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# How is Entrepreneurship Good for Economic Growth?

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## Introduction

How is entrepreneurship good for economic growth? This question would seem to have a simple answer: Entrepreneurs create new businesses, and new businesses in turn create jobs, intensify competition, and may even increase productivity through technological change. High measured levels of entrepreneurship will thus translate directly into high levels of economic growth. However, the reality is more complicated. If, by "entrepreneurship," one allows inclusion of any type of informal self-employment, then high levels of entrepreneurship may actually mean either that there are substantial bureaucratic barriers to formally creating a new business, or simply that the economy is creating too conventional few wage-earning job opportunities. Under these circumstances, we might reasonably hypothesize that high levels of "entrepreneurship" would correlate with slow economic growth and lagging development.

For the past two years I have been the Chair of the research committee of a multi-country survey effort known as the Global Entrepreneurship Monitor (GEM) project that has during that time begun to make headway in understanding how different types of "entrepreneurship" affect development. The starting point has been to distinguish "necessity entrepreneurship," which is having to become an entrepreneur because you have no better option, from "opportunity entrepreneurship," which is an active choice to start a new enterprise based on the perception that a unexploited, or underexploited business opportunity exists. Analyzing data gathered by GEM researchers in eleven countries, Atilla Varga and I have found that effects on economic growth and

development of necessity and opportunity entrepreneurship, respectively, vary greatly. We found that necessity entrepreneurship had no effect on economic development while opportunity entrepreneurship has a positive and significant effect.[1]

After the fall of the Berlin Wall many uneconomical factories were closed in Central Europe as economies became integrated into the global economy. These workers who had jobs in the plants and factories of the former Socialist countries were productive members of society. However, as factories were closed one after another, many of these workers found themselves with no other options for work other than self-employment—necessity entrepreneurship. As one would expect, the influx of many former wageworkers into necessity entrepreneurship resulted in several years of negative GDP growth. This story can be retold in several other countries around the world when economies are confronted with structural change.

While it is easy to see that starting a new business to exploit a perceived business opportunity would lead to economic development, it is also possible that necessity entrepreneurship may *not* lead to economic development. Being pushed into entrepreneurship (self-employment) because all other options for work are either absent or unsatisfactory, can even lead to under development. While all countries have some level of both opportunity and necessity entrepreneurship we suggest that the ratio of opportunity-to-necessity entrepreneurship should be a useful indicator of economic development, and can be a guide for development policy. In fact we find a positive relationship between the opportunity ratio and GDP per capita. We then suggest that policies in less developed countries should focus on strengthening General National Framework Conditions and in developed economies policy should focus on strengthening

the entrepreneurial framework conditions. The next section describes the GEM program. The third section examines the relationship between economic development and globalization. Section Four examines the differential impacts of necessity and opportunity entrepreneurship on development while the conclusions are in the final section.

## II. The GEM Program

The **Global Entrepreneurship Monitor (GEM)** research program is an annual assessment of the national level of entrepreneurial activity. Initiated in 1999 with 10 countries, expanded to 21 in the year 2000 and 39 countries 2005, the program covers both developed and developing countries. The research program, based on a harmonized assessment of the level of national entrepreneurial activity for all participating countries, involves exploration of the role of entrepreneurship in national economic growth. Representative samples of randomly selected adults, ranging in size from 1,000 to almost 27,000 individuals, are surveyed each year in each country in order to provide harmonized measures of the prevalence of entrepreneurial activity. There is, further, a wealth of national features and characteristics associated with entrepreneurial activity.[2]

The GEM project is unique in that while all countries collect official data on self-employment, the size distribution of firms, census data on all or most plants and firms, firm and plant entry, almost none of these registry sources are comparable across countries, even in developed countries. Official data sources differ in the way they define when an establishment enters a file, when it leaves, how they handle self-employment makes cross national comparisons almost impossible.[3] Therefore, one of the major

strengths of the project is the application of uniform definitions and data collection across countries for international comparisons.

