Volume Title: Industrial Demands upon the Money Market, 1919-57: A Study in Fund-Flow Analysis

Volume Author/Editor: Wilson F. Payne

Volume Publisher: NBER

Volume ISBN: 0-87014-420-0

Volume URL: http://www.nber.org/books/payn61-1

Publication Date: 1961

Chapter Title: Front matter, tables of content, preface, introduction

Chapter Author: Wilson F. Payne

Chapter URL: http://www.nber.org/chapters/c5014

Chapter pages in book: (p. -19 - 0)

Industrial Demands Upon the Money Market, 1919-57: A Study in Fund-Flow Analysis

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TECHNICAL PAPER 14

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.
1961

LIBRARY OF CONGRESS CATALOG CARD NUMBER: 60-8326

PRICE: $1.50

Printed in the United States of America
by Quinn & Boden Company, Inc., Rahway, N. J.

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Acknowledgments

Like the companies here surveyed, the author is in debt. Unlike a well-run company, he can acknowledge only a fraction of his debt, but that heartily. Among his long-term creditors are Ralph A. Young, who first set him at these problems; R. J. Saulnier, who kept him at the task; Howard Greenbaum, his colleague at Columbia University and the National Bureau, who, as logician and certified accountant, poured vast wealth into the undertaking. Sergei Dobrovolsky, W. Braddock Hickman, Morris Copeland, Solomon Fabricant, Thor Hultgren, and Ruth Mack commented helpfully on an earlier version. The author is especially indebted to Geoffrey H. Moore and to his colleague, Henry A. Kriebel, for help with the present edition. National Bureau Directors Willis J. Winn, Donald B. Woodward, and Murray Shields provided constructive criticism. Others who read the manuscript were Louis K. Brandt, Oscar Nelson, C. R. Whittlesey, and Robert V. Roosa. Among the current creditors are Mildred Courtney, who supervised the typescript; Catherine Grant and Rose Ferro, who typed and retyped the tables; H. Irving Forman, who fitted the unwieldy charts into page limits; and Mary Phelps and Ester Moskowitz, editors, from whose true sense of narrative the finished product has benefited.

This paper is the third report on the subject. (The first two are in mimeograph.) The first, dated September 1949, laid the theoretical groundwork for fund-flow analysis. The second, dated September 1952, essentially in the form presented herewith, traced the flows of the several individual funds, both for a single company and for the NBER sample of large manufacturing companies taken as a group, covering the years 1921 to 1939. In order to provide a continuum for the analysis of group flows since 1939, the Federal Reserve Board's sample of large manufacturing companies was added in 1956. A chart of cash flows, 1921-54, was presented in the Bureau's Annual Report of that year. The present paper incorporates the new data and makes certain other improvements suggested by readers. I am grateful to the National Bureau for its patience with the author in effecting these improvements.

WILSON F. PAYNE

Preface

In the field of economics there are few lines of communication more in need of development and improvement than those that connect the accountant and the economist. The task is by no means an easy one, but much progress is evident, e.g., in the current attempts to construct broad social accounts and in the more modest efforts of the economist seeking merely to measure the financial activities of business.

The purpose of the present essay—an exploratory study of how to trace financial processes in standard accounting records—is to suggest ways of revealing, through an analysis of corporate balance sheets and income accounts, the forces that affect the level of corporate cash balances and, thus, a concern's need for outside funds. On a "net" basis, business concerns sometimes draw cash from the capital and credit markets and at other times return it, with consequences that have long been the subject of discussion among economists. By tracing this ebb and flow of cash to specific aspects of business operations, Dr. Payne throws new light on the relationship between the cash-using and the cash-supplying sectors of the economy, and thereby on a critical element in the dynamics of our business system.

Two chapters deal with factors affecting total business assets and that segment of assets commonly referred to as working capital, but it is in the analysis of the cash account that the author's principal interest is centered.

The financial accounts of the Allis-Chalmers Manufacturing Company have been employed in the development of the cash-flow analysis, but there is no significance in this fact except that the figures for this large company are unusually well-ordered for the author's purposes and are conveniently available in public sources. In addition, the technique is applied to data for a group of large manufacturing corporations.

Dr. Payne's project was under way at the National Bureau when I had responsibility for the Bureau's Financial Research Program. Although I have been out of touch with his work in the past few years, my experiences in public service during that time have strengthened my conviction that the economist urgently needs better techniques for extracting information that is meaningful to him from accounting records designed for other people and other purposes.

