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THE DEVELOPMENT OF HISTORICAL SERIES ON SOURCES AND USES OF CORPORATE FUNDS

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The purpose of this paper is to focus attention on some of the problems involved in estimating over-all series on the historical sources and uses of corporate funds, to discuss briefly the availability of data, and to describe the project now under way in the Department of Commerce to fill gaps in the existing information. Originally, we planned to present a set of tentative annual estimates of major sources and uses of corporate funds for the prewar period, but this plan proved to be too ambitious in the light of the progress we have been able to make. We shall, however, cover briefly the findings already made on the basis of the postwar material which we regularly compile, making whatever historical generalizations are possible in the light of some rough estimates for the prewar period.

The basic raw material for our project comes in large part from balance sheet information published in the Bureau of Internal Revenue's *Statistics of Income,* Part II. Not only are there difficult conceptual problems involved in the application of these historical data to the sources and uses approach, but problems of classification and coverage are equally formidable and practically dictate item-by-item and year-by-year examination. And where reliance must be placed on source material other than that of the Bureau of Internal Revenue — such as capital market transactions — data for the earlier part of the period we wish to cover, 1926 to date, are very rough and require substantial adjustment before they can be fitted into the "sources and uses" framework.

I Status of Prewar "Sources and Uses" Statistics

Before discussing the adequacy of available prewar sources and uses statistics, a few comments are in order concerning the usefulness of over-

all series on business financing of capital requirements. It is, of course, recognized that such series involve all the shortcomings that are usually associated with global figures and must therefore eventually be supplemented by financial series relating to minor groups and even by studies based on individual companies.

Aggregate sources and uses data for all business and its major industry components serve many important purposes which need not be detailed here. The major advantages of such series stem not only from the fact that such over-all information is necessary to complete the picture of economic trends by highlighting the developments in business finance, both secular and cyclical, but equally important because the total financial requirements — long-run and short-run — are placed in the perspective of the means of financing. By recourse to different combinations of the data, it is possible to throw light on the interrelationships of variations in emphasis between short-term and long-term requirements and methods of financing such as debt versus equity, internal versus external, and short-term versus long-term financing. With the addition of supplementary data on relative costs of financing, it may be possible further to analyze such important topics as possible shortages of equity capital or the balance in the over-all financial structure.

It is recognized that information on many, if not all, of these problems is currently available, but as I shall point out in a moment, the data are far from complete and often must be dealt with in a piecemeal fashion which frequently leaves the analyst with the feeling that the questions raised are still largely unresolved. This is not to imply that historical series on total sources and uses of business funds will supply the key which opens the door to final knowledge. It is believed rather that the construction of such series will add considerably to the existing information on business financing and will, therefore, represent a partial advance in understanding the problems of business financing.

In the light of these remarks, we may ask, What is the status of studies already made in the field of business capital requirements and their financing? Generally speaking, existing analyses of this field may be divided into two categories:

1) *Detailed and extensive investigations into special aspects of the subject.* Here I have in mind numerous statistical studies of business uses of funds — plant and equipment expenditures, inventory requirements, customer financing charges, and the like. On the sources side, there have also been many studies of a similar nature covering trends in retained earnings, depreciation reserves, securities market financing and short-term bank borrowing.

It is not feasible to comment on any or all of these studies, most of which are well known to students of business financing. Despite the fact that, generally speaking, these studies have not been carried on from the viewpoint of the over-all sources and uses of funds approach, many of their results can be successfully used in developing an historical series on sources and uses of funds, and reference will be made later to the manner in which we intend to incorporate such information in our present project.

2) *Complete sources and uses tables that have at various times been developed for samples of the corporate business economy.* The literature based on such studies is not so great and in view of their more direct relationship to our over-all project, a few of the more important of these contributions may be briefly noted.

One of the most useful statistical compilations along these lines is Koch's *The Financing of Large Corporations,* prepared under the Financial Research Program of the National Bureau of Economic Research.[1] In this work, Koch presents virtually complete data for the railroad, telephone, and electric light and power industries. His sample amounts to about 26 percent for manufacturing as a whole with coverage ranging from 85 percent in the rubber industry to 3 percent in textiles and food other than meat packing. In trade, coverage amounts to 9 percent, again varying widely among the four trade groups covered. Further remarks on coverage are not called for here, since this aspect of the study is adequately treated in the book.[2]

In the context of our current project, which looks toward the development of over-all sources and uses, the statistical material presented by Koch will be of help as a check on estimates of sources and uses which are developed primarily from other data, such as that of the Bureau of Internal Revenue.

