %
Lowest TEA level of activity	4.2 %	4.5 %	1.8 %
Highest TEA level 1	21.4 %	15.5 %	17.9 %
Total Population, all ages (Thousands)	2,044,000	2,089,000	2,112,000
Total Labor Force: 18-64 yrs (Thousands)	1,132,000	1,239,000	1,258,000
Total Active in Entre Process (Thousands)	123,000	133,000	161,000
G-7 Countries***			
TEA Index (average across countries)	8.9 %	8.7 %	5.8 %
TEA Index (based on total labor force)	10.8 %	8.3 %	6.7 %
Lowest TEA level of activity	5.6 %	5.2 %	1.8 %
Highest TEA Level of activity	16.6 %	11.6 %	10.5 %
Total Population, all ages (Thousands)	689,000	696,000	699,000
Total Labor Force: 18-64 yrs (Thousands)	416,000	438,000	440,000
Total Active in Entre Process (Thousands)	45,000	40,000	30,000
*Portugal not in project for 2002, not included for 2001 comparison.			
**Ireland data for 2000 was not usable, dropped for 2001, 2002 comparisons.			
***Canada, France, Germany, Italy, Japan, UK, & US.			

This page left blank.

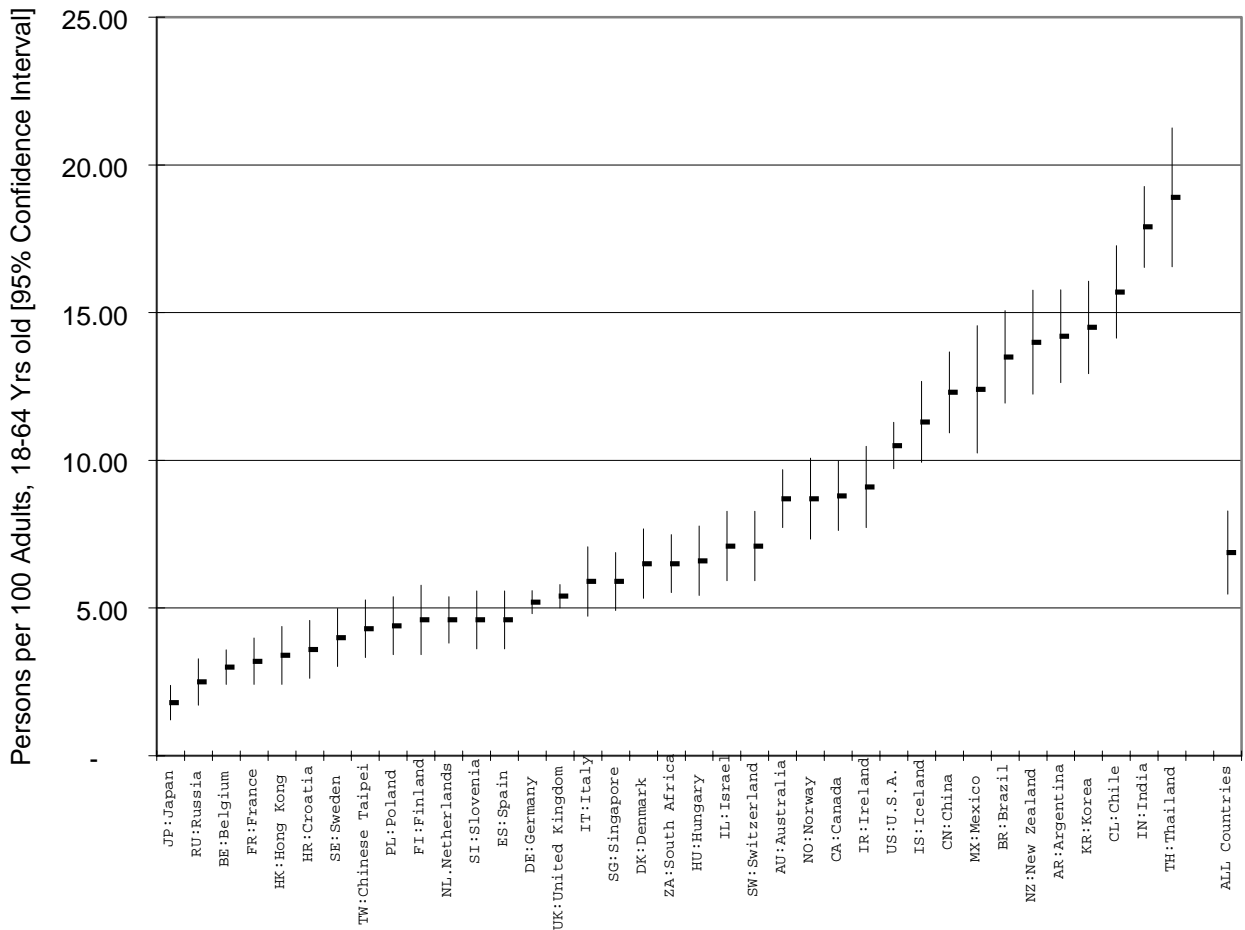
C

COMPARISONS AMONG COUNTRIES

The level of activity among the 37 GEM 2002 countries is presented in Figure 1. The Total Entrepreneurial Activity [TEA] prevalence rate—the number of persons per 100 in the labor force—varies from about 2% for Japan (1 in 50) to 19% for Thailand (1 in 5). The vertical bars represent the 95% confidence intervals—sometimes referred to as the margin of error—

and indicate the precision of the estimates. Those countries where the vertical bars overlap would not be considered to have a statistically significant difference. Hence Thailand, India and perhaps Chile would be considered equivalent at the high end; with Japan, Russia, Belgium, France, and Hong Kong equivalent at the lowest end. The length of the bars reflects the sample sizes, from

Figure 1 - Total Entrepreneurial Activity [Prevalence] Prevalence 2002: By Country

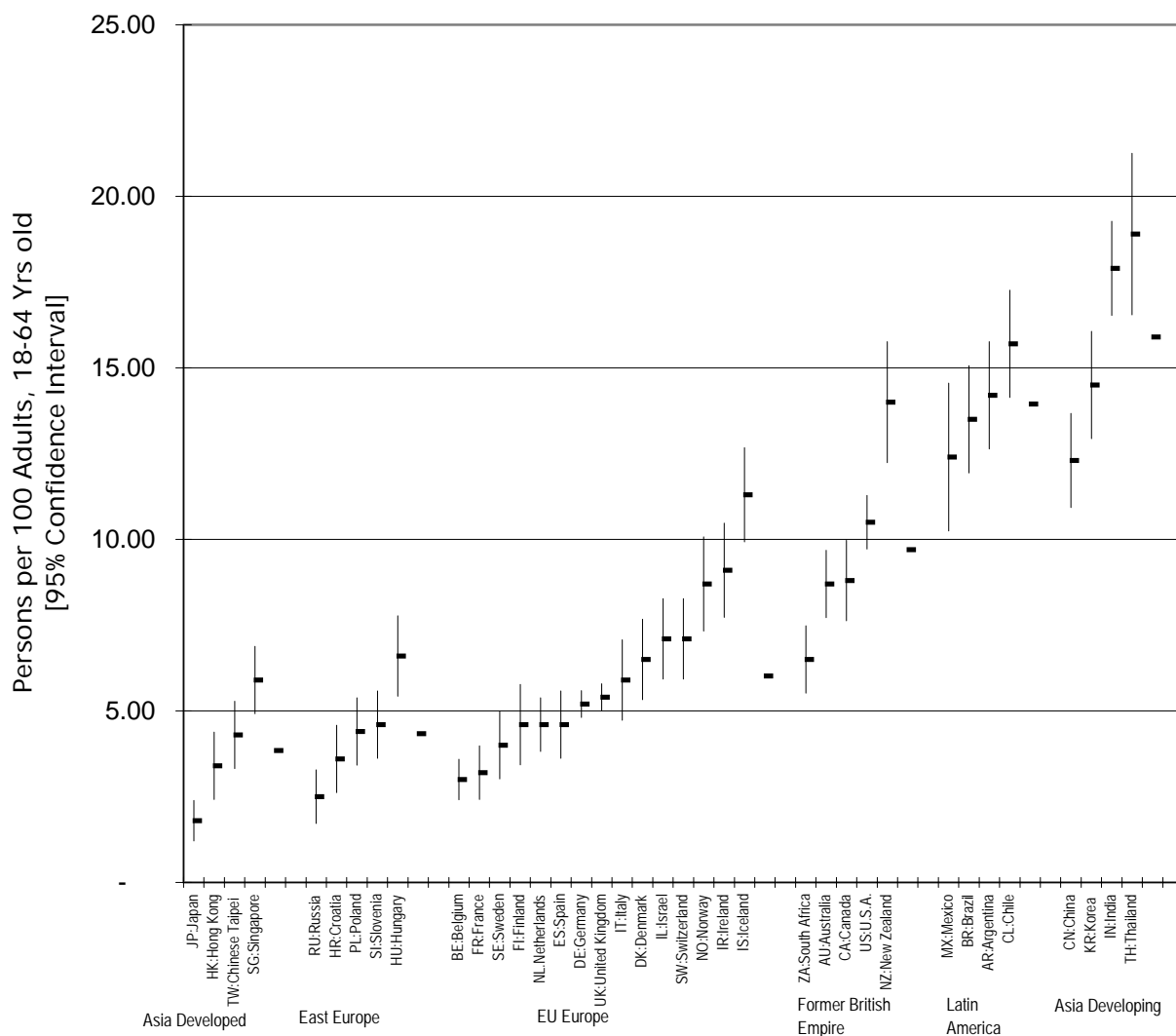


wide vertical bars for samples of 1,000 in Mexico and Thailand to narrow bars for Germany and the UK, where samples exceeded 15,000.

These entrepreneurial efforts are not uniformly distributed around the world. The countries in Figure 1 have been placed in six groups for presentation in Figure 2: fifteen in the EU Europe region including Iceland, Israel, Norway, and Switzerland; five countries in East

Europe; four Latin American countries; five former British Empire colonies (Australia, Canada, New Zealand, South Africa, and the US); four developed Asian countries; and four developing Asian countries. Without question, entrepreneurial activity is quite low across the Developed Asian, Eastern European, and most EU European countries. Former British Empire countries have a relatively high level of activity compared to the

Figure 2 - Total Entrepreneurial Activity Prevalence Rate 2002: Countries by World Region



EU European countries. Latin America has among the highest and uniform levels of activity. But it is the Developing Asian countries where the level of activity is the highest. Ironically, many of the most and least active countries are in Asia, often sharing the same cultural background and, in some cases, with contiguous borders. A more complete understanding of the diversity in this part of the world will be a major challenge.

The estimated counts associated with different regions of the world are presented in Figures 3 and 4; the first presents the proportion of the total labor force in the six groups and the

second the proportion of all those entrepreneurially active. The massive populations in India and China leads to domination of the Developing Asian countries, where 63% of the labor force are providing 77% of the entrepreneurially active. Latin American and former British Empire colonies contain about the same percent of both the labor force and the entrepreneurially active. In contrast, EU Europe, Eastern Europe and Developed Asian countries have about 19% of the labor force but 6% of the entrepreneurially active. Both the levels of participation and the consequences, in terms of the numbers of active individuals, vary considerably.

Figure 3 - Global Distribution of Labor Force: GEM 2002 Countries
 [Persons 18-64 Years of Age, Total estimate = 2,374,956,000]

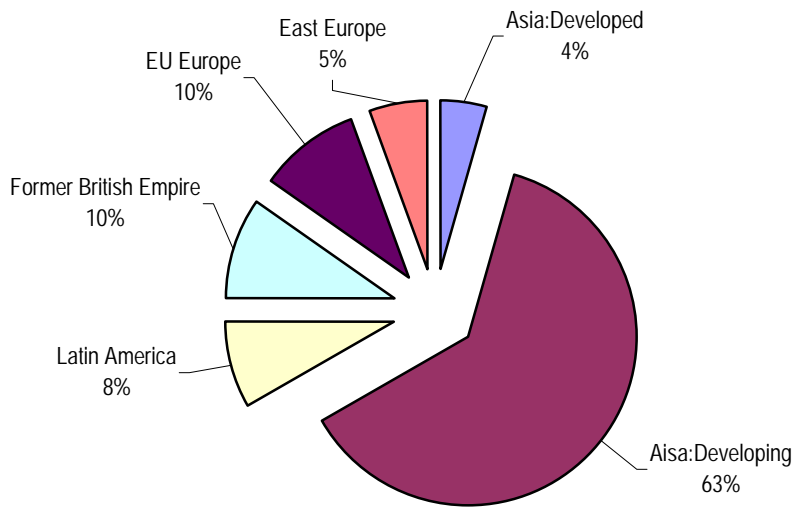
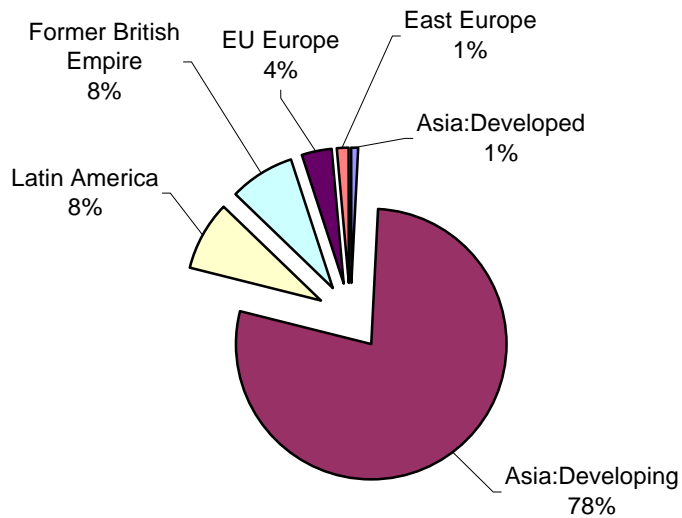


Figure 4 - Global Distribution of the Entrepreneurially Active: GEM 2002 Countries
 [Total = 265,122,000]



D MOTIVATION AND TYPES OF ENTREPRENEURIAL ACTIVITY

There are two major motivations for individuals to participate in entrepreneurial activities: those who are willing volunteers seeking to pursue a business opportunity, and those who become involved as a last resort when other options for work or participation in the economy are absent or are considered unsatisfactory. It has been possible to classify over 97% of the entrepreneurially active as either opportunity or necessity entrepreneurs. Three in five (61%) of those involved in entrepreneurial activity across the world are attempting to take advantage of a business opportunity; two in five (36%) consider they have no other options.

There is, however, great disparity across the 37 GEM 2002 countries in the presence of opportunity and necessity entrepreneurs. Cross-national comparisons are presented in Figures 5 and 6. Figure 5 indicates that from 1% in Japan to over 12% in India and 15% in Thailand are engaged as opportunity entrepreneurs. The rank order of countries is very similar to that found in Figure 1, where the overall TEA rate was presented.

The level of necessity entrepreneurs in Figure 6 has an even greater variation, from virtually none in France and Spain to 7% or more in Chile, China, Brazil and Argentina. In 17 of 37 countries the level is below 1%, and in six it is below 1/2 of 1%—less than one in 200 in the labor force are involuntary participants in entrepreneurial activity.

An issue of some consequence is the extent to which the type of business activity associated with opportunity and necessity entrepreneurship may differ. Is the potential for a business to provide major contributions to the economy affected by the motivation for initiating the business? Necessity entrepreneurs, for example, are often considered to be small scale with unsophisticated efforts that provide little more than self-employment for the founder-owner.

The nature of the business activities associated with these two motivations is summarized in Table 4. Weighted to represent the total global population, about two-thirds reflect the pursuit of opportunity and one-third a response to necessity. In the absence of any other information, then, we would expect this same ratio between opportunity and necessity entrepreneurship on characteristics of these new business endeavors.

Four aspects of this new business activity are reviewed in Table 4: a) expected job growth, b) expected out of country exports, c) whether the business will replicate existing activity or create new sectors, and d) their economic activity in one of four sectors.

Expected job creation refers to five years after a start-up would be established as a going concern or five years after the interview for existing firms. About one in five (20%) expect to

Table 4 – Entrepreneurial Motivation and Business Activity

	All	Opportunity	Necessity	Other	Row Totals
No Cases *	9,129	5,541	3,356	232	
		61 %	37 %	3 %	100 %
No jobs in 5 years	20 %	44 %	53 %	3 %	100 %
1-5 Jobs in 5 years	39 %	59 %	39 %	2 %	100 %
6-19 Jobs in 5 years	12 %	77 %	21 %	2 %	100 %
20 + Jobs in 5 years	28 %	68 %	29 %	3 %	100 %
	100 %				
No export sales	78 %	60 %	38 %	3 %	101 %
1-25% Export sales	16 %	74 %	23 %	3 %	100 %
26-50 % Exports	2 %	73 %	24 %	3 %	100 %
51-100% Exports	4 %	88 %	10 %	2 %	100 %
	100 %				
No market niche creation	73 %	60 %	37 %	3 %	100 %
Little market niche creation	20 %	63 %	34 %	3 %	100 %
Some market niche creation	6 %	71 %	25 %	4 %	100 %
Maximum market niche creation	1 %	79 %	15 %	5 %	99 %
	100 %				
Agriculture, Forestry, Fishing	4 %	4 %	6 %	2 %	
Mining, Construction	3 %	4 %	2 %	2 %	
Manufacturing	11 %	11 %	10 %	28 %	
Transportation, Communication, Utilities	4 %	4 %	3 %	2 %	
Wholesale, Motor Vehicle Sales & Service	10 %	12 %	8 %	6 %	
Retail, Hotel, Restaurants	50 %	45 %	58 %	41 %	
Financial, Insurance, and Real Estate	2 %	2 %	1 %	* %	
Business Services	8 %	9 %	4 %	7 %	
Health, Education, and Social Services	4 %	4 %	4 %	5 %	
Consumer Service	4 %	4 %	4 %	6 %	
	100 %	99 %	100 %	99 %	

* Weighted to represent global population of entrepreneurially active. "Other" motivations, less than 3% of sample are included in "All" column. All differences between opportunity and necessity statistically significant at 0.0000 or better.

provide no jobs in five years, and about half are motivated by opportunity and the other half by necessity. More than 1 in 4 expect to provide more than 20 jobs in 5 years, and about 70% are pursuing opportunity while 30% are involved out of necessity.

The extent of out-of-country exports and its significance will vary dramatically by the size of the country. Many new ventures in countries with large internal markets (Brazil, China, India, US) can survive quite well without exports. Those in small countries (Denmark, Iceland, Singapore) may have trouble sustaining themselves without exports. Nonetheless, it provides some measure of the capacity to export a product or service and, thereby, increasing national wealth. Only about one in four expect to have any exports, and only about one in twenty expect export sales to be more than 26% of total sales (or turnover). The large majority of these are related to the pursuit of opportunity, although 10-20% are related to necessity entrepreneurship.

In an attempt to determine the extent to which these new firms would lead to the creation of new markets or services, three questions were asked about the business activity. Respondents were asked if (a) customers would be familiar with the product or service to be provided, (b) the extent of competition in this market, and (c) if the critical technology was available 12 months before the interview. If the respondent/entrepreneur claimed the customers were uninformed about the product, there was no competition, and that the critical technology was less than a year old, it is

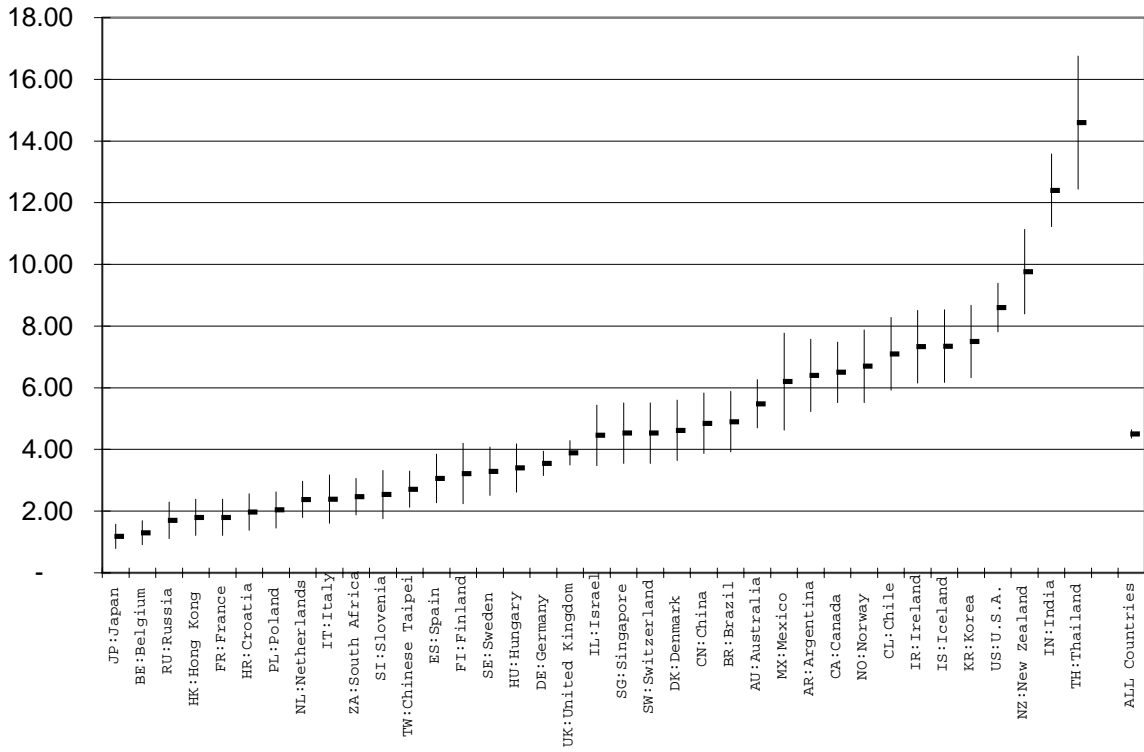
reasonable to assume that the new business would be developing a new market niche or sector. Seven of 10, however, responded that the customers were very familiar with the product or service, that there was already considerable competition, and that the critical technology had been available for more than a year. In fact, only about 1% provided strong evidence that a new market niche or economic sector would be created if the business were successful, 7% provided evidence of some or maximum market expansion. The large majority of new businesses are basically replications of existing business activity—perhaps in a new form, at a new location, using new procedures, or with a new price structure.

While the creation of new market niches is uncommon, most (80% or more) appear to be provided by those pursuing new opportunities, the remainder by necessity entrepreneurs. Or phrased differently, 9% of opportunity entrepreneurs expect to provide some or maximum new market creation, compared to 5% of necessity entrepreneurs. So necessity entrepreneurs seem to be involved in creating new market niches, but at a somewhat lower rate than opportunity entrepreneurs.