R. J. SAULNIER
On Leave, National Bureau of Economic Research

Introduction

This study is another in a National Bureau series centering upon the over-all financing of corporations. It follows in character two previous studies, by Koch, *The Financing of Large Corporations,* and by Lutz, *Corporate Cash Balances.*[1] It is concerned chiefly with the relationship between industrial corporations and the money market as told by the ebb and flood of cash between them.

Ordinarily, we think of this flow as being tipped, over the long term, toward the corporations, but the year-to-year transfer of cash shows another story, both for individual companies and for aggregates of individual companies. The flood and ebb of cash conforms so regularly with the business cycle that the origins of these movements cannot be doubted.

To have made this observation, however, is not to explain the machinery that transmutes the forces of the business cycle into an efficient pump; and it is to the task of explaining this machinery that our primary effort is directed here. Since the preservation of solvency is the *sine qua non* of corporate existence, it is natural to look first at business itself to inquire why it is not self-sufficient in the matter of cash, especially since the record shows that, even when its profits are best, it draws from the money market, and that, during business contractions when it is said to be embarrassed for want of funds, it returns surplus quantities to the market. Hence, the first step (Chapter 1) in looking for the machine is to study the flow of revenue and expenditures on the business side of the corporate ledger (i.e., to study sales, the purchase of goods and services for sale, and the acquisition of equipment and other durable assets), to find the effective propellant to money-market contacts in the cyclical patterns of cash receipts and expenditures.

Chapters 2 and 3 take up the search for the causes of the ebb and flood

1 Albert Ralph Koch, *The Financing of Large Corporations, 1920-39,* New York, National Bureau of Economic Research, 1943; Frederich A. Lutz, *Corporate Cash Balances, 1914-43: Manufacturing and Trade,* New York, NBER, 1945.

from points of view that are slightly different from the one based on cash, of which we have just been speaking. Although the writer feels that they are less revealing of causation, they are considered here out of respect for the theories of corporation finance which they represent.

The first of these theories holds that the duty of the chief financial officer is to provide his associates with assets of the kind and quantity they want, the effective accomplishment of this task presupposing solvency. Cash is not the only thing that obtains assets, this school holds; unpaid bills for goods and services add much to assets, especially the unpaid services of capital (retained earnings), which often appear as large as the plant itself in mature companies. Therefore, calls upon the money market only supplement the assets obtained otherwise in reaching the total asset requirements. So, in Chapter 2 we trace the expansions and contractions of total assets and the variations in unpaid bills in order to find the residual demands upon the market.

Still another school holds that only changes in capitalization (long-term debt plus equity) are worthy of financial notice. To this older view, long the more articulate, the assets are composed of but two parts, the fixed assets and the working capital (current assets minus current liabilities), the latter being regarded as a semiliquid quantity not very far removed from cash. Thus, any demands upon the money market are for the purpose of expanding either one or both of these quantities. Typical are the statements in new security offerings that the "proceeds are to be available for working capital, capital expenditures, and other corporate purposes" or that "this financing will replace money spent in recent years for plant expansion and will provide funds for additional working capital." In order to identify the business origins of new-cash needs satisfactory to this school, therefore, we have but to trace the transactions affecting working capital. This task is undertaken in Chapter 3.

Demand upon the money market has been discussed above in terms of total assets, working capital, and cash. Ultimately, of course, the demand goes back to goods and services—to the difference between their inflow and outflow. This difference is capital formation and is represented on the company books as the change in plant and inventory. For instance, a company takes in factor services, materials, and machinery amounting to $348,867,000. Meanwhile, it gives out $329,260,000 in products. Of the demand arising out of this capital formation ($19,607,000), $19 million is passed on to the money market, and the balance, $607,000, lies in net unpaid bills. Although companies survive by the intake and output of goods and services, the individual treasurer is not likely to formulate his financial problems in these terms. To those who deal with economic problems in the national aggregate, however, it is not solvency, nor working capital, nor even total corporate resources, but the flow of goods and the formation of capital that are the primary objects to be financed. Accordingly, Chapter 4 takes up the cyclical demand upon the money market which arises out of the transfer of goods and services and the formation (or consumption) of capital.

While our first objective is to survey the business transactions that lead to the money market and to note their behavior during the course of a business cycle, a secondary objective is to formulate systematic procedures by which the statement of income and condition can be transformed into a cash statement or a working-capital statement or a statement of transactions affecting any other asset or group of assets. Confronted with a record of all of the transactions undertaken by a company in a period, the analyst must select only those affecting the fund which is to be augmented by financing. This sorting-out process is here called fund-flow analysis; the Appendix is devoted to the purely technical matters of measurement that are involved.