Book Reviews

William D. Bygrave and Jeffry A. Timmons, *Venture Capital at the Crossroads*. Boston: Harvard Business School Press, 1992. ISBN 0-87584-304-2

Venture Capital at the Crossroads offers an in-depth examination of the venture capital industry (VCI) and its impact on business and economic development. The book was written by two seasoned veterans of entrepreneurship, who actively perform research in the field, and are intimately involved with the practical mechanics of spawning new firms. This extremely readable and stylistic book is based upon original research about the venture capital industry and demonstrates that "risk taking and the time perspectives of [the venture capitalists] are changing as the boom of the 1980's fades."

The authors look at the VCI from the focal point of individual venture capitalists. They investigate the decisions venture capitalists make. These decisions range from the timing of investments to the determination of an acceptable level of return. The authors also discuss how to decide when it is time to sever a relationship with a losing firm. They fill their narratives with fascinating stories about the origins of such remarkable companies as Lotus, Digital Equipment Corporation, Genetech, and Apple Computer. The authors weave a fascinating tapestry about capital markets and the impact of the venture capital industry on regional economic development. This is no ordinary book about the VCI. It is authoritative in all aspects.

The chapters are well-researched. Many themes reflect the authors' fifty-years of combined experience collecting observations, case reports, and empirical data. It is well-written, and visionary, especially when it offers educated guesses about the future of the VCI in the year 2000. The insights follow from their intensive examination of the major changes that occurred in the VCI during the 1980's. Their forecasts include: (1) In the year 2000, there will be global competition for deals, capital, and venture-capital know-how; and (2) in the next millennium a unique form of venture capital will emerge in the ". . . Eastern bloc nations and the former Soviet Union with hundreds of links to Western venture capital and investment banking, especially in Germany." Admitting the possibility that their crystal ball is quite murky, Bygrave and Timmons continue:

> The U.S. venture capital industry will rank third behind Europe and Japan, with $45 to $50 billion under management. Market mechanisms will cull underperformers from the industry, with about 40 or so top performers earning returns higher than 20% by the mid-1990's. This shake-out will continue in the European venture-capital industry. A new technology wave will renew interest in start-up and early-stage investing. Creative financial strategies and alternative sources of capital will replace the 1980's style of merchant capital. Strategic partnering will become the harvest mechanism of choice, replacing the unpredictable IPO markets. Seed stage companies will grow by merging with giant firms rather than going public, concentrating on building R&D assets rather than generating quick profits.

The origins and sources of venture capital are discussed in the first two chapters. Chapter 3 discusses global venture capital, documenting growth of the worldwide venture capital. In Chapter 4, the book proceeds to an exciting presentation of the many revolutionary novel industries that have been financed with venture capital, such as the minicomputer and biotechnology industries, respectively. The authors provide a convincing caveat when describing venture capital investing strategies citing "the case of capital market myopia." They warn that ". . . industry participants must focus first on the prospects for industry," and then and only then examine the individual company itself.

Chapter 6 examines venture capital fund performance and Chapter 7 examines "harvesting" investments. Chapter 8 talks about syndicating investments and venture capital networks, describ-ing the implications for investors, entrepreneurs and policy makers and Chapter 9 discusses the value added by venture capitalists ". . . by being actively involved in the success of the enterprises in which they invest." They explore this last topic by examining the venture-capital investing process and by citing results of a study conducted for the National Science Foundation that examined the flows of venture capital and the investing process.

The importance of venture capital is linked to regional economic development. Chapter 10 describes venture capital's role in financing innovation and creating jobs, and also traces the development of venture capital complexes and the regional flow of capital. In answer to the question: "Can a high-tech entrepreneurial region be planned?," the authors lean toward a conclusion that credits more to serendipitous events than to rational planning. The factors influencing the flows of venture capital are the topic of Chapter 11, and the final chapter offers a future outlook for the VCI that I have already discussed. In the last chapter, the authors also look ahead to the year 2000 and assess how well the United States economy is performing at furthering creativity, technology, and entrepreneurship from the point of view of culture, education, and government. Calling for minimal regulatory policy, greater investment in human capital, and the teaching of entrepreneurship and finally emphasis on new political/tax incentive structures for venture capital pools, Bygrave and Timmons conclude that the venture capital industry has arrived at a crossroads. They summarize their position as follows:

> For practitioners, the roads lead to either opportunity or peril – opportunity for those who focus on value-adding and peril for those who bring only capital to venture capital deals. For policy-makers, the crossroads represents an opportunity to shape the environment for entrepreneurship and venture capital for the twenty-first century in a way that can go far to revive America's competitiveness. Academics also have choices to make and new avenues to explore in their research and teaching. As fields of formal study, entrepreneurship and venture capital are in their adolescent stages; scholars have a chance to build solid intellectual foundations for both of them.

This book is indeed a treasure-packed classic about venture capital that will benefit all who read it. Practitioners, students, academics, investors, researchers and entrepreneurs alike can appreciate this definitive treatment of a critically important industry facing a strikingly intriguing future.

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Alfred Kleinknecht and Donald Bain, eds., *New Concepts in Innovation Output Measurement*, New York: St. Martin's Press Inc., 1993. ISBN 0-312-09974-6.

> Community R&D action gives rise to considerable added value at the European level . . . Effective subsidy requires that priorities be carefully chosen and the effect of Community activities be measured in order to guide future action . . . [Archibugi and Pianta (1992).]

These words, from President Jacques Delors of the Commission of the European Community, illustrate the social need for reliable R&D measurement and its associated results. Not only governmental officials, but R&D managers are increasingly required to justify their programs and their spending patterns in terms of measurable economic benefits.

Along with this need for management-productivity measurement there is a scientific need for this measurement as well. In the field of industrial organization "a fundamental problem in the study of innovation and technical change is the absence of satisfactory measures of new knowledge and this contribution to 'technological progress' " (Cohen and Levin [1989, p. 1062]). The output of the innovation process was traditionally measured by patent counts. The several drawbacks to this type of output measure stimulated economists to search for a more adequate measurement system.

The book, now under review, is a collection of scientific papers edited by Alfred Kleinknecht and Donald Bain. Alfred Kleinknecht is an economist researching innovation in an empirical fashion and Donald Bain is a policy analyst now working for the European Community. This talent combination is well positioned to suggest new measures of innovation.

Two *new* measures of innovation output (INO) are offered and analyzed in this book. Since new measures require methodological research, the