A major shortcoming of the GEM project has been the fact that it has not been able to effectively deal with the 'issue' of how to compare entrepreneurial activity in developed and developing countries. For example, low-income countries as Uganda, Peru and Ecuador have very high levels of self-employment and therefore have high levels of entrepreneurial activity as measured by the GEM program. High-income countries like Japan, Sweden and Germany have much lower levels of entrepreneurial activity as measured by the GEM program. In order to address this issue, when India entered the program, GEM researchers started to collect data on both opportunity entrepreneurship—starting a business to exploit a perceived business opportunity—and necessity entrepreneurship—starting a business because you were pushed into it. However, both of these measures show higher levels in developing countries than in developed countries. Many respondents are probably tempted to state that they are pursuing an opportunity rather than being involved in entrepreneurial activities because they have no other option for work, even is the latter statement describes these people best. Moreover, the relationship between necessity entrepreneurship and economic development is most likely *negative* in low income countries while the relationship between entrepreneurship and economic development in high income countries is mostly likely *positive*. This must be further balanced by the fact that some low income countries like India and China have high levels of opportunity entrepreneurship, at least in certain part of the country, and countries like Japan have very low levels of opportunity entrepreneurship and low growth.

Therefore, in the *2004 Global Entrepreneurship Report* we started to pursue the idea of using the opportunity-necessity ratio as a composite indicator of entrepreneurial activity and economic development.[4] These results have also been recently examined comparing data from the World Bank and GEM.[5]

### III. Economic Development and Globalization

Development economists distinguish three major stages of development. In the first state, the economy specialized in the production of agricultural products and small-scale manufacturing. In the second stage, the economy shifts from small-scale production towards manufacturing. In the third stage, with increasing wealth the economy shifts away for manufacturing towards services.[6] The first stage is marked with high rates of non-agricultural self-employment. Sole proprietorship—i.e. the self-employed—probably account for most small manufacturing firms and service firms. Almost all economies experienced this stage.

The second stage is marked by decreasing rates of self-employment. There are several reasons to expect that entrepreneurial activity will decrease as economies become more developed.[7] If we assume that individuals have different endowments of managerial ability, then as an economy becomes wealthier the average firm size should increase as the better managers run the companies. Average firm size is an increasing function of the wealth of the economy if capital and labor substitutes. When capital and labor are substitutes, an increase in the capital stock increases the returns from working and decreases the returns from managing.

In other words, marginal managers find they can earn more money while being employed by somebody other. In this model of economic development, increases in the capital stock either through private enterprise, direct foreign investment, or government ownership, will increase the returns to wage work relative to entrepreneurial activity. In this model the relationship between entrepreneurial activity and economic development would be negative. That is, as the economy became more developed we should find less people pursuing entrepreneurial activity. [8]

The third stage is marked by an increase in entrepreneurial activity. For over a century there has been a trend in economic activity, exhibited in virtually every developed industrialized country, away form small firms and towards larger organizations. It was therefore particularly striking when a series of studies identified that this trend had not only ceased sometime during the mid 1970s, and had actually begun to reverse itself. [9] More recent studies have confirmed this result for most developing countries in the 1970 and 1980s.[10] The empirical evidence clearly showed that the firm size distribution in developed countries began to shift away from larger corporations and towards entrepreneurial activity.[11]

There are three reasons why entrepreneurial activity rises in the final stage of economic activity. Fist, the third stage is marked by decreases in the share of manufacturing in the economy. Virtually all of the industrialized market economies experienced a decline in the share of manufacturing in their economies in the last thirty years. The business service sector expended relative to manufacturing. Service firms are smaller on average that manufacturing firms, therefore, economy wide average firm size may decline. Moreover, service firms provide more opportunities for entrepreneurship.

This is clearly the case in the United States, as well as in several EU countries including Germany and Sweden.

Second, during the post war period technological change has been biased towards industries in which entrepreneurial activity is important. Improvements in information technologies such as telecommunications may increase the returns to entrepreneurship. Express mail services, photocopying services, personal computers, the internet, web services and mobile phones services make it less expensive and less time consuming for geographically separate individuals to exchange information. [12]

Third, Robert Lucas derived a model where higher development leads to higher average firm size because of a negative relationship between the elasticity of factor substitution and firm size. However, recent Aquilina, Klump and Pietrobelli have come to a different conclusion. A high value of the elasticity of factor substitution does not only lead to more per capita capital, but makes it at the same time easier for an individual to become an entrepreneur if the aggregate elasticity of substitution is also negative. In an economy characterized by higher values of the aggregate elasticity of substitution we should expect a higher level of development, more entrepreneurs and smaller firms. [13]

