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978-0-521-11148-5 - Investing in Dynamic Markets: Venture Capital in the Digital Age
Henry Kressel and Thomas V. Lento

Excerpt

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Introduction

In early 2009 bestselling author and *New York Times* columnist Thomas Friedman wrote a column decrying the US government's decision to give failing American automakers billions of dollars in aid. He was writing in the wake of the worldwide fiscal crisis of 2008, the biggest since the Great Depression.

"When it comes to helping companies," Friedman says, "precious public money should focus on start-ups, not bailouts ... Let's make sure all the losers clamoring for help don't drown out the potential winners who could lift us out of this."¹ He goes on to suggest that top venture capital firms (VCs) pick the winners and allot the Federal funds.

It is clear that the importance of innovation in spurring economic growth and creating new wealth and prosperity is no longer in question. During the American presidential campaign of 2008 there were constant calls for the development of new, revolutionary energy technology as a way of reigniting the economy. But there was plenty of support for this position at the highest levels of government even before that. Here is an excerpt from the 2005 US President's "Economic report."

Innovation is a primary engine of economic growth. Many commonplace features of modern life, such as personal computers, the Internet, e-mail, and e-commerce, have developed and diffused throughout the economy within a short span of years. Our Nation's growing prosperity depends on fostering an environment in which innovation will flourish.

¹ T. L. Friedman, "Start up the risk-takers," *The New York Times*, "Week in review" (February 22, 2009), 10.

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The innovative process involves the invention, commercialization, and diffusion of new ideas. At each of these stages, people are spurred to action by the prospect of reaping rewards from their investment. In a free market, innovators vie to lower the cost of goods and services, to improve their quality and usefulness, and – most importantly – to develop new goods and services that promise benefits to customers. An innovation will succeed if it passes the market test by profitably delivering greater value to customers. Successful innovations blossom, attracting capital and diffusing rapidly through the market, while unsuccessful innovations can wither just as quickly. In this way, markets allow capital to flow to its highest-valued uses.²

However, such statements of faith in Adam Smith's invisible hand of the market romanticize the messy process through which technological innovations generate increased industrial and commercial productivity and fuel economic growth. Dr. William H. Janeway, a Warburg Pincus partner and respected economic analyst, puts it this way:

The relationship between risk and reward remains as critical as it is problematic ... The history of venture capital is littered with examples of technological "solutions" in search of commercially identifiable problems; the history of venture capital is also littered with sets of "me-too" start-ups seeking to follow where others have already proven a market to exist. The point is that the selection of interesting investment opportunities requires the matching of evolving technological capabilities with evolving market needs.³

² *Economic report of the President* (Washington, DC: United States Government Printing Office, February 2005), p. 135.

³ W. H. Janeway, "Doing capitalism: Notes on the practice of venture capitalism," *Journal of Economic Issues*, XX (2) (1985), 431–441.

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In other words, it takes expertly managed risk capital to commercialize innovations. Experienced investors and entrepreneurs must come together to create new enterprises in a business arrangement that works to their mutual advantage. In a free enterprise system, technological innovations can be transformed into engines of economic growth only if those who take those risks have the prospect of reaping commensurate rewards.

In my view and that of many others, including Mr. Friedman, professionally managed venture capital remains the best model for that arrangement. Because new ventures are far more likely to fail than to succeed, actively engaged investors must play a key role to increase the chances of success.

And failures are an integral part of the venture capital investing process. In Janeway's words, "an economic system driven by technological innovation must have a robust tolerance for failure, an ability to absorb the waste of failed ventures."⁴

This book is intended to show how venture capital helps entrepreneurs profit from innovation through the commercialization of new technology. To accomplish that task it is divided into three broad topics:

- Chapters 1–3: how investment opportunities emerge, how venture capital works, and how industry dynamics influence new business opportunities;
- Chapters 4–7: case studies of thirteen venture-backed companies funded by Warburg Pincus in four different market areas, with summaries of the lessons each teaches about building new companies around innovative technologies;
- Chapter 8: analysis of key factors impacting the historical profitability of venture capital funds, particularly public markets, and likely future directions for investment.

Hopefully this will provide readers with a framework for understanding and appreciating the work of professional investors

⁴ Ibid.

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in dealing with the many factors that can impact the success of their ventures and hence the profitability of the funds they manage.

WHY VENTURE CAPITAL?

The general reader may wonder why anyone would write a book on a financial industry as specialized as venture capital investing.

My answer is that the need for venture capital is constant in modern economies, as it is one of the crucial engines of growth. The development of technological innovations to satisfy insatiable human needs and desires is not going to stop any time soon. As long as it continues, venture capital will be required to take the innovations to market.

That does not mean that the deployment of risk capital and its financial returns will remain constant. It will vary with prevailing economic conditions. Business cycles are a fact of life, affecting venture capital along with our other financial institutions. But, over the long term, economic growth will continue to be driven by commercialization of innovations and the creation of new markets.