The principal limitation on the use of Koch's data for the development of over-all measures of sources and uses of funds stems from the fact that his samples comprised mainly large corporations and, hence, may not reflect the trends in the corporate universe. This Koch has pointed out. Evidence that the large and small corporations may not be affected equally, or even in the same direction, is available from such financial data as *Statistics of Income* compilations or the new postwar SEC-FTC quarterly financial reports on manufacturing corporations. In view of this fact, development of representative financial data for smaller corporations is necessary before sample data can be used as the basis of universe estimates.

[1] Albert R. Koch, *The Financing of Large Corporations, 1920-39* (National Bureau of Economic Research, 1943).

[2] *Ibid.*, pp. 11-15 and Appendix A.

An important contribution along this latter line is Merwin's *Financing Small Corporations*.[3] While this work is a valuable study for the specific industries covered, it is of limited utility in the development of an over-all sources and uses series. Because of lack of data, the study is limited to five minor industry groups in manufacturing and, while small firms characterize these industries,[4] the data and trends shown for the samples chosen can at best only be taken as representative of small business in the selected industries. Thus, a large segment of small business is not covered.

Special reference should also be made to Terborgh's work on sources and uses of corporate funds contained in his book, *The Bogey of Economic Maturity*.[5] In this work, Terborgh presents some global estimates of sources and uses for nonfinancial corporations (excluding, in addition to banks and insurance companies, "real estate" corporations — which were segregated in BIR data for only part of the period covered — and the relatively insignificant group of "agricultural" corporations). The basic material for his estimates are the BIR tabulations of corporate income accounts and balance sheets, and his own estimates of plant and equipment. Since in the context of his analysis, Terborgh was interested only in broad trends of external versus internal financing, only the over-all totals for these sources are treated in the chapter dealing with this subject.[6]

After briefly discussing the difficulties in the use of new security issue series or balance sheet capital account items, Terborgh decided to derive net external sources by the residual method of deducting corporate savings (BIR retained earnings, depreciation and depletion) from capital requirements (plant and equipment, inventories and cash).[7]

While Terborgh's method may be useful for his purposes, its utility is limited because it does not make available a comprehensive picture of the sources and uses of funds. There is a more serious objection to the residual method of estimating the "net inflow of funds" in that this figure will be

[3] Charles L. Merwin, *Financing Small Corporations in Five Manufacturing Industries, 1926-36* (National Bureau of Economic Research, 1942).

[4] Baking, men's clothing, furniture, stone-clay, and machine tool.

[5] George Terborgh, *The Bogey of Economic Maturity* (Machinery and Allied Products Institute, Chicago, 1945).

[6] *Ibid.*, Chapter 9.

[7] Inventory requirements as used by Terborgh are after valuation adjustment, but since an equal and offsetting adjustment is made in retained earnings, his "net inflow" of outside funds is not affected by the refinement. It may be noted that receivables and trade payables data need not be estimated for Terborgh's purposes, since intercorporate receivables and payables presumably cancel out and, as he points out, funds raised externally to finance receivables from the "outside" do not affect the "net inflow" figure which he sought to derive.

affected by any errors in estimating requirements and in the estimated volume of internal financing, with the size of the error not given by balancing sources against uses. Rough estimates for a few prewar years suggest, for example, that uses tended to exceed sources. If this was a generally prevailing characteristic of the statistics available for that period, the residual method would consistently overstate the amount of external financing required – though not necessarily by the same amount each year.

II Major Statistical Problems

The general sources and uses approach, while of relatively recent origin in its application to the study of economic problems, is generally well understood and needs only brief description.

The sources and uses estimates currently in use are derived from a combination of selected items in the income and balance sheet statements, together with estimates based on plant and equipment schedules, securities markets transactions and other financial data. Theoretically, it would be possible with a sufficiently detailed statement to set up a limited source and use table from balance sheets alone. With terminal balance sheets available for the period under review, we would treat increases in assets or decreases in liabilities as "uses" and increases in liabilities or decreases in assets as "sources" of funds. Stress must, however, be laid on the *detail* necessary in using balance sheets alone, since for most purposes in sources and uses analysis we wish to eliminate such accounting adjustments as involve mere bookkeeping transactions, or "noncash" changes which simply reflect revaluations of accounts.