Therefore, we would expect that economies in the early or middle stage of economic development, entrepreneurial activity would be negatively related to economic development since most people would be trying to move from self-employment to wage employment. In developed economies we would expect entrepreneurial activity to be positively related to economic development as people shift from wage work to entrepreneurial activity. This framework seems to imply that a U-shaped relationship may in fact exist between entrepreneurial activity and economic development in the

global economy. Countries like Uganda, Peru and Ecuador are all countries with high levels of entrepreneurial activity but very low levels of per capita income. Countries with much lower levels of entrepreneurial activity, for example Brazil and Argentina, appear to have higher levels of per capita income and are moving toward lower level of entrepreneurial activity. The middle represents a set of countries that appear to be transitioning from a middle-income level to a higher income level and some have rising levels of entrepreneurial activity. High-income countries, Germany, France, Belgium, Italy and Finland have relatively low levels of entrepreneurial activity. Two countries stand out as outliers, Japan with one of the lowest levels of entrepreneurial activity, and the United States with one of the highest levels of entrepreneurial activity.

To answer our question, "How entrepreneurship good for Development?" we actually need to know what type of entrepreneurial activity countries are engaged in. We use the Global Entrepreneurship Monitor (GEM) data to identify the type of activity in countries at different levels of development. The intent of GEM is to systematically assess two things: the level of start-up activity or the prevalence of nascent firms and the prevalence of new or young firms that have survived the start-up phase. First, start-up activity is measured by the proportion of the adult population (18-64 years of age) in each country that is currently engaged in the process of creating a nascent business. Second the proportion of adults in each country who are involved in operating a business that is less than 42 months old measures the presence of new firms. The distinction between nascent and new firms is made in order to determine the relationship of each to national economic growth. For both measures, the research focus is on entrepreneurial activity in

which the individual involved have a direct but not necessarily full, ownership interest in the business.

There are numerous ways to measure entrepreneurial activity. Not all entrepreneurial activity is induced by the same motives. One important distinction is between opportunity-based entrepreneurial activity and necessity-based entrepreneurial activity. Opportunity entrepreneurship represents the voluntary nature of participation and necessity reflecting the individual's perception that such actions presented the best option available for employment but not necessarily the preferred option. Opportunity entrepreneurship differs from necessity by sector of industry and with respect to growth aspirations. Opportunity entrepreneurs expect their ventures to produce more high growth firms and provide more new jobs.

A clearly discernible trend occurs between the ratio of opportunity to necessity entrepreneurship and the per capita income of a country. Figure 1 illustrates this trend. On the x-axis, countries are ranked from the lowest to the highest opportunity to necessity entrepreneurship ratio. Opportunity to necessity entrepreneurship ratio is a short

