

New Firm Creation: A Global Assessment of Personal and National Factors

Global Entrepreneurship: The Latest Research on Business Creation

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Analysis Objective

What factors are associated with measures of business creation?

Two measures of business creation:

- National prevalence of business creation activity
- Reports of individual participation in business creation

Two related analyses

National Context

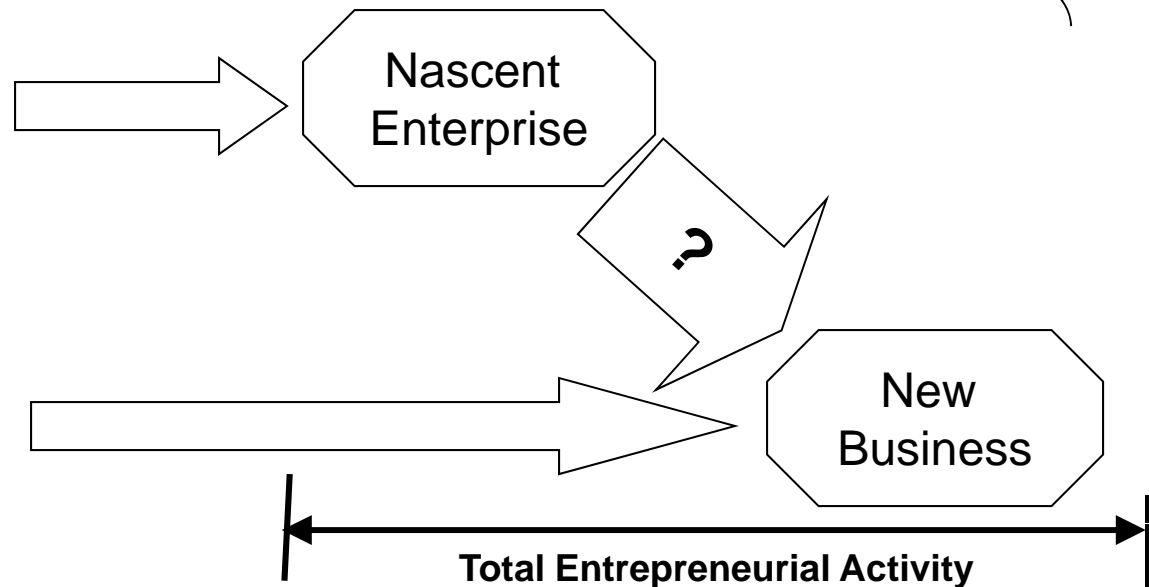
Characteristics of the workforce, national cultural & social values, current levels, structure, and change in economic activity, structure of business population, sector focus, centralized national control of business activity

Personal Context:

Support for Entrepreneurship, Potential for Financial Support

Personal Attributes

- Age
- Gender
- Education
- Work Experience
- Confidence in ability to create buss
- Fear of failure



National Measures of Business Creation

- Total Entrepreneurial Activity
 - All
 - Opportunity
 - Necessity
- Nascent Entrepreneurs
 - All
 - Opportunity
 - Necessity
- New Firm Owner/Managers
 - All
 - Opportunity
 - Necessity

Dependent Variable Sources

Detailed APS Data

- GEM 1998 -2006 Harmonized File
- Egypt 2008
- Algeria, Jordan, Lebanon, Morocco, Syria, West Bank/Gaza, Yemen for 2009
- 800,000 cases