All business activity was coded centrally using the International Standard Industry Coding procedure supported by the United Nations and using a four-digit scheme (about 250 categories).³ These can be summarized in ten categories, as presented in the bottom of Table 4. The distribution of type of business activity is similar for opportunity and necessity entrepreneurship and all firms. There are only a few obvious shifts

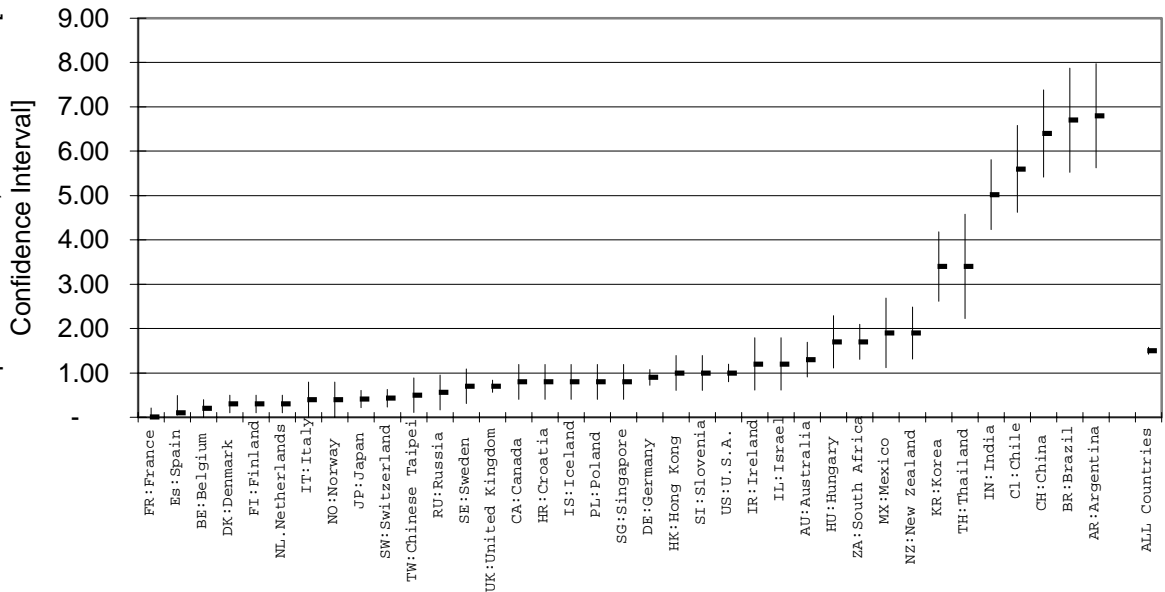
Persons per 100 Adults, 18-64 Yrs old [95% Confidence Interval]

Figure 5 - TEA Opportunity Prevalence Rate by Country: 2002



Persons per 100 Adults, 18-64 Yrs old [95% Confidence Interval]

Figure 6 - TEA Necessity Prevalence Rate by Country: 2002



in emphasis. More wholesale, motor vehicle sales and service, and more business services among opportunity start-ups; more agricultural, forestry, fishing, and retail (including hotels and restaurants) among necessity start-ups. The biggest sector differences are found among the 3% in the other or mixed motivation category, business endeavors.

In conclusion, it seems clear that a substantial number of high-growth, export-oriented, new market creation businesses are implemented by both opportunity and necessity

entrepreneurs, although those pursuing opportunity are more frequently expecting to provide opportunity are more frequently expecting to provide somewhat greater job growth, exports, and more of the rare new-market niches. But if only 5% of necessity entrepreneurs anticipate providing a new market niche (broadly defined) this would be 1.5 million among the 30 million necessity entrepreneurs in India and 2.0 million among the 57 million necessity entrepreneurs in China. The aggregate potential may be considerable.

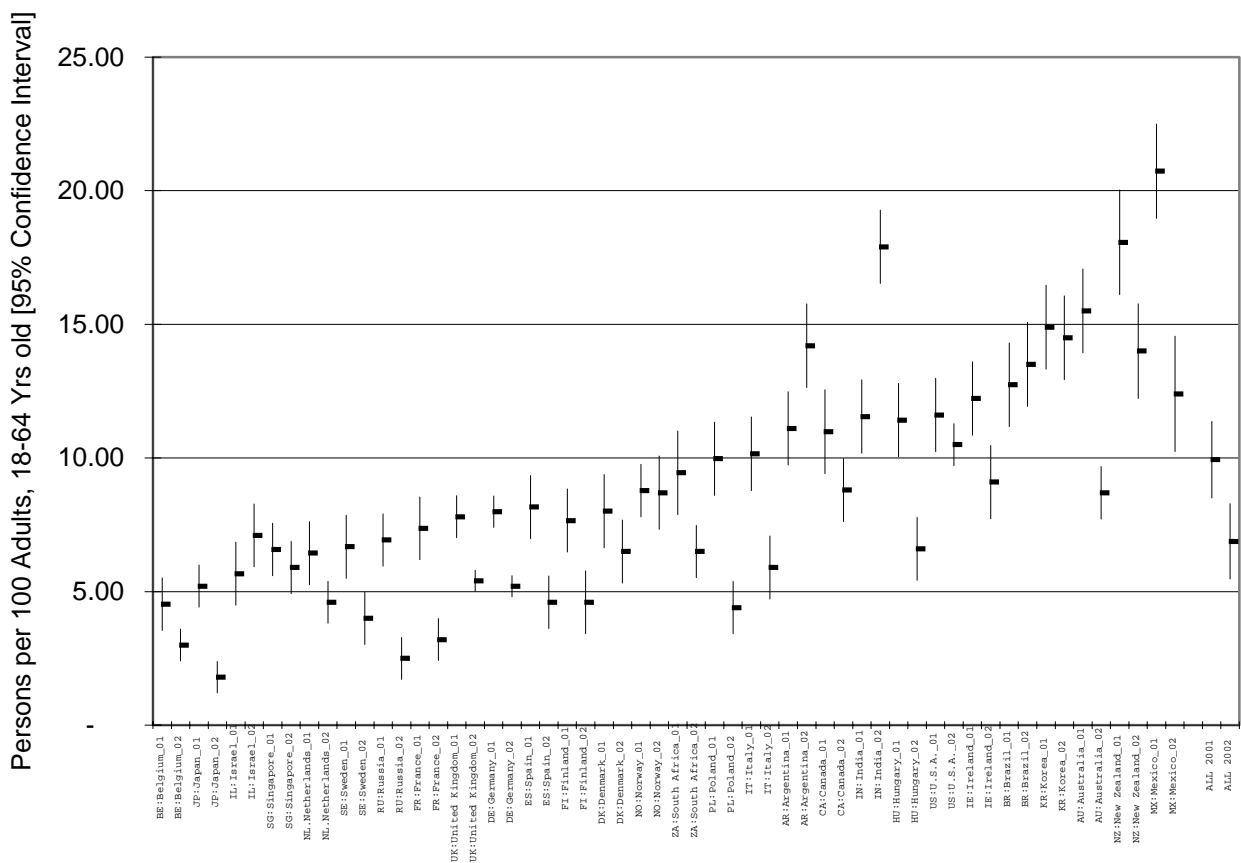
This page left blank.

E TEMPORAL STABILITY

The extent of year-to-year stability in the level of entrepreneurial activity is not well documented. Two major factors are often discussed as affecting entrepreneurial activity: general macro-economic conditions and enduring cultural and social norms and national institutions. If general macroeconomic conditions have a major impact, then some year-to-year variation in

entrepreneurial activity reflecting shifts in these conditions would be expected. If enduring cultural and social norms and national institutions are the overriding causal mechanism, relatively stable year-to-year levels of activity would be expected. Previous analysis has indicated that most of the factors with stable and significant correlations with the level of entrepreneurial activity—such as

Figure 7 - TEA Index Prevalence Rate by Country: 2001 and 2002



income disparity, the population structure, levels of educational attainment, economic security programs, mechanisms for registering new businesses—change rather slowly, over decades rather than years.⁴ The most reasonable expectation is that both of these two external mechanisms may have an impact.

Evidence for year-to-year stability—and entrepreneurial activity as reflecting slow-to-change cultural and social norms and institutions—was found in the GEM 2001 assessment. The TEA index for twenty GEM 2000 countries was unchanged for 17 in GEM 2001. There was a statistically significant drop for only three countries between the year 2000 and 2001 (Brazil, Norway, and the US).

The situation has changed dramatically for the 2001-2002 period. The overall TEA index levels for 28 of the GEM 2001 countries are presented in Figure 7 for 2001 and 2002. There has been a statistically significant drop for 17, no significant change for 9, and a significant increase for two—Argentina and India. There was a change in survey firms in India and an expansion of the sample; some of the increase in India may reflect these methodological adjustments. The increase in Argentina reflects a dramatic rise in necessity entrepreneurship—the prevalence rate doubled; this more than offset a decline in opportunity entrepreneurship. This appears to reflect the major crisis in Argentine financial institutions that began in the autumn of 2001.

This pattern among the changes in the TEA index appears to mirror changes in growth in GDP.⁵ Among the 20 GEM 2000 countries, the average change in growth in GDP [not GDP it self] from 1998-19999 to 1999-2000, just prior to the

2000-2001 period, was slightly above zero, or 0.82 percent. There was no change in the annual growth rate. The average change in the TEA rate

Table 5 – Average Change in Growth in GDP
1998/1999 to 1999/2000, Prior to change in TEA Rates,
2000-2001

Country	GDP % Growth Change: 1998/1999 to 1999/2000:	TEA Overall: 2001-2000 Change	
Italy	1.27	2.83	
India	-1.35	2.59	
Singapore	3.32	2.36	
Argentina	2.60	1.89	
France	0.98	1.76	
Spain	-0.01	1.31	
United Kingdom	0.67	0.89	
Denmark	0.71	0.85	
Germany	0.81	0.54	
Australia	-1.63	0.32	
Sweden	-0.90	0.01	
Belgium	1.00	-0.27	
Finland	1.53	-0.46	
Japan	1.60	-1.19	
Canada	-0.86	-1.24	
Korea	-1.57	-1.45	
Israel	4.80	-1.47	
Norway	0.30	-3.08	-*
US	-0.36	-4.97	-*
Brazil	3.55	-8.69	-*
Average	0.82	-0.37	

“-*” Statistically significant drop, 2000 to 2001, p <0.05.

for these 20 countries from 2000 to 2001 is also about zero (-.37 %). The results for the 20 GEM 2000 countries are shown in Table 5. Only three countries (Brazil, Norway, and the US) had a statistically significant change, and all were declines. Stable national economic growth seems to be associated with stable levels of entrepreneurial activity.

But in the following period, from 1999-2000 to 2000-2001, there was a systematic decline in the annual rate of growth among every GEM 2001 country, as shown in Table 6. This represents an average absolute decline of 3.28% in the growth of GDP. Only four of these 27 countries had an absolute decline in GDP itself—Argentina, Japan, Israel, and Mexico. This was followed by an average absolute drop of 2.29 %—or a relative drop of 23%—in the TEA rates from 2001 to 2002. As mentioned above, this was statistically significant in 17 of 28 countries. As the decline in GDP growth was uniform—present among virtually all GEM 2001 countries—it is not possible to compare countries with increases and decreases in the annual rate of economic growth. A worldwide drop in national economic growth seems to be associated with a worldwide decline in entrepreneurial activity.

Two factors discussed above help to illuminate the impact of changes in national growth rates with the level of entrepreneurial activity. First, about two-thirds of entrepreneurial activity reflects the desire to take advantage of a business opportunity. Second, three-fourths or more of opportunity-based entrepreneurship involves replication of existing business activity—little or no new markets are created. The primary “opportunity” is an unmet demand for goods and

services; such unsatisfied demands are likely to increase with general growth in a national economy. If the national growth rate declines,

Table 6 – Average Change in Growth in GDP
1999/2000 to 2000/1001, Prior to change in TEA Rates,

NAME	2001-2002	
	GDP % Growth Change: 1999/2000 to 2000/2001:	TEA Overall: 2001-2002 Change
India	-1.28	6.32 +*
Argentina	-3.62	3.05 +*
Israel	-8.30	1.39
Brazil	-2.85	0.78
Norway	-1.00	-0.08
Korea	-6.30	-0.37
Singapore	-12.30	-0.67
U.S.	-3.50	-1.10
Denmark	-2.07	-1.48
Belgium	-3.01	-1.54 -*
Netherlands	-2.14	-1.82
Canada	-3.03	-2.16
United Kingdom	-1.15	-2.43 -*
Sweden	-2.40	-2.68 -*
Germany	-2.28	-2.83 -*
South Africa	-1.14	-2.90 -*
Ireland	-5.61	-3.09 -*
Finland	-4.85	-3.10 -*
Japan	-2.69	-3.38 -*
Spain	-1.51	-3.58
New Zealand	-1.33	-4.06 -*
France	-2.36	-4.17 -*
Italy	-1.09	-4.26 -*
Russia	-3.99	-4.41 -*
Hungary	-1.44	-4.79 -*
Poland	-3.00	-5.53 -*
Australia	-0.58	-6.83 -*
Mexico	-6.91	-8.33 -*
Average	-3.28	-2.29

+ Statistically significant increase, 2001 to 2002, p <0.05.

- Statistically significant drop, 2001 to 2002, p <0.05.

there is likely to be a reduction in the demand for goods and services and less opportunity for market replication new businesses. And indeed, the impact on a reduction in opportunity entrepreneurship was widespread, particularly in those countries—about half of the group—where only a small fraction of the activity reflected necessity entrepreneurship.

However, the relative year-to-year rank order of the countries in GEM is relatively stable. Table 7 presents the year-to-year correlation in business start-up rates for three one-year comparisons, for the overall TEA index rate for two one-year comparisons, and the opportunity and necessity TEA rates for a single comparison. The correlations vary from 0.61 to 0.81 and all are statistically significant. While global changes in economic growth may affect the level of entrepre-

neurial activity across all countries, the country-to-country differences appear to be stable.

In conclusion, this natural experiment—a universal drop in national economic growth rates—provides evidence that both macro-economic conditions and enduring national characteristics have an impact on the level of entrepreneurial activity. A uniform drop in economic growth followed immediately by an almost universal drop in entrepreneurial activity suggests that macro-economic conditions have an effect. On the other hand, the relative stability in the rank order of the countries suggests that stable national characteristics may also have an effect. As the GEM research program continues it may be possible to provide more precise evidence about the relative impact of these disparate sources of influence.

Correlations (no of countries)	1999/2000	2000/2001	2001/2002
Business Start-up Rate	0.81 (10)	0.61 (20)	0.74 (28)
TEA Overall Index		0.81 (20)	0.74 (28)
TEA Opportunity			0.60 (28)
TEA Necessity			0.74 (28)
NOTE: All statistically significant at 0.001, one tailed test.			

F

ASSOCIATION WITH ECONOMIC GROWTH

Is there evidence that the national level of entrepreneurship activity is associated with subsequent national economic growth? This is, after all, one of the central issues of focus for the GEM research program. Measures of entrepreneurial activity—the TEA index—are available for 20 countries in the year 2000, 29 countries in the year 2001, and 37 countries in 2002. The relationship to growth in previous and following years may be examined with a pooled sample to improve the capacity for analysis of this issue.

The International Monetary Fund World Economic Outlook⁶ provides a continuous record of national economic growth, adjusted for inflation and differences in national purchasing power. It is

updated three times a year and the September 2002 data can be used to determine the national growth in GDP for a number of one-year periods. By using projections for 2003, the national growth in the 2002 to 2003 period can be estimated. Table 8 presents the relationship between this measure of growth and different time lags for the three years of comparable TEA indices. For three periods—2000, 2001, and 2002—data can be aggregated for correlations with a one-year lag, although 20 GEM 2002 countries will appear three times. For two periods—2000 and 2001—data can be aggregated for correlations with a two-year lag. And for one GEM year, 2000, a three-year lag can be considered.

Table 8 - Tea Index Rates And National Economic Growth

Growth Year to GEM Year LAG	-2	-1	0	+1	+2	+3
Years for lagged correlations						
TEA00	97/98	98/99	99/00	00/01	01/02	02/03
TEA01	98/99	99/00	00/01	01/02	02/03	
TEA02	99/00	00/01	01/02	02/03		
TEA ALL	-0.03	0.20	0.19	0.22*	0.42**	0.32
TEA ALL (w/o hi traders)#	-0.01	0.23*	0.25*	0.23*	0.47**	0.42
TEA OPPORTUNITY	0.06	0.16	0.20	0.22	0.26	
TEA OPPORTUNITY (w/o hi traders)#	0.13	0.16	0.21	0.24*	0.29	
TEA NECESSITY	0.02	0.15	0.23	0.35**	0.49**	
TEA NECESSITY (w/o hi traders)#	0.07	0.16	0.23	0.37**	0.52**	
* Statistically significant, <0.05; ** <0.01.						
#w/o Hong Kong, Singapore.						

The results of this analysis with pooled data are presented in the body of Table 8. It indicates that the correlation between the overall TEA index and economic growth is zero two years before the year of focus ($t = -2$), low but nearing statistical significance for the prior year ($t = -1$) and concurrent years ($t = 0$), statistically significant and moderately positive for the following year ($t = +1$), a clearly statistically significant positive correlation for the second year following ($t = +2$), and a positive but not statistically significant relationship in the third following year ($t = +3$).

But national economic growth can come from several sources—internal enhancements to the economic structure or successful participation in the global economy. High levels of entrepreneurship would be expected to contribute to indigenous economic growth. But some countries have followed a strategy of serving as a major trading platform in the world economy. Both Hong Kong and Singapore have a total import and export trade that is several times their GDP. National growth in such countries is more likely to reflect international trading conditions than internal entrepreneurship. If these two countries are removed from the analysis, the correlations universally increase. This suggests that there are alternative strategies for promoting national growth and these may be successful for some countries.

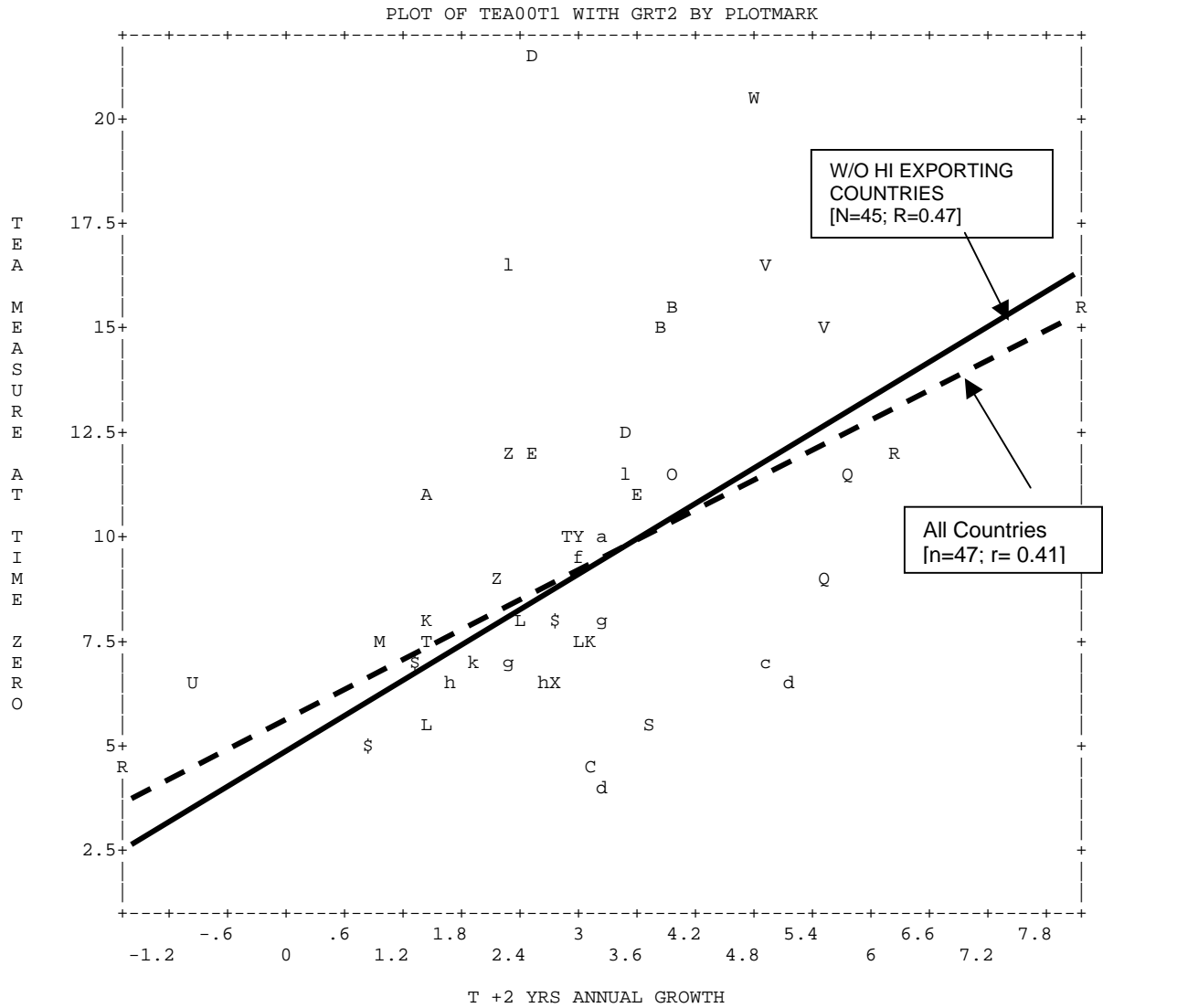
It is of interest that the leading correlations ($t = -1$) are about the same for opportunity and necessity entrepreneurship

measures. But concurrent and following correlations ($T = 0, 1, 2$) are uniformly higher for necessity entrepreneurship. This is consistent with analysis completed as part of the GEM 2001 report when this distinction was first made: necessity entrepreneurship appears to be associated with higher levels of subsequent national economic growth.

The correlation with a two-year lag, which combines data from GEM 2000 and 2001 TEA measures, is presented graphically in Figure 8. All data points are shown, as well as the best-fit correlation line with ($r = 0.42$) and without ($r = 0.47$) the high export trading countries (Hong Kong, and Singapore). The presentation makes clear that the correlation is reduced by countries with high levels of national growth and low levels of entrepreneurship, such as Belgium, and Singapore. There are no countries with high levels of entrepreneurial activity and low levels of national economic growth; they would be found in the upper left corner of Figure 8.

This analysis does not suggest that entrepreneurial activity—by itself—is a source of economic growth. It does indicate that changes in the economic structure and market processes within a country that lead to economic growth may occur more quickly when an active entrepreneurial sector is available to implement such changes. Resolving the complex interrelations between basic changes in factor conditions, entrepreneurial activity, and national economic growth will require more countries and a longer time series.

Figure 8 - TEA Index and GDP Growth, 2 yr lag



47 cases plotted. Regression statistics of TEA00T1 on GRT2:
 Correlation .41324 R Squared .17077 S.E. of Est 3.68796 2-tailed Sig. .0039
 Intercept(S.E.) 6.33711(1.20037) Slope(S.E.) 1.11524(.36635)

A:A:AR	B:B:AU	C:C:BE	D:D:BR	E:E:CA	F:F:CL	G:G:CH	H:H:TW
I:I:HR	J:J:DK						
K:K:FI	L:L:FR	M:M:DE	N:N:HK	O:O:HU	P:P:IS	Q:Q:IN	R:R:IE
S:S:IL	T:T:IT						
U:U:JP	V:V:KR	W:W:MX	X:X:NL	Y:Y:NZ	Z:Z:NO	a:a:PL	b:b:PT
c:c:RU	d:d:SG						
e:e:SI	f:f:ZA	g:g:ES	h:h:SE	i:i:SW	j:j:TH	k:k:UK	l:l:US

\$:Multiple occurrence

This page left blank.

G

WHO ARE ENTREPRENEURS?

