


Financial Management and Real Options

Jack Broyles

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Preface

Readers under pressure such as MBA students and executives want short chapters rich in essential insights. In writing this book, I kept five principles constantly in mind. First, individual chapters must be short. Second, the book must put insight before unnecessary mathematics. Third, each topic should nevertheless reflect the state of the art. Fourth, the book should not distract the reader with nonessentials. Most importantly, the book should be useful throughout. Writing to these tight specifications is both arduous and rewarding. One has to believe that the reader will benefit.

The book primarily is about financial management and, as its title implies, real options are an integral, subsidiary theme. Real options are opportunities available to management permitting them to adapt the enterprise to changing needs. Understanding the value of real options is essential to corporate financial management. Examples in several chapters demonstrate why failure to assess the value of real options leads to mistaken investment decisions. A distinctive feature of this book is showing how to conduct real options analysis without higher mathematics.

Most of the individual chapters were distilled from postgraduate and executive teaching materials used by the author and colleagues in leading European business schools, universities, major companies, international banks, training organizations, and management consultants. These included the London Business School, Templeton College (Oxford), Cranfield School of Management, Warwick Business School, the University of Buckingham, the University of Notre Dame, and the University of Orleans. Training programs at Shell International Petroleum, Imperial Group, Ford of Europe, ICI, ITT, EMI, Expamet, Lucas CAV, Burmah Oil, Citibank, Bank of America, Continental Bank, Morgan Guaranty Trust, Bankers Trust, PricewaterhouseCoopers, London Society of Chartered Accountants, Euroforum, and the Boston Consulting Group also used the materials.

I have had the privilege of working with distinguished colleagues, and I wish to acknowledge their influence on this book. First, I must mention Julian Franks, Willard Carleton, Ian Cooper, and Simon Archer with whom I co-authored earlier books. I can trace the approach adopted in many parts of the book to the thinking of other distinguished former colleagues as well. Prominent among them were Harold Rose, Peter Moore, David Chambers, Howard Thomas, Richard Brealey, Stewart Hodges, Paul Marsh, Elroy Dimson, Stephen Schaefer, Colin Meyer, John McGee, Adrian Buckley, David Myddleton, and Ian Davidson.

In 1981, Ian Cooper and I jointly published one of the first research papers on real options, anticipating results in some of the books and hundreds of papers published subsequently on this subject.

The road from the mathematical beginnings to the less difficult approach to real options advocated here was long. The Financial Options Research Centre (Warwick Business School) workshops and frequent conversations with Stewart Hodges, Les Clewlow, Chris Strickland, Tony Steele, Archie Pitts, Peter Corvi, Elizabeth Whaley, Vicky Henderson, and our postgraduate students provided the environment for such thinking to flourish.

Of particular importance was team teaching at different stages of my academic career, for example, with Julian Franks, Walter Reid, Ian Davidson, Peter Corvi, Mark Freeman, and Archie Pitts. We shared many pedagogical ideas and experiences on how best to explain advanced financial concepts to MBAs and executives. I introduced drafts of chapters and exercises in the more recent courses. Students invariably were enthusiastic; and their feedback, as always, was invaluable.

I owe thanks also to the publisher's referees, Lance Moir, Winfried G. Hallerbach, Stewart Hodges, André Farber, Steve Toms, Edward Sprokholt, Lesley Franklin, Andrew Marshall, Seth Armitage, and other anonymous referees who were generous with their time and insightful with suggestions, many of which made a significant difference to particular chapters. If the book retains flaws, it will not be due to lack of effort and advice from referees.

The book divides into five parts. The first, **Introduction to Financial Management**, begins by defining the role of financial management in corporate governance. It then introduces the fundamental methods of financial analysis used throughout the book. Finally, it introduces financial securities and securities markets. In this way, the first part builds a foundation and sets the scene for the remainder of the book.

The second part, **Valuation of Investment and Real Options**, introduces the reader to the standard methods of capital project appraisal and then shows how to integrate real options analysis with project appraisal methodology. Building on the resulting approach, it shows how to value companies, particularly those with future investment opportunities. The part ends with a review of perhaps the most challenging project appraisal problem, acquisitions and mergers. Four of the chapters in this part contain new material not yet offered in other books.