Summary Data from GEM Coordination 2009 file

- All other 2009 countries

Data taken from 2007 and 2008 Global Reports

- All 2007 countries and 2008 except Egypt

Total sample about 1.1 million cases

Harmonized procedures for all transformation across all years

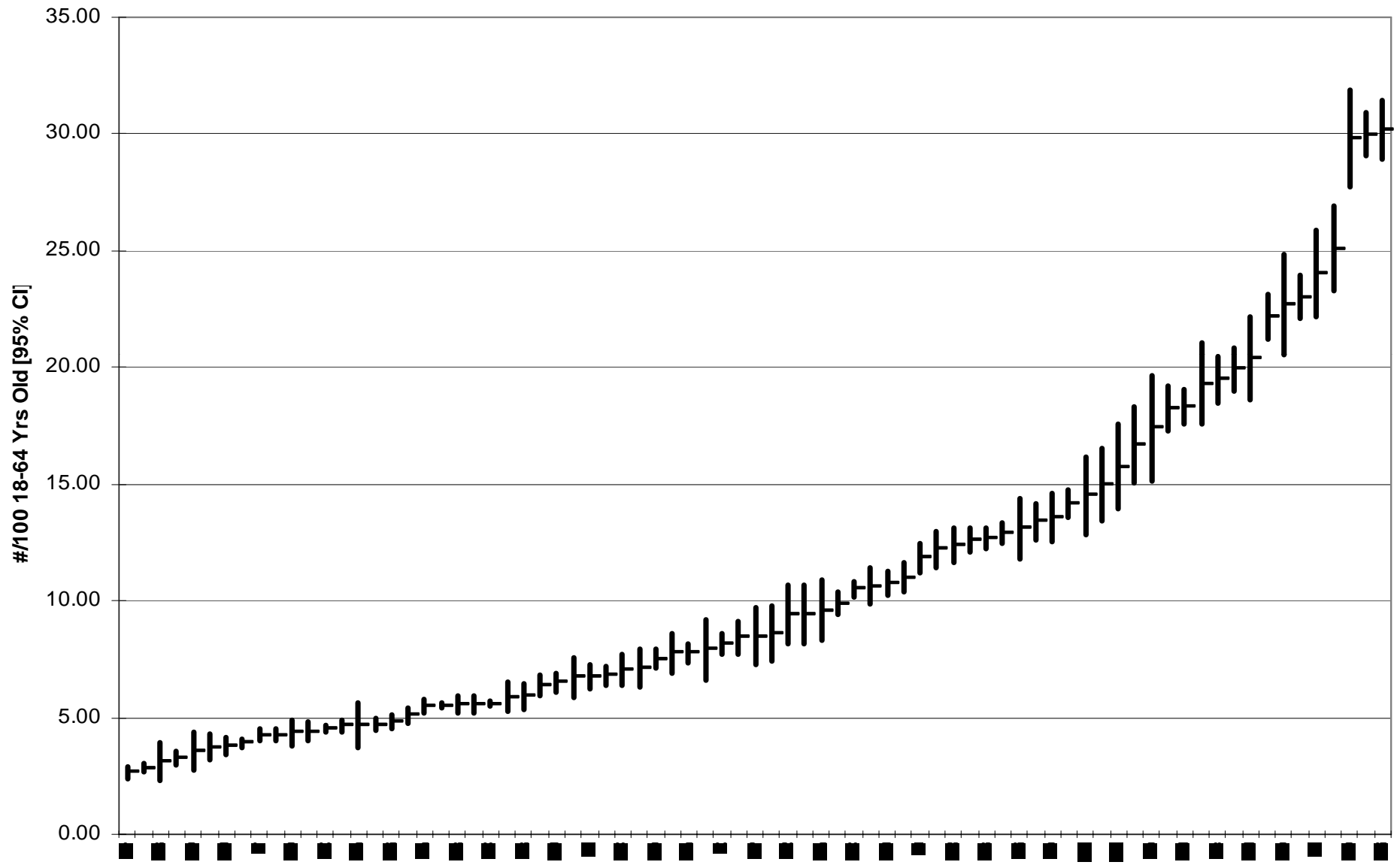
National values are all years for which data available