A pervasive issue is determining the nature of those active in the business start-up process. The first source of interest is in terms of efforts to increase the overall level of entrepreneurial activity. It may be easier—or more efficient—for policy makers to increase the presence of business start-ups if they know what type of people are predisposed to become involved. The issue also draws attention from those concerned with social equity—those that want all segments to have equal access to the career benefits from participating in entrepreneurial activity.

But describing and or predicting who will become involved in a business start-up is not a simple endeavor. A typical strategy is to look at various factors that may affect participation, including:

- Personal factors—age and gender;
- Personal skill or ability—educational attainment, skill or ability to do a start-up, fear of failure;
- Immediate social context—household income, labor force participation, personal contact with entrepreneurs;
- Perception of business opportunities;
- Features of the broader context—such as national economic growth or the general acceptability of entrepreneurial career options.

Both the individual and joint impact of such factors may be considered.

AGE AND GENDER

Perhaps most fundamental are age and gender, and their joint impact is illustrated in Figure 9 for the entire sample. While this is weighted to represent the labor force population of 2.4 billion, the patterns within world regions or specific countries are quite similar.⁷ The exhibit presents the prevalence rate for the overall TEA index, opportunity and necessity based entrepreneurship, as well those pursuing nascent firms and those owner-managers of new firms. Women are to the left, men to the right; prevalence rates for five age groups are presented for each type of activity. All differences in Figure 9 are highly statistically significant—these patterns occur with predictable regularity.

Men are, overall, about 50 % more likely to be involved as women 13.9 % to 8.9 %, this ratio is even greater for opportunity entrepreneurship, 9.3 % to 4.9 %. Gender equality appears, however, for necessity entrepreneurship, with men at 4.2 % and women at 3.8 %. For both men and women and all types of entrepreneurial activity, the prevalence rates peak at 25-34 years of age. The next most active age groups are 18-24 and 35-44 years of age. Participation is generally lowest for those over 55 years old. Although not shown, entrepreneurial activity is almost nonexistent among those 65 years of age and older.

Figure 9 - Entrepreneurial Prevalence Rates by Age, Gender, and Type of Activity: 2002

	Women	Women	Men	Men
	#/100			#/100
	*n=47,258			*n=45,697
TEA All				
18-24 yrs	7.7	[XXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	13.2
25-34 yrs	12.8	[XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX]	XX	19.7
35-44 yrs	10.2	[XXXXXXXXXXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	14.6
45-64 yrs	6.2	[XXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	11.2
55-64 yrs	5.0	[XXXXXXXXXX]	XXXXXXXXXXXXXXXXXX	6.8
TEA Opportunity				
18-24 yrs	5.6	[XXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	10.8
25-34 yrs	7.6	[XXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	13.3
35-44 yrs	5.2	[XXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	9.8
45-54 yrs	3.2	[XXXXXX]	XXXXXXXXXXXXXXXXXX	7.1
55-64 yrs	2.5	[XXXXX]	XXXXXX	3.7
TEA Necessity				
18-24 yrs	1.9	[XXXX]	XXXX	1.8
25-34 yrs	5.0	[XXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXX	6.0
35-44 yrs	4.8	[XXXXXXXXXXXX]	XXXXXXXXXXXXXX	4.3
45-54 yrs	3.0	[XXXXXX]	XXXXXXXXXX	4.1
55-64 yrs	2.4	[XXXXX]	XXXXXX	2.8
Nascent Firms				
18-24 yrs	4.1	[XXXXXXXX]	XXXXXXXXXXXXXXXXXXXX	8.1
25-34 yrs	7.3	[XXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	10.6
35-44 yrs	6.0	[XXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXX	7.9
45-54 yrs	3.7	[XXXXXXXX]	XXXXXXXXXXXXXXXXXX	6.2
55-64 yrs	3.0	[XXXXXXXX]	XXXXXXXXXX	3.8
New Firms				
18-24 yrs	3.7	[XXXXXXXX]	XXXXXXXXXXXXXXXXXX	6.1
25-34 yrs	6.1	[XXXXXXXXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	10.3
35-44 yrs	4.7	[XXXXXXXXXXXX]	XXXXXXXXXXXXXXXXXXXX	7.0
45-54 yrs	2.8	[XXXXXX]	XXXXXXXXXXXXXX	5.3
55-64 yrs	2.2	[XXXX]	XXXXXX	3.3

* Sample weighted in relation to national sampling ratios, total counts.

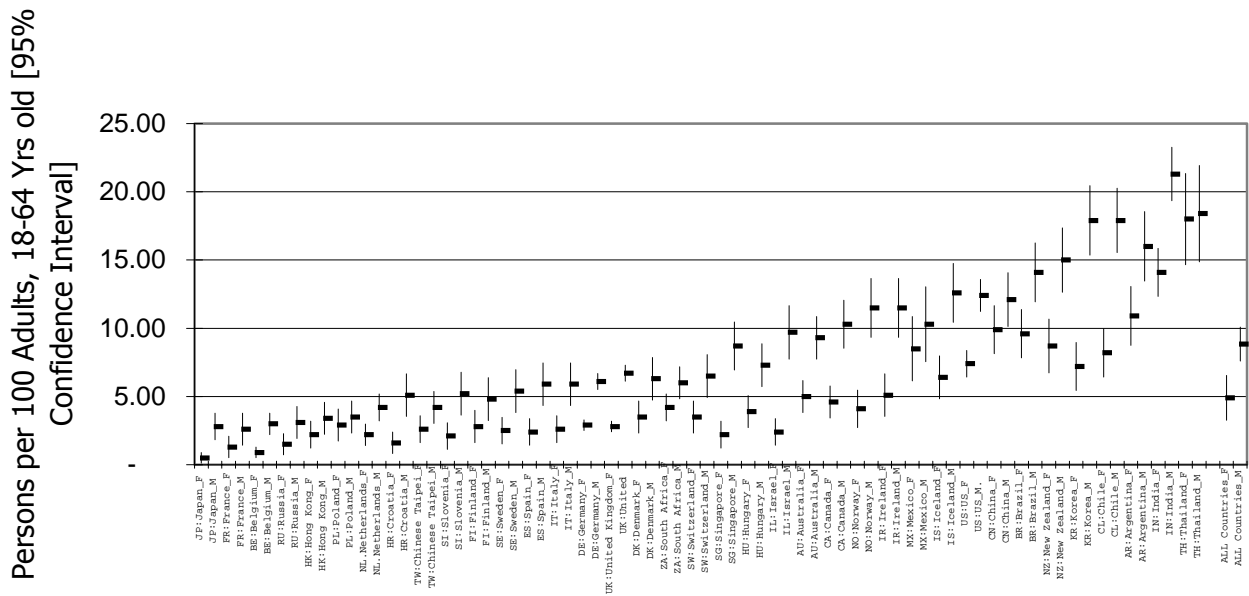
The differences between men and women are quite stable across countries, as illustrated in Figure 10. There is no country where women are more active than men, but there are a number where the difference is not statistically significant—mostly in countries where the prevalence rates are quite low and lead to large standard errors for samples of 2,000 per country, about 1,000 per gender.

CONDITIONS LEADING TO ENTREPRENEURIAL ACTION

Other aspects of the individual’s situation could be considered as well, and are presented in Table 9. This table shows the relationship between the level of entrepreneurial activity, age and gender, and eight other factors. Four are

related to the individual’s responses about their situation: 1) Have they know someone that recently started a business? 2) Do they think there are good opportunities where they live for starting a business? 3) Do they have the education, skill, or experience to start a business? And 4) Would fear of failure prevent them from starting a business? Three are related to their level of education, current labor force activity, and household or personal income relative to others in their country. The final factor is related to the relative rate of decline in the growth of GDP in the previous two years: from 1999/2000 to 2000/2001.

Figure 10 - Total Entrepreneurial Activity Prevalence Rates 2002: Gender by Country



The analysis is based on 29 of the 37 GEM 2002 countries,⁸ those countries where harmonized data on all seven factors are available; the total sample size is about 65,000. Cases are weighted to represent the total work force population, 1.6 billion (China is included), of those 18-64 years old. The major constraint that reduced the sample size was the absence of data on educational attainment, labor force status, or household/personal income from 8 countries. If data were absent on any one variable a country was excluded.

Every pattern presented in Table 9 is highly statistically significant, reflecting the large sample size:

- Men are more involved than women.
- Those 25-34 years are most involved, followed by those 35-44 years of age.
- Those with more education are more likely to be involved in overall or opportunity entrepreneurship, less likely to be involved in necessity entrepreneurship;
- Higher income, relative to others in the same country, is associated with greater opportunity and overall entrepreneurial activity; less income relative to others in the same country associated with greater necessity entrepreneurship
- Those working full or part time are the most likely to be involved.
- Those that think they have the skill and experience to start a business are 2-7 times more likely to be involved than those that do not.

Table 9 - Selected Socio-Demographic and Contextual Characteristics and Participation in Entrepreneurial Activity

	TEA Overall	TEA Opportunity	TEA Necessity
	[#/100]	[#/100]	[#/100]
Gender			
Male	12.8	8.6	4.0
Female	8.0	4.6	3.4
Age			
18-24 Years	10.3	8.4	1.5
25-34 Years	15.0	9.7	5.1
35-44 Years	11.7	6.6	5.0
45-54 Years	7.6	4.6	3.1
55-64 Years	5.0	2.7	2.0
Educational Attainment			
Graduate Experience	11.6	9.3	1.6
Post Secondary Experience	11.3	9.4	1.6
Secondary Completed	9.4	5.5	3.7
Some Secondary	10.8	5.4	5.5
None	6.6	1.3	5.3
HH Income Relative to Others in country			
Top third	13.1	10.3	2.4
Middle third	7.7	5.5	2.1
Lowest third	11.1	4.5	6.7
Labor Force Status			
Working Full or Part Time	13.7	8.7	4.9
Not working	5.0	2.5	2.2
Retired, Student, Disabled	1.9	1.7	0.1
Know someone started a business in past 2 years			
Yes	16.0	10.7	5.2
No	5.3	2.8	2.3
Good opportunities for a new business in the next 6 months			
Yes	21.7	16.7	4.7
No	7.0	3.5	3.4
Have the skills, experienced to start new business			
Yes	20.2	14.0	6.1
No	4.6	2.1	2.3
Fear of failure would prevent from starting a business			
Yes	8.8	4.8	4.0
No	10.9	7.1	3.6
Decline in Growth of GDP in Prior two years			
Low level of decline	11.0	6.6	4.4
Moderate level of decline	7.4	5.8	1.4
High level of decline	12.6	8.1	3.1
All differences statistically significant < 0.0000; weighted to represent total population of all adults.			

- Those that have known someone that recently started a business are 3-4 times more likely to be involved.
- Those that consider good opportunities for starting a business to be present, are up to four times more likely to be involved.
- Those with a fear of failure are less likely to be involved than those with no fear of failure in the overall and opportunity measures, but are more likely to be starting a firm out of necessity.
- High and low levels of decline in economic growth are associated with more entrepreneurial activity of all types.

But the major issue for both (1) understanding the conditions that lead individuals to pursue entrepreneurship and (2) determining how public policy and programs may be the most effective is determining the joint impact of these factors. The interaction among these factors may lead to unique situations that have a dramatic impact by increasing or decreasing the level of entrepreneurial activity.

The research issue, then, is to what extent it is possible to identify unique sets of conditions that dramatically increase the propensity to engage in entrepreneurial activity? Or, conversely, are there sets of conditions where participation in entrepreneurship is low or non-existent? It would be both interesting and useful to locate start-up “hotbeds” or “entrepreneurial graveyards.” A search for unique combinations of factors may identify just such situations.

One example of joint impact, with interaction between two factors, has been in the association of age and gender on entrepreneurial activity, displayed in Figure 9. While useful for two variables, it is clumsy and inefficient to expand this strategy to a wide range of variables—the number of alternatives quickly becomes too large to manage. The use of computer based systematized search procedures dramatically facilitates the process.⁹ While the details are tedious, the results are illuminating. The outcome of searching for the unique set of conditions, using the ten variables presented in Table 9, are a set of groups, described by 3-4 of these variables that will have the greatest joint impact, that can be rank ordered in terms of participation in entrepreneurial activities.

An analysis focusing on the overall TEA measure and restricted to the four most influential variables resulted in 33 distinct groups. They are rank ordered by entrepreneurial activity—the overall TEA measure—and presented in Table 10_A. Similar tables are provided below for opportunity and necessity entrepreneurship. The percentage in entrepreneurship ranges from 35% (one in three) to none, 0.0 %. Apparently, both entrepreneurial “hotbeds” and “graveyards” exist—defined by different sets of social conditions.

Columns 2-5 in Table 10_A indicate the unique characteristics of each group. The far right column indicates the percentage of women in each group. Intermediate columns give information on the size of each group as a percentage of the sample and as a percent of all those entrepreneurially active. For example, the most active group, where one in three (35%) are involved in

Table 10_A – Global Labor Force Groups by Level of Overall Entrepreneurial Activity

Row	First Level	2nd Level	3rd Level	4th Level	TEA Rate	No Cases	Sample Percent	Cumulative Sample	# Entre Act	% Entre Act	Cumul Entre Active	% Female in Group
1	Has skill, ability for start-up	Work, Full or Part-Time	Know recent entrepreneur	Good start-up opportunities	34.8	5,156	7.9%	7.9%	1,794	26.6%	26.6%	29.4%
2	Has skill, ability for start-up	Work, Full or Part-Time	Good start-up opportunities	HH Inc Lowest Third	27.4	426	0.7%	8.6%	117	1.7%	28.4%	70.0%
3	Has skill, ability for start-up	Work, Full or Part-Time	Do not know recent entrep	Good start-up opportunities	27.0	1,756	2.7%	11.3%	474	7.0%	35.4%	37.3%
4	Has skill, ability for start-up	Work, Full or Part-Time	Know recent entrepreneur	No start-up opportunities	23.1	7,345	11.3%	22.6%	1,697	25.2%	60.6%	39.2%
5	Has skill, ability for start-up	Retired, students, disabled	Good start-up opportunities	HH Inc Low, Medium Third	17.9	535	0.8%	23.4%	96	1.4%	62.0%	50.8%
6	No skill, ability for start-up	Work, Full or Part-Time	Low drop in growth	HH Inc Low third	12.4	5,941	9.1%	32.5%	737	10.9%	72.9%	50.1%
7	Has skill, ability for start-up	Work, Full or Part-Time	Good start-up opportunities	HH Inc Medium, Hi Third	12.3	716	1.1%	33.6%	88	1.3%	74.3%	64.8%
8	No skill, ability for start-up	Not working	18-44 Years Old	Good start-up opportunities	12.1	747	1.1%	34.8%	90	1.3%	75.6%	68.6%
9	Has skill, ability for start-up	Work, Full or Part-Time	No start-up opportunities	Lo, moderate drop in growth	10.7	712	1.1%	35.9%	76	1.1%	76.7%	65.7%
10	No skill, ability for start-up	Not working	55-64 Years Old	HH Inc Highest Third	10.4	186	0.3%	36.1%	19	0.3%	77.0%	64.5%
11	No skill, ability for start-up	Work, Full or Part-Time	High drop in growth	Post secondary education	10.2	1,069	1.6%	37.8%	109	1.6%	78.6%	40.5%
12	Has skill, ability for start-up	Work, Full or Part-Time	Do not know recent entrep	No start-up opportunities	9.5	4,286	6.6%	44.4%	407	6.0%	84.7%	39.6%
13	No skill, ability for start-up	Retired, students, disabled	18-24 Years Old	Hi drop in growth	9.2	92	0.1%	44.5%	8	0.1%	84.8%	44.9%
14	No skill, ability for start-up	Work, Full or Part-Time	Low drop in growth	HH Inc Hi third	7.7	4,177	6.4%	50.9%	322	4.8%	89.6%	52.8%
15	Has skill, ability for start-up	Retired, students, disabled	No start-up opportunities	Hi, moderate drop in growth	5.5	401	0.6%	51.5%	22	0.3%	89.9%	48.3%
16	No skill, ability for start-up	Not working	55-64 Years Old	HH Inc Lowest Third	5.3	728	1.1%	52.7%	39	0.6%	90.5%	79.4%
17	Has skill, ability for start-up	Retired, students, disabled	Good start-up opportunities	HH Inc Highest Third	5.3	237	0.4%	53.0%	13	0.2%	90.7%	53.0%
18	No skill, ability for start-up	Work, Full or Part-Time	Moderate drop in growth	Know recent entrepreneur	4.8	1,420	2.2%	55.2%	68	1.0%	91.7%	54.5%
19	Has skill, ability for start-up	Work, Full or Part-Time	No start-up opportunities	High drop in growth	4.2	1,711	2.6%	57.8%	72	1.1%	92.7%	49.6%
20	No skill, ability for start-up	Work, Full or Part-Time	Low drop in growth	HH Inc Medium third	3.6	7,838	12.0%	69.9%	282	4.2%	96.9%	44.3%
21	No skill, ability for start-up	Not working	45-54 Years Old	Hi, moderate drop in growth	2.5	438	0.7%	70.6%	11	0.2%	97.1%	75.9%
22	No skill, ability for start-up	Not working	18-44 Years Old	No start-up opportunities	2.3	4,838	7.4%	78.0%	111	1.7%	98.7%	80.7%
23	No skill, ability for start-up	Retired, students, disabled	18-24 Years Old	Low drop in growth	2.3	924	1.4%	79.4%	21	0.3%	99.1%	45.3%
24	No skill, ability for start-up	Work, Full or Part-Time	High drop in growth	Up to HS degree	2.2	319	0.5%	79.9%	7	0.1%	99.2%	38.6%
25	No skill, ability for start-up	Work, Full or Part-Time	Moderate drop in growth	Do not know recent entrep	1.1	4,117	6.3%	86.2%	45	0.7%	99.8%	51.9%
26	Has skill, ability for start-up	Retired, students, disabled	No start-up opportunities	Lo drop in growth	1.0	776	1.2%	87.4%	8	0.1%	100.0%	53.9%
27	No skill, ability for start-up	Retired, students, disabled	18-24 Years Old	HH Inc Highest 33%	0.8	59	0.1%	87.5%	0	0.0%	100.0%	60.4%
28	No skill, ability for start-up	Retired, students, disabled	18-24 Years Old	Moderate drop in growth	0.2	327	0.5%	88.0%	1	0.0%	100.0%	51.9%
29	No skill, ability for start-up	Not working	45-54 Years Old	Lo drop in growth	0.1	1,633	2.5%	90.5%	2	0.0%	100.0%	80.5%
30	No skill, ability for start-up	Not working	55-64 Years Old	HH Inc Medium Third	0.1	478	0.7%	91.3%	0	0.0%	100.0%	71.5%
31	No skill, ability for start-up	Retired, students, disabled	35-44 Years Old		0.0	170	0.3%	91.5%	0	0.0%	100.0%	58.3%
32	No skill, ability for start-up	Retired, students, disabled	45-54 Years Old		0.0	1,758	2.7%	94.2%	0	0.0%	100.0%	81.5%
33	No skill, ability for start-up	Retired, students, disabled	55-64 Years Old		0.0	3,763	5.8%	100.0%	0	0.0%	100.0%	60.4%
						65,079			6,737			

entrepreneurial activity are those with the skill and ability to start a new firm, are working full or part time, know someone that recently started a business, and consider that good start-up opportunities exist. Women are 30% of this group. The next sub-group—where 27% are active in start-ups—has three of these attributes. But the fourth attribute, knowing someone that recently started a business, is replaced by presence in the lowest third of household income for their country. Women are 70% of this group of individuals. Groups three and four are similar in that three of the four attributes are positive, those in the third group did not know a recent entrepreneur and those in the fourth group did not see good opportunities for new businesses. Women are a minority of those in groups three and four.

Further examination of the top third of the groups indicates that individuals with a range of situations are entrepreneurially active; usually two or three factors reflect some work experience, a positive view of opportunities, or personal acquaintance with a recent entrepreneur.

A review of the bottom third of the groups, where 2% or less are involved in entrepreneurship, indicates that in most cases the individuals report no skills or ability for start-ups, are not working, or are retired, students or disabled.

Despite the systematic impact of age and gender reported above, these factors are clearly less important in this assessment. Age appears occasionally at the third level of analysis and gender is not statistically significant in any of the first four levels. A review of the far right column

indicates that the proportion of women in the groups increases as the proportion that are active entrepreneurs decreases. This suggests that the other factors—skill to implement a start-up, the perception of a business opportunity, active in the work force, knowing an recent entrepreneur—are much more significant than gender in affecting participation in entrepreneurial activity. Women are not involved because they do not have the attributes associated with active entrepreneurship.

The clustering of entrepreneurial activity among special groups in the population is quite clear. The top four groups—the entrepreneurial hotbeds where one in four is active—account for 60% of all those engaged in entrepreneurial activity, yet are drawn from 11% of those in the sample. Conversely, the bottom eight groups—the entrepreneurial graveyards where 1% or less are active—represent 13% of the sample but less than 1 in 100 of all those entrepreneurially active. Were those 65 years and older included in the analysis, this “nonparticipating” group would be much larger. Clearly, participation in entrepreneurial activity is not uniformly distributed across the adult population in any country.

