

Quantitative Methods for Valuation of Financial Assets—100 Questions and Answers, by A S Ramasastry (Response Books — A Division of Sage Publications, New Delhi 110 048) 2000, pp199, Price: Rs 175.00 (paper); Rs 325.00 (cloth) [ISBN 0 7619 9408 4 (cloth)]

We always wonder how investors determine value of a share or a bond traded at a stock exchange. And, it is still a wonder as valuation of such financial assets has not yet reached to a conclusive state— the number of questions answered so far about it are much less than the number of questions still unanswered. Besides that, whatever are answered have not been understood properly by the students and the practitioners of Finance. The present book makes a humble effort in answering some of the questions about the quantitative methods for valuation of financial assets. It is written in a question–answer format. The author has selected 100 questions, which are considered to be useful and important.

It is a book neither on valuation of financial assets nor on quantitative methods; instead it attempts to answer questions about the quantitative methods for valuation of bonds, equity, portfolios and options. It also shows how one can make use of electronic spreadsheet for implementing some of the quantitative methods for valuation. Thus the book is organised into five chapters—first on Bonds, second on Equity, third on Portfolios, fourth on Options, and fifth on Spreadsheet. First four chapters are broadly designed under the headings of *Preliminary Ideas, Valuation, Application and Quantitative Background*.

The term *valuation* of financial assets — bonds, equity and portfolios — is by-and-large taken in the sense of *intrinsic value* determined by fundamentals while options are determined by making use of *no arbitrage principle*. Valuations of bonds and equity are done by finding *present value* of future stream of cashflows; while that of a portfolio is done by taking weighted expected values of financial securities used to construct it. Valuation of option is done by using the principle that in a competitive market in the absence of arbitrage opportunities, identical assets should have the same price.

Chapter 1 introduces the ideas of *yield-to-maturity* (YTM) and spot rates and forward rates. Value of a bond is determined by its intrinsic worth. It also explains relation among value of a bond, its YTM and coupon rate. Investment in bonds is not totally risk-free and one of the major source of risk is market interest rate—changes in it cause variation in bond prices. One of the quantitative tools to measure it is **Duration**, which is defined as weighted average time where weights are taken as the present value of future cashflows. Duration assumes linear relation between bond price and YTM that, in fact, is non-linear and thus gives approximate result. But, to obtain a better estimate, it discusses another measure **convexity**. It suggests further how one can construct a portfolio of bond with minimum risk by using ideas of immunization and horizontal analysis.

Chapter 2 answers questions related to equity valuation that has many approaches. One of the approaches — based on future stream of dividend — is known as Dividend Discount Model. Another is based on P/E Ratio and this chapter shows how this approach is related to Dividend Discount Model. Further, if one wants to know whether valuation of an equity is proper, he/she can make use of some valuation ratios, e.g., Dividend Yield, Market Value to Book Value Ratio and P/E Ratio. Whether equity prices are predictable is one of the important debates in the Theory of Finance. Some believe that equity prices follow Random Walk Model and hence, are unpredictable in nature. This chapter also looks into whether Indian Stock Markets have random walk. Some others believe that equity prices are predictable and one can do that by using either Fundamental Analysis or Technical Analysis. One can also find out the nature of relationship between risk and return. The necessary quantitative background required for equity valuation is given at the end, especially for those who do not have it.

Investment in financial assets is full of risk and every one wants to achieve maximum possible returns with minimum risk. One way of minimising risk is — diversification that is obtained by constructing a suitable portfolio and Chapter 3 talks about it. If one has questions — whether diversification through portfolio reduces risk; if

yes, what kind of risk; how does market help in the selection of an optimum portfolio and its pricing; what is ; what is CAPM and other related questions; then he/she must go through this chapter. Once a portfolio is selected then it has to be monitored on a continuous basis. For that one must know what are the various measures of evaluating the performance of a portfolio. And, an answer to this is in the chapter. Chapter 3 ends with brief description on various Mathematical and Statistical tools necessary to understand the effects and determination of an optimum portfolio.

Chapter 4 takes us altogether into entirely a different but exciting area of valuation and that is — *valuation of derivatives*. The way derivatives are valued is totally new and different. Further, since, so far, trading in derivatives has not yet started in India; we do not have any experience in this regard. However, we must understand their valuation, as it is going to be a *reality* at the Indian Stock Exchanges very soon. One of the derivative assets is — Option that gives its buyer a right whether to execute it. Different kinds of options exist. But, European Options are comparatively more comfortable than American Options in their valuation. Chapter 4 discusses various bounds on the values of options — lower bound and upper bound. It shows how the values of put and call options; and of European and American options are related. By making use of *no arbitrage principle*, it has shown how the prices of binomial options are determined. Further, it shows how one can make use of the Black- Scholes' Option Pricing formula in the valuation of European call. It also demonstrates how one can make use of the principles, valuation of options in valuing warrants, convertible debentures, etc. The necessary quantitative background about various statistical tools is given at the end of it.

The process of valuation is a difficult one and the calculations involved therein are massive but iterative. Thus the role of computers in the valuation of financial assets is very important. Therefore, any text on valuation without talking about computers will be a meaningless text. The present book ends with discussion on how one can make use of electronic spreadsheet in the valuation of bonds, equity, portfolios and options and accordingly the Chapter 5 is designed. It shows with numerical examples how one can implement various valuation models/formulas by exploiting certain features of spreadsheet, which are quiet users- friendly.

The book, it is believed, will have very limited readership. It will prove to be very useful for those who are presently undergoing some course in valuation of financial assets or those who have already studied such a course, but have doubts about some of the aspects of valuation. Further the question-answer format will be very comfortable for them as they can reach straight to

that question which is related to their doubt(s). However, one can not take it as a serious and research-based text. Though it is a book on quantitative methods for valuation, yet it does not provide necessary rigour needed for quantitative methods. Thus, it is not very useful for a serious student/researcher. It presumes that one is comfortable with the basic terms of Finance. For the benefits of those who are not well versed with basic terms, it is suggested that the book should have included a glossary of basic terms and concepts of Finance. Further, I feel that the necessary quantitative background given at the end of a chapter should have been given in the beginning so that he/she could better understand the discussion to follow. It contains Bibliography towards the end and not at the end of each chapter. It has several errors. For instance, in the discussion of H – Model, it is written – ‘ ... After H years the growth rate would be exactly half of g_a .’ Instead it should be - ‘ ... After H years the growth rate would be exactly g_n plus half of the difference between g_n and g_a .’ It is hoped that in future the author would take care of such errors.

Since the area of valuation of financial assets is upcoming, many people have many doubts about various aspects of it especially those who are in practice. For them, it would prove to be a good reading and it is believed that many of their doubts would just vanish. It is a very handy and interactive type of text. It is good for quick reference. It may become popular with practitioners who want to know about various quantitative methods of valuation of financial assets but are scared of mathematical and statistical complexities and dryness.

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