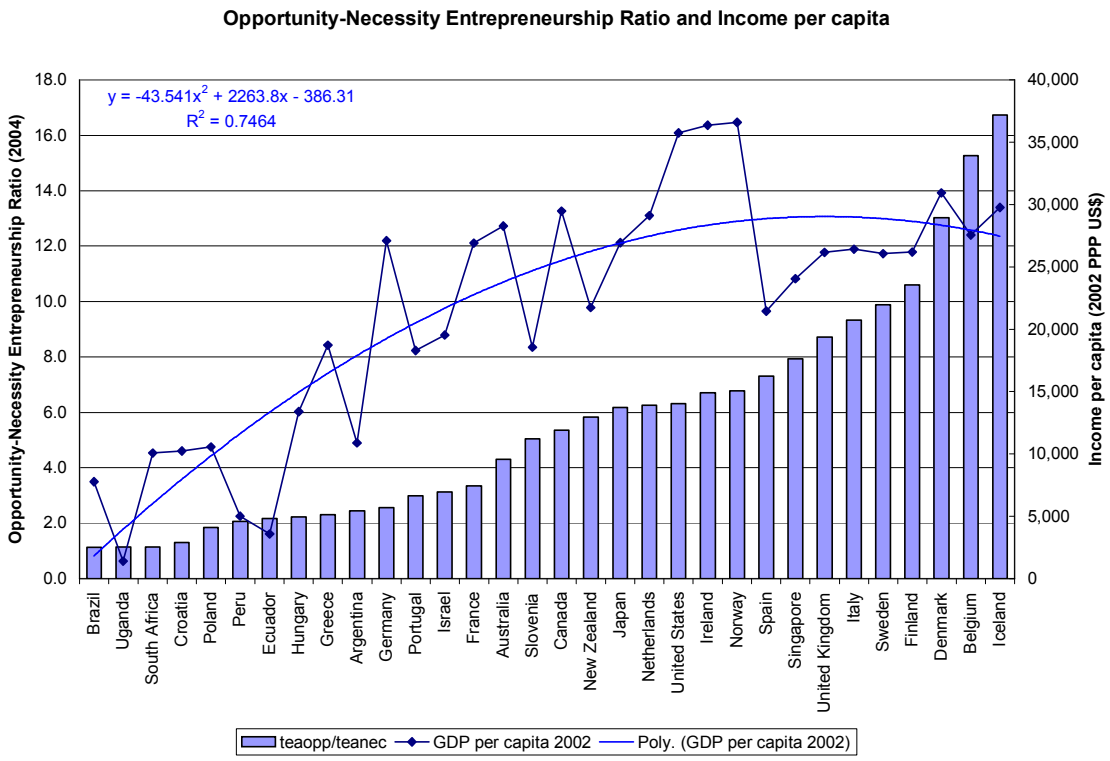


**Figure 1: Opportunity-Necessity Entrepreneurship Ratio and Income *per capita***

Entrepreneurship data are for 2004, income data for 2002 (the latest available). The sample of countries is defined by the Global Entrepreneurship Monitor database.
*Source:* entrepreneurship data *GEM 2004 Global Report*, accessible at http://www.gemconsortium.org/category_list.asp?cid=163; income data United Nations Development Program, *Human Development Report 2004*, Table 13.

hand to describe the importance of the desirable, opportunity entrepreneurship relative to the necessity induced entrepreneurship. The advantage of this ranking is that countries with high levels of necessity entrepreneurship get ranked as a country with low levels of entrepreneurship. The values of opportunity to necessity entrepreneurship ratio are measured on the y-axis. They range from 1.1 in Brazil to 16.7 in Island. The right hand side y-axis is for countries' per capita income data in 2002 with individual values also being shown on the diamond-line.

We have fitted a polynomial regression line to estimate the relationship between the opportunity-necessity entrepreneurship ratio and a country's income. While some fluctuations occur, a positive relationship appears between income level and the entrepreneurship ratio. In other words, countries where more entrepreneurship is motivated by an economic opportunity recognized than by necessity have higher levels of income. The graph provides some evidence to the question posited at the beginning of this essay assuming that we have the right kind of entrepreneurship.

An interesting question is how does the ration of opportunity to necessity entrepreneurship track with other development variables. We carried out this exercise and found that most variables also tracked positively including, exports as a percent of GDP, licensing receipts, research and development expenditures and education spending. Most variables associated with development appear to track rather well with entrepreneurship.

## IV. The Differential Impacts of Necessity and Opportunity Entrepreneurship

We are now in a position to at least give a tentative answer to our question, "How is entrepreneurship good for economic development?" The answer depends clearly on what one means by entrepreneurship and therefore what one thinks the link between the two is. If one means by entrepreneurship, self employment either in agriculture or very small scale industry, then in most cases entrepreneurship will not lead to economic development because there is no mechanism to link the activity to development. In fact we know that self-employment declines as economies become more developed. It is only

when economies are able to remove people from self-employment that we start to see an increase in development. Or to quote Adam Smith when the division of labor increases so wills economic development. Our data clearly indicated that the ration of opportunity to necessity entrepreneurship is a key indicator of economic development. As more and more of the population becomes involved in opportunity entrepreneurship and as more and more people leave necessity entrepreneurship (self-employment) the more we see rising levels of economic development.

Traditional analyses of economic development tend to focus on large corporations and neglect the innovations and competition that small start-ups contribute to the overall economy.[14] For large corporations, the ability to affect national economic growth is influenced by general business conditions, specific to each country. [15] These corporations influence economic growth primarily through the construction of new plants, which in turn creates job opportunities. In addition, when an old plant is replaced, new technologies are applied in the new plant, resulting in increased productivity. The new plants that positively affect the national economy in this way can be built by domestic firms or by multinational enterprises.[16]

For potential entrepreneurs, the decision whether to start a business is influenced by additional characteristics within the existing business environment. These are referred to as Entrepreneurial Framework Conditions. The conditions comprise a country's capacity to encourage start-ups, combined with the skills and motivations of those who wish to go into business for themselves. Together, these two conditions affect the economics of the entrepreneurial process. When successfully combined, these conditions will lead to offshoot businesses, which in turn will increase innovation and competition

within the marketplace. The end result is a positive influence on national economic growth.