Such detail is not generally published, and in the absence of this information it has been found most practical to combine the various types of financial information usually published. Thus, on the "uses" side (defined, for convenience in presentation, as composed of changes in assets and hence, possibly containing both positive and negative quantities), information is derived from balance sheet accounts for working capital estimates, while changes in fixed assets are derived from estimates of expenditures on plant and equipment which are not derived from balance sheet or income statements, but rather from two different sources to be described later.

One major difficulty in using the balance sheet statement alone to derive "sources and uses" estimates stems from the general paucity of detail necessary to reconcile "surplus" changes. For most purposes, the analyst is interested primarily in those surplus changes that reflect actual flows of funds to or from the universe studied. Many other surplus adjustments involving revaluations of accounts are involved in the changes in

surplus accounts, thus making impractical the use of these items. Many of the difficulties in this respect can be obviated by including on the sources side retained earnings from the income statement.

Other capital accounts such as the capital stock usually shown are likewise of little utility in estimating sources and uses because of the noncash nature of many of the changes in this category. Since, for our purposes, we are concerned with the flow of funds, we use data available from other sources, such as the net proceeds from the sale of capital stock estimated from capital markets data. For debt financing, reliance may be placed on available estimates of borrowing based on bond issues series and bank loans series.

While fairly reliable data may thus be fitted together from various financial statements, not all the problems of estimation are thereby resolved. The problem of valuation adjustments, for example, still remains for those asset and liability items taken from *Statistics of Income.* Write-ups or write-downs of marketable securities, for example, must be estimated to arrive at an adequate sources and uses table, and similar adjustments are required for a number of other balance sheet items.

III The Commerce Project

The nature of the project that we have undertaken can best be described by putting down some notes on the major sources and uses items and on the material at hand which is being used in deriving our estimates. So far, we have published data only for the postwar period, starting with estimates for 1946 and 1947, presented in an article by Irwin Friend in the March 1948 issue of *Survey of Current Business,* and carried forward on a semi-annual basis thereafter. In addition to the aggregate sources and uses data for corporations, estimates have been prepared for certain broad industry groups, such as manufacturing, railroads and electric and gas utilities. Information is also being gathered on the net purchases of corporate securities by various financial institutions and others.

PLANT AND EQUIPMENT

For the postwar period, fairly satisfactory data on corporate plant and equipment expenditures are available from the information supplied on schedules submitted by firms reporting annually and quarterly to the Securities and Exchange Commission and the Commerce Department. Estimates for the corporate universe as well as for all business firms are made from these data. These estimates, which are made by broad industry

groups, are checked against the independent totals derived from commodity flow data.

When this postwar information is used in conjunction with the basic material for prewar years already available in various sources a major problem of comparability arises. The more widely used of the prewar series on capital expenditures are those of the National Income Division of the Department of Commerce, Kuznets and Terborgh, which are essentially based on a commodity flow approach not comparable with the company reports available for the postwar period. The differences in the various series, which are fairly substantial, are partly statistical and partly conceptual. To achieve greater comparability of available estimates of the various series is one of the more important tasks on which we are now engaged.

WORKING CAPITAL ITEMS

The basic source for these estimates is the BIR tabulations which, as is well known, are deficient not only as to the coverage of some of the financial items but also as to the year-to-year comparability of these items in the aggregate and by industry.

One of the most troublesome of the problems involved in the use of these data arises from changes in the degree of consolidation of balance sheet information over the period under study, particularly the 1933-34 break resulting from the requirement that in the latter year, all corporations — with a few major exceptions — were required to file on an unconsolidated basis. The partial reversion to the use of consolidated returns in 1942 also gives rise to a somewhat less bothersome but still considerable problem of achieving comparability.[8] It is in connection with these estimates that recourse is being had to all the various sample data and other types of information which have been or may be developed.

Some of the specific deficiencies of BIR data as well as the alternatives available may simply be outlined:

1) *Security holdings* are not broken down in BIR tabulations as clearly as might be desired. Prior to 1929, nongovernment securities held were included in the miscellaneous category "other assets." More important, the data on security investments even for the later period are so affected by valuation adjustments that independent estimates of changes in such holdings are being made from sample balance sheet data as well as from

[8] The shift in form of reporting also greatly affects corporate sales estimates which are a necessary tool in the analysis of the financial position of corporations. We are currently also attempting to provide sales series from which the major deconsolidation-consolidation effects have been removed.

universe information on intercorporate dividend transactions. This problem is particularly troublesome for the late twenties and early thirties.