It may be, as 29 countries are represented in this analysis, that some countries may have more of these types of groups than others. In order to explore this potential, all countries were sorted into six categories, as shown above in Figure 2. Table 10_B indicates the percentage of individuals in each sub-group from each of these types of countries. Again, the sample is weighted in

Table 10_B – Global Labor Force Groups by Level of Overall Entrepreneurial Activity and Type of Country

Row	First Level	2nd Level	3rd Level	4th Level	TEA Rate	Asian Developed	Central Europe EU	Europe plus Israel	Formere British Empire	Latin America	Asian Developing	Total Percent
1	Has skill, ability for start-up	Work, Full or Part-Time	Know recent entrepreneur	Good start-up opportunities	34.8	1%	2%	7%	19%	12%	60%	100%
2	Has skill, ability for start-up	Work, Full or Part-Time	Good start-up opportunities	HH Inc Lowest Third	27.4	1%	2%	7%	19%	20%	51%	100%
3	Has skill, ability for start-up	Work, Full or Part-Time	Do not know recent entrep	Good start-up opportunities	27.0	1%	1%	12%	35%	11%	40%	100%
4	Has skill, ability for start-up	Work, Full or Part-Time	Know recent entrepreneur	No start-up opportunities	23.1	1%	4%	8%	11%	6%	69%	100%
5	Has skill, ability for start-up	Retired, students, disabled	Good start-up opportunities	HH Inc Low, Medium Third	17.9	0%	5%	4%	14%	9%	68%	100%
6	No skill, ability for start-up	Work, Full or Part-Time	Low drop in growth	HH Inc Low third	12.4	2%	0%	11%	2%	1%	85%	100%
7	Has skill, ability for start-up	Work, Full or Part-Time	Good start-up opportunities	HH Inc Medium, Hi Third	12.3	0%	3%	8%	24%	9%	56%	100%
8	No skill, ability for start-up	Not working	18-44 Years Old	Good start-up opportunities	12.1	2%	3%	10%	14%	10%	61%	100%
9	Has skill, ability for start-up	Work, Full or Part-Time	No start-up opportunities	Lo, moderate drop in growth	10.7	1%	8%	2%	46%	36%	7%	100%
10	No skill, ability for start-up	Not working	55-64 Years Old	HH Inc Highest Third	10.4	7%	1%	21%	13%	10%	48%	100%
11	No skill, ability for start-up	Work, Full or Part-Time	High drop in growth	Post secondary education	10.2	8%	0%	4%	0%	45%	43%	100%
12	Has skill, ability for start-up	Work, Full or Part-Time	Do not know recent entrep	No start-up opportunities	9.5	4%	4%	15%	31%	10%	37%	100%
13	No skill, ability for start-up	Retired, students, disabled	18-24 Years Old	Hi drop in growth	9.2	12%	0%	7%	0%	81%	0%	100%
14	No skill, ability for start-up	Work, Full or Part-Time	Low drop in growth	HH Inc Hi third	7.7	2%	0%	19%	3%	1%	75%	100%
15	Has skill, ability for start-up	Retired, students, disabled	No start-up opportunities	Hi, moderate drop in growth	5.5	1%	17%	4%	58%	20%	0%	100%
16	No skill, ability for start-up	Not working	55-64 Years Old	HH Inc Lowest Third	5.3	15%	1%	16%	8%	6%	54%	100%
17	Has skill, ability for start-up	Retired, students, disabled	Good start-up opportunities	HH Inc Highest Third	5.3	0%	1%	4%	17%	6%	72%	100%
18	No skill, ability for start-up	Work, Full or Part-Time	Moderate drop in growth	Know recent entrepreneur	4.8	0%	52%	3%	43%	3%	0%	100%
19	Has skill, ability for start-up	Work, Full or Part-Time	No start-up opportunities	High drop in growth	4.2	2%	1%	12%	5%	3%	77%	100%
20	No skill, ability for start-up	Work, Full or Part-Time	Low drop in growth	HH Inc Medium third	3.6	14%	0%	15%	2%	0%	69%	100%
21	No skill, ability for start-up	Not working	45-54 Years Old	Hi, moderate drop in growth	2.5	4%	29%	3%	30%	21%	13%	100%
22	No skill, ability for start-up	Not working	18-44 Years Old	No start-up opportunities	2.3	7%	10%	9%	13%	6%	55%	100%
23	No skill, ability for start-up	Retired, students, disabled	18-24 Years Old	Low drop in growth	2.3	2%	1%	4%	6%	0%	86%	100%
24	No skill, ability for start-up	Work, Full or Part-Time	High drop in growth	Up to HS degree	2.2	26%	0%	2%	0%	73%	0%	100%
25	No skill, ability for start-up	Work, Full or Part-Time	Moderate drop in growth	Do not know recent entrep	1.1	0%	51%	2%	45%	2%	0%	100%
26	Has skill, ability for start-up	Retired, students, disabled	No start-up opportunities	Lo drop in growth	1.0	1%	3%	8%	4%	0%	85%	100%
27	No skill, ability for start-up	Retired, students, disabled	18-24 Years Old	HH Inc Highest 33%	0.8	4%	21%	32%	21%	22%	0%	100%
28	No skill, ability for start-up	Retired, students, disabled	18-24 Years Old	Moderate drop in growth	0.2	0%	80%	3%	5%	12%	0%	100%
29	No skill, ability for start-up	Not working	45-54 Years Old	Lo drop in growth	0.1	10%	0%	9%	4%	1%	76%	100%
30	No skill, ability for start-up	Not working	55-64 Years Old	HH Inc Medium Third	0.1	31%	1%	24%	6%	7%	32%	100%
31	No skill, ability for start-up	Retired, students, disabled	35-44 Years Old		0.0	1%	29%	5%	10%	0%	54%	100%
32	No skill, ability for start-up	Retired, students, disabled	45-54 Years Old		0.0	0%	9%	1%	5%	0%	84%	100%
33	No skill, ability for start-up	Retired, students, disabled	55-64 Years Old		0.0	0%	15%	5%	7%	0%	74%	100%

relation to the populations of the different countries, so that China, India, the US, Japan, and Russia (the larger countries) get more emphasis in the comparisons.

For example, among the top group in terms of entrepreneurial activity, where 35% are active, 60% are in Asian developing countries, 19% from Former British Empire countries (which includes the US), and 12% from Latin America. The remaining 10% are spread across EU Europe (7%), Central Europe (2%), and Asian Developing (1%) countries. Those in the third group—with skills, jobs, and no contact with entrepreneurs, but who see opportunities and 27% are active—are found mostly in Asian Developing (40%) and former British Empire (35%) countries. The thirteenth group—those without the skill or ability to do a start up, students, 18-24 years old, in countries with a large drop in the growth of GDP and where 9% are entrepreneurially active—are found primarily in Latin America (81%) and Asian Developed (12%) countries, with a few (7%) in EU Europe. The twenty-fifth group—where 1% are active, are those with no skills for a start-up but are currently working, are in countries with a moderate drop in the growth of GDP and do not know an entrepreneur—are heavily concentrated in Central Europe (51%) and former British Empire countries (45%).

There is considerable information that processes leading to opportunity and necessity entrepreneurship are somewhat different. This difference is also reflected in this type of analysis. For simplicity, only the groups that represent 80% of the active entrepreneurs are presented, 14 sub-groups for opportunity entrepreneurship and 15 for necessity are presented in Tables 10_C to 10_F. However, this is already a substantial difference, for the four variable analyses resulted in 38 sub-groups and a range of opportunity entrepreneurship from

none to 34%. The necessity entrepreneurship analysis resulted in many more groups, 54, and a much smaller range of activity, none to 18%. Clearly, a more diverse set of factors affects participation in necessity entrepreneurship.

The assessment of opportunity entrepreneurship in Table 10_C, where 30% of the sample produces 79% of the entrepreneurially activity, makes clear that skill, perception of opportunity, and working are critical—these top five groups represent 11% of the sample but provide 44% of the opportunity entrepreneurs. There are differential impacts on those of different ages with those 25-34 the most active. One interesting group is number 8, those that feel they have the skill, know a recent entrepreneur and are working but do not see good opportunities for start-ups; while 13% are active opportunity entrepreneurs, they are 11% of the sample and provide 22% of those entrepreneurially active. As before, women are a minority of most sub-groups, except those where the individual is “not working” where they are a majority.

The distribution of individuals from these groups among country types are presented in Table 10_D. Among the top five sub-groups, the proportion from Asian developing clearly drops with age, offset by increases in EU Europe and Former British Empire. There is little age related variation for Latin American, Asian Developed, and Central Europe countries. The fourteenth group, young people without skills for start-ups in countries with big declines in the growth of GDP seem to be concentrated in Asian Developed and Latin American countries.

**Table 10_C – Global Labor Force Groups by Level of Opportunity Entrepreneurial Activity
[Top 14 of 38 groups]**

Row	First Level	2nd Level	3rd Level	4th Level	TEA Rate	No Cases	Sample Percent	Cumulative Sample	# Entre Act	% Entre Act	Cumul Entre Active	% Female in Group
1	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	25-34 Years Old	33.6	2,388	3.7%	3.7%	802	18.9%	18.9%	26.7%
2	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	18-24 Years Old	30.1	831	1.3%	4.9%	250	5.9%	24.8%	37.6%
3	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	35-44 Years Old	25.8	2,022	3.1%	8.1%	522	12.3%	37.2%	34.5%
4	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	45-54 Years Old	18.0	1,228	1.9%	9.9%	221	5.2%	42.4%	33.2%
5	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	55-64 Years Old	17.6	443	0.7%	10.6%	78	1.8%	44.2%	26.1%
6	Has skill, ability for start-up	Good start-up opportunities	Retired, student, disabled	Know recent entrepreneur	16.9	545	0.8%	11.5%	92	2.2%	46.4%	50.5%
7	Has skill, ability for start-up	Good start-up opportunities	Not working	No fear of failure	12.9	886	1.4%	12.8%	114	2.7%	49.1%	66.3%
8	Has skill, ability for start-up	No start-up opportunities	Know recent entrepreneur	Work, Full or Part-Time	12.8	7,345	11.3%	24.1%	940	22.2%	71.3%	39.2%
9	No skill, ability for start-up	Work, Full or Part-Time	25-34 Years Old	Good start-up opportunities	11.3	1,191	1.8%	25.9%	135	3.2%	74.5%	56.8%
10	No skill, ability for start-up	Not working	18-24 Years Old	HH Inc Highest 33%	11.1	923	1.4%	27.4%	102	2.4%	76.9%	53.7%
11	No skill, ability for start-up	Not working	Know recent entrepreneur	18-24 Years Old	8.3	357	0.5%	27.9%	30	0.7%	77.6%	60.4%
12	No skill, ability for start-up	Work, Full or Part-Time	18-24 Years Old	HH Inc Lowest Third	6.9	650	1.0%	28.9%	45	1.1%	78.6%	53.3%
13	No skill, ability for start-up	Not working	Know recent entrepreneur	55-64 Years Old	6.2	333	0.5%	29.4%	21	0.5%	79.1%	69.5%
14	No skill, ability for start-up	Retired, student, disabled	18-24 Years Old	Highest economic decline	6.2	92	0.1%	29.6%	6	0.1%	79.3%	44.9%

Table 10_D – Global Labor Force Groups by Level of Opportunity Entrepreneurial Activity and Type of Country
[Top 14 of 38 groups]

Row No	First Level	2nd Level	3rd Level	4th Level	TEA Rate	Asian Developed	Central Europe	EU Europe plus Israel	Former British Empire	Latin America	Asian Developing	Total Percent
1	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	25-34 Years Old	33.6	1%	2%	7%	17%	11%	63%	100%
2	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	18-24 Years Old	30.1	0%	2%	4%	25%	13%	57%	100%
3	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	35-44 Years Old	25.8	1%	1%	9%	23%	12%	55%	100%
4	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	45-54 Years Old	18.0	1%	2%	11%	30%	11%	46%	100%
5	Has skill, ability for start-up	Good start-up opportunities	Work, Full or Part-Time	55-64 Years Old	17.6	2%	2%	17%	36%	12%	32%	100%
6	Has skill, ability for start-up	Good start-up opportunities	Retired, student, disabled	Know recent entrepreneur	16.9	0%	4%	3%	11%	7%	76%	100%
7	Has skill, ability for start-up	Good start-up opportunities	Not working	No fear of failure	12.9	1%	2%	8%	23%	12%	54%	100%
8	Has skill, ability for start-up	No start-up opportunities	Know recent entrepreneur	Work, Full or Part-Time	12.8	1%	4%	8%	11%	6%	69%	100%
9	No skill, ability for start-up	Work, Full or Part-Time	25-34 Years Old	Good start-up opportunities	11.3	3%	4%	9%	10%	6%	68%	100%
10	No skill, ability for start-up	Not working	18-24 Years Old	HH Inc Highest 33%	11.1	1%	18%	7%	12%	5%	57%	100%
11	No skill, ability for start-up	Not working	Know recent entrepreneur	18-24 Years Old	8.3	1%	13%	18%	13%	9%	47%	100%
12	No skill, ability for start-up	Work, Full or Part-Time	18-24 Years Old	HH Inc Lowest Third	6.9	2%	10%	12%	29%	7%	41%	100%
13	No skill, ability for start-up	Not working	Know recent entrepreneur	55-64 Years Old	6.2	3%	0%	16%	2%	8%	71%	100%
14	No skill, ability for start-up	Retired, student, disabled	18-24 Years Old	Highest economic decline	6.2	12%	0%	7%	0%	81%	0%	100%

A comparable analysis of the top 15 subgroups of those engaged in necessity entrepreneurship is presented in Table 10_E. While work activity is the primary, first order characteristic, the strong presence of educational attainment as a major factor at the second level is of interest; nine sub-groups include people with a high school degree. The second group, which is 8% of the entire sample but 32% of all those in necessity entrepreneurship are individuals working, with a secondary school (high school) degree, in countries with low decline in GDP growth but in the lower third of the country household income. Note that women are, once again, a majority in those subgroups where the individuals are not working and group four, individuals without schooling.

The distribution of sub-group membership is again provided by country type in Table 10_F. The large second group, representing 32% of all necessity entrepreneurship, is almost entirely (92%) located in developing Asian countries. This is also true for sub-group four, those with no schooling. While for most sub-groups the concentration is heaviest in Asian Developing, it is not true for every case. For example, Latin American countries are quite significant for sub-groups 3, 6, and especially 12. Former British Empire countries are a host for a large proportion of those in Group 6 and 13. European countries are well represented in a number of sub-groups including 7 and 11. It is clear that different countries can expect to have

different types of sub-groups emphasizing necessity entrepreneurship.

This assessment makes clear the distinctive and personal nature of the situations that lead to a decision to participate in entrepreneurial activity. When a unique set of personal circumstances develops, the propensity to entrepreneur increases dramatically. When another set of personal circumstances occurs, it may dramatically depress the tendency to be an entrepreneur. These sets of factors appear to differ for opportunity and necessity entrepreneurship. Working, the perception of opportunities, the skill to do a start-ups, as well as age seem important to opportunity entrepreneurship; working, educational attainment and national economic growth seems to affect necessity entrepreneurship.

While comparisons based solely on gender indicate a systematic and significant reduction in activity among women, this assessment indicates that it may reflect other related differences—level of educational attainment, experience in the work force, and contact with entrepreneurs—that are associated with gender. Women may not have the benefit of work experience or higher levels of educational attainment (a large portion of the sample represents developing countries that have yet to establish universal education). These factors, rather than gender itself, may reduce the tendency of women to become involved in entrepreneurial activity.

But in terms of public policy, it is clear that certain sub-groups are responsible for the majority of entrepreneurial activity—but the sub-groups differ for opportunity and necessity entrepreneurship. These no doubt vary among countries and country specific patterns would need careful assessment before major policy implications could be developed for any specific nation.

**Table 10_E – Global Labor Force Groups by Level of Necessity Entrepreneurial Activity
[Top 15 of 54 groups]**

Row	First Level	2nd Level	3rd Level	4th Level	TEA Rate	No Cases	Sample Percent	Cumulative Sample	# Entre Act	% Entre Act	Cumul Entre Active	% Female in Group
1	Not working	Good start-up opportunities	35-44 Years Old	No fear of failure	18.5	435	0.7%	0.7%	80	3.3%	3.3%	71.1%
2	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	HH Inc lowest third	15.2	5,154	7.9%	8.6%	783	32.4%	35.8%	44.4%
3	Work, Full or Part-Time	Secondary School Degree	Major economic decline	45-54 Years Old	12.5	176	0.3%	8.9%	22	0.9%	36.7%	33.8%
4	Not working	Good start-up opportunities	25-34 Years Old	HH Inc lowest third	11.1	249	0.4%	9.2%	28	1.1%	37.8%	62.7%
5	Work, Full or Part-Time	No schooling			9.9	745	1.1%	10.4%	74	3.1%	40.9%	63.6%
6	Work, Full or Part-Time	Secondary Educ Experience	Moderate economic decline	Has skill, ability for start-up	7.4	369	0.6%	11.0%	27	1.1%	42.0%	27.6%
7	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	HH Inc highest third	6.7	1,857	2.9%	13.8%	124	5.1%	47.1%	39.4%
8	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	25-34 Years Old	6.7	2,776	4.3%	18.1%	186	7.7%	54.8%	44.3%
9	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	35-44 Years Old	6.7	3,817	5.9%	23.9%	256	10.6%	65.4%	48.2%
10	Work, Full or Part-Time	Secondary School Degree	Highest economic decline	55-64 Years Old	5.6	81	0.1%	24.1%	5	0.2%	65.6%	28.2%
11	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	45-54 Years Old	5.6	2,139	3.3%	27.4%	120	5.0%	70.6%	35.7%
12	Work, Full or Part-Time	Secondary School Degree	Highest economic decline	25-44 Years Old	4.7	502	0.8%	28.1%	24	1.0%	71.6%	35.3%
13	Not working	Good start-up opportunities	45-64 Years Old	Has skill, ability for start-up	4.4	284	0.4%	28.6%	12	0.5%	72.1%	67.4%
14	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	HH Inc middle third	4.2	3,791	5.8%	34.4%	159	6.6%	78.7%	39.1%
15	Work, Full or Part-Time	College/Univ degree	Has skill, ability for start-up	25-34 Years Old	4.2	2,589	4.0%	38.4%	109	4.5%	83.2%	28.4%

Table 10_F – Global Labor Force Groups by Level of Necessity Entrepreneurial Activity and Type of Country
[Top 15 of 54 groups]

Row	First Level	2nd Level	3rd Level	4th Level	TEA Rate	Asian Developed	Central Europe	Europe Plus Israel	Former British Empire	Latin American	Asian Developing	
1	Not working	Good start-up opportunities	35-44 Years Old	No fear of failure	18.5	1%	2%	6%	17%	9%	65%	10
2	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	HH Inc lowest third	15.2	0%	0%	5%	1%	0%	92%	10
3	Work, Full or Part-Time	Secondary School Degree	Major economic decline	45-54 Years Old	12.5	5%	0%	4%	0%	33%	58%	10
4	Not working	Good start-up opportunities	25-34 Years Old	HH Inc lowest third	11.1	1%	2%	6%	9%	19%	63%	10
5	Work, Full or Part-Time	No schooling			9.9	0%	0%	0%	3%	5%	92%	10
6	Work, Full or Part-Time	Secondary Educ Experience	Moderate economic decline	Has skill, ability for start-up	7.4	0%	4%	2%	58%	37%	0%	10
7	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	HH Inc highest third	6.7	0%	1%	20%	5%	1%	74%	10
8	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	25-34 Years Old	6.7	9%	1%	17%	3%	1%	70%	10
9	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	35-44 Years Old	6.7	6%	1%	15%	1%	1%	76%	10
10	Work, Full or Part-Time	Secondary School Degree	Highest econpmic decline	55-64 Years Old	5.6	2%	0%	4%	0%	24%	70%	10
11	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	45-54 Years Old	5.6	10%	1%	22%	2%	1%	65%	10
12	Work, Full or Part-Time	Secondary School Degree	Highest economic decline	25-44 Years Old	4.7	4%	0%	4%	0%	55%	38%	10
13	Not working	Good start-up opportunities	45-64 Years Old	Has skill, ability for start-up	4.4	1%	3%	16%	31%	16%	33%	10
14	Work, Full or Part-Time	Secondary School Degree	Lowest economic decline	HH Inc middle third	4.2	2%	1%	15%	3%	0%	79%	10
15	Work, Full or Part-Time	College/univ degree	Has skill, ability for start-up	25-34 Years Old	4.2	2%	2%	6%	20%	14%	57%	10

This page is left blank.

H

Entrepreneurial Contextual Structure

The history, institutional structure, and cultural and social systems of the 37 GEM 2002 countries are quite diverse and they may have differential impacts on the indigenous patterns of entrepreneurial activity. GEM national teams in 34 of the 37 GEM 2002 countries (no national teams were present in Italy, Poland, and Russia) collected two types of data from national experts. Reflecting the conceptual model presented in Appendix I, national experts were chosen by the national teams to represent the nine entrepreneurial framework conditions: presence of financial support, government policies, government programs, education and training, research and development transfer, commercial and professional infrastructure, internal market openness, access to physical infrastructure, and cultural and social norms related to entrepreneurship. An effort was made to contact one person related to each topic who was active as an entrepreneur, the others were chosen for roles in institutions, agencies, or organizations emphasizing the entrepreneurial framework.

Table 11 summarizes those who completed a 10 page self-completed questionnaire in terms of their gender (82% male), age (90% were 35 years or older), educational background (95% had college/university degrees; 69% post-college/university experiences), area of expertise

(evenly divided across the nine entrepreneurial framework conditions), and experience in the entrepreneurial sector (57% had more than 10 years of experience). This is clearly a very sophisticated, experienced group of people.

Most dramatic is their current participation in entrepreneurial activities. The bottom of Table 10 compared the percentage that are starting new businesses, managing new businesses, acting as informal investors, expect to start businesses, and recently discontinued a business. Compared to the typical adults in these 34 countries, the experts—most of whom had full time jobs in established government agencies or business organizations—were three to five times more likely to report a current or expected active involvement in an entrepreneurial activity.

No matter how one considers these national experts—selected by the national teams for their special knowledge—they can be considered to be very knowledgeable about entrepreneurship from their professional perspective and career experiences.

The experts' perspectives and judgments on entrepreneurship in their countries are obtained in two ways. First, their spontaneous reactions are provided in a 45-60 minute personal interview. Second, from their responses to a 10

Table 11 - Country Experts in Entrepreneurship:
Selected Descriptive Characteristics

	Experts	Adult Pop
Number of countries	34	34
Number of experts	1,300	
Minimum per country	14	
Maximum per country	64	
Male	81.9 %	
Female	18.1 %	
18-24 Years Old	0.5 %	
25-34 Years Old	10.0 %	
35-44 Years Old	30.3 %	
45-54 Years Old	34.4 %	
55-64 Years Old	21.2 %	
65-94 Years Old	3.7 %	
Less than vocational/technical training	1.9 %	
Vocational/technical degree	3.2 %	
University/college degree	25.8 %	
Professional training	25.4 %	
Graduate degree	43.7 %	
Financial support expertise	12.3 %	
Government policies expertise	11.2 %	
Government programs expertise	10.4 %	
Education and training expertise	12.4 %	
R & D transfer expertise	11.3 %	
Commercial and professional infrastructure expertise	11.2 %	
Market flexibility/openness expertise	10.7 %	
Access to physical infrastructure expertise	9.9 %	
Cultural and social norms/institutions expertise	10.4 %	
0-4.9 Yrs experience in entrepreneurial sector	21.3 %	
5.0-9.9 Yrs experience in entrepreneurial sector	21.5 %	
10.0-14.9 Yrs experience in entrepreneurial sector	21.9 %	
15.0-19.9 Yrs experience in entrepreneurial sector	11.9 %	
20.0-24.9 Yrs experience in entrepreneurial sector	10.4 %	
24.9-50.0 Yrs experience in entrepreneurial sector	13.0 %	
Alone or with others doing a start-up	32.9 %	7.9 %
Current job involves a start-up	32.7 %	3.6 %
Currently a business owner/manager	47.0 %	14.0 %
Informal investor in a start-up in past three years	33.0 %	3.2 %
Expect to start a business in next three years	45.7 %	15.5 %
Shut down a business in past 12 months	14.5 %	3.7 %

page self-administered questionnaire, completed at the end of the personal interview. Their responses illustrate the great diversity of contexts and situations that confront those starting businesses across the GEM countries in 2002.

EXPERT OBSERVATIONS

The material provided by the experts during the discussion initially focused on that area where the expert had the most experience; it then shifted to other relevant topics chosen by the expert. At the conclusion of the discussion, the expert was asked to provide three major strengths supporting entrepreneurship in their country, three major weaknesses, and three policy suggestions. These were translated into English as one-page summaries and submitted to the GEM coordination team where they were reviewed, standardized, coded, and classified into the nine general entrepreneurial framework conditions or placed in an "other" category.¹⁰

The relative emphasis among categories provides a general overview of the experts' impressions regarding major strengths and weaknesses in Table 12 and Table 13. In each case, the top three comments from each respondent are assembled and the proportion of focus on each category is computed. For example,

if 20 experts were interviewed, they would generally have three comments per person or 60 total comments. The percentage of comments in each category would be based on the total of 60.

In Table 12 and 13 the countries are organized in terms of the level of entrepreneurial activity and the rows are organized in terms of overall emphasis among the national experts. This makes clear that across the 1,000 experts, cultural and social norms are generally given the most emphasis as strengths in Table 12; about 25% of all comments are related to this topic. Two other areas each receive about 15% of the comments—government policies and education and training. Three other topics each receive about 10% of the comments—the miscellaneous "other" category, internal market openness, and government programs. Four other areas, including financial support, received 5% or less of the comments.