Writing this book has also given me the opportunity to share my experience in venture capital investing. Since 1984 it has been my privilege to be a partner at Warburg Pincus, one of the largest and oldest investment firms. Warburg Pincus has a broad range of equity investing strategies to address many different industries, geographies, and stages of company development, from startup to mature business. The company traces its origins to the 1960s and raised its first fund in 1971. It is now in its tenth fund.

Venture capital funding has increased dramatically in the intervening years. This was a time when hundreds of new VCs were created in the hopes of profiting from the high returns delivered by this investment model.

Venture capital is a relative latecomer to the financing of innovation. Throughout the history of capitalism, when new technologies held out the promise of huge business opportunities, entrepreneurs and investors have always managed to find each other. In the

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early days, however, this was typically done through a financing process where entrepreneurs or freelance “company promoters” brought pools of investors together to back specific business opportunities.⁵

The well-known example of Thomas Edison provides a good illustration of how this was done in the US in the nineteenth century. His inventions were commercialized through *ad hoc* arrangements with investors. Today we would call this “angel” financing, but some of Edison’s angels were bankers, including J. P. Morgan.

This form of financing continues to play a crucial role in underwriting early-stage “seed” companies, with billions invested in startups every year. But as technologies become more complex and more costly to develop, angel investing is generally no longer sufficient to take an innovation to commercial launch.

In the second half of the twentieth century the emergence of VCs, staffed with professional investors with backgrounds in industry, academia, and finance, changed the way technology-based businesses get created. With billions of dollars to invest annually, they funded thousands of new businesses.

The venture capital model is to create limited partnerships managed by general partners with the responsibility and authority to invest funds within broad guidelines. The institutions that provide these funds – the limited partners – are attracted by the promise of above-average financial returns, which they believe to be consistent with the risk of the businesses that venture capitalists finance. They count on the VCs and entrepreneurs to manage the risks.

MANAGING CHANGE

Though there were broader motivations for writing this book, including an ongoing need to better understand and communicate what drives the success of new technology ventures, my immediate impetus was a practical one. I needed case histories for discussion in

⁵ N. R. Lamoreaux and K. L. Sokoloff, with a foreword by W. H. Janeway, *Financing innovation in the United States: 1870 to the present* (Cambridge, MA: The MIT Press, 2007).

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a class on entrepreneurship that I present every year at the California Institute of Technology at the invitation of Professor Ken Pickar.

I started with a review of over thirty investments that my partners and I have made in technology businesses over a period of 24 years. I ended up selecting thirteen companies as representative of different kinds of investments, each of which presented interesting lessons about the process and outcome of venture development. The case studies of these companies are at the heart of this book.

The businesses that I selected include semiconductor and electronic equipment companies, software firms, and service organizations. They range from startups with nothing but a handful of hopeful entrepreneurs to companies that were spun out from larger businesses to become standalone entities. The investing period covered is the 1980s and 1990s, and these companies were participants in the age of digital electronics, the biggest growth technology of that era.

In reviewing these investments, I hope the reader will get a good insight into how professional investors sort out investment opportunities during periods when new markets are opening up and there are apparently limitless opportunities to be exploited by startup companies.

Some of these companies went public, with their stock traded on the leading exchanges, while others remained privately held and ended up being sold to larger entities. Some were US-focused, while others were international. I also include some examples of disappointing investments.

Looking back over many investments with the benefit of hindsight proved to be a fascinating experience. I found it particularly interesting to compare the expectations of my partners and me at the time of the investments with what actually happened afterwards. These patterns became apparent.

- Businesses rarely develop as planned. Sometimes an initial error in charting a business strategy becomes evident, but it need not be fatal. The fate of ventures is not written in the stars and timely action can result in a successful outcome.

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- Chance and the ability to exploit unexpected opportunities both play a key role in the eventual fate of companies – if they are in the right markets and have strong leadership.
- Building business value requires close team effort between the investors and the management, usually over many years. Our successes resulted from tight partnerships with extraordinary entrepreneurs.

Beyond these observations a number of other patterns emerged that tended to be repeated from company to company.

The patterns I am talking about deal with “environment” and market issues that can change drastically for good or ill during the life of an investment. These issues must be understood as soon as possible, because they form the basis of changing a business strategy while there is still time.

In my experience, the constant in successful companies is their skill in managing change and innovation. This is a process where the investors and the management team must cooperate closely, because more often than not changes in company strategy require changes in expenditures. The ability to accurately assess the environment and quickly adapt to changes tests the ability of the CEO and his or her staff and is a key determinant of success.

Investors are very fond of focusing on “management quality” as a crucial determining factor in the success or failure of a business. Well, of course it is. But this is like saying that good weather improves the experience of a golf outing. It’s obvious, but it doesn’t cover all the variables.