Missing data on some variables for countries

Involved only in 2007 and 2008

Detailed data missing in 2009 GEM aggregate file

TEA Active Prevalance Rates Average: 2000-2009

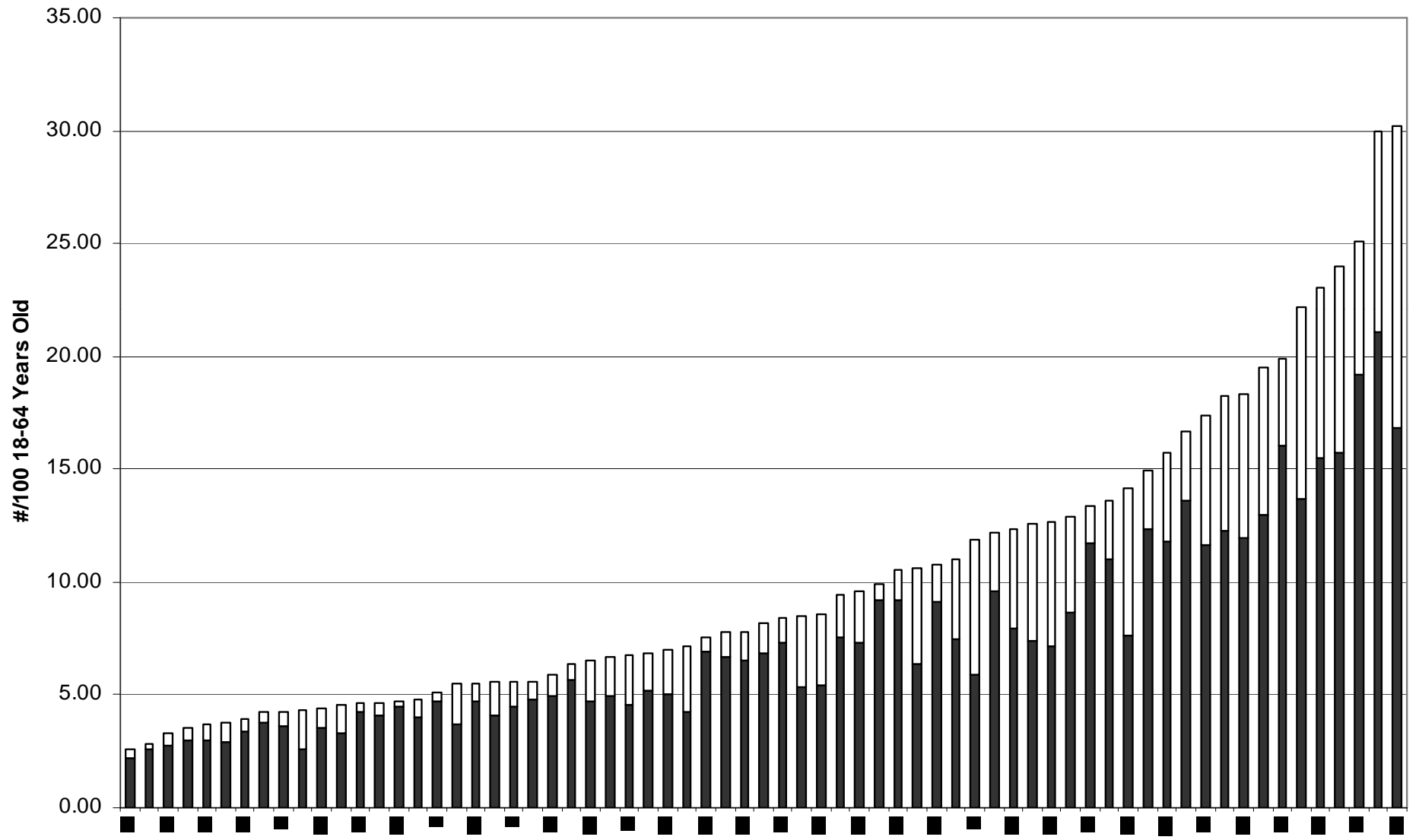


Necessity Entrepreneurs

- Across the countries
 - About one-third of the activity
- Higher proportion among countries with higher prevalence rates
 - Tend to be the developing countries
- Varies over time
 - About 10% change in 12 month follow-up interview
 - From necessity to opportunity
 - New venture looks promising
 - From opportunity to necessity
 - Other work options look less promising
- To ignore necessity entrepreneurs is to ignore a major portion of the phenomena

TEA Active Prevalence by Contextual Motivation: 2001-2009

■ Opportunity □ Necessity



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TEA and Components: Correlation Matrix

| | TEA Overall | Nascent Entrepreneurs | New Firm Owner-Managers |
|-------------------------|-------------|-----------------------|-------------------------|
| TEA Overall | 1.00 | | |
| Nascent Entrepreneurs | 0.90 | 1.00 | |
| New Firm Owner Managers | 0.83 | 0.52 | 1.00 |

Conclude: Benefits to treating each measure separately.

Measures Related to Contextual Motivation

| Comparison | Correlation |
|---|--------------------|
| TEA Necessity/TEA Opportunity | 0.75 |
| Nascent Necessity/Nascent Opportunity | 0.84 |
| New Firm Necessity/New Firm Opportunity | 0.68 |

CONCLUDE

- Different processes involved
- Complete separate analyses

Dependent Variable Frequency Distributions

- High skewed due to high values for small number of countries in the sample
- Log 10 transform creates normal distributions
- Log10 used in all regression models
 - Result is normally distributed residuals
 - Indication that data set meets most assumptions of the model

National Case Weights

- If weight of one, all countries have equal impact on assessment
- Emphasizes Western European business creation
 - 16 of 76 GEM countries Western European
- Total sample of 76 countries
 - 3.2 billion persons 18-64 years of age
 - More activity in larger countries
- Create weights based on proportion of total population represented in each country
 - Sum of the weights = 76
 - Tonga [0.0015]
 - China [21.10, 14,333 times Tonga]
- Population weighted analysis give emphasis to developing countries
 - Weights over 1 for Russia, Brazil, Indonesia, India, and China
 - Weights over 1 for Germany, Japan, and U.S.

Independent Variables: Economic Characteristics

| | Source | Yrs | TEA r [no wt] | TEA r [pop wt] |
|----------------------------------|----------------|---------------|------------------|-------------------|
| GDP per capita | WEO | 2009 | -.65 | -.61 |
| GDP per capita inc | WEO | 2005- 2008 | 0.11 [NS] | 0.37 |
| Human population increase | US Census | 1999- 2009 | 0.49 | 0.41 |
| Income inequality: GINI index | Solt (2009) | 2000- 2008 | 0.59 | 0.41 |

Independent Variables: Structural Features

| | Source | Yrs | TEA r [no wt] | TEA r [pop wt] |
|---------------------------------------|---------------|---------------|------------------|-------------------|
| Firm size: enterprises/ 100 adults | GEM | 2000- 2009 | 0.69 | 0.78 |
| Agriculture workers/ all workers | World Bank | 2000- 2007 | 0.59 | 0.67 |
| Industry workers/ all workers | World Bank | 2000- 2007 | -.42 | -.67 |
| Service workers/ all workers | World Bank | 2000- 2007 | -.47 | -.57 |

Independent Variables: Centralized Control of Economic Activity

| | Source | Yrs | TEA r [no wt] | TEA r [pop wt] |
|---|----------------------|------|------------------|-------------------|
| Common law (1) versus civil law (0) legal code | La Porta, et al. | 2009 | 0.04 [NS] | 0.02 [NS] |
| Ease of business registration index | WB Doing Business | 2009 | 0.50 | 0.51 |
| Government expenses as percent of GDP | Heritage Found | 2009 | -.50 | -.63 |
| Per cent workers in non- private sectors | ILO and World Bk | 2005 | -.40 | -.51 |

