Chapter 6

Investing in IPOs in Technology Stocks

Editorial Introduction

Abstract: Markowitz' portfolio theory is reviewed. In a small textbook example, the frontier of efficient portfolios is calculated numerically. The editor demonstrates that the very same frontier can alternatively be obtained using quadratic Data Envelopment Analysis.

Key words: Initial public offering, portfolio of stocks, balanced portfolio, risk, diversification, quadratic efficiency frontier, aversion against risk, covariance matrix, quadratic programming, quadratic DEA

1. WHAT IS AN IPO?

IPOs (Initial public offerings) in the stock market offer an opportunity to the common investor to participate in the launching of new ventures and new technologies. The precise circumstances behind an IPO may vary, but usually an IPO falls in one of the following categories:

- Under the guidance and nurturing of a venture capitalist or a consortium of venture capitalists, a successful startup company has reached a critical point in its expansion, needing a considerable new injection of equity capital.
- A large corporation has decided to spin off a separate entity, charged with developing existing or new technology under a new aegis. Example: AT&T spinning off Lucent Technologies.
- Many recent IPOs in information technology and on the Internet (so-called dot-com companies) relate to startups that are still encumbered by heavy past and present development costs. Sales
and earnings are on a growth path, but there is still a long way to go before the IPO reaches positive profits.

- Finally, the IPO may be a pure research venture, such as in biotechnology. It may yet be too early to say whether the research will ever result in a marketable process or product. The IPO has no current sales, no revenues, and certainly no profit.

Equity holdings in startup technologies are always risky. Ventures held by a venture capitalist are typically quite illiquid, so that if a venture turns sour there is no way of disengaging. To the venture capitalist, the IPO commonly represents the exit of his or her engagement.

IPOs bought by an investor in the stock market are certainly also risky, but at least they are liquid and can be sold in the market over night (possibly at a loss). Essentially, this is what the IPO does: it transfers the ownership of a startup from a small group of venture capitalists with personal stakes in the management of the company to the anonymity and multitude of stock market investors.

An IPO changes the scope for evaluation and assessment of a new technology in many ways, bringing in new stakeholders with new concerns. The link between equity funding and management is further attenuated. As the new stock is being sold on the stock market, some of the former equity holders that used to have direct insight into the management of the company will cash out and be replaced by anonymous investors who have no direct line of communication with management. At the same time, new financial controls will be put in place and more information about the prospects of the new company and its financial conditions will become publicly available. This happens to satisfy the various oversight bodies that regulate conditions on the stock market, and because the company will from now on have to satisfy the unquenchable thirst for technical and financial information by the investment community.

The stock market typically has little patience. Under the former terms of equity funding, the owners would take their time, letting the new technology mature on its own terms. Now, there is a scramble for immediate results and for good news to feed the community of investment analysts. The daily price quotations of the stock will reflect the immediate concerns, hopes and anxieties of the investors. For good and for bad, the time perspective of the new venture is shortened. The stock price of an IPO is typically quite sensitive to short-term expectations. The result may be a wave of enthusiasm and attendant price increases, or a wave of gloom and falling prices.

For all these reasons, the evaluation and assessment of an IPO brings in new and difficult elements of analysis (if analysis indeed is possible), that may seem new and strange to the management team but which are common