There is, however, substantial variation among countries. Despite the overall pattern, those in Singapore considered financial support their top strength and it was considered second to the top in Canada. In contrast, the Netherlands experts considered government policies a major

Table 12 – Experts Emphasis on National Strengths

Country	TEA02	Cultural, Social Norms	Government Policies	Education & Training	Other, NEC	Market Openness	Government Programs	Financial Support	Access to Physical Infrastructure	Commercial, Professional Infrastructure	Research & Development Transfer	Number of Experts
Average	6.9	XXXXXX	XXX	XXX	XX	XX	XX	X	X	X	X	
Thailand	18.9	XXXXXXXXXX	XXX	X	XX	X	X	X	X	X	*	39
India	17.9	XXXXXX	XX	XXXX	XX	XXX	*	*	XX	XX	-	34
Chile	15.7	XXX	XXXX	X	X	XXXXXX	*	X	X	XX	X	38
Korea (South)	14.5	XXXX	X	XXX	X	*	XXXXX	XX	*	XXX	-	33
Argentina	14.2	XXX	-	XXXX	XXXXX	XXXXX	-	-	XXX	*	-	21
New Zealand	14.0	XXXXXXXXXXXX	X	X	XX	X	XX	*	-	*	*	31
Brazil	13.5	XXXXXXXXXX	XX	XX	*	XX	XXX	*	*	X	*	42
Mexico	12.4	XXXXXX	XX	XXX	X	XX	XXX	XX	-	X	*	18
China	12.3	XXXX	XXXXXX	X	X	XXX	-	X	XX	X	X	36
Iceland	11.3	XXXXXX	XX	XXX	XXXXX	X	X	X	-	XXX	*	35
US	10.5	XXXXXXXXXX	XXX	XX	X	X	X	XXX	X	X	X	40
Ireland	9.1	XXXXXXX	XX	XX	X	-	XXX	X	X	XX	X	18
Canada	8.8	XXXXXXX	XXXX	XX	-	0	X	XXXX	XXX	-	-	9
Australia	8.7	XXXXXXXXXX	X	XX	XXX	XX	X	X	*	X	X	32
Norway	8.7	XXX	XX	XXXX	XX	XXX	X	XX	XX	X	*	34
Israel	7.1	XXXX	X	XXXXXXXXXX	X	XX	X	*	XX	*	XX	18
Switzerland	7.1	XX	XXX	XX	X	XX	X	XX	XX	XX	XXX	36
Hungary	6.6	XXXXXXX	XXX	X	XXX	XX	XXX	*	-	*	-	18
South Africa	6.5	XXX	XXXX	X	XXXXX	XXX	X	X	XX	X	*	53
Denmark	6.5	XXXX	XXXX	XXX	X	-	XXX	X	XX	*	X	18
Singapore	5.9	XX	XX	X	XXX	XX	X	XXXX	XX	XX	-	20
UK	5.4	XXXX	XXXXXX	XXX	XX	X	X	X	X	X	*	33
Germany	5.2	XXX	X	XXX	XX	XX	XXX	X	XXX	X	X	22
Finland	4.6	XXXX	X	XXX	XXXXX	X	*	XX	X	XX	*	16
Netherlands	4.6	X	XXXXXX	XX	X	*	X	XXX	XXX	XX	*	18
Slovenia	4.6	XXXXXXX	*	XXX	XXXXXX	X	-	*	*	X	-	37
Spain	4.6	XXXXXX	XXX	XX	XXXXX	XXXX	XX	X	X	-	*	36
Chinese Taipei	4.3	XXXXXX	XX	XX	X	XXXX	XX	XXX	*	X	X	36
Sweden	4.0	XXXXXX	XX	XXXXXXXXXX	XXX	-	*	X	*	X	X	19
Croatia	3.6	XXXXX	X	XX	XXX	XX	XXX	XX	X	X	X	37
Hong Kong	3.4	XXXX	XXXXXXX	X	XXX	X	*	XX	XX	X	-	39
France	3.2	XXX	XXX	X	*	XX	XXXXX	XX	XX	XX	-	18
Belgium	3.0	XX	XX	XXXX	XXX	X	*	XX	XXX	X	X	19
Japan	1.8	XXXXX	XX	XX	XXXXX	XX	X	-	XX	X	X	16

[NOTE: "X" = about 5% of the row totals, "*" = less than 2.5% of row totals, "-" = empty cell.]

strength and few commented on the benefits of the cultural and social norms.

This diversity is reflected in the analysis of comments regarding weakness, presented in Table 13. In this case, there is far more consensus across countries, as four domains receive the 70% of the comments regarding weaknesses: government policies, cultural and social norms, financial support and education and training. Only in a few special cases does another

internal market openness in Singapore and Iceland, or the problems with research and development transfer in the Netherlands.

Three domains—government policies, cultural and social norms, and education and training—are among the leading issues discussed as both a national strength and weakness. Different aspects may be under discussion, and a more precise review of these differences is underway.

Table 13 – Experts Emphasis on National Weakness

Country	TEA02	Government Policies	Cultural, Social Norms	Financial Support	Education & Training	Internal Market Openness	Other, NEC	Government Programs	Commercial, Professional Infrastructure	Research & Development Transfer	Access to Physical Infrastructure	NOCASES
Average	6.9	XXXX	XXXX	XXXX	XXX	X	X	X	X	X	X	
Japan	1.8	XXX	XXXXXXXX	XXXX	XXXX	-	*	X	XX	-	-	16
Belgium	3.0	XXXXXX	XXX	XXXX	XX	X	XX	*	-	X	X	19
France	3.2	XXXXXX	XXXX	XXX	XXX	*	-	XXX	*	*	-	18
Hong Kong	3.4	XXX	XXX	XX	XXX	XXX	XX	*	*	X	X	39
Croatia	3.6	XXXX	XXX	XXX	XXXX	X	XX	XX	XX	*	*	37
Sweden	4.0	XXXXXX	XXXXXX	XXX	XX	*	XX	-	*	*	*	19
Chinese Taipei	4.3	XXXX	X	XXXX	XXX	XXX	X	XX	X	X	*	36
Finland	4.6	XXXX	XXXXX	XXXX	XXXX	*	XX	-	*	*	-	16
Netherlands	4.6	XXX	XXXX	X	XXXX	-	X	X	XX	XXX	X	18
Slovenia	4.6	XXXXXX	XXXXX	XX	XXX	*	X	*	XX	*	*	37
Spain	4.6	XXXX	XXXXX	XXXXX	XXX	*	X	X	-	*	*	36
Germany	5.2	XXXX	XXXXX	XXX	XXXX	X	X	X	X	X	-	22
UK	5.4	XX	XXXX	XXXXX	XXXX	-	*	*	XX	X	X	33
Singapore	5.9	X	XXXX	XX	XXXX	XXXXX	XX	X	*	-	-	20
Denmark	6.5	XXX	XXXXXXXX	XX	XXXX	X	X	X	*	X	-	18
South Africa	6.5	XXX	XXX	XXXX	XXXXX	X	X	X	X	*	*	53
Hungary	6.6	XXXXXX	*	XXXXXX	XX	X	X	XX	*	-	XX	18
Israel	7.1	XXXXXXXXXX	XX	X	XXX	X	XX	X	X	-	X	18
Switzerland	7.1	XXXX	XXXXXX	XXX	XXX	XX	*	*	X	*	*	36
Australia	8.7	XXX	XXXXXXXX	XXXX	XXX	*	X	X	X	*	*	32
Norway	8.7	XXXX	XXX	XXXXXX	X	X	X	XX	X	X	*	34
Canada	8.8	XXXXXXXXXX	X	XXXX	XX	-	X	XX	X	X	-	9
Ireland	9.1	X	XX	XXXX	XXX	X	XX	X	-	X	XX	18
US	10.5	XXXX	XX	XXXXX	XXXXX	X	X	X	X	X	*	40
Iceland	11.3	X	XXXX	XXXXX	XX	XXXX	X	X	X	*	-	35
China	12.3	XXXX	XXX	XXXXXX	XX	X	X	X	XX	XX	-	36
Mexico	12.4	XXX	XX	XXX	XXX	XX	X	XXX	X	X	X	18
Brazil	13.5	XXXXXX	XX	XXX	XXXX	*	X	XX	X	-	*	42
New Zealand	14.0	X	XXXXXX	XXX	XXXXX	X	X	*	X	-	-	31
Argentina	14.2	XXXXXX	XXXX	XXX	X	XXX	X	X	-	X	-	21
Korea (South)	14.5	XXXXX	XXXX	XXXXXX	X	-	XX	X	XX	-	*	33
Chile	15.7	XXXXXX	XXXX	XXXXX	XXX	X	X	X	X	X	-	38
India	17.9	XXX	XXXXX	XXX	XX	X	XX	-	XX	X	XX	34
Thailand	18.9	XXX	XXXX	XXX	XXXXXX	X	X	*	X	X	X	39

[NOTE: "X" = about 5% of the row totals, "*" = less than 2.5% of row totals, "-" = empty cell.]

In summary, this assessment presents both systematic patterns—as some topics dominate as arenas of strength or weakness—as well as considerable national uniqueness. The detailed analysis underway by the national teams provides a more informed, sophisticated interpretation of these unique national situations.

EXPERT ASSESSMENTS OF ENTREPRENEURIAL FRAMEWORK CONDITIONS¹¹

A wide range of factors that may facilitate the implementation of a new firm or the growth of a young firm cannot be measured with existing

cross-national measures. To develop reliable measures of these factors, the national experts were asked to complete a 10-page questionnaire. The majority of the items were factual statements about the situation in their country: "In my country, people working for government agencies are competent and effective in supporting new and growing firms" Answers were provided on a five point scale: completely true, somewhat true, neither true or false, somewhat false, and completely false. The questionnaire—developed in English—was translated into the appropriate language for each GEM country by the national team.

Appropriate procedures were used to determine which sets of questions—with the same substantive focus—tended to receive the same types of answers. The results are presented in

Table 14, which shows the 18 different aspects of the national entrepreneurial context measured with this procedure. For each aspect, the number of items used in developing a summary index and the reliability of the index is presented. Reliabilities are important for they indicate the extent to which the procedure would provide the same result on repeated applications. If reliabilities are high, then most variation will reflect diversity in the phenomena, not uncontrolled errors in the measurement procedure. The high reliabilities, only two are below 0.70, reflect the constant adjustment and improvements to the questionnaire since 1999. The 2002 version was the fourth generation and represents a substantial technical achievement. It suggests confidence that individuals in different countries are responding to the items in the same way.

Table 14 – Expert Questionnaire Indices

Dimension Label	Number of Items	Reliability (Cronback's Alpha)
EFC 1: Financial Support 1: Access to institutional debt, equity	3	0.73
EFC 1: Financial Support 2: High value equity, venture capital, IPO	3	0.65
EFC 2: Government Policies 1: Policy content, procedures	3	0.72
EFC 2: Government Policies 2: Regulatory ease, processing speed	3	0.70
EFC 3: Government Programs: Presence, ease of assistance	5	0.77
EFC 4: Education & Training 1: Primary, secondary education	3	0.81
EFC 4: Education & Training 2: Post-secondary programs	2	0.54
EFC 5 Research & Development Transfer to New, Growth Firms	5	0.75
EFC 6 Commercial, Professional Infrastructure: Cost, availability	5	0.82
EFC 7 Internal Market Openness 1: Rapid Market Changes	2	0.90
EFC 7 Internal Market Openness 2: Barriers to Entry	4	0.75
EFC 8 Access to Physical Infrastructure	5	0.82
EFC 9 Entrepreneurial orientation accepted in culture	5	0.87
EFC 10 Protection of Intellectual Property Rights	5	0.86
Opportunity: Presence of and access to business opportunities	5	0.69
Capacity, skills: People know how to launch, manage new firms	5	0.80
Capacity, motivation: People want to launch, manage new firms	5	0.80
Gender: Supporting for entrepreneurship by women	5	0.76

It is appropriate to use the results to compare countries.

Note that most of the dimensions are closely related to the GEM model, representing various entrepreneurial framework conditions, the presence of opportunities within the country, and two aspects of the capacity of the people for entrepreneurial activity—skills and motivation. This reflects the initial focus of the research program on opportunity-based entrepreneurship. Additional sets of items were added to measure the national protection for intellectual property rights (IPR) as well as the presence of support for women to engage in entrepreneurship.

Are these dimensions, designed to reflect an improved context for opportunity entrepreneurship, related to differences in entrepreneurial activity? The correlations between these dimensions and the overall TEA index, as well as TEA opportunity and necessity measures is provided in Table 15 for 34 countries in the GEM 2002 assessment. As all are predicted to have a positive relationship with the level of entrepreneurial activity, a one-tailed statistical significance is appropriate as a guide to which correlations may reflect a systematic association.

The results are quite striking. Most of the correlations associated with the TEA overall and TEA opportunity measures are NOT statistically significant. There is a significant positive relationship between the capacity of the people in the country to implement and manage new firms for both TEA overall and TEA opportunity, and a positive correlation associated with TEA opportunity and the presence of business opportunities. On the other hand, the presence of

Dimension Label	TEA Overall	TEA Opportunity	TEA Necessity
EFC 1: Financial Support 1: Access to institutional debt, equity	*-.31	-.07	**-.52
EFC 1: Financial Support 2: High value equity, venture capital, IPO	-.15	0.11	**-.46
EFC 2: Government Policies 1: Policy content, procedures	-.17	0.03	**-.40
EFC 2: Government Policies 2: Regulatory ease, processing speed	-.06	0.08	#-.23
EFC 3: Government Programs: Presence, ease of assistance	-.25	-.02	**-.45
EFC 4: Education & Training 1: Primary, secondary education	0.06	0.20	-.15
EFC 4: Education & Training 2: Post-secondary programs	0.01	0.07	-.08
EFC 5 Research & Development Transfer to New, Growth Firms	-.20	-.05	*-.33
EFC 6 Commercial, Professional Infrastructure: Cost, availability	-.01	0.16	#-.24
EFC 7 Internal Market Openness 1: Rapid Market Changes	0.10	0.00	0.19
EFC 7 Internal Market Openness 2: Barriers to Entry	-.01	0.12	-.18
EFC 8 Access to Physical Infrastructure	-.10	0.02	-.20
EFC 9 Entrepreneurial orientation accepted in culture	0.19	#0.26	0.00
EFC 10 Protection of Intellectual Property Rights	***-.40	-.20	**-.54
Opportunity: Presence of and access to business opportunities	0.10	#0.27	-.18
Capacity, skills: People know how to launch, manage new firms	#0.25	*0.31	0.03
Capacity, motivation: People want to launch, manage new firms	0.20	0.18	0.16
Gender: Supporting for entrepreneurship by women	0.07	0.20	-.09
One-tailed statistical significance: # <0.10; * <0.05; ** <0.01.			

strong protection for intellectual property rights reflects negative correlations across all three measures of entrepreneurial activity. This may reflect the higher level of entrepreneurial activity in developing countries where protection for IPR is still emerging.

But it is the relationships to TEA necessity measures of activity that are the most dramatic. All seven statistically significant correlations are negative. Those countries where the experts consider the presence of financial support, government policies and programs, mechanisms for transferring research and development to new firms, the presence of commercial and professional infrastructures and the protection of intellectual property rights to be disadvantageous for new and growth firms have higher levels of necessity entrepreneurship.

This rather consistent negative relationship between these experts' judgments on the quality of the infrastructure and the level of necessity entrepreneurship may reflect several phenomena. First, necessity entrepreneurship is clearly much higher among the GEM 2002 developing countries: such as Thailand, India, Korea, Brazil, China, and Mexico. Second, a large number of developed countries, principally in EU Europe, have implemented a number of programs and procedures designed to enhance the context for entrepreneurship, yet the level of activity remains modest. Third, the well-educated, highly experienced experts may be focusing on the entrepreneurial sector in terms of the people and issues they confront on a daily basis. All countries—whether the overall level of entrepreneurship is high or low—tend to have a sector where some activity takes place. It is these

“entrepreneurial sectors” that are the major sources of information for the experts. Through no fault of their own, the experts may share—with colleagues across the world—a lack of contact with and information about necessity entrepreneurship.

This assessment provides several valuable insights into the complexity of the entrepreneurial phenomena. First, it is clear there is substantial uniformity across the GEM countries in the concepts, language, and judgments of national experts. Second, this seems to reflect considerable uniformity among the developed countries, which may have developed very similar infrastructure to support entrepreneurial activity. Third, the presence of necessity entrepreneurship—new firms initiated by those that are unable to participate in the economy as employees—may not be affected by the entrepreneurial framework conditions in the same way that as opportunity entrepreneurs, those that have a choice about their participation.

* * * * *

Overall, the assessments of the national experts—either in the form of their personal observations or responses to a standardized questionnaire—add considerable information to this overview of the global context for entrepreneurial activity. It makes clear there is substantial national diversity on some features and that the current perspectives on facilitating entrepreneurship reflect an orientation toward opportunity-based entrepreneurship. It is clear that the presence of necessity entrepreneurship reflects a different set of processes; processes that may be facilitated with a different set of government programs and policies than opportunity entrepreneurship.

Most new firms receive initial support from informal investments from family, friends, business associates, and other personal contacts. An extremely small proportion of the most promising firms, perhaps 1 in 10,000, receive financial support from venture capital firms—a specialized form of formal funding. The GEM assessments provide national assessments of the magnitude of both forms of financial support.

Informal flows are estimated by asking all those in the adult population surveys if they have made a personal investment in a new firm, not their own, in the past three years. If so, they are asked about the total magnitude of their support, the nature of the businesses they sponsored, and their relationship with the recipient. This information can be used to estimate the total annual support provided to new firms in most countries. Data on venture capital support for all European countries, except Croatia, were obtained from the European Venture Capital Association; in other countries these were obtained from national sources, generally a national venture capital association, often with help from the GEM national teams. Unlike the estimates based on the adult population samples, the data on venture capital investments are a complete survey of all “deals” made in the previous year. The informal investments are for the previous three years, 2000 to 2002, and the venture capital data for the prior year, 2001, is used for the 2002 assessment. Both estimates reflect the same time period.

VENTURE CAPITAL FLOWS IN 2001

The amount of venture capital invested as a percent of GDP for each GEM nation where there are venture capital statistics is shown in Figure 11. For all the GEM nations combined, the amount of venture capital fell from 0.5% of GDP in 2000 to 0.2% of GDP in 2001. The biggest year-to-year declines were in the UK (-66%) followed by South Africa (-66%), France (-61%), and USA (-60%). Only three nations enjoyed year-to-year increases: Korea (133%), Denmark (114%), Sweden (101%), and Spain (9%). Granted, the amounts of venture capital invested in most nations fell from their peaks in 2000, but 2001 was still was a very good year by historical measures. For most nations, the amount invested in 2001 was either greater than or comparable with the amount invested in 1999. Only in Belgium, the UK, and the USA was the amount significantly lower in 2001 than in 1999.

For the GEM nations where there are data for both the year 2000 and 2001, the number of companies receiving venture capital declined from 19,569 to 18,247—a drop of 1,300. The biggest decline in total number of companies was in the USA, Figure 12, but in percent the biggest drops were in Portugal (60%), Australia (51%), France (47%), Poland (43%) and Germany (37%). The biggest increases were in Korea (169%), South Africa (47%), Denmark (24%), and Finland (17%).

For the GEM nations where there are comparable data for both 2000 and 2001, the total amount of venture capital declined by 53%;

Figure 11 Domestic classic venture capital invested Percent of GDP

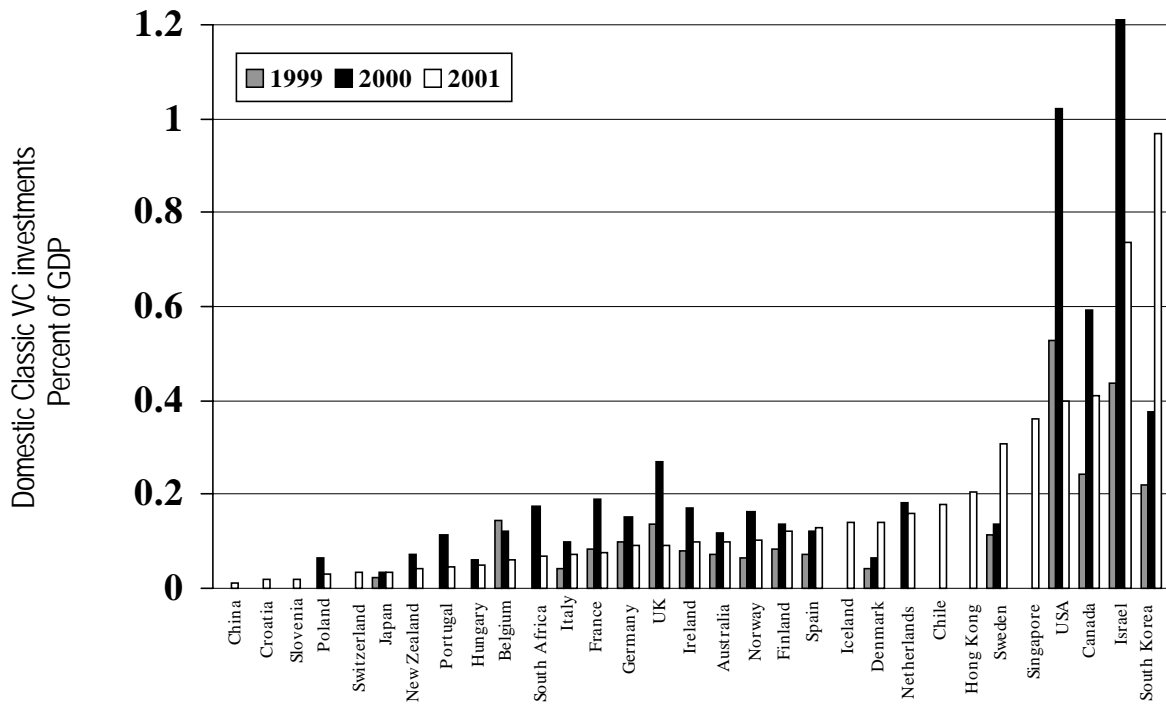
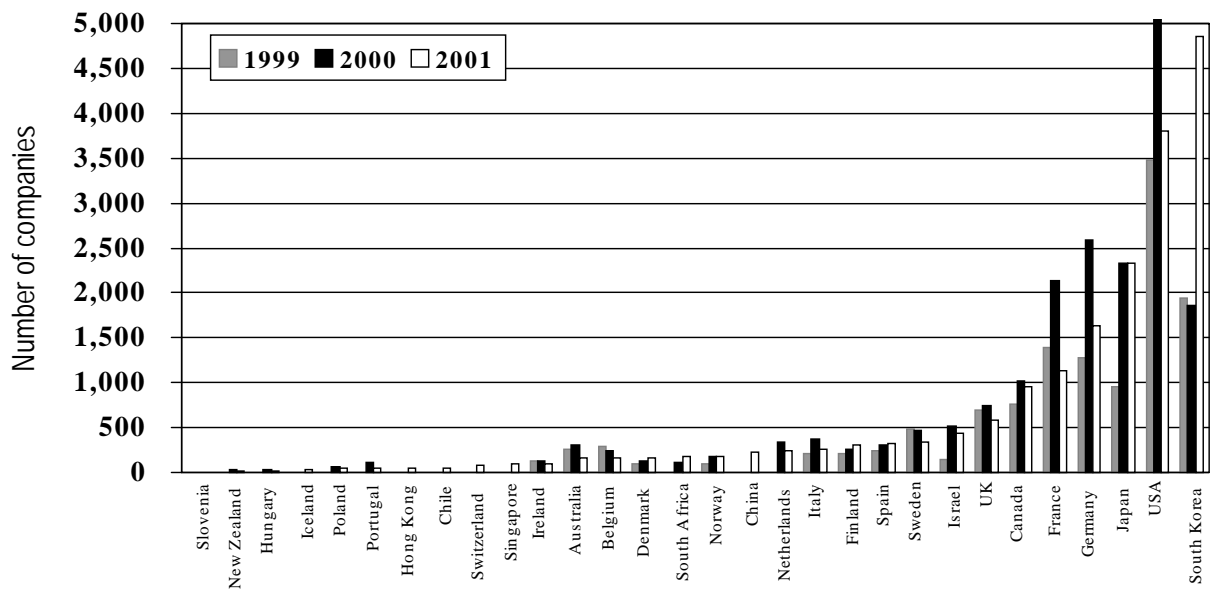


Figure 12 Number of companies receiving domestic Classic venture capital in 2001, 2000, & 1999



although the number of companies that received a venture capital investment fell by only 7%. The explanation is that the average amount invested per company declined noticeably from US\$ 6,389,000, in 2000 in 2001 to US\$ 3,144,000. The steepest percentage drops were in the UK, the USA, and in Canada; the biggest percentage increases were in Sweden and Korea (Figure 13). The surprise was Hong Kong where the average amount was US\$ 7,067,000. The average amount invested per company in the USA was US\$ 10.7 million versus US\$ 1.2 million for companies in the other GEM countries. True, the amount invested per company in the USA declined from US\$ 19.2 million in 2000, but—with the exception of Hong Kong—it still towers over the amount invested in companies in other nations.