Independent Variables: Population Capacity for Business Creation

| | Source | Yrs | TEA r [no wt] | TEA r [pop wt] |
|---|---------------------|-----------|------------------|-------------------|
| Entrepreneurial ready adults prevalence index | GEM | 2000-2009 | 0.72 | 0.77 |
| <u>Percent 25-44 yrs old persons in population</u> | US Census | 2007 | -.29 | 0.25 |
| Percent adults with high school degree or more educ | Barro & Lee | 2000 | -.35 | -.35 |
| Men: % labor force participation | World Values Sur | 2007 | 0.34 | 0.57 |
| <u>Women: % labor force participation</u> | World Values Survey | 2007 | -.11 [NS] | 0.05 [NS] |

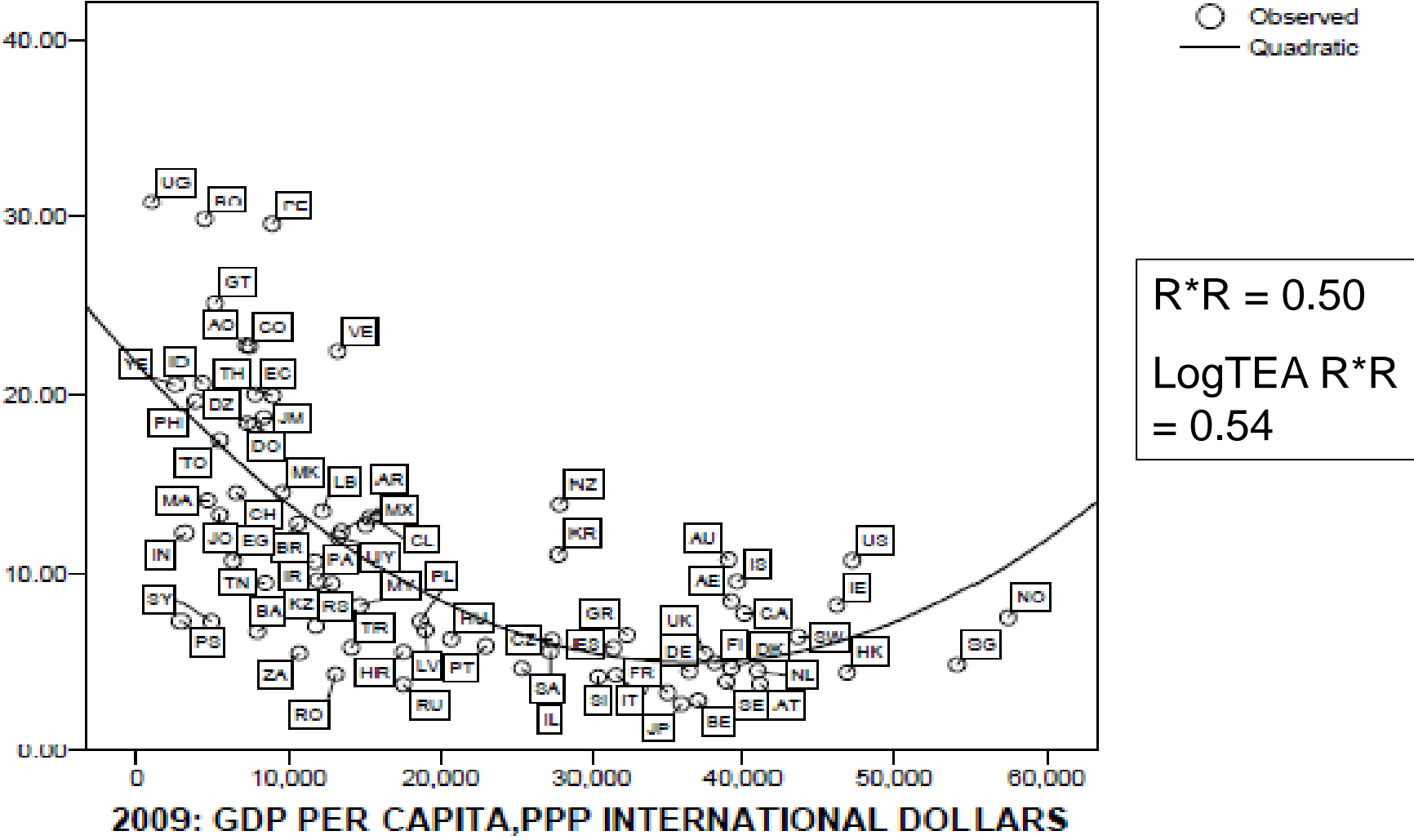
Independent Variables: National Cultural and Social Norms

| | Source | Yrs | TEA r [no wt] | TEA r [pop wt] |
|--|------------------|-----------|------------------|-------------------|
| Perception of Corruption Index | Trans Intern | 2005 | 0.54 | 0.56 |
| Prevalence of Informal Investors | GEM | 2000-2009 | 0.58 | 0.67 |
| Cultural Support for Entrepreneurship | GEM | 2000-2009 | 0.55 | 0.67 |
| Traditional versus Secular/Rational Values | World Value Surv | 2007 | -.67 | -.25 |
| Survival versus Self-Expressive Values | World Value Surv | 2007 | -.15 [NS] | -.27 |
| <u>Unemployment rate</u> | World Bank | 2000-2008 | 0.06 [NS] | -.17 |