Taking into account the different economic environments that affect these two groups of players in the business world, we focus on the complementary nature of the mechanisms among large and small firms. By defining these mechanics, we link the nation's economic growth to the interplay of entrepreneurship and existing businesses. This opens the door to a clearer understanding of why entrepreneurship is vital to the larger economy. The relationship between entrepreneurships, corporations, and economic development is complex. By applying this model to a nation's economy, important conclusions can be drawn.

A nation's economic development depends on successful entrepreneurship combined with the force of established corporations. However, the beneficial value of this mechanism varies with the national income, as measured by GDP per capita. At low levels of national income, self-employment provides job opportunities and scope for the creation of markets. As GDP per capita income increases, the emergence of new technologies and economies of scale allows larger and established firms to satisfy the increasing demand of growing markets and to increase their relative role in the economy.

At the same time, the numbers of business start-ups decrease as a growing number of people find stable employment. Finally, as further increases in income are experienced, the role played by the entrepreneurial sector increases again, as more individuals have the resources to go into business for themselves in a business environment that allows the exploitation of opportunities. In high-income economies, through lower costs and accelerated technology development, entrepreneurial firms enjoy

a newly found competitive advantage. Thus, entrepreneurs in countries with different levels of GDP per capita, face different challenges. As a result, policies and conditions favorable to entrepreneurship in one country (or region) may not be effective or favorable in another.

## V. Implications for Policy

In all countries a balance needs to be struck between the General National Framework Conditions[17] and the Entrepreneurial Framework Conditions. However, that balance depends on the level of economic development.

Less developed countries need to strengthen their Small and Medium Sized sector, before focusing on the entrepreneurial framework conditions, since this is the first step toward development. These policies are focused at firms not at individuals. These include financial assistance, management assistance, training and reducing regulatory burdens. Part of the goal should be to reduce the number of self-employed and strengthen the existing Small and Medium Sized Sector. Underdeveloped countries should be focuses on bringing in direct foreign investment that would employ more of the people leaving agriculture and self-employment. A strong commitment to education and training, both at the elementary and secondary level are important. Those with less education in developing countries will end up in necessity entrepreneurship.

For developing countries a more balanced approach to both the National Framework Conditions and the Entrepreneurial Framework Conditions is needed. Depending where a country is in its path of general economic development it might need to strengthen the conditions for /to improve the quality of entrepreneurial environment for

major established firms, including the rule of law, labor market flexibility, infrastructure, financial market efficiency and management skills. Most of these conditions are necessary to attract foreign direct investment that will provide employment, technology transfer, exports and tax revenues. Entrepreneurship in developing countries should be focuses on strengthening the entrepreneurial sector. A strong commitment to education at both the secondary and tertiary level is necessary.

For developed economies the focus shifts to strengthening the Entrepreneurial Framework Conditions if they want to be entrepreneurial economies. The focus of an entrepreneurial economy is on change. Entrepreneurial economies need to strengthen technology transfer, make early stage funding available, and support entrepreneurial activity at the state, corporate and educational level, especially at the university level. Entrepreneurial activity in developed countries needs to focus on high value added, high technology, innovation and technology commercialization. Finally, in developed economies the higher education system needs to play an important role in research and development, technology commercialization and education.

**Appendix. Definitions**

Historically entrepreneurship has at least two meanings.[18] First, entrepreneurship refers to owning and managing a business. This is the occupational notion of entrepreneurship.[19] Within this concept of entrepreneurship, a dynamic perspective focuses on the creation of new businesses, while a static perspective relates to the number of businesses owners. Second, entrepreneurship refers to entrepreneurial behavior in the sense of seizing an economic opportunity. This is the behavioral notion of entrepreneurship. Entrepreneurs in the behavioral sense need not be business owners. At the crossroads of behavioral entrepreneurship and the dynamic perspective of occupational entrepreneurship, a new focus has arisen that considers new venture creation as the hallmark of entrepreneurship.[20]