While it is absolutely true that startups need outstanding management, more importantly they need the *right* management at the right stage of a company’s development. It is important to install managers who can adapt to the challenges of the business as it goes through transitions. A startup in its early phases needs to have a very different management profile from that of a more mature company. A major task for entrepreneurs and investors is to understand the changing requirements and make sure that the right people are on board. That starts with the CEO.

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Fast, flexible, and creative thinking is especially important in a CEO. Of all the skills and leadership qualities required of a CEO, a crucial one – and the hardest to find – is the judgment to react rapidly and effectively to new situations. Winston Churchill described the ideal military leader in terms that could just as easily apply to the head of a company in a highly competitive industry:

Nearly all the battles which are regarded as the masterpieces of the military art ... have been battles of manoeuvres in which very often the enemy has found himself defeated by some novel expedient or device, some queer, swift, unexpected thrust or stratagem. There is required for the composition of a great commander not only massive common sense and reasoning power, not only imagination, but also ... an original and sinister touch which leaves the enemy puzzled as well as beaten ...⁶

Here you have a crisp summary of a key skill that a CEO needs to lead a business to success.

ASSESSING RISK

Revolution, innovation, trend, fad, bubble: when we talk about technical progress and socio-economic change, even the language we use carries an undercurrent of uncontrollable risk and uncertain success.

If I can single out one factor that has led to business failure more than any other, it is overinvestment in emerging markets deemed to have unlimited growth possibilities. While venture capital funds have been responsible for many successful ventures, much capital has been spent funding ventures that eventually failed for any one of hundreds of reasons. Excessive optimism is one of them – perhaps the most common.

Entrepreneurs may have very diverse backgrounds but they share one key characteristic: they are optimists convinced that their business will succeed in the face of intense competition. Venture

⁶ Quoted in A. C. Brown, *Bodyguards of lies* (New York: Harpers and Row, 1975), p. 5.

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capitalists, the entrepreneur's partners, must share their vision, but they have to temper enthusiasm with realism, and weigh the risks of failure against the chances of success.

At least that is the ideal, but it is periodically discarded. For example, in the 1990s many investors lost their objectivity and poured seemingly endless streams of money into Internet startups. Investments in Internet-related companies hit an astonishing peak of about \$79 billion in 2000 with 4,512 companies funded.

Everyone was acting like the party would go on forever. Just one year later, in 2001, the bottom dropped out. Overall investments dropped to \$38 billion as stock market valuations crashed. By 2002 investments were down to only \$9 billion, recovering to \$28 billion in 2008. As a result, many startups failed after 2000 because they could not raise money.

The "dot-com" crash taught us once again that even the most far-reaching of innovations can be the basis for bad investments, particularly in early stages when applications and hence markets are unclearly defined. The result: a bubble, pithily defined by Eric Janszen as "a market aberration manufactured by government, finance, and industry, a shared speculative hallucination and then a crash, followed by a depression."⁷

It is easy to dismiss all investments made in startups in periods of rapid technological innovations as too risky. Of course this is not true, provided investors base their funding decisions on sober criteria. The reality is that successful investments were made during the dot-com period, just as they were in other periods of rapid technological change, by a selective process of evaluating opportunities and selecting good management for the companies being funded. That is the right way to create valuable businesses.

One way that investors tilt the odds in their favor is to invest in companies based on technologies and markets that they already

⁷ E. Janszen, "The next bubble: Priming the markets for tomorrow's big crash," *Harper's Magazine* (February 2008), 39.

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understand or have the background to learn quickly. Before joining Warburg Pincus I managed research and product development in electronics and optical communications in one of the leading R&D organizations in the world, the David Sarnoff Research Center of RCA Corporation. The Sarnoff labs pioneered many of the important industrial technologies, including color television, semiconductor lasers, and CMOS chips. When I became a venture capitalist it was only natural for me to focus on areas related to those fields, especially computing and communications.

Over the years I have been involved in funding companies during periods of extraordinary market transformation. As a bonus, I have participated in an industry that has done more in the past 50 years to improve lives and create social and economic progress than practically any other field of endeavor. That is the source of a good deal of personal satisfaction. But it was only possible because of close teamwork with my partners over many years. Teamwork is a core success factor at Warburg Pincus. It promotes the participation of many people in an investment as it evolves, leading to successes that no individual working alone could hope to achieve.

The investments discussed in detail in this book involved teamwork with my partners that extended over many years. I cannot overemphasize the importance of close teamwork in managing investment portfolios. My close collaboration with Joseph P. Landy (co-president of the firm since 2002) and Dr. William H. Janeway (formerly vice-chairman of the firm and now a senior advisor) began in the 1980s. In the 1990s, A. Bilge Ogut, Cary Davis, and Dr. Frank Brochin became closely involved in some investments. Over time other partners also made valuable contributions to investments discussed, including Jeffrey A. Harris, Charles R. Kaye (co-president of the firm since 2002), James Neary, Patrick T. Hackett, Steven G. Schneider, Mark Colodny, and Alex Berzofsky.

No investor group bats a thousand. Since failures often teach you more than successes, a number of disappointing investments