Comments on Correlation Patterns

- Most correlations about the same regardless of weighting
- Sign reversals for:
 - Percent 25-44 years old persons in population
 - Participation of women in labor force
 - Unemployment rate
- Several measures retained despite low correlations
 - Legal tradition (common law vs. civil law)
 - Female labor force participation
 - Survival versus self-expressive values
 - Unemployment rate

TEA_ALL_AVERAGE ACROSS YEARS WITH DATA



Comment on GDP per Capita

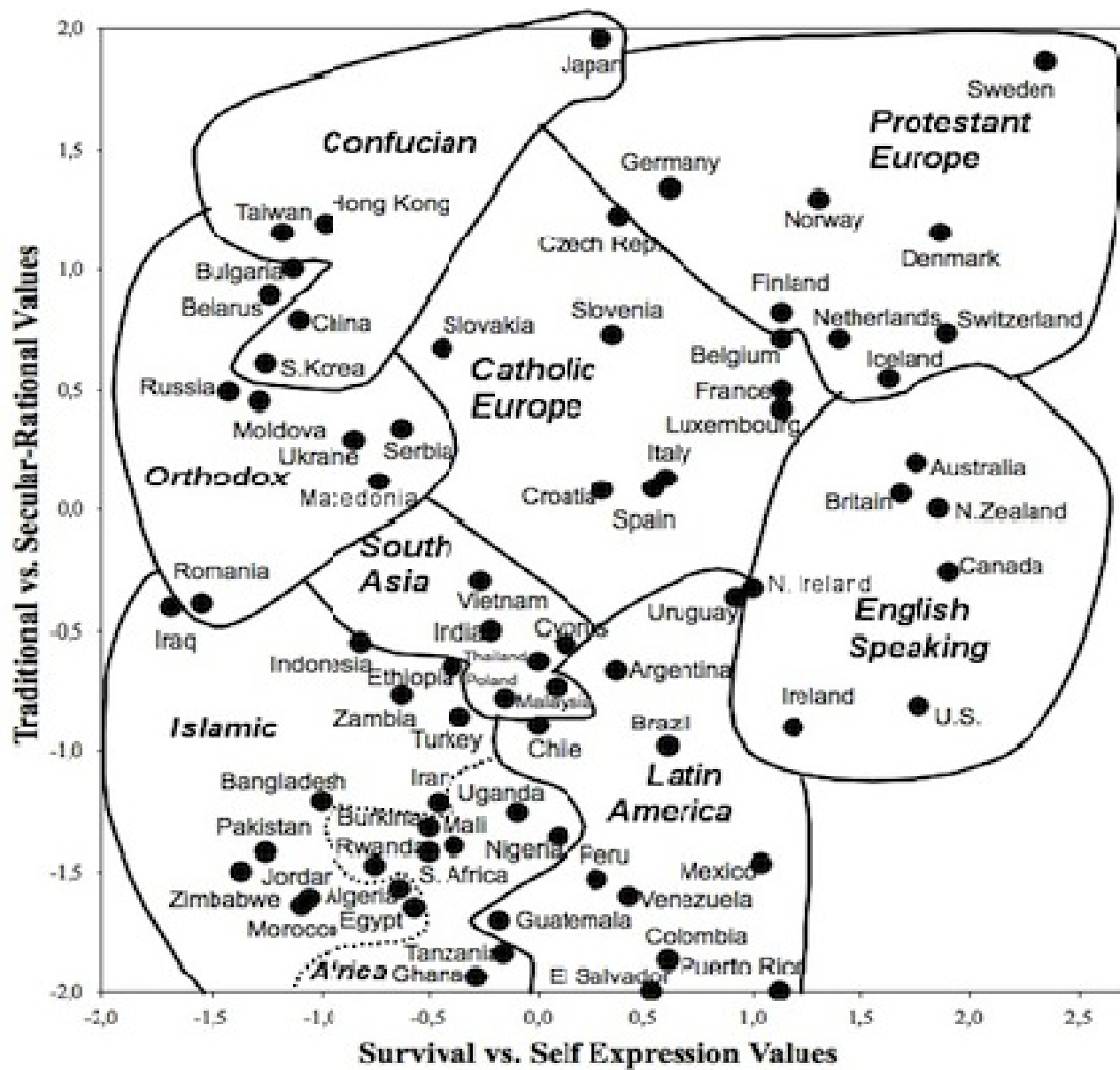
- Widely used as summary measure of the level of economic development
- Quadratic relationship accounts for 50% (or more) of variance in level of TEA overall
- But hard to know how to interpret
 - Assumes all countries have same “development trajectory”
 - Very crude indicator, not clear what national features are associated with differences
 - Useless for policy development
 - Actually a measure of outcomes expected from more business creation