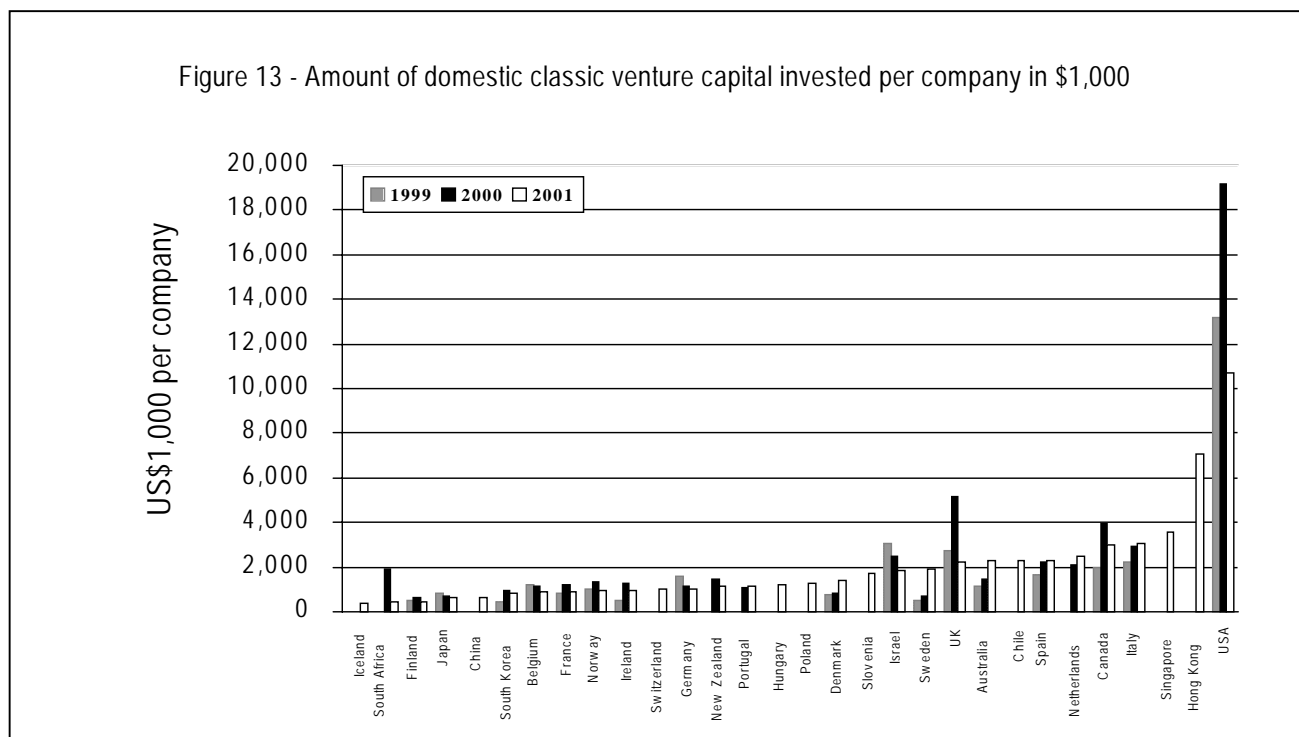
INFORMAL INVESTMENTS

In 2001, informal investments in all 37 GEM nations totaled US\$ 298 billion compared

with US\$59 billion of venture capital. Not only is the amount of informal capital impressive, but so is its extent: the total amount of informal investment in the GEM nations in 2001 was almost 1% of their combined GDPs, while the prevalence of informal investors among those 37 nations was 2.9% of the population 18 years of age and older.

Prevalence rates in 2002 ranged from 7.4% in Iceland to 1% in Japan (Figure 14). The overall prevalence rate fell from 3.4% in 2000 to 2.9% in 2001. For the nations where we have prevalence rates for 2001 and 2000, the year-to-year rate decreased in 16 of them and increased in seven, and held steady in two (Figure 14).

The significance of informal investments relative to venture capital is clearly shown in Figure 15. Venture capital exceeded informal investment in only one of the GEM nations, Israel. In other nations it ranges from 0.3% in China to 39% in Canada.



Informal investment is a crucial component of the entrepreneurial process. For instance, according to an analysis of the *Inc.* magazine's 500 "America's fastest growing private companies" in 2000, 16 percent started with less than \$1,000, 42 percent with \$10,000 or less, and 58 percent with \$20,000 or less (*Inc.*, 2000), whereas fewer than 5% started with venture capital. Hence, small investments primarily by family and friends are crucial in funding not only micro-companies but also future superstars. In comparison, formal venture capital is very rare at the seed stage of a new venture. For example, in 2002, about 12 million in the USA are attempting to start about 6 million new businesses. In a

typical year, however, less than a few hundred are launched with formal venture capital in hand.

Hence, it is estimated less than 0.01 percent of nascent entrepreneurs launch their new ventures with formal venture capital. 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.

Figure 14 - Informal Investor Prevalence Rate

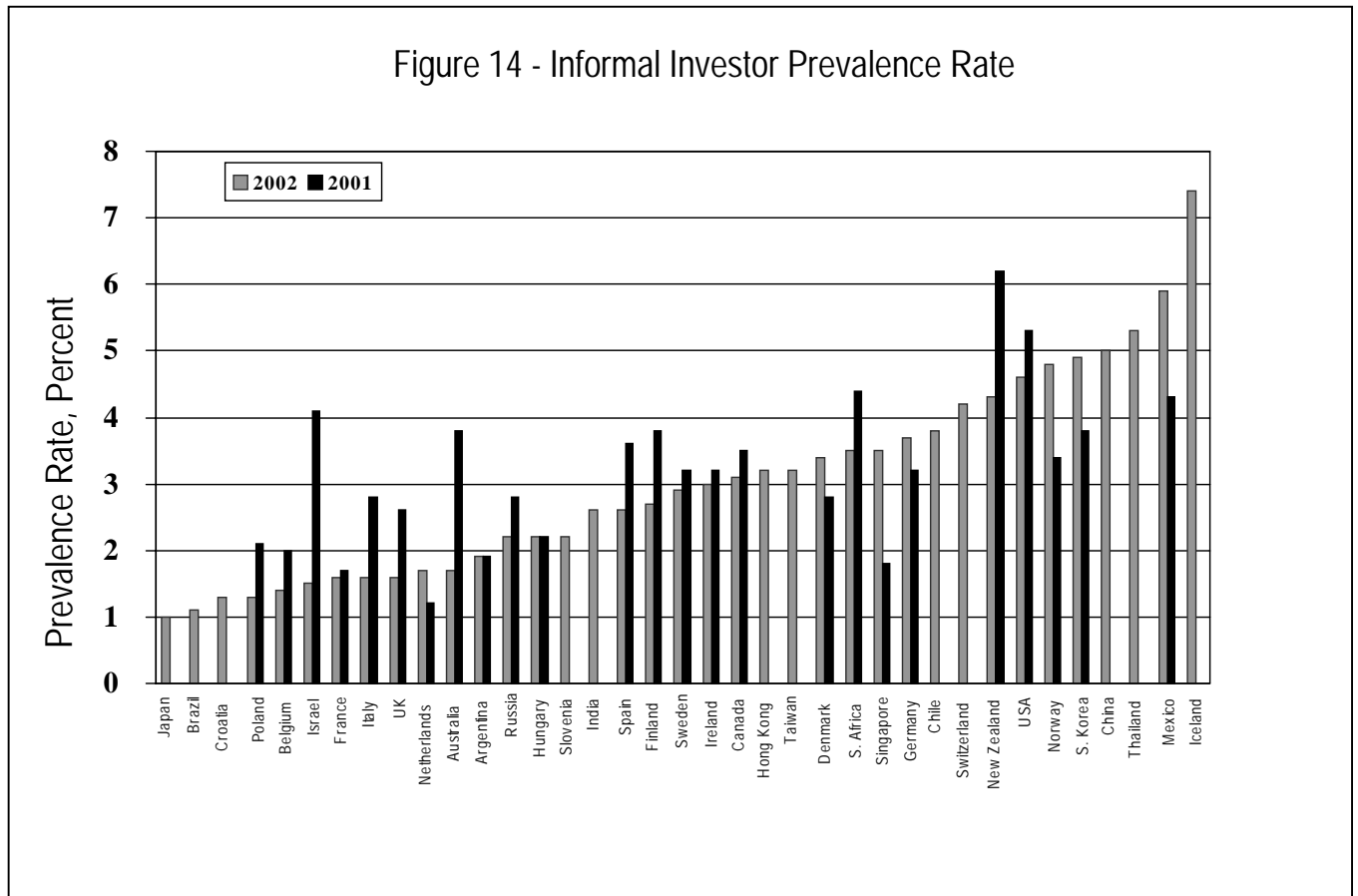
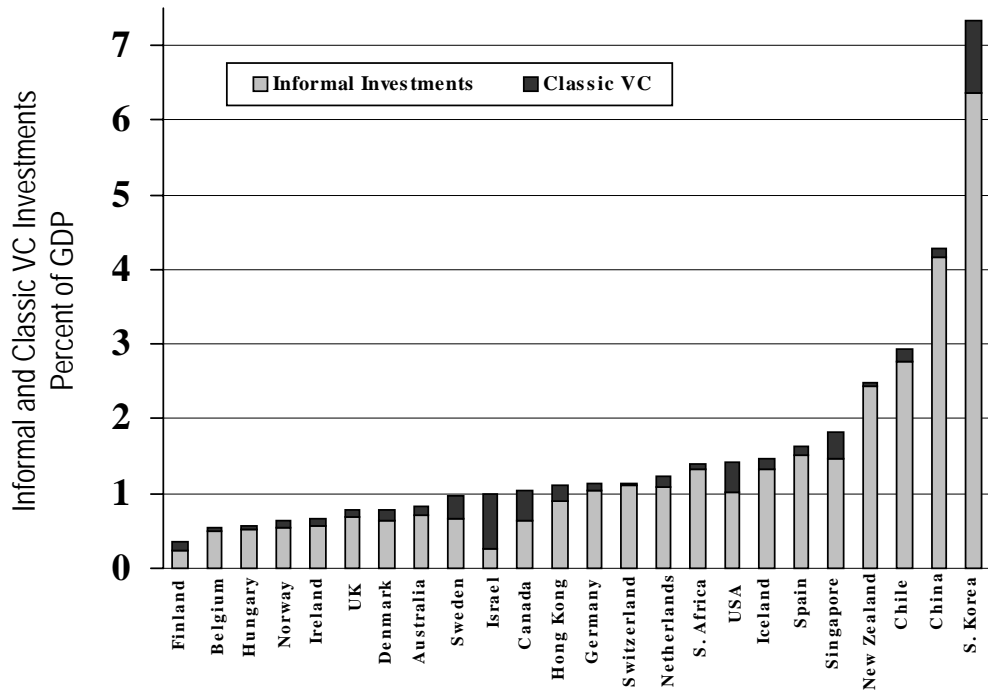


Figure 15 - Domestic informal and classic venture capital investments Percent of GDP



This page left blank.

J

SPECIAL TOPICS

The diversity of issues associated with entrepreneurship is quite large and a number of special topic teams have been organized to provide detailed assessments on important issues. Preliminary summaries are provided here on the relationship of national science and technology resources on high potential entrepreneurship, the special situation of women, and the role of family support in the development of new businesses. More complete assessments are underway.

NATIONAL SCIENCE AND TECHNOLOGY BASE AND HIGH POTENTIAL ENTREPRENEURSHIP¹²

The GEM data suggests complex relationships between entrepreneurial activity and economic growth. One important entrepreneurial process is the transformation of technological advances into commercial outputs. In an effort to track this important entrepreneurial process, a detailed review of the links between the national science base and entrepreneurial activity is provided.

Because high-potential, innovative ventures are rare, their identification is challenging. For GEM 2002, several new questions were introduced in an attempt to identify those ventures that would contribute to the creation of new sectors. As reviewed above, three items were utilized to track ventures with market creation potential—absence of competition, low product awareness among customers, and use of new technology. Those with some or strong

potential for market expansion could be identified with these items. Two additional criteria were also used to locate those new ventures with a potential for major contributions to the national economy: the expectation of 20 or more jobs created within 5 years and a plan for export sales. Of the 9,615 start-ups and new firms identified in the 37 countries, only 926 met these criteria.

These 926 high-potential new ventures are likely to be based on new technology, as all indicated that they were utilizing technology that was not available more than a year ago. The following analysis focuses on these high-potential ventures.

Table 16 provides a comparison between the high potential ventures against the other start-up attempts identified in the GEM 2002 survey. The high-potential ventures are more likely to involve males, those under 34 years old, and pursue opportunities. In addition, 50% of those identified had college or graduate experience, two-thirds came from the upper third of their countries' household income distribution, 95% were working full- or part-time, and the ventures were concentrated in manufacturing, wholesale, and business service sectors. All these differences are statistically significant.

Table 2 indicated that the GEM index for high potential ventures has a relatively low correlation with the overall TEA index (0.34). It also has a modest correlation with the TEA opportunity prevalence rate (0.40) and a comparable relationship with the prevalence rate of market expansion and job creation new firms. On the other hand, the correlation with the TEA necessity prevalence rate is essentially zero. This

Table 16 – Characteristics of High Impact, Export Oriented TEA Entities

	All Others	Hi Impact
Number of cases, weighted by sampling ratio	9,615	926
Male	59 %	71 %
Female	41 %	29 %
18-24 Yrs old	9 %	19 %
25-34 Yrs old	32 %	44 %
35-44 Yrs old	32 %	23 %
45-54 Yrs old	19 %	11 %
55-64 Yrs old	7 %	4 %
Opportunity motivated	59 %	85 %
Mixed & other motivations	3 %	3 %
Necessity motivated	37 %	12 %
Graduate experience	1 %	2 %
Post secondary degree	22 %	48 %
Secondary degree	27 %	25 %
Some secondary schooling, none	49 %	25 %
Highest 33% in household income	32 %	64 %
Middle 33% in household income	29 %	24 %
Lowest 33% in household income	39 %	12 %
Working full or part time	87 %	95 %
Not working (unemployed, housewives, etc.)	10 %	4 %
Retired, students, disabled	3 %	1 %
No jobs expected in 5 years	22 %	2 %
1-5 jobs expected in 5 years	43 %	7 %
6-19 Jobs expected in 5 years	14 %	2 %
20 up Jobs expected in 5 years	22 %	89 %
Exports expected to be 0% sales	87 %	0 %
Exports expected to be 1- 25% sales	11 %	67 %
Exports expected to be 26- 50% sales	1 %	10 %
Exports expected to be 51-100% sales	2 %	23 %
Etractive: Agr, forestry, fishing , mining	5 %	1 %
Transforming: Construct, Manufact, Whole	26 %	37 %
Business Service: Financial, consultants, etc.	8 %	17 %
Consumer oriented: Retail, Repair, Services	61 %	44 %

All differences between columns statistically significant at 0.0000 level.

would suggest that high-potential new ventures result from processes that may have a low interrelationship with normal mechanisms that lead to new start-up attempts.

Several efforts have tried to track national potential for firm growth, particularly in technology-intensive sectors. The correlations for the GEM indices of entrepreneurial activity and seven such measures are presented in Table 17. Table 17 includes the World Competitiveness Yearbook¹³ index for overall national competitiveness, government efficiency, and business efficiency, and the Global Competitiveness Report¹⁴ indices for national competitiveness, national technological capacity,

efficiency of public institutions, and Information and Communication Technology. The prevalence rate of high-potential ventures has a moderate, positive, and statistically significant relationship with all seven measures. The TEA opportunity index does not depict a statistically significant relationship with these indices, and both the overall TEA and the TEA necessity indices have a negative, statistically strongly significant relationship with the same indices. This suggests that the GEM index for high-potential ventures reflects many features captured by general indices for national competitiveness.

A number of measures of different aspects of national science and technology base

Table 17 - Correlations Between Selected National Competitiveness Indices and Entrepreneurial Activity

	TEA02HIG	TEA02	TEA02NEC	TEA02O
WCY 2002 Overall Competitiveness Score	0.36*	-0.23	-0.48**	0.01
WCY 2002 Government Efficiency Score	0.43**	-0.10	-0.39*	0.12
WCY 2002 Business Efficiency Score	0.40*	-0.20	-0.45**	0.03
GCR 2001 Overall Competitiveness Score	0.37*	-0.35*	-0.58**	-0.10
GCR 2001 Technology Index Score	0.29+	-0.36*	-0.61**	-0.12
GCR 2001 Public Institutions Index Score	0.43**	-0.37*	-0.60**	-0.11
GCR 2001 ICT Index Score	0.38*	-0.47**	-0.63**	-0.26

Sources of data: GEM 2002; World Competitiveness Yearbook 2002 (WCY 2002); Global Competitiveness Report 2001 (GCR 2001).

Bivariate correlation coefficients, two-tailed tests. *** = $p < 0.001$; ** = $p < 0.01$; * = $p < 0.05$; + = $p < 0.1$.

are compared against the GEM indices of entrepreneurial activity in Table 18. While we can observe several statistically significant negative correlations for TEA overall, TEA necessity, and even for TEA opportunity indices, the correlations with the GEM high-potential venture index are either positive or neutral. The higher positive correlations are associated with the enrollment rate in tertiary education, the number of computers per capita, computing capacity in relation to GDP, and the proportion of Internet users per capita. These correlations appear to suggest that the GEM index for high-potential ventures may be capturing a unique and more sophisticated set of new firm activities.

The GEM index for high-potential new ventures was also compared against the GEM 2002 national expert data and GEM 2002 adult population survey data. Table 19 shows that the index for high-potential ventures has a statistically significantly association with several of the national entrepreneurial framework condition indices: (1) market openness (entrepreneurial firms' access to markets and the quality of anti-trust legislation); (2) primary and secondary education's support for entrepreneurial attitudes; (3) population-level capacity and skills for entrepreneurial ventures; (4) quality of intellectual property protection regime; (5) quality of national

Table 18 - Various Science and Technology Indicators and Entrepreneurial Activity

	TEA02HIG	TEA02	TEA02NEC	TEA02OPP
<i>Science Base Input and Output Indicators</i>				
Total Expenditure on R&D Per GDP 1999	0.08	-0.46*	-0.47*	-0.32+
Business Expenditure on R&D (per GDP), 1999	0.09	-0.46*	-0.50**	-0.30
Total R&D Personnel Per Capita 2000	0.07	-0.20	-0.29+	-0.08
Scientific Publications Per Capita 1999	0.20	-0.38*	-0.60**	-0.12
Nobel Prizes Received 1950-2001	0.01	-0.14	-0.28	-0.011
Number of Patents Granted in the US Per Capita 2000	0.02	-0.42**	-0.46**	-0.28+
<i>Education System Indicators</i>				
Enrollment in Primary Education 1997 (per capita)	-0.21	0.09	0.41*	-0.12
Enrollment in Secondary Education 1997 (per capita)	0.17	-0.55**	-0.63**	-0.36*
Enrolment in Tertiary Education 1997 (per capita)	0.38*	-0.25	-0.50**	-0.03
<i>Internet and ICT Indicators</i>				
Computers Per Capita 2001	0.36*	-0.39*	-0.67**	-0.11
MIPS per GDP 1998	0.39*	-0.36*	-0.67**	-0.06
Internet Users Per Capita 2000	0.40*	-0.20	-0.52**	0.04
Mobile Phones Per Capita 2001	0.15	-0.57**	-0.64**	-0.42*
<i>National Wealth Indicators</i>				
GDP (ppp) Per Person Employed 2000	0.15	-0.55**	-0.69**	-0.35*

Sources of data: GEM 2002; World Competitiveness Yearbook 2001 and 2002; Global Competitiveness Report 2001; OECD ; US Patent Office.

Bivariate correlation coefficients, two-tailed tests. *** = $p < 0.001$; ** = $p < 0.01$; * = $p < 0.05$; + = $p < 0.1$.

support programs for entrepreneurial companies; and (6) support for women's entrepreneurship. These statistically significant positive correlations stand in stark contrast with those for the TEA overall, opportunity, and necessity entrepreneurship indices reported in Table 15, again suggesting that high-potential ventures represent a distinct facet of entrepreneurial activity.

The prevalence for high-potential ventures varies from 0 to 4% of the labor force across the 37 GEM 2002 countries. Preliminary regression

analyses suggest that a model including the quality of the IPR protection regime, population-level skills, and background for starting a new business, and the prevalence rate of informal investors may explain up to 45% of the variation in the prevalence rate of high potential ventures.

* * * * *

The conclusions from the above analysis appear clear. First, the GEM index for high potential ventures appears to behave distinctly differently from GEM's more general indices of start-up activity. There is virtually no correlation

Table 19 - Correlations Between National Entrepreneurial Framework Condition Indices and Entrepreneurial Activity

	TEA02HIG
<i>Indicators from GEM 2002 National Expert Interviews</i>	
Finance: Availability of debt funding	-0,05
Finance: Availability of equity funding	0,04
Government policy emphasis on entrepreneurship	0,14
Government regulations favor entrepreneurship	0,31+
Government support program index	0,18
Primary and secondary education support for entrepreneurship	0,32+
Post-secondary education support for entrepreneurship	0,04
R&D and technology transfer index	0,20
Commercial services index	0,19
Market dynamics and change	-0,06
Market openness for entrepreneurial firms	0,50**
Physical infrastructure index	0,24
National culture: Entrepreneurial orientation	0,25
Entrepreneurial opportunity next 12 months	0,16
Population entrepreneurial capacity index	0,35*
Population entrepreneurial motivation index	0,07
IPR protection index	0,41*
Support for women entrepreneurship	0,33+
<i>Indicators from GEM 2002 Adult Population Survey</i>	
GEM Business Angel Prevalence Index 2002	0,56**
Respondent's Job Involves Start-Up Activity	0,39*
Respondent Personally Knows an Entrepreneur	0,50**
Respondent Thinks Possesses Skills for Start-Up	0,36*
Respondent Thinks There Will be Good Opportunities for New Start-Up in Next 6 Months	0,26

Source: GEM 2002 National Expert Interviews, GEM 2002 Adult Population Survey.

