

Entrepreneurship Capital and Economic Performance

Original publication by **David Audretsch** and **Max Keilbach**
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Synopsis by **Michael Shambon**, Claremont McKenna College '09

In 1956, Robert Solow proposed the groundbreaking Solow Growth Model to evaluate the economic performance of nations based upon the output/income per average worker in a given economy. Solow focused on six key variables for capital and labor to derive a nation's level of production, namely, its population growth rate, depreciation rate of the capital stock, capital per worker, savings rate, technological progress rate, and the proportions of the labor force. While his theory offered an excellent means for ranking nations that are economic winners and losers, exciting new contributions continue to refine his analyses, such as Romer's (1986) inclusion of "knowledge capital" as a key production factor. In their recent article "Entrepreneurship Capital and Economic Performance" published in the *Regional Studies Association* journal (May 2007), David B. Audretsch and Max Keilbach assert that the Solow Growth Model misses another important element in measuring an economy's growth: the innovative energy embodied in each society's entrepreneurship capital. The authors present a convincing logical and statistical case that entrepreneurship capital merits inclusion in any production function model, for it may even outweigh the inherent value of knowledge capital, forcing a reevaluation of public policy incentives toward start-up businesses to spur economic growth.

Audretsch and Keilbach define entrepreneurship capital as "a region's endowment with factors conducive to the creation of new businesses." Reviewing prior studies, the authors point out that these factors range from the existence of venture capital, public relations, market research, and consulting firms to opportunities for networking through trade associations and local business organizations.

While not covered in the study, a nation rich in entrepreneurship capital moreover has few legal, financial, logistical, or cultural impediments to establishing new enterprises. Data from Transparency International indeed confirm that the United States requires relatively few governmental procedures (currently 10) to incorporate a business, with Hong Kong requiring even less (5), and many South American (15-17) and African nations (Chad: 19) maintaining the most red tape. The high frequency of necessary government interaction in creating a new firm diminishes entrepreneurship capital due to the inefficiency and frustration associated with fulfilling bureaucratic requirements.

A benefit of high entrepreneurship capital is the spillover effect of knowledge that arises from new and innovative enterprises. Audretsch and Keilbach explain that this positive externality occurs at the highest levels in places with the greatest rates of growth in diversity among industries. An increase in the breadth of different kinds of firms in a

region, therefore, fosters an ever-expanding level of entrepreneurship capital. The authors also highlight a too often overlooked element, that of individuals' willingness to take risks by starting new firms and the region's support of this activity. This cultural phenomenon rewards innovative decision making and parcels out the costs and benefits among individuals and firms involved in any new venture. The authors acknowledge that many of these forces evaded quantitative measure until now.

Audretsch and Keilbach selected the number of start-up enterprises (as a proportion of population) to stand as proxy for entrepreneurship capital, asserting that this simple indicator embodies the multifaceted aspects of entrepreneurship and is easily observable. Using multiple-regression analysis, the authors used figures from 327 German jurisdictions over the course of a decade, demonstrating that a one percent increase in entrepreneurship capital corresponds with a 0.12 percent increase in output. Audretsch and Keilbach prove that entrepreneurship capital achieves statistical significance and may have an even larger effect upon growth of worker output/income than knowledge capital. Existing economic growth models account for knowledge capital by quantifying the amount of research and development that firms in a location undertake. The authors differentiate between this kind of R & D investment and the innovative economic energy contributed by entrepreneurial individuals. Although such correlation does not equal causation, this relationship reveals the potentially greater impact of the authors' new entrepreneurial variable than that of the previously accepted variable of knowledge capital.

Audretsch and Keilbach's study argues for a modified Cobb-Douglas production function that includes entrepreneurship capital as an additional variable to the traditional equation of physical capital, labor, and knowledge. The authors conclude by commenting on the future possibilities of increasing entrepreneurship capital in specific locations through the use of public policy. They concede that they do not yet know what specific initiatives could stand in this realm, but they call for further investigation on the general topic of entrepreneurship capital and on specific government actions that could stimulate such innovative risk-taking and ambitiousness in provinces or nations.

Although it arrives short of providing specific policy recommendations for bolstering conditions ripe for innovation, this concise article poses a thoroughly compelling, well-reasoned argument for the inclusion of a measure of entrepreneurship in production functions. Hopefully, further study of the influence of entrepreneurship upon economic growth called for by Audretsch and Keilbach will likewise confirm their findings and will lead to the incorporation of this variable in formulas measuring the economic success of jurisdictions large and small.