World Values Survey

- Collected data on 80+ countries
 - Data on 64 GEM countries
- Surveys completed over 5 waves:
 - 1981, 1990, 1995, 2000, 2006
- Two major dimensions, not correlated
- Traditional versus secular-rational values
 - Emphasis on religion, obedience, respect for authority, national pride versus opposite
- Survival versus self-expressive values
 - Emphasis on economic security, avoiding political involvement, care in trusting others versus opposite

Cultural Values Reinterpreted

- Traditional focus associated with
 - Focus on work, husband as provider
 - Care of family a major responsibility
 - Respect for authority
 - No expectation of government assistance
 - Increased self-reliance regarding economic status
- Survival focus associated with
 - Dissatisfaction with income
 - Security, good income a major priority
 - Working hard more important than leisure



World Region Classification

| Region | GDP/Capita < \$20,000 | GDP/Capita < \$20,000 |
|---------------------------|--|--|
| North America, Oceania | | AU, CA, NZ, US |
| Western EU, Israel | | AT, BE, DE, FI, FR, DE, GR, IS, IL, IE, IT, NL, NO, PT, ES, SE, SW, UK |
| Central, Eastern EU | BA, HR, KZ, LV, MK, PL, RO, RU, RS | CZ, HU, SI |
| Asia | CH, IN, ID, MY, PH, TH, TO | HK, JP, KR, SG, TW |
| Middle East, North Africa | DZ, EG, IR, JO, LB, MA, SY, TN, TR, PS, YE | SA, AE |
| Latin America, Caribbean | AR, BO, BR, CL, CO, DO, EC, GT, JM, MX, PA, PE, UY, VE | |
| Sub-Sahara Africa | AO, ZA, UG | |

World Regions

- Major basis for replacing missing values for Independent Variables ONLY
 - Many cross national data sets are “incomplete” for smaller, low income countries
- Missing value replace with mean value for world region cells
 - Not much of a problem for North America, Oceania or Western Europe, Israel
 - Not used for any GEM based measures

Linear Additive Regression Model Outcomes

| Dependent Variable | No weights | | Weighted by Population | |
|-----------------------------|--------------------|-----------------------|------------------------|-----------------------|
| | Explained Variance | Significant Variables | Explained Variance | Significant Variables |
| TEA Overall [n=72] | 72.2 % | 3 | 83.9 % | 5 |
| TEA Opportunity [n=72] | 74.3 % | 5 | 85.3 % | 6 |
| TEA Necessity [n=72] | 78.8 % | 6 | 87.5 % | 8 |
| | | | | |
| Nascent Overall [n=76] | 57.8 % | 3 | 75.7 % | 6 |
| Nascent Opportunity [n=62] | 53.4 % | 4 | 69.6 % | 3 |
| Nascent Necessity [n=62] | 66.5 % | 6 | 73.7 % | 5 |
| | | | | |
| New Firm Overall [n=71] | 82.3 % | 7 | 94.2 % | 8 |
| New Firm Opportunity [n=59] | 94.4 % | 13 | 93.0 % | 7 |
| New Firm Necessity [n=60] | 80.6 % | 6 | 89.8 % | 9 |

Impacts (1/5)

| Economic Characteristics | Un-weighted Model Presence | Weighted Model Presence | Direction of Effect |
|---|-----------------------------------|--------------------------------|----------------------------|
| Economic development: GDP per Capita 2009 | 5 | 4 | Reduces |
| Recent increase in GDP per Capita: 2005-2008 | 2 | | Reduces |
| Recent population increase: 1999-2009 | 1 | 1 | Reduces |
| Income inequality | 2/1* | 1 | (Note 1) |
| (Note 1) Income inequality increases business creation, except for opportunity new firms. | | | |

Impacts (2/5)

| Structural Features of the Economy | Un-weighted Model Presence | Weighted Model Presence | Direction of Effect |
|---|-----------------------------------|--------------------------------|----------------------------|
| Structure of existing firms: Enterprise prevalence | 6 | 4/1 | (Note 2) |
| Agriculture Sector: Percent Workers | 1 | 1 | Reduces |
| Industry Sector: Percent Workers | | | |
| Service Sector: Percent Workers | 1 | | Increases |
| (Note 2) Greater prevalence of firms increases business creation, except for TEA necessity. | | | |

Impacts (3/3)

| Centralized Control of Economic Activity | Un-weighted Model Presence | Weighted Model Presence | Direction of Effect |
|---|-----------------------------------|--------------------------------|----------------------------|
| Legal origin: Common code (1) vs. civil code (0) | | 3/2 | (Note 3) |
| Less business registration complications | 1 | 3 | Increases |
| Government expenditures as proportion of GDP | 1 | 1 | Reduces |
| Government employees as per cent of labor force | 5 | 3 | Reduces |
| (Note 3) Common law increases nascents/ civil code increases new firms. | | | |