2) *Receivables* and *payables* are particularly affected by the shift in form of reporting from consolidated to unconsolidated statements. The special BIR tabulations for the 1933-34 transition are of some help in alleviating this difficulty, but the development of reasonably reliable estimates will depend on the piecing together of large company sample data and such other information as can be gathered on the different characteristics of large and small businesses. Also, only since 1937 has BIR separately tabulated accounts payable. Since that year "notes payable" have been included in the breakdown of "bonds, notes, mortgages payable" into those with maturities of less than one year and maturities of one year or more. Thus again, other source material such as bank statistics must be utilized to determine changes in bank loan financing of corporations.

3) For *other current liabilities* there is no BIR tabulation. As a result, this item must be derived from estimates based on a number of supplementary sources of sample data.

CORPORATE SAVINGS

(including retained earnings, depreciation and depletion)

Compared with some other problems encountered in estimating sources and uses, those involved in the analysis of these components are relatively minor. For the most part, use is made of Commerce national income estimates which permit a segregation of nonfinancial corporate savings for the period from 1929 to date. The only real difficulty, though not too serious, relates to the period prior to 1929 when bank and insurance company data were not shown separately from data for "other" financial corporations.

NET NEW ISSUES

Estimates of corporate sources of funds from new security issues present some of the most difficult problems in the whole project, particularly for the period prior to 1934. For the period from 1934 on, considerable work has been done in estimating net new issues. The basic series are the published "new securities offered for cash" estimates of the Securities and Exchange Commission and estimates of retirements also collected by the SEC but not published by that agency. Even within the period from 1934 on, the more recent estimates are more reliable than those for the early part of the period. To the basic material just mentioned must be added information on a number of security market transactions not covered by these series.

An important part of our project is concerned with the development of net new issues series for the period prior to 1934. It is fairly clear from already available analyses that such new issue series as that of the *Commercial and Financial Chronicle* or the "productive issues" series as compiled by Moody's are inadequate as a basis for estimating corporate sources of funds from net sales of securities. The inclusion of purely financial transactions in the new issue series and the absence of satisfactory data on retirements are two of the major reasons for the deficiencies in these series.[9]

In attacking this problem of net new issues for the period of the late twenties and early thirties, some work has been done in adjusting the overall *Chronicle* series on the basis of a sample examination of the data on individual new issues, together with the institution of a related series on retirements. Further analysis and testing will show us whether this project can be carried through successfully.

A second procedure being followed involves the blowing-up of sample data. Such samples are for the most part heavily weighted in favor of large companies but it is felt that fairly reliable global estimates may be derived for at least stock financing. Information on debt financing from such samples can be checked against universe estimates on changes in debt such as are contained in the debt data in the BIR and other financial sources.

Finally, use will be made of the "residual" technique – total uses less corporate savings and other current financing. For reasons given above, this latter method can only be used as a broad check on estimates more directly obtainable.

One serious problem that arises in connection with the derivation of estimates of corporate money raised in the securities markets by the use of a "new issues" series is concerned with the extent to which other corporations are purchasers of these new corporate issues. As already noted, data are lacking with which to approach this problem directly but we are attempting to make use of the available material previously described.

In summarizing our approach to the "new issues" problem, we feel that too much reliance cannot be placed on any one approach, but we believe that judicious weighing of the different factors involved in our estimating techniques and results will permit us to derive at least a fairly reliable set

[9] George A. Eddy's study, "Securities Issues and Real Investment in 1929" (*Review of Economic Statistics*, May 1937), attempted to arrive at new domestic corporation issues for "real" investment. His adjusted figure came to $2 billion as compared with the *Chronicle's* $10 billion total for new capital. Of the $8 billion difference, $2 billion represented noncorporate or foreign corporation issues, the remainder being essentially "financial" issues. Eddy's figures for new "real" issues of domestic corporations for that year are "gross," that is, before retirements for cash.

of figures usable within the framework of other data on sources and uses of corporate funds.

The preliminary work already completed seems to indicate one interesting result – a