Bivariate correlation coefficients, two-tailed tests. *** = p < 0.001; ** = p < 0.01; * = p < 0.05; + = p < 0.1.

between this index and GEM's TEA index for necessity entrepreneurship. Also, the correlations between these entrepreneurial measures and the national science and technology indices are mostly to the opposite direction. These findings underscore the multifaceted nature of entrepreneurial activity. Different forms of entrepreneurial activity are likely to be influenced by different national conditions, and their economic impacts are also likely to be distinctly different. From a policy perspective, some forms of entrepreneurial activity may be more desirable than others, and different policy measures may be required to foster different forms of entrepreneurship.

The negative associations between TEA index for necessity entrepreneurship and the overall TEA index, on the one hand, and science and technology indicators, on the other, appear to reflect the general wealth of the nation. The rich countries have resources and funds to invest in science and technology infrastructure, which is reflected in their science and technology indicators. Because of this wealth, the presence of necessity entrepreneurship is reduced. Thus, the negative correlations are likely due to the general wealth of nations with a strong science and technology base, rather than some kind of entrepreneurial inhibition effect. Another, complementary explanation might have to do with the wealth creation effect: an investment in national technology base would create new wealth and new job opportunities, thereby reducing the scope for necessity-driven entrepreneurial activity. On the other hand, the GEM index for high-potential ventures appears to reflect some of the processes through which

technological advances are transformed into commercial activity.

This analysis did not observe any statistically significant correlations between science and technology input and output indicators and the prevalence rate of high-potential ventures (Table 18). Most correlations were positive, however. The nonsignificance of these correlations is likely due to the general nature of both indicators. It is well-known that some technology sectors (e.g., software) are more supportive of start-up activity than others (e.g., pharmaceuticals). General indicators of national science and technology base might thus mask sector-based differences. This conclusion is supported by the several statistically significant, and expected, correlations between Internet and information technology indicators and high-impact ventures.

Some tentative policy conclusions appear to arise from this analysis. The significant associations with the market access and IPR protection indices point to the importance of a solid institutional and regulatory framework; more high potential ventures may be created if the context provides innovative entrepreneurs with a fair access to markets and a possibility to profit from their inventions. Building up entrepreneurial capacity and investing in education is also important, as well as the harnessing of the innovative capacities of the entire population. Finally, the strong correlations with GEM's indices for informal investors, jobs involving start-up activity, and personal familiarity with entrepreneurs all underscore the importance of widespread grassroots participation in entrepreneurial start-up attempts.

WOMEN AND ENTREPRENEURSHIP ¹⁵

There is a substantial range of participation by women in entrepreneurship across the 37 GEM 2002 countries, from 0.6% (6 per 1,000) in Japan to 18.5% (185 per 1,000) in Thailand. As shown in Figures 9 and 10, presented earlier, women participate at about two-thirds the rate of men, although there is substantial country-to-country variation. At the most general level of analysis, the level of female entrepreneurship is highly related to other measures. The correlation among the overall measure of entrepreneurial activity with the overall measure for women is 0.96; and the overall level for women correlates 0.88 with the overall level for men. This would suggest that women are influenced by many of the same factors that affect men in participating in entrepreneurial activity. On the other hand, there is not a perfect correspondence, suggesting some differences may be present in entrepreneurial processes for men and women.

It is worth considering at least three general issues associated with the participation of women. First, different factors are related to the participation of men and women in entrepreneurship—is the correlation just an accident? Second, are there different factors affecting the level of opportunity versus necessity entrepreneurship among women? Third, are there differences in the factors and processes among countries with different levels of development? A preliminary assessment of some of the factors related to these three issues is presented in Table 20.

To facilitate this initial assessment, correlations of a number of national characteristics

reflecting the status of women with overall, opportunity, and necessity entrepreneurship are presented for two types of comparisons. First, they can be compared with the correlations for overall, opportunity, and necessity entrepreneurship among men and, second, a distinction is made between countries with high and low levels of per capita income.¹⁶ The break at US\$ 18,000 per year (in 1999) is justified by a major gap in the distribution of per capita annual income between US\$ 15,860 to US\$ 19,160. There is substantial variation in the participation of women in entrepreneurship within both groups of countries as well as most national characteristics; correlations have some potential value for interpretation for both groups of countries.

The same national factors are presented for both types of countries in Table 20, with the high-income country correlations at the top, low-income country correlations at the bottom. It is immediately apparent that there is a difference between these two groups of countries—there are more statistically significant correlations in the bottom half and the patterns are somewhat different.

For example, population growth from 1996 to 2002 has a marginally statistically significant correlation only with men engaged in necessity entrepreneurship among developed countries, but it has a strong positive relationship with all six measures of entrepreneurial activity among low-income countries. Clearly the increase in demand—or perhaps competition for jobs—associated with population growth is having an impact.

Two measures are related to the general features of the economy. The proportion of

Table 20 - Selected Factors Affecting Women' Participation in Entrepreneurship

	Women: TEA Overall	Women TEA Opportunity	Women TEA Necessity	Men: TEA Overall	Men TEA Opportunity	Men TEA Necessity
High Per Capita Income Countries [More than \$18,000/yr]						
Population Growth: 1996-2002	0.06	0.09	0.21	0.25	0.22	*0.46
Unofficial Economy as % of GDP	-0.19	-0.38	0.16	-0.14	-0.22	-0.30
Social security as % of GDP	*-.46	*-.49	-0.32	*-.50	*-.50	*-.54
Female/Male Labor Force Participation Ratio:	0.12	0.22	*-.42	0.04	0.11	-0.29
% women in public agency mgt	0.37	*0.43	0.04	0.15	0.24	-0.10
% women in private management	**0.52	0.31	**0.51	0.39	0.32	-0.24
Per cent women work in agriculture	-0.09	-0.23	-0.14	-0.14	-0.20	-0.28
Per cent women work in industry	*-.42	*-.50	0.12	-0.27	-0.40	-0.14
Per cent women work in services	*0.42	*0.52	-0.02	0.32	0.37	0.28
Female current unemployment	-0.11	-0.24	-0.01	-0.24	-0.31	*-.42
Female long term unemployment	-0.3	*-.47	0.07	-0.34	*-.44	-0.38
Female Illiteracy rate	n/a	n/a	n/a	n/a	n/a	n/a
Low Per Capita Income Countries [Less than \$18,000/yr]						
Population Growth: 1996-2002	**0.63	**0.50	**0.49	***0.77	***0.76	*0.49
Unofficial Economy as % of GDP	0.18	0.17	0.11	0.17	0.11	0.18
Social security as % of GDP	*-.42	*-.42	-0.19	*-.47	*-.56	-0.14
Female/Male Labor Force Participation Ratio:	-0.34	-0.05	*-.54	*-.47	-0.32	*-.55
% women in public agency mgt	-0.2	-0.23	-0.07	-0.13	-0.15	-0.02
% women in private management	-0.36	-0.22	-0.42	*-.58	-0.46	*-.56
Per cent women work in agriculture	*0.52	*0.68	0.04	0.15	0.25	-0.06
Per cent women work in industry	*-.47	-0.29	*-.56	*-.55	-0.46	*-.52
Per cent women work in services	-0.28	*-.49	0.2	0.09	-0.03	0.27
Female current unemployment	*-.58	*-.51	-0.35	*-.56	*-.57	-0.31
Female long term unemployment	*-.64	-0.55	*-.72	-0.58	-0.55	-0.48
Female Illiteracy rate	*0.49	0.34	*0.49	*0.45	*0.51	0.24

Stat sign: * <0.05, ** ,<0.01, ***<0.001.

unofficial (or unregistered, or black, or illegal) economic activity does not have a statistically significant relationship to entrepreneurial activity for either high- or low-income countries, but the signs of the correlations are completely different, with negative correlations among high-income countries and positive correlations among low-income countries. This clearly suggests a differential impact depending on the level of national development. The proportion of social and economic security payments, as a percent of GDP, has a negative correlation for both high- and low-income countries; greater economic security is associated with less opportunity and necessity entrepreneurship.

A number of measures related to the situation of women in these countries are presented. The ratio of women to men in terms of participation in the labor force is a measure of gender equality in the world of "work for pay." This measure approaches 1.0 in countries where the same proportion of women and men work, such as Nordic countries and Russia. It approaches 0.5 in many developing countries (Brazil, India, and Mexico) where the women's contribution to the household may have a high economic value. In every case where this correlation is statistically significant, it is negative. Where women have more opportunities for participation in the labor force, their entrepreneurial activity declines—but this is also true for men, so presumably this reflects households increasing income by becoming a "two-job" marriage.

The more women are incorporated in managerial and supervisory positions in

government agencies or private management in high-income countries, the greater the tendency for them—and men—to be involved in entrepreneurship, although the correlations are modest. The reverse seems to be the case in low-income countries, although the relationship is not statistically significant. This would suggest that in high-income countries this is associated with women who have the skills and confidence to start a new firm; in low-income countries these job opportunities may be more attractive than entrepreneurial initiatives.

The proportion of women in different economic sectors has differential impacts on entrepreneurial activity for these two groups of countries. Participation in agriculture (which includes forestry and fishing) seems to be associated with more female entrepreneurship in low-income countries, but there is no or a negative impact in high-income countries. The greater the proportion of women working in industry (construction, manufacturing, wholesale, etc.) in high- or low-income countries, the lower the level of entrepreneurial activity. But work in services (restaurants, hotels, repair, personal services, etc.) seems to be associated with an increase in female opportunity entrepreneurship in high-income countries, but a reduction in low-income countries. In the former it may provide the skills and background to implement a new firm, in the latter the jobs may be more attractive than entrepreneurship.

Unemployment, either the current level or long-term unemployment, is associated with reduced levels of entrepreneurial activity, and the relationships are much stronger among low-

income countries. Higher levels of unemployment would be associated with a reduction in the demand for goods and services, reducing the opportunities for new firms to secure customers.

Finally, but perhaps most important, the level of illiteracy has a strong positive impact on all entrepreneurship—men and women—in low-income countries. 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, perhaps from the illiterate. There is little variation on this measure in high-income countries—where almost everybody finishes basic education—and correlations with entrepreneurial activity would not be useful.

There are a number of instances where the correlations are different for opportunity and necessity entrepreneurship among women—including the impact of higher female/male labor force participation ratios—sectors in which women are employed, and the female illiteracy rate. This suggests that different processes lead to opportunity and necessity entrepreneurship among women. For both women and men, these two types of entrepreneurship seem to reflect different causal mechanisms.

In addition to the clear differences in many factors associated with the level of national

per capita income, there are a number of differences associated with gender. In particular, there are differential impacts on men related to population growth, women in management and administrative positions, and the types of sectors where women are working. The impact on men and women is largely uniform with regards to female/male labor force participation rate, presence of unofficial economic activities, social security payments, unemployment, and female illiteracy.

A series of assessments have indicated a lower level of participation of women than men in entrepreneurial activity (Figure 9 and 10), differential reactions of women to different sets of conditions that may affect entrepreneurial activity (Table 11), and the analysis in this section that indicates that national characteristics have differential influences on men and women and that vary in high- and low-income countries (Table 20). In short, women make up a substantial proportion of those in entrepreneurship, but the process of involvement seems somewhat different when compared to the processes that affect men. On the other hand, many countries where there is a shortage of those active in entrepreneurship may be well-served if they can increase the participation of women. This may be facilitated by a more complete understanding of the unique features of entrepreneurship among women. Such an assessment is under development.

FAMILY SPONSORED
ENTREPRENEURSHIP ¹⁷

A large proportion of all businesses are owned and managed by families or groups of relatives. This is particularly true of new and growing businesses. Any global effort to understand entrepreneurial processes would be enhanced if a focus on family businesses were included. This would properly begin with procedures that would identify family-owned businesses among the start-ups, new firms, and established firms located in the GEM adult population surveys. With the support of the Raymond Family Business Institute a pretest of these procedures was completed in ten GEM 2002 countries: Australia, Brazil, Hungary, Israel, New

Zealand, Singapore, Spain, Sweden, the United Kingdom, and the United States. Countries were chosen for this pretest to provide worldwide diversity in regions and levels of national development.

The critical items asked of all those reporting start-up firms or going businesses was whether or not 50% or more of the firm was either currently owned by family members or if this pattern of ownership was expected within five years.¹⁸ The assessment was organized in relation to whether the firm had one principal owner or two or more owners. The patterns for the ten GEM 2002 countries for four categories of businesses—start-ups, new businesses, established

Table 21 - Distribution of Family Ownership: TEM GEM 2002 Countries

	Start-ups	New Firms	Established Firms	TEA02 entities
No of cases (sampling ratio weights)	1,695	1,563	2,074	3,021
One principal, family owners under < 50%	34 %	48 %	53 %	40 %
Two or more owners, family owner under 50%	26 %	16 %	12 %	22 %
Total Family owners under 50%	60 %	64 %	67 %	64 %
One principal, family owners over 50%	18 %	17 %	14 %	17 %
Two or more owners, family owners over 50%	22 %	20 %	22 %	21 %
Total with Family owners over 50%	40 %	37 %	36 %	38 %
Total Family owns over 50% plus one person	74 %	84 %	88 %	78 %
Two or more principals and family owns under 50%	26 %	16 %	12 %	22 %

businesses, and those in the TEA index—is presented in Table 21, weighted to represent the total population of start-ups. Based on the responses of the individuals reporting on the businesses entities, there was over 50% family ownership for over one-third of the entities: 40% among start-ups, 37% among new firms, 36% among established firms, and 38% of those in the TEA index.

A recurrent dilemma in such analysis is how to treat one-person firms. Many would argue that family support is so critical that any one-person firm should be considered a family business. This involves adding all one-person businesses to the total of multiple owner businesses with a majority of family ownership; this is presented in the next to last row of Table 21. With this change about two-fourths of all businesses are family owned: 74% of start-ups, 84% of new firms, 88% of established firms, and 78% of those in the TEA index.¹⁹ While the use of this measure suggests that older firms are more likely to have family ownership, this reflects the increase in proportion of one-person firms among the older firms.

Variation across countries in the proportion of family firms using this classification technique is presented in Table 22 for those in the TEA index. The countries are ranked—from left to right—by the percentage of family businesses using the expanded definition to include all one-person businesses. This ranges from 85% for Brazil to 51% for Sweden. Developing countries such as Brazil and Hungary are at the highest end on this measure at four in five. European countries with declining birth rates and perhaps smaller family groups—Spain and Sweden—are at the lowest end at slightly more than half. There is little variation among the four “Anglo” countries—UK, New Zealand, Australia, and the US—

which are intermediate with three in four reflecting a family firm.

Are family owned entrepreneurial entities different? Differences on a number of dimensions are presented in Table 23. On almost all aspects, the pattern is clear: start-ups with two or more principals not owned by a family are at one extreme, family-owned firms with one owner or two or more principals are at the other extreme, and firms with one principal that claims no family ownership are intermediate. More women report involvement in family-owned firms, family-owned firms tend to have older principals, and more individuals with modest education report family-owned firms—but the difference is small. There is not much difference associated with the labor force activity, but more family firms are associated with the lower end of the household income distribution. All new firms, including family firms, are more likely to reflect opportunity entrepreneurs, although the ratio is somewhat higher among nonfamily new firms. A greater proportion of family firms are associated with manufacturing, retail, hotels, and restaurants and less with financial, insurance and real estate, business services, health, education and social services, and consumer services. Finally, family firms are less likely to be associated with high job creation, export sales, or market niche creation; they are less likely to have several of these attributes associated with high-potential impact on the economy. On the other hand, the aggregate impact of family firms, as they are the majority of all entrepreneurial firms, can be substantial.

Table 22 - Distribution of Family Ownership TEA Entities: 10 GEM 2002 Countries

	Brazil	Hungary	United Kingdom	Australia	Israel	New Zealand	United States	Singapore	Spain	Sweden	Country Average
National labor force weights											
1 Principal, Family Owns under 50%	35.5%	51.0%	51.7%	42.0%	40.2%	23.2%	42.9%	26.5%	21.9%	25.7%	41.9%
2+ Principal, Family Owns under 50%	14.2%	20.2%	22.5%	23.4%	24.4%	25.4%	25.5%	35.3%	43.8%	48.1%	24.5%
Total family owns under 50%	49.7%	71.8%	74.2%	65.4%	64.6%	48.6%	68.4%	61.8%	75.7%	73.8%	66.4%
1 Principal, Family Owns over 50%	21.7%	12.9%	10.2%	15.0%	24.4%	18.5%	16.2%	12.9%	1.1%	5.2%	14.4%
2+ Principal, Family Owns over 50%	28.6%	15.9%	15.6%	19.5%	11.1%	32.9%	15.5%	25.4%	23.2%	21.0%	19.1%
Total family owns over 50%	50.3%	28.8%	25.8%	34.5%	35.5%	51.4%	31.7%	38.3%	24.3%	26.2%	33.5%
Total Family owns over 50% + One Person	85.8%	79.8%	77.5%	76.6%	75.6%	74.6%	74.5%	64.7%	56.2%	51.9%	75.6%
Two+ persons, family owns under 50%	14.2%	20.2%	22.5%	23.4%	24.4%	25.4%	25.5%	35.3%	43.8%	48.1%	24.5%

Table 23 – Character of Family and Non Family Entrepreneurial Entities

	2+ Principals; Family owns over 50%	One Principal; Family own over 50%	One Principal; Family owns under 50%	2+ Principals; Family owns under 50%
Percentage all firms (sample ratio wts)	21%	17%	42%	24%
Men	53%	53%	64%	68%
Women	47%	47%	36%	32%
18-24 Years old	18%	10%	11%	18%
25-34 Years old	33%	32%	28%	34%
35-44 Years old	26%	31%	29%	28%
45-54 Years old	15%	17%	22%	13%
55-64 Years old	7%	10%	9%	6%
Graduate experience	12%	7%	10%	12%
Post secondary experience	44%	53%	48%	54%
Secondary degree	35%	31%	32%	28%
Some secondary schooling, none	10%	9%	11%	7%
Working full or part time	88%	79%	83%	85%
Not working (unemployed)	8%	16%	13%	11%
Retired, student, disabled	3%	5%	4%	4%
Upper third HH income	54%	38%	39%	48%
Middle third HH income	29%	45%	40%	39%
Lower third HH income	18%	16%	21%	12%
Opportunity entrepreneur	64%	66%	68%	73%
Other/mixed motives	2%	3%	3%	3%
Necessity entrepreneur	34%	31%	30%	24%
Agriculture, forestry, fishing	2%	3%	5%	5%
Mining, construction	7%	5%	8%	6%
Manufacturing	12%	12%	11%	9%
Transport, communication, utilities	6%	6%	6%	5%
Wholesale, motor vehicle sale, service	8%	8%	7%	10%
Retail, hotels, restaurants	38%	39%	27%	17%
Financial, insurance, real estate	1%	6%	3%	9%
Business services	13%	10%	13%	18%
Health, education, social services	5%	4%	8%	11%
Consumer services	9%	8%	12%	12%
Expect 20+ jobs in five years	22%	19%	17%	33%
Expect some export sales	17%	13%	19%	26%
Expect some or maximum market creation	6%	6%	11%	12%
Hi job growth, hi market creation	25%	28%	29%	43%
Hi job growth, hi market creation, exports	5%	4%	5%	12%

How many family-owned start-ups and new firms are involved in the entrepreneurial process? Two sets of estimates, based on whether or not the one-principal entities that claim no family ownership are included as family firms, are provided in Table 24. For comparison, the total number of participants from Table 1 is presented in the far right column. For these ten countries, the number of those involved in a family-owned business varies from 13 million to 27 million, which is one-third to three-fourths of the 38 million participants involved in these 10 countries. The estimates are based on a total of 376 million individuals 18 to 64 years of age from a total population of 609 million. It is clear that a substantial proportion of those in the entrepreneurial process are doing so with family supported new ventures.

In summary, then, identifying those start-up, new, and established firms that appear to have family ownership is associated with a number of patterns:

- It is possible to identify business entities with 50% or more of family ownership.
- It is not clear how to classify many one-principal firms that claim no family ownership.
- There is substantial variation across countries in the proportion of entrepreneurial firms that are family-owned, from 52 % to 86 %.

- Most start-up entities are similar, but there are some systematic differences between family owned firms and, in particular, those with two or more owners and no family support. Family firms have more women; more individuals from low-income households; proportionally fewer opportunity entrepreneurs; and their firms have lower aspirations for job growth, international exports and the creation of new market niches.
- As they are from one-third to three-fourths of all start-up and new firms in this sample of ten GEM 2002 countries, there are from 13 to 27 million individuals involved in a family firms in the entrepreneurial process; without family supported efforts, the scope of entrepreneurial activity would be substantially reduced.

Because the majority of entrepreneurial firms are family owned, their overall impact will be the majority of the impact on national economic growth and adaptation. There is no question that understanding the dynamics of family firm creation is an important aspect of understanding the total entrepreneurial process.

Table 24 – Scope of Family Entrepreneurial Entities: Selected GEM Countries

Country	Total Population: 2002	Populaiton 18-64 Years Old: 2002	TEA: Low Family Estimate	TEA: High Family Estimate	TEA: Low Family Estimate	TEA: High Family Estimate	TEA: Total All Participants
			#/100	#/100	Total	Total	Total
United States	280,000,000	173,911,000	3.2%	7.5%	5,565,000	12,973,000	18,260,000
Brazil	176,029,000	106,442,000	6.0%	10.2%	6,386,000	10,899,000	14,369,000
United Kingdom	59,778,000	36,927,000	1.3%	3.8%	480,000	1,399,000	1,994,000
Australia	19,546,000	12,273,000	2.5%	5.6%	306,000	688,000	1,067,000
Spain	40,077,000	25,886,000	1.1%	2.5%	284,000	654,000	1,190,000
Hungary	10,075,000	6,557,000	1.6%	4.3%	104,000	282,000	432,000
New Zealand	3,908,000	2,432,000	4.9%	7.1%	119,000	173,000	340,000
Israel	6,029,000	3,485,000	2.1%	4.4%	73,000	154,000	247,000
Singapore	4,452,000	3,191,000	2.0%	3.3%	62,000	106,000	188,000
Sweden	8,876,000	5,433,000	0.7%	1.5%	40,000	79,000	215,000
Sum	608,770,000	376,537,000			13,419,000	27,407,000	38,302,000
Average			2.5%	5.0%			

Major conclusions from the GEM 2002 cross-national assessment of entrepreneurial activity in 37 contributions would include:

- Procedures for measuring participation in the business start-up process continue to improve and provide a standardized cross-national measure of participation in the business start-up process.
- There is a substantial range in the participation of adults in their working years, aged 18 to 64, in business start-up activities. This varies across countries from less than 2 to almost 20 adults per 100 in the labor force, a ten-fold difference.
- There are an enormous number of individuals involved, 460 million or more worldwide, three times the annual number of new human births, which is about 135 million.
- A distinction between those voluntarily involved, opportunity entrepreneurs, and those involved in reaction to an absence of employment options, necessity entrepreneurs, continues to indicate considerable diversity in the start-up process and differential contributions to national economic growth.
- The national level of entrepreneurial activity appears to reflect general macroeconomic conditions—moving up and down with changes in the national GDP—as well as enduring cultural, social,

and institutional factors—the rank order of GEM countries is relatively stable from year to year.