Impacts (4/5)

| Population Capacity for Business Creation | Un-weighted Model Presence | Weighted Model Presence | Direction of Effect |
|---|-----------------------------------|--------------------------------|----------------------------|
| Prevalence of entrepreneurial ready workers | 5 | 7 | Increases |
| Percent population 25-44 years in age | 1 | 3 | Increases |
| Percent population 15+ years w secondary degree | 3 | 3 | Increases |
| Labor force participation: men | | | |
| Labor force participation: women | 5 | 4 | Increases |
| Unemployment rate | 1/1 | 2 | (Note 4) |
| (Note 4) Higher unemployment reduces new firms, increases necessity nascents. | | | |

Impacts (5/5)

| National Cultural and Social Norms | Un-weighted Model Presence | Weighted Model Presence | Direction of Effect |
|--|-----------------------------------|--------------------------------|----------------------------|
| Perception of corruption | 1 | 1 | Reduces |
| Prevalence of informal investors | 2 | 4 | Increases |
| Cultural support for entrepreneurship | 2 | 4 | Increases |
| National Values: Traditional versus secular/rational | 6 | 4 | Increases |
| National Values: Survival versus self-expressive | | 1 | Increases |

Estimated Category Effects [Rank order]

- Population Capacity for Entrepreneurship
 - Entrepreneurial ready workers has major impact
- National cultural and social norms
 - Traditional values, support for entre, informal investors
- Centralized control of the economy
 - Less centralized, more business creation
- Economic characteristics
 - GDP per Capita has small effect (take it out of regression, R² drops in 4-6% in 4 of 9 models)
- Measures of existing economic structure
 - More firms/person has some effect; little sector effect

Policy Implications

- Improving capacity of individuals to pursue business creation
 - Takes resources, but might be done quickly
 - Focus on training and education
- Changing national cultural, social norms
 - Deserves attention, but a long term project
- Decentralize economic decision making
 - Can change some features quickly (business registration)
 - But reflects basic social contract, political philosophy underlying the entire society, hard to adjust
- Economic characteristics, economic structure
 - Basically the consequence of more business creation
 - May be difficult to adjust

PREDICTING INDIVIDUAL PARTICIPATION IN BUSINESS CREATION

- Based on detailed GEM survey cases
 - About 800,000 cases in base file
- Retain nine measures of business creation activity
- Use three types of variables
 - Personal attributes
 - Personal context
 - National context
 - Taken from previous assessment

Additional Variables

| | Personal Attributes | Personal Context | Initial Source | Transformations |
|--|---------------------|------------------|----------------|-----------------|
| Gender | X | | GEM | |
| Age | X | | GEM | |
| Educational Attainment | X | | GEM | |
| Work Experience, labor force participation | X | | GEM | |
| Index of entrepreneurial readiness | X | | GEM | 3 items |
| Fear of failure | X | | GEM | |
| | | | | |
| Financial Support: Household Income | | X | GEM | |
| Financial Support: Informal Investors | | X | GEM | |
| Perceived support for entrepreneurship | | X | GEM | 3 items |

Analysis Strategy

- Participation in business creation is a dichotomous characteristics
 - Individual is ACTIVE or INACTIVE
- Use Log Linear regression procedure to build models
- With low prevalence rates, Log Linear predictions highly successful if predict that NOBODY is active in business creation

Solution

- For each type of business creation activity
- Identify the number of active individuals
 - TEA Active count is about 33,772
- Randomly divide “non-active” into a set of comparison groups of the same size
 - TEA Active comparison groups: 10 each about 34,600
- Complete Log Linear regression model with a number of TEA Active-TEA Inactive comparison groups
- Stop when evidence of stability in model results
 - Each comparison run five times
 - For nine measures a total of 45 modeling runs

Initial Research Question: Relative Impact of Personal & Context versus National Factors

- Strategy was to run Log Linear analysis with three sets of IV
 - National IVs only
 - Personal and Immediate Context only
 - National, Personal, and Immediate Context
- Again, five runs completed for each set of IVs
- Total of 3 X 45 or 135 runs
- Consider the estimated explained variance from each exercise

Summary of Log Linear Model Success

[Nagelkerke estimate of explained variance]

| | | National Factors | Personal & Contextual Factors | National, Personal & Contextual Factors | Number of analysis completed |
|----------------------|-------------|------------------|-------------------------------|---|------------------------------|
| TEA Active | All | 9.6 % | 19.5 % | 35.8 % | 5 |
| TEA Active | Opportunity | 7.7 % | 22.9 % | 38.3 % | 5 |
| TEA Active | Necessity | 22.5 % | 14.7 % | 38.2% | 5 |
| Nascent Entrepreneur | All | 9.5 % | 18.4 % | 34.1 % | 5 |
| Nascent Entrepreneur | Opportunity | 8.2 % | 21.0 % | 36.6 % | 5 |
| Nascent Entrepreneur | Necessity | 21.4 % | 16.4 % | 37.6 % | 5 |
| New Firm Owner | All | 9.2 % | 19.7 % | 35.7 % | 5 |
| New Firm Owner | Opportunity | 7.2 % | 23.7 % | 38.1 % | 5 |
| New Firm Owner | Necessity | 22.8 % | 15.6 % | 39.3 % | 5 |