The entrepreneur therefore "is someone who specializes in taking judgmental decisions about the coordination of scarce resources."[21] The term *someone* emphasizes that the entrepreneur is an individual. The term *judgmental* implies that the decision cannot be simply a routine application of a standard rule. The idea that, the perception of opportunities is subjective, but opportunities are objective, has a long history in the theory of entrepreneurship. It is most clearly expressed in Hayek.[22] Knight expressed the same idea in somewhat different language when he introduced the distinction between risk, which is objective, and uncertainty, which is subjective, and identified uncertainty-bearing as the economic function of the entrepreneur.[23] We also find it in the early Schumpeter who was clear that the entrepreneur was the prime mover in economic development and his function was to innovate. As G. L. S. Schackle wrote, "The

entrepreneur is a maker of history, but his guide in making it is his judgment of possibilities and not a calculation of certainties."[24]

Entrepreneurship is what happens at the intersection of history and technology.[25] History is the codified record of what has happened in the past and technology is ways too view the future. This leads to two further concepts in the analysis of entrepreneurship. First, is the stock of technical knowledge, what one might think of as codified language and knowledge. The second is the technology opportunity set. It consists of all the opportunities that have not been exploited. Investment in new knowledge increases the technology opportunity set and sharpens out ability to gaze into the future. . Consequently, entrepreneurial activity can be defined as the activity that involves the discovery, evaluation and exploitation of opportunities within the framework of an individual-opportunity nexus.[26]

The institutional arrangement of how opportunities are exploited depends on the nature of exploitation and discovery of those opportunities. The four types of ventures discussed in the literature are: independent start-ups; spin-offs; acquisitions; and corporate ventures. When one looks at the four vehicles to exploit new opportunities it becomes clear that the first three have empirical counterparts in the real world. Many large corporations engage in both the spin-off of existing operations and the acquisition of independent start-ups. As opposed to this, corporate venturing does not have an easily identifiable empirical counterpart in the business world. By and far the most popular vehicle for exploiting newly discovered opportunities is the independent start-up.

While independent start-ups are difficult to conceptualize in the empirical world two types of empirical data exist for studying it. The first is self-employment data, a legal definition as much as an economic one however. The self-employed work on there own account and do not work for wages. Self-employment data have been used to explore many questions in entrepreneurship, including occupational choice questions, financial constraints and the characteristics of entrepreneurs. [27] The second operational measure is the founding of a new business with employees that may or may not be incorporated. New firm formation implies that the new venture is independent of any existing business currently in operation. It is not a subsidiary, or establishment, of any existing business. This measure has been used to study industry evolution including new firm formation, firm survival, firm growth and firm exit.[28]

Therefore, the operational definition of entrepreneurship used in this paper is the *new firm formation rate* defined as the process whereby an individual or group of individuals acting independently of any association with an existing organization, create a new organization.[29] Thus, our definition operates outside the context of a previously established organization and is consistent with the early Schumpeter.[30] It is also consistent with opportunity entrepreneurship or high value entrepreneurship.

**Notes**

[1] Acs, Z. J. and A. Varga 2005. "Agglomeration, Entrepreneurship and Technological Change." *Small Business Economics*.
[2] For more information on GEM and all GEM reports please go to: www.gemcomnsortium.org