The third part, **Financial Structure**, covers the important issues concerning how best to finance a company. Interrelated topics included here are portfolio theory and asset pricing, the cost capital, long-term financing, dividend policy, capital structure, and lease finance. Two chapters in this part contain new material not yet offered by other books.

Arguably, the most essential responsibility for the Chief Financial Officer is to keep the company solvent. The fourth part integrates **Solvency Management**, by bringing together the related topics of financial planning, the management of debtors and inventories, and of interest and exchange rate risks.

The purpose of the chapter in the final part is to translate project appraisal to a global setting involving many foreign currencies. In this way, this part provides a bridge to subsequent study of **International Financial Management**.

I would like to dedicate this book to my sympathetic family, stimulating colleagues, and inquiring students.

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PART I

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1 Financial Management and Corporate Governance[1]

This introductory chapter paints a broad-brush picture of what finance is about and how financial management helps to steer the firm toward its financial objectives. First, we consider the financial problems of the small firm and then see how the same problems reappear in large corporations. We also describe the way these problems give rise to the functions performed by the principal financial officers of the firm and show how financial managers assist operating managers to make decisions that are more profitable. Finally, we discuss how the Chief Financial Officer draws upon the information, analysis, and advice of financial managers and staff when advising other members of the company's board of directors concerning important issues such as shareholder relations, dividend policy, financial planning and policy, and major capital investments.

TOPICS

The chapter introduces the main concerns of financial management. In particular, we begin by addressing the following topics:

- *the fundamental concerns of financial management;*
- *organization of the finance function;*
- *the principal financial officers;*
- *responsibilities of the principal financial officers;*
- *financial objectives;*
- *the role of financial management in corporate governance.*

1-1 WHAT FINANCIAL MANAGEMENT IS REALLY ABOUT

If you were to start a small business of your own tomorrow, you soon would be involved in financial management problems. Having first conceived of a unique product or service, perhaps in a market niche lacking competition, you must then develop a plan. The plan requires answers to some

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[1] Adapted by permission of J. R. Franks, J. E. Broyles, and W. T. Carleton (1985) *Corporate Finance Concepts and Applications* (Boston: Kent).

important questions; for instance, what assets will the business require? That is, what premises, equipment and inventories of merchandise and materials will the business need? The purchase of these resources can require substantial funds, particularly in the initial stages before generation of much sales revenue. In other words, you need access to money.

PLANNING

The strategy that you adopt for starting and operating your business will affect the amount of money you will need and when you will need it. If the money is not available at the right time and in the required amounts, you will have to alter your plans. As a result, your problems are those of a financial manager, more specifically, the company **Treasurer**. You have to translate the operating plan of your business into a financial plan that enables you to forecast how much capital you need and when.

FUNDING

At the same time, in your role as acting Treasurer, you have to begin building relationships with sympathetic bankers prepared to lend your business money when needed. Banks do not like to lend more than half the money that a business needs, because bankers do not like to take too many chances with their depositors' money. Consequently, before you can borrow you must be willing to risk much of your own funds. If you do not have enough personal capital, you must try to find relations or other people who might be willing to contribute some money. In exchange for their capital, they will want to be part owners of the business and share in its profits. So, your business will require two kinds of capital: **debt** (the bank's funds) and **equity** (the owners' funds). This is an essential function of financial management: ensuring that your business has adequate funds available to operate efficiently and to exploit its opportunities.

CAPITAL INVESTMENT

When you have secured the capital that you need to acquire the assets required by the business, you face some further choices. Which assets do you need, and how do you choose between competing ones? If two business machines have different revenue-producing capabilities and different operating lives, you need some financial yardsticks to help you make a choice. How much money will each machine make each month, and for how many years? Is this cash income sufficient to justify the price that you would have to pay for each machine? Does the rate of return on the investment in either machine compare favorably with your other investment opportunities? Answers to such questions require analysis, and financial management is concerned in part with providing the techniques for this sort of analysis. A large company would employ financial analysts to make such comparisons for the company Treasurer.

FINANCIAL CONTROL

Once your business is in operation, you will engage in an enormous number of transactions. Sales slips, receipts, and checkbook entries pile up. You cannot rely on memory to handle information in the mounting piles of paper on your desk. Your sympathetic accountant says, "You need a management accounting system." For a fee, he sets up a simple system for you.