Log Linear Model Factors: Top 12 Ranked by Average Beta Weights

| Rank | Beta weight | Category | Factor |
|------|-------------|-------------------------|--|
| 1 | 1.36 | Personal Attribute | Personal readiness for entrepreneurship |
| 2 | -1.12 | Personal Attribute | Retired, students, disabled |
| 3 | -.72 | Personal Attribute | Not working [homemaker, unemployed] |
| 4 | -.44 | Personal Attribute | Over 55 years of age |
| 5 | 0.30 | Personal Attribute | Male |
| 6 | -.25 | National Characteristic | Traditional value orientation [not secular-rational] |
| 7 | -.24 | Personal Attribute | Fear of failure |
| 8 | 0.21 | National Characteristic | Ease of business creation index |
| 9 | -.17 | National Characteristic | Recent increases in the total population |
| 10 | 0.16 | Personal Attribute | Personal education beyond secondary school |
| 11 | 0.15 | Personal Attribute | Between 25 and 34 years of age |
| 12 | -.14 | Personal Attribute | Between 45 and 54 years of age |

Preliminary Comments

- Explained variance, even at 35%, is relative high for this type of modeling
- Analysis was un-weighted
 - If weighted by national population may change outcomes
- Based on a preliminary assessment of national characteristics
 - May change if new variables added, give more emphasis to centralized national control
- Does suggest that personal characteristics, context more significant than national factors
 - Consistent with first analysis of national factors affecting national prevalence rates

Final Observations

- Preliminary report
 - About halfway through assessment
 - Moving toward developing factors that provide less complex set of independent variables reflecting the 23 discrete national variables
- Initial results are encouraging
 - Sample of 76 countries covers most of the world
 - Additional countries, weighted by population, will not change results very much
 - High explained variance
 - Interpretations of possible underlying mechanisms seem reasonable
 - Some significant policy implications
 - Even if only to identify the difficulty of immediate impacts
- Causal inferences will continue to be tenuous
 - Both IVs and DVs change slowly, will take decades to sort out temporal sequences
 - Measures of both IVs and DVs have a lot of error, missing data
 - But as good as can be expected at this stage

Research Lacuna

- Longitudinal Studies of Business Creation
 - Available in nine countries
 - Only one in a developing country (China) and that in urban areas
 - Provide a wealth of information about the nature of and success associated with the start-up process
 - Difficult to design, relatively expensive, and require a research team commitment for 4-6 years

PANEL STUDIES IN DEVELOPING COUNTRIES
WOULD MAKE A MAJOR CONTRIBUTION

Selected References

- 'http://www.gemconsortium.org'
- 'http://www.psed.isr.umich.edu'
- Barro, Robert J . and Jong-Wha Lee. 2000. International Data on Educational Attainment: Updates and Implications. Cambridge, MA: Harvard University, Center for international Development. Working Paper 42.
- Bosma, Niels and Jonathan Levie. 2010. Global Entrepreneurship Monitor: 2009 Executive Report. Global Entrepreneurship Research Association.
- Gartner, W.B., K.G. Shaver, N. M. Carter, and P. D. Reynolds (Eds). (2004). Handbook of Entrepreneurial Dynamics: The Process of Business Creation. Thousand Oaks, CA: Sage Publications.
- Inglehart, Ronald and Christian Welzel. 2005. Modernization, Cultural Change and Democracy. New York, Cambridge University Press.
- La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2008. The Economic Consequences of Legal Origins. Journal of Economic Literature 46(2):285-332.
- Reynolds, Paul D. (2007). New Firm Creation in the U.S.: A PSED I Overview. Hanover, MA: now Publishers, Inc.
- Reynolds, Paul D. (2010) MENA Region Entrepreneurship. Cairo, Egypt: International Development Research Centre Report.
- Reynolds, Paul, Niels Bosma, Erkkko Autio, Steve Hunt, Natalie De Bono, Isabel Servais, Paloma Lopez-Garcia, and Nancy Chin. (In 2005) Global Entrepreneurship Monitor: Data Collection Design and Implementation: 1998-2003. Small Business Economics: 24: 205-231.
- Reynolds, Paul D. and Richard T. Curtin. (2008). Business Creation in the United States: Entry, Startup Activities and the Launch of New Ventures. Chapter 8 in U.S. Small Business Administration. The small Business Economy: A Report to the President. Washington, DC: U.S. Government Printing Office (in press).
- Reynolds, Paul D. and Richard Curtin (2008). Business Creation in the United States: Panel Study of Entrepreneurial Dynamics II Initial Assessment. Foundations and Trends in Entrepreneurship. V(3):155-307.
- Reynolds, Paul D. and Richard T. Curtin (Eds). (In press). New Business Creation: An International Perspective. New York City, NY: Springer.
- Reynolds, Paul D. and Richard T. Curtin (Eds). (2009). New Firm Creation in the United States: Preliminary Explorations with the PSED II Data Set. New York City, NY: Springer.
- Solt, Frederick. 2009. Standardizing the World Income Inequality Database. Social Science Quarterly. 90(2):231-242.
- World Bank. 2009a. Doing Business 2010. New York: Palgrave MacMillan.