[3] For a discussion of the GEM data see Reynolds, P. D. N. S. Bosma, E. Autio, 2005. "Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998-2003." *Small Business Economics,*
[4] Acs, Z. J, P. Arenius, M. Hay and M. Minniti, 2005. 2004 *Global Entrepreneurship Monitor.* London Business School and Babson College. London U.K. And Babson Park, MA
[5] Acs, Z.J., S. Desai, and L. F. Klapper, "What Does 'Entrepreneurship" Data Really Show? A Comparison of the Global Entrepreneurship Monitor and World Bank Group Datasets" World Bank, Washington D. C. September 2007.
[6] Syrquin, M. 1988. "Patterns of Structural Change." In *Handbook of Development Economics*, edited by H. Chenery and T.N. Srinivasan, 203-273. Amsterdam / New York: North-Holland.
[7] Kuzents, S. 1966. *Modern Economic Growth.* New Haven: Yale University Press. Kuznets observed the tendency for the self-employment rate to decline with economic development. See also Schultz, T. 1988. "Education Investment and Returns." In *Handbook of Development Economics*, edited by H. Chenery and T.N. Srinivasan, 543-630. Amsterdam / New York: North-Holland.
[8] There are other, more simplistic, explanations for why entrepreneurial activity may decline as economies develop. Improvements in the economy's infrastructure such as transportation, telecommunications, and credit markets probably increase the advantages of larger firms over smaller firms. Improvements in transportation and telecommunications make it cheaper to distribute goods and services over larger areas. Assuming there are scale economies up to a point, better distribution systems enable firms to operate larger production units that can serve larger markets.
[9] Blau, D. 1987. "A time-series analysis of self-employment in the United States." *Journal of Political Economy* 95 (3): 445-67; Evans, D. and L. S. Leighton. 1989. "The Determinants of Changes in U.S. Self-employment, 1968-1987." *Small Business Economics* 1(2): 111-119.
[10] Acs, Z., D. Audretsch and D. Evans. 1994. "Why Does the Self-Employment Rate Vary Across Countries and Over Time?" Discussion Paper No. 871, Center for Economic Policy Research, January 1994.
[11] Carree, M., A. van Stel, R. Thurik and S. Wennekers. 2002. "Economic Development and Business Ownership: An Analysis Using Data of 23 OECD Countries in the Period 1976-1996." *Small Business Economics* 19(3): 271-290.
[12] Jorgenson, D. W. 2001. "Information Technology and the U.S. Economy." *American Economic Review*, 91 (1): 1-32.
[13] Aquilina, M., R. Klump and C. Pietrobelli 2006. "Factor Substitution, Average Firm Size and Economic Growth." *Small Business Economics*, in press.
[14] Acs, Z., D. Audretsch, P. Braunerhjelm and B. Carlsson. 2004. "The Missing Link: The Knowledge Filter and Entrepreneurship in Endogenous Growth." Discussion Paper, Center for Economic Policy Research, London, UK.
[15] International Institute for Management Development. 2004. *The World Competitiveness Yearbook: 2004*. Lausanne, Switzerland.
[16] The major generators of employment growth are both new plants and new firms with each creating about one half of net new employment in any given year. Acs, Z.J. and C.

Armington. 2004. "Employment Growth and Entrepreneurial Activity in Cities." *Regional Studies* 38 (8): 911-927.

[17] *The World Competitiveness Yearbook*, 2004. Lausanne Switzerland: International Institute for Management Development.

**[18]** Sternberg, R. and S. Wennekers. 2005. "The Determinants and Effects of Using New Business Creation Using Global Entrepreneurship Monitor Data." *Small Business Economics* 24(3): 193-203.

[19] Hebert, R. F. and A. N. Link. 1982. *The Entrepreneur: mainstream views and radical critiques*. New York: Praeger.

[20] Cooper, A. 2003. "Entrepreneurship: The Past, The Present, The Future." In *Handbook of Entrepreneurship Research*, edited by Z. Acs and D. Audretsch, 21-36. The Netherlands: Kluwer Academic Publishers.

[21] Casson, M. 2003. "Entrepreneurship, Business Culture and the Theory of the Firm." In *Handbook of Entrepreneurship Research*, edited by Z. Acs and D. Audretsch, 225-245. The Netherlands: Kluwer Academic Publishers.

**[22]** Hayek, F. A. von. 1937. "Economics and Knowledge." *Economica*, 4: 33-54.

[23] Casson, M. 2005. "The Individual-Opportunity Nexus: A Review of Scott Shane: The General Theory of Entrepreneurship." *Small Business Economics* 24(5): 423-430; Alvarez, S. and J. Barney. 2005. "How Do Entrepreneurs Organize Under Conditions of Uncertainty?" *Journal of Management* 31(5): 776-793.

[24] Shackle, G.L.S. 1982. "Foreword" to Hebert, R.F and A.N. Link, *The entrepreneur: mainstream views and radical critiques*, p.viii. New York: Praeger.

[25] Acs, Z. and D. Audretsch, 2003. *Handbook of Entrepreneurship Research*. The Netherlands: Kluwer Academic Publishers

[26] Shane, S. 2003. *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*. Cheltenham: Edward Elgar.

[27] Parker, S. 2004. *The Economics of Entrepreneurship* and *Self-employment*. Cambridge, MA: Cambridge University Press.

[28] Audretsch, D. 1995. *Innovation and Industry Evolution*. Cambridge: The MIT Press.

[29] Sharma, P. and J.J. Chrisman 1999. "Toward a Reconciliation of the Definitional Issues in the Field of Corporate Entrepreneurship." *Entrepreneurship Theory and Practice* 23(3): 11-27.

[30] Schumpeter, J.A. 1934 [1911]. *The Theory of Economic Development*. Cambridge: Harvard University Press. This work does not include self-employment in its empirical analysis. We define self employment as working for profit and not for wages.