- Efforts to identify those start-up activities that will expand the range of goods or services by creating new sector or market niches indicate that this is a very rare activity found among about 7% of start-up efforts. More pronounced among opportunity-based new firms, they are also found among necessity-based start-ups.
- There continues to be a positive association between the levels of entrepreneurial activity and national economic growth, and the correlations with a two-year lag are significant, low and positive (correlations of about 0.42). The exact causal mechanisms are not, as yet, established; correlations are higher for necessity than for opportunity entrepreneurship.
- Identifying combinations of personal and situational factors affecting entrepreneurial activity indicates that a complex set of interactions can have a potent impact on the decisions of individuals to pursue a business start-up. No single factor is nearly as powerful as the joint occurrence of confidence in the skill and experience to implement a start-up, the perception of a business opportunity, and work experience. Up to 40% of those

reporting different combinations of such factors are entrepreneurially active; as few as 1% are active in situations where no favorable conditions are present.

- National experts show considerable agreement on the types of factors considered positive and negative for entrepreneurship in their own country. Cultural and social norms, government policies, and education and training are commonly cited as major strengths; major weaknesses often emphasize government policies, cultural and social norms, financial support, and education and training. Experts all over the world appear to share the same perspectives and frameworks in reviewing the situation in their own country.
- Informal financial support for start-ups was five times that of domestic venture capital support (US\$ 300 billion versus US\$ 60 billion) among the 37 GEM 2002 countries, replicating findings from previous GEM assessments. Venture capital support declined significantly between 2000 and 2001 as the potential for successful initial public offerings declined; informal support was more consistent, reflecting the greater stability at the grassroots level of entrepreneurial activity.
- High potential new firms—using new technology, expecting to create new market niches, anticipating high job creation, and planning on export sales—are a small proportion of all start-up activity (less than 10%) and seem to

reflect a different set of factors than typical start-up activities. They appear to be more prevalent in “R&D rich” countries.

- Women participate in the entrepreneurial process at about half the rate of men. While they are influenced by many factors and processes that affect men, there are some differences, and these processes take different forms in highly developed countries compared to developing countries. More participation in the labor force in developed countries is associated with greater female entrepreneurship; in developing countries the reverse occurs—job opportunities for women appear to reduce their start-up participation.
- Most of the businesses in the world are either owned by a single family group or are a sole proprietorship with a strong family connection. This appears to be true among start-ups as well, and there are a number of implications for understanding the processes by which individuals assemble resources and talent to put a new business in place.

Most significantly, the GEM 2002 assessment has confirmed the substantial diversity in entrepreneurial activity across countries, its relationship to measures of economic growth, and the complexity of the various processes that underlay the conception, gestation, and successful birth of a new business entity.

IMPLICATIONS FOR POLICY

This report has emphasized a timely description of major differences and features of entrepreneurship—as a global phenomenon. Two factors prevent the full development of policy implications. To begin with, no systematic attention has been given to the third major issue adopted for the GEM research program: Why is there variation among countries? As a result, there has been no attention to the mechanisms, which may be affected by public policy. Next, there is considerable national diversity among the GEM countries, and the national teams are emphasizing the unique situations in their countries and the implications for public policy.

Nevertheless, a few broad observations may be possible. Perhaps the most significant implication for government policy is the overall scope of the phenomena itself. Even in the less entrepreneurial countries, tens of thousands, in some cases tens of millions, are pursuing entrepreneurial career options.

- There continues to be a positive association with national economic growth. In developing countries, it would appear that necessity entrepreneurs are contributing to national economic growth in a substantial way. Very few public policies seem to recognize this mechanism and it has considerable implications, particularly in relation to ensuring that educational programs prepare all adults for entrepreneurial career opportunities.
- In some countries up to one in five adults in the workforce are involved in new firm creation—it is a widespread social

phenomena and should be recognized as a major socio-economic activity.

- Formal venture capital support—important for some firms and some emerging economic sectors—receives the bulk of attention from governments as a mechanism for providing new firm financing. In contrast, informal financial support is provided to the majority of new firms and is the source of ten to twenty times the resources provided via the venture capital mechanism. Governments may want to consider tracking the informal, personal financial flows and developing programs that would recognize or encourage these flows with carefully developed tax incentives for such contributions.
- There is preliminary evidence that the mechanisms that lead to more R&D-based new firm start-ups maybe quite different from the mechanisms that lead to general business start-ups, particularly those reflecting necessity motivations.

It is clear that entrepreneurship is a major mechanisms leading to economic growth and adaptation in all economies, developed, in transition, developing, or whatever. Only a very few countries have developed strategies that allow them to grow with low levels of entrepreneurial activity. Belgium, Hong Kong, Netherlands, and Singapore may fall in this group with very high levels of international trading in relation to their domestic economic activity.

It is also clear that national differences in the level of activity—as represented by a relatively persistent rank order among countries—may reflect considerable institutional, social, and cultural factors that may be quite difficult to change in a short period, a matter of years. The reports prepared by the GEM national teams highlight both the processes common among all countries and the unique features of each

country, drawing on the assessments of national experts. The fact that many national governments have implemented a wide range of programs and procedures to facilitate or enhance indigenous entrepreneurial activity with little evidence of short-term impact is not evidence that the programs are necessarily wrong, only that major shifts in the phenomena may take time.

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 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 (Figure AI-1).

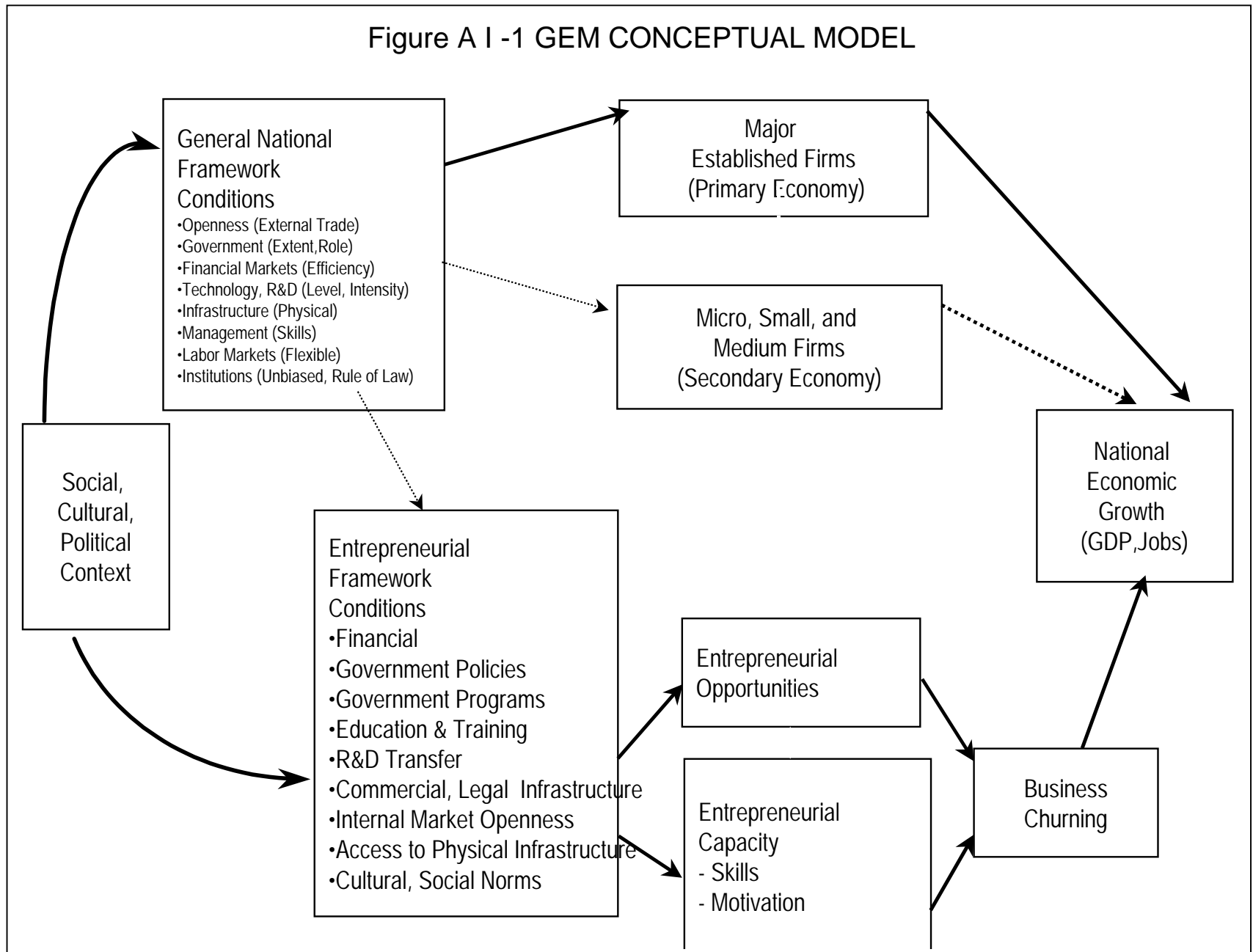
The first major mechanism, as illustrated in the top portion of Figure AI-1, reflects the role of large established firms that provide national representation in international trade. It is assumed that as the general national conditions are appropriately developed, the international competitive posture 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.

The second primary mechanism driving economic growth, as illustrated in the lower portion of Figure AI-1, emphasizes the role

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. Through lower costs and accelerated technology development, entrepreneurial firms can provide a competitive advantage for established firms—their major customers—in global competitive arenas. Though previous GEM findings have supported these complementary perspectives, 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.

Figure A I -1 GEM CONCEPTUAL MODEL



APPENDIX II: DATA COLLECTION

The GEM assessments are based on four major types of data; three are unique to this research program.²⁰ Most significant are surveys of representative samples of the adult populations completed in each GEM 2002 nation by indigenous commercial survey research firms. From 1,000 to 16,000 adults in each country were interviewed in spring 2002 about their participation in and attitudes toward entrepreneurial activity. All interviews were done in the languages appropriate to the respondents in each country. The structure of the interviews is presented in Figure AII - 1. The research firms and sample sizes in each country are listed in Table AII-1. While most survey firms provided samples weighted to represent the population in the country, the age and gender structure of all samples was compared to the US Census International Database projections for 2002 and all weights were adjusted so each national sample matched this standardized source.

From the 113,000 individuals contributing to these surveys in 2002, over 7,000 [unweighted] were actively involved in a business start-up or a new firm—up to 42 months old. The information they provide about the new business activity as well as their background and situation are an important and critical source of the descriptions of entrepreneurial activity and cross-national comparisons.

Detailed national assessments were provided by personal interviews conducted with 20-70 national experts in each GEM 2002 country, about 1,000 in total. They provide personal assessments of the unique features of their country's situation. The conversations are in the native language(s) of the country. One-page summaries of these interviews are then translated into English and delivered to the GEM coordination team, where the material is standardized and coded using common procedures for all countries.

The third source of data is a ten-page standardized questionnaire completed by each one of these experts at the conclusion of the interview (also in the native 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.

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 is made to assemble data on the activities of the venture capital sector in each country.

Figure All – 1 Structure of GEM 2002 Adult Population Interview Schedule

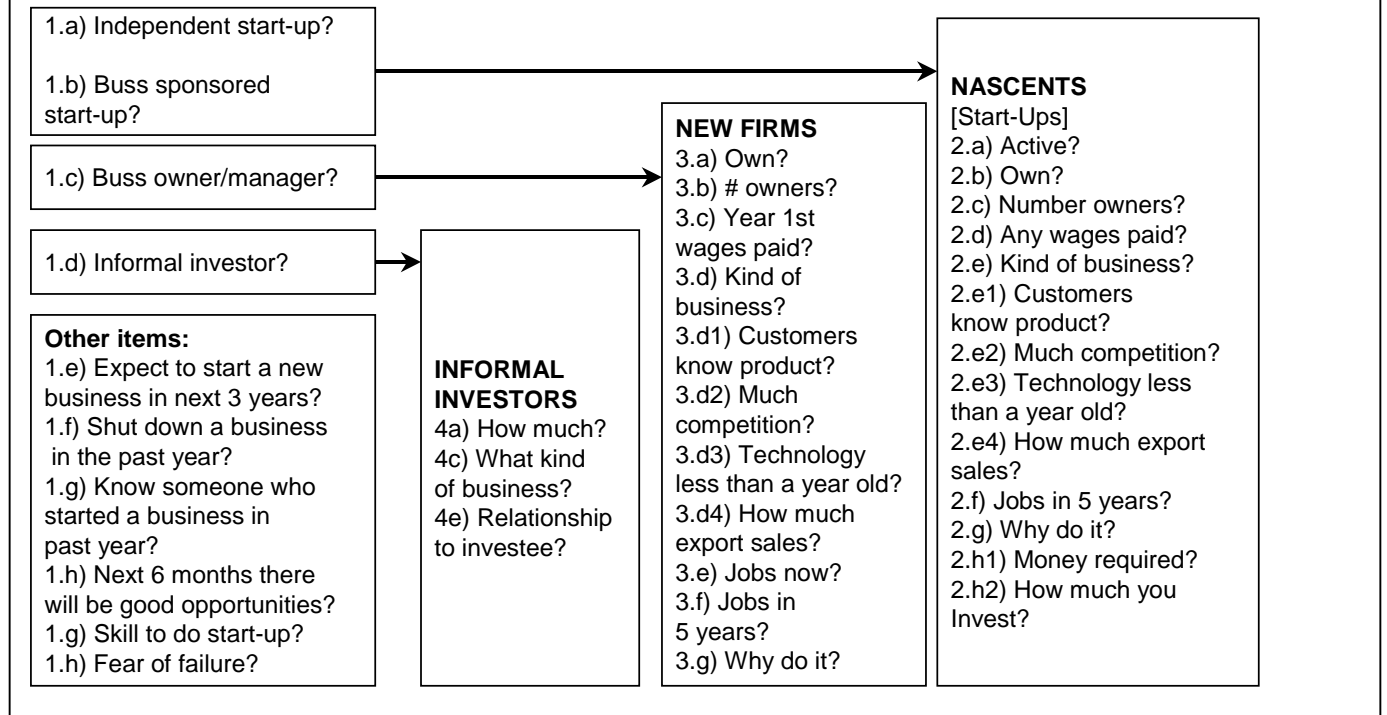


Table A II - 1 Survey Research Firms, Sample Size by Country

Country	Data Collection Agency	Coordinator	No Cases
Argentina	MORI Argentina	GEM Coordination	1,999
Australia	Digipoll	GEM Coordination	3,378
Belgium	Taylor Nelson Sofres	Taylor Nelson Sofres	4,057
Brazil	Instituto Bohilha	GEM Coordination	2,000
Canada	Market Facts	GEM Coordination	3,014
Chile	Adimark	GEM Coordination	2,016
China	AMI	GEM Coordination	2,054
Chinese Taipei	Graduate Institute of Applied Statistics	GEM Coordination	2,236
Croatia	Taylor Nelson Sofres	Taylor Nelson Sofres	2,001
Denmark	Taylor Nelson Sofres: IFKA	GEM Coordination	2,009
Finland	Taylor Nelson Sofres : MDC	GEM Coordination	2,005
France	A C Nielsen	A C Nielsen	2,029
Germany	Taylor Nelson Sofres: EMNID	GEM Coordination	15,041
Hong Kong	Consumer Search	GEM Coordination	2,000
Hungary	MEMRB, Hungary	GEM Coordination	2,000
Iceland	Gallop - Iceland	GEM Coordination	2,000
India	Scope	GEM Coordination	3,047
Ireland	Landsdown Research	GEM Coordination	2,000
Israel	BI Cohen Institute	GEM Coordination	2,004
Italy	Nomesis	GEM Coordination	2,002
Japan	SSRI	GEM Coordination	1,999
Korea	Hankook Research	GEM Coordination	2,015
Mexico	ALDUNCIN Y	GEM Coordination	1,002
Netherlands	Survey@	GEM Coordination	3,510
New Zealand	DigiPoll	GEM Coordination	2,000
Norway	Taylor Nelson Sofres	Taylor Nelson Sofres	2,036
Poland	AC Nielsen	AC Nielsen	2,000
Russia	AC Nielsen	AC Nielsen	2,190
Singapore	Joshua Research Consultants	GEM Coordination	2,005
Slovenia	Gral-Iteo	GEM Coordination	2,030
South Africa	Markinor	GEM Coordination	3,498
Spain	Opinometre	GEM Coordination	2,000
Sweden	SKOP	GEM Coordination	2,000
Switzerland	Taylor Nelson Sofres	Taylor Nelson Sofres	2,001
Thailand	A C Nielsen	GEM Coordination	1,043
UK	MORI Telephone Surveys	GEM Coordination	15,002
	Taylor Nelson Sofres (Pretest)		1,000
US	Market Facts	GEM Coordination	6,058
	Market Facts (Pretest)		1,001
Total			113,282

This page left blank.

ENDNOTES

¹ The standardized source of annual population structure estimates was the US Census Bureau International Database [<http://www.census.gov/ipc/www/didbnew.html>]. This age range, 18-64 years of age, is covered by all samples in all countries and approximates the ages in which individuals are expected to be active in the labor force.

² An individual was considered a nascent entrepreneur under three conditions: first, if they had done something—taken some action—to create a new business in the past year; second, they expected to share ownership of the new firm; and, three, the firm had not paid salaries or wages for more than three months. If the new initiative had paid salaries and wages for more than 3 months but less than 42 months it was classified as a new business. An individual was also considered entrepreneurially active if they were involved in ownership and management of a new business that had not paid salaries and wages for over 42 months. Data were also collected on a large number of individuals that were owner/managers of firms over 42 months old; no analysis of these established businesses is reported in this summary.

³ United Nations, Statistical Office, Department of Economic and Social Affairs (1990), *International Standard Classification of All Economic Activities: Revision 3*. New York City, United Nations. [<http://esa.un.org/unsd/cr/registry/regist2.asp>].

⁴ See Reynolds, Paul D., et al. 2001. Global Entrepreneurship Monitor: 2001 Summary Report, available at 'www.gemconsortium.org'.

⁵ Most recent IMF projections provided 25 September 2002 at 'www.imf.WEO.org/external/pubs/B/WEO/2002/02' were used in this assessment.

⁶ Located at 'www.imf.WEO.org/external/pubs/B/WEO/2002/02' after 25 September 2002.

⁷ These sampling ratios vary from 1 in 90 in Iceland to 1 in 300,000 in China. Weighting by the sampling ratio substantially increases the impact of those engaged in necessity entrepreneurship on the descriptive patterns.

⁸ Excluded are Spain, Italy, Brazil, New Zealand, India, Ireland, Croatia, and Chinese Taipei (Taiwan).

⁹ The Automatic Interaction Detection (AID) was developed to systematically explore the interactions between such variables and their joint impact on a binary outcome—one is either involved in entrepreneurship or not. The AID procedure provided a systematic way to locate interaction effect between two or more variables (Sonquist, John A. and James N. Morgan, 1964, *Detection of Interaction Effects*. Ann Arbor, MI: University of Michigan Institute for Social Research Monograph No. 35). One current version is the SPSS Answer Tree 3.0 Program (SPSS, Inc. 2001, AnswerTree 3.0 Users Guide, Chicago, IL: SPSS, Inc.), replacing the previous version called CHAID (Chi-Square Automatic Interaction Detection). The procedure systematically assesses the potential “causes” of variation, identifies the one with the biggest impact, and then divides the sample into groups based on this factor. Each subgroup is then reassessed in light of the remaining variables, and the most predictive independent variable is used to further subdivide the sample. Each branch of the tree—the “Answer Tree”—may have a different path, reflecting diversity in the interaction among factors that have an impact on entrepreneurial activity. To provide confidence that the results are not a fluke based on an atypical sample, the total sample is randomly divided into ten sub-samples with a randomly selected 10% of the sample removed from each sub-sample. The results reflect the average results of the ten assessments. When repeated with a different “random seed start,” which provides different sub-samples, the results were quite similar.

While Answer Tree 3.1 uses weighted cases to compute the trees, the results are presented with unweighted frequencies. In order to compute the tables for this report, an SPSS command file was written to identify each group and then weighted group values computed with SPSS.

¹⁰ This procedure was developed by Isabel Servais, implemented by Natalie De Bono with the use of the QSR NUD*IST program, version N6, and substantial technical assistance from UK consultant Dr. Clare Tagg.

¹¹ Professor Erkkö Autio, of the Helsinki University of Technology, has managed this process from the beginning of the GEM research program. The success of this effort is directly related to the considerable attention he has given to refining and improving the items with the full involvement and cooperation of the national teams.

¹² Professor Erkkö Autio, of Helsinki University of Technology and CERN in Geneva, Switzerland, has lead the team doing the special assessments related to the development of technology and science based new firms.

¹³ The World Competitiveness Yearbook: 2002. Lusanne, Switzerland: International Institute for Management Development.

¹⁴ Schwab, K., M. Porter, and J. Sachs. [2002] The Global Competitiveness Report: 2001-2002. Oxford, UK: Oxford U. Press.

¹⁵ Prepared on behalf of the women and entrepreneurship special team: Pia Arenius, Helsinki University of Technology; Anne Kovalainen, Turku School of Economics; Maria Minniti, Babson College; and Susan Rushworth, Swinburne University of Technology.

¹⁶ Those 19 with per capita income in excess of US\$ 18,000 per year in 1999 include Australia, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Iceland, Ireland, Italy, Japan, Netherlands, Norway, Singapore, Sweden, Switzerland, UK, and the US. Those 18 with per income below US\$ 18,000 in 1999 include Argentina, Brazil, Chile, China, Chinese Taipei (Taiwan), Croatia, India, Israel, Korea, Hungary, Mexico, New Zealand, Poland, Russia, Slovenia, South Africa, Spain, and Thailand.

¹⁷ Prepared on behalf of the Family Team, chaired by Dr. Carol Wittmeyer and sponsored by the Raymond Family Business Institute.

¹⁸ This is the first and most critical of six criteria that may be used in an assessment of whether or not a firm is considered a “family business.” Others that may be used include family representation in management, more than 50% of managers from the same family, family members determining the firm strategy, plans to transfer the firm to future family generations, and perception of the family managers that this was, indeed, a family business. Uhlaner, Lorraine M. [2002]. The Use of the Guttman Scale in Development of a Family Business Index. Zootermeer, NL: EIM Research Report H200203, September 2002.

¹⁹ Similar proportions of family owned businesses have been found in other samples reflecting UK and European countries (Westhead, P, and Cowling M. [1998] Family Firm Research: The Need for a Methodological Rethink. Entrepreneurship Theory and Practice, 23(1):31-56.

²⁰ Details of all procedures as covered in the Operations Manuals prepared for all phases of the data collection; these are made available on request.