TECHNIQUES OF FINANCIAL ANALYSIS

Fifth Edition

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1982 **RICHARD D. IRWIN, INC.** Homewood, Illinois 60430

Library of Congress Catalog Card No. 81-81558

Printed in the United States of America

12 13 14 15 DO 9 8 7 6 5

PREFACE

The purpose of this book is to provide the student, business executive, analyst, or other interested person with a concise reference collection of the more important tools and techniques of financial analysis without delving into their broad theoretical and institutional backgrounds. In this sense the book is self-contained—a practical, application-oriented survey of key concepts, with enough perspective to assist the user in understanding the framework and the validity of the analytical techniques. In another sense, the book is supplementary to the many full-fledged texts in the field of corporate finance which contain much well-developed conceptual and institutional background.

The evolution of this book began with its First Edition as a collection of what are known as *technical notes* on basic concepts, tools, and techniques made available to students in the MBA program at the Harvard Graduate School of Business Administration. These notes are designed as short briefings on financial analysis, supplementary to the broad reading matter assigned in the finance area. They equip the student with the basic skills and knowledge required to analyze case problems for class discussion and are guides toward more specialized sources of information required in preparation for a management career.

The First Edition of the book, published in 1963, contained selective materials that had been used for some time in the Harvard Business School MBA curriculum and other finance courses and seminars. The concept of publishing a collection of such materials proved successful. In the Revised Edition, published in 1967, all materials were fully updated and three chapters were completely rewritten. The Third Edition, published in 1972, was new throughout, with more emphasis on viewing financial analysis as part of a system of management decisions, and with stress on an integrated concept of investment, operations, and financing. The Fourth Edition, published in 1977, maintained the basic coverage with updating and refinements, as does this revised Fifth Edition. It continues to address both the practitioner and the student. In view of the extensive use the book has found in major corporate and other executive development programs as well as in universities on the graduate and undergraduate levels, both in the United States and in many foreign countries in several translations, the original notion of a straightforward and relatively uncomplicated approach to a complex subject has been maintained. The key thrust is toward explaining the doable and practical—an "executive briefing" concept—and toward building basic ability to grasp financial relationships and issues. The book presupposes only some familiarity with fundamental accounting concepts and financial statement preparation.

I would again like to express my appreciation to my former colleagues in the finance teaching group at the Harvard Business School, and to the administration of that institution—both under former Dean George P. Baker and under Dean Lawrence E. Fouraker—for the opportunity to develop and publish the original materials and for the suggestions and encour-

agement given me during the various editions. My thanks also go to my colleagues at universities here and abroad, too numerous to mention, for their extensive application of the book and endorsement of its concept, and for their many expressions of interest in further updated editions.

Finally, I would like to express my particular appreciation to the chairman and chief executive of Crown Zellerbach, C. R. Dahl, for the opportunity over the years to apply many of the materials and concepts in the management development programs and the planning processes at Crown Zellerbach.

San Francisco, California   Erich A. Helfert

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INTRODUCTION

The financial manager, analyst, or student must, during analytical efforts for planning or problem solving, rely on a variety of financial analysis techniques which help answer questions of significance. This book provides such tools for use in understanding problems and opportunities of a financial nature, and contains practical examples on which to exercise the application of these skills.

A critical point must be made here: While the tools and concepts exposed in the ensuing chapters are explained and discussed in detail, they cannot be viewed as *ends* in themselves. It is simply not enough to master the techniques! Financial analysis is a process which helps to answer questions properly posed; it is a *means* to an end. We cannot overemphasize the need to view financial analysis only as an aid to the manager in planning for investment, operations, and financing, and to the prospective investor in assessment, valuation, and projection. In each situation the objective must be clearly stated before putting pencil to paper—otherwise, the exercise becomes idle "number crunching." Some have referred to effective management as the "art of asking significant questions"; this is no less true of proper financial analysis, which, after all, is but one aspect of corporate and financial management.

Perspective is also required in choosing the degree of *refinement* to which any financial (or other) analysis should be carried. This book often presents refinements of the methods of analysis, which should, however, be sparingly applied to areas of real significance only. Otherwise, the effort far outweighs the results. There is no need to belabor obvious answers or foregone conclusions.

In applying the tools presented, one should therefore consider and make judgments on the following points *before starting any analysis:*

1. What precisely is the issue to be analyzed and resolved? Has the problem been clearly spelled out?
2. Which factors, relationships, and trends will likely be helpful in analyzing the problem at hand?
3. What ways can be found to get a quick "ballpark" estimate of a possible result?
4. How reliable are the available data, and how is this likely to affect results?
5. How exact does the answer have to be, and how much effort should be expended in refining results?
6. What are the limitations of the tools themselves, and how is this likely to affect results?

Only after having thought through these issues should work proceed on the analysis and the tools be applied. In effect, we are talking not only about good financial analysis but about a rational approach to problem solving. And in the end, this is what decision making in management, operations, financing, and investments is all about.

1 BUSINESS AS A SYSTEM OF FUNDS FLOWS

The starting point of this chapter, and indeed the focus of the whole book, is the concept of business as a series of decisions to deploy resources for profit, that is, for an economic return. Viewed in their broadest sense, these management decisions involve three areas: (1) the *investment* of resources, (2) the *operation* of the business with the help of these resources, and (3) the proper mix of *financing* to provide the resources. While business has infinite variety—we can list, for example, manufacturing, trading, financial, and service institutions of various sizes and with different legal structures—common to all is this theme of management: planned commitments of resources for the purpose of creating, over time, sufficient economic value to recover these resources and a margin of profit beyond. Over the long run, the result of such resource deployment should be a net improvement in the economic position of the owners—including the ability to make further resource commitments. If this is not the case, the economic viability of the business is in question.

The techniques developed in this chapter are designed to assist the student and practitioner in analyzing the pattern of resource deployments in a business over a given time period. The concept used for the purpose is *funds flow analysis*, which is a way of expressing and displaying resource movements in monetary terms, based on the periodic accounting statements of financial condition and profit and loss results. Along with other techniques developed later in this book, this analytical process will provide a basis for judging management effectiveness.

We are interested in funds flow analysis because it allows us to *reconstruct* from accounting statements—which are summaries of the transactions of the period—many important resource decisions made regarding investments, operations, and financing. It is a *comparative* process which identifies shifts in financial condition and the impact of operations. It structures these into a framework of resource (funds) *uses* or applications, and resource (funds) *sources* or provisions. The resulting "decisional" view of business operations provides additional insights beyond the balance sheet, which is a mere static "snapshot" of financial condition at a point in time, and beyond the standard operating statement, which is just a summary of revenue and expenses applicable to the period. Since it does add insight, the inclusion of a funds flow analysis statement has in recent years been made mandatory for the accounting reports of publicly traded companies to obtain a more dynamic picture of management decisions.

Funds flow analysis techniques rest heavily on the understanding of commonly accepted accounting methods, since accounting statements generally have to serve as the raw material for analysis. A thorough funds flow analysis can involve a variety of fairly complex adjustments, as the effect of accounting conventions must be translated into funds movements. Once the basic concepts have been mastered, however, the complexities appear only as variations of the resource deployment theme. In fact, funds flow analysis is a more natural way of characterizing business operations and conditions than the standard accounting statements.

The chapter will contain a gradual buildup of complexities in funds flow analysis. We shall first demonstrate the simple, generally applicable notions and then discuss complications which have to be considered largely because of the *timing* of funds decisions. We shall show that accounting conventions must be analyzed as to their effect on funds movements, since the objective of accounting reports is to achieve first and foremost the reporting of financial condition on a *given date*, and operating profits for a *period*. Finally, we shall discuss the interpretation of the results of funds flow analysis in the attempt to understand and judge the nature of the decisions made by management.

WHAT ARE FUNDS?

In the most basic sense, we think of funds as *cash*, since cash is the easiest form of expressing economic value and is readily convertible into goods and services. Moreover, the fact that most business transactions will eventually involve cash at one time or another leads some to say that "cash is the name of the game." A business operation normally involves a great number of cash transactions over a period of time, as wages are paid, machinery acquired, revenues collected, and so on. If a business were operated strictly on an immediate cash receipt and payments basis, and some simple businesses are, it would be very easy to trace the key commitments and recoveries of cash over a time period. This cash flow pattern would provide a picture of the resource deployments of the business.

Not all resources, however, are committed or obtained on the basis of cash transactions. This introduces a degree of complexity into our analysis. Management has the discretion to grant or obtain credit; and every time this discretion is exercised, an economic resource has been deployed. Eventually such transactions will result in cash changing hands, but in the meantime we cannot ignore the resource commitment. If a business grants trade credit to its customers, for example, its own funds or resources are in effect used by someone else until repayment. If a business obtains trade credit from a supplier, someone else's funds or resources will in effect be employed in the company until repayment is made.

Furthermore, an imprudent management can overcommit an enterprise by taking on too many credit obligations, which represent other people's funds, although no cash will have changed hands. Obtaining merchandise on account would be an example, or acquiring machinery on loans and notes, or trading a piece of land as part payment for a larger property with the difference due some period hence. It would be hard to deny that economic values have been shifted by these noncash management decisions.

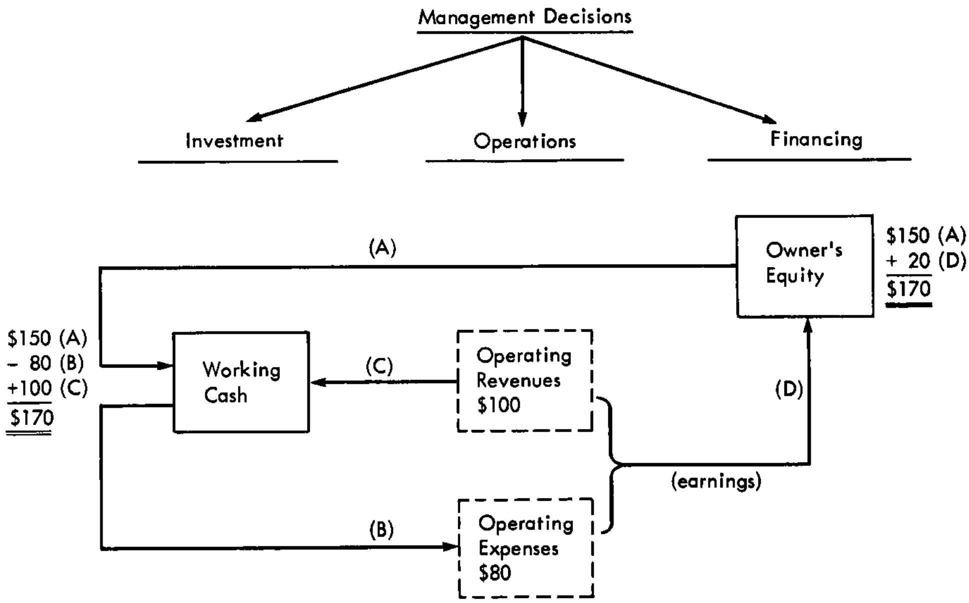
The concept of funds, therefore, should be broadly understood to cover *all measurable resources*, including cash. We shall use the term in this wider sense throughout the book. The point of view of the person analyzing funds flow will to some extent influence the precise meaning of the concept. The financial officer worrying about repayments of obligations will have a concept of funds very close to cash and current credit, while the operating executive being judged on return of investment will define as funds all the resources under his command. It should now be clear, however, that cash is only one form of funds; and when referring to cash or cash items in their specific definitions, we shall employ the concept of "cash" or "liquid funds" throughout the book.

SIMPLIFIED VIEW OF A BUSINESS

It may be best to illustrate funds flow analysis by taking a very simplified example of a business and adding realism step by step. For this purpose we shall employ the example of a person operating as a news vendor. Initially our vendor is selling papers on the street corner, without a booth or any equipment. He has invested some of his savings in a working cash fund, which is the only investment required to operate.

The model in Figure 1–1 shows the operations of this very simple business. Financing is provided by the owner in the form of $150 (A), shown as owner's equity and a working cash balance. During the day, $80 (B) of this working cash is spent

Figure 1–1
FUNDS FLOW MODEL I
Cash Transactions Only



Balance Sheets

	Beginning of Period	*End of Period*	*Differences*
Assets			
Cash	$150	$170	+$20
Equities			
Owner's equity	$150	$150	–0–
Retained earnings	–0–	20	+$20
Total equities . . .	$150	$170	+$20

Operating Statement

	Period
Operating revenues	$100
Operating expenses	80
Earnings for period	$ 20

Figure 1–1 ***(continued)***

Funds Flow Analysis

a. To start up the business:

Use of funds:	
Cash balance established	$150
Source of funds:	
Owner's investment	150

b. To operate the business for one period:

Use of funds:	
Increase in cash balance	$20
Source of funds:	
Profit from operations (retained earnings)	20

to pay for newspapers, while revenues of $100 (C) are received. The profit or earnings from operations, $20 (D), in effect increases the working cash balance to a net of $170, and this increase is also reflected in owner's equity as earnings. Note that the investment (asset) item, working cash, and the financing (liability and net worth) item, owner's equity, are shown in solid frames, while the periodic operating (profit and loss) items, revenues and expenses, are shown in dashed frames to reflect their temporary nature.

We have drawn up simple balance sheets at the beginning and at the end of the day, showing the effect of these transactions. It is clear that the day's operations have provided a $20 increase in cash and an offsetting increase of $20 in owner's equity. This is the only difference between the two balance sheets. The operating statement for the period reflects the profit of $20.

We can now turn to funds flow analysis, but not before defining our ground. In this instance it is possible to analyze two distinct phases, the establishment of the business and the operation of the business. This distinction does not *have* to be made, but since we are interested in the effects of major decisions, it may be useful to establish the separation. The first analysis, the start-up of the business, shows that our vendor *used* $150 worth of cash to establish his working cash balance. The *source* of these funds was his own private savings. The second analysis, which spans the day's operations, shows that the changes in the funds picture are a *use* of funds of \$20, which increased the working cash, and a *source* of funds of \$20, which is the profit from operations. As we shall see in later sections of this chapter, the selection of time periods is a critical aspect of funds flow analysis, since the impact of decisions we are trying to picture may be obscured if too long a time period is chosen.

Several things become apparent from this simple illustration. First of all, we find that funds flow analysis is very closely related to the normal decision-making process of the business. In fact, one could carry funds flow analysis to the extreme and display every single transaction that took place during the period in terms of sources and uses. This is unnecessary and impractical for most purposes, since we should be satisfied to reconstruct only the major resource decisions of the period.

Second, we find that funds flow analysis is very closely related to the accounting statements, the balance sheet and the income statement. As pointed out before, funds flow analysis focuses on the differences between periodic statements. While oversimplified here, the process is readily apparent.

Third, as we already pointed out, it is important to recognize that funds flow analysis is related to a time span. We must choose the period over which funds movements are to be observed, and analysis and judgments must be related to those time periods. In this simple case, the only question that comes to mind is the fact that \$20 of funds has been committed to an increase in the cash balance. One might ask if it was reasonable to let this cash accumulate, or whether a different, better use for these funds might have been found by the owner.

Let us now introduce some complications in the form of delayed transactions. The model in Figure 1–2 shows the operations of our news vendor on the following day when he decides to sell some news magazines along with his papers. Since the magazines selected are weeklies, he can maintain an inventory for several days. Our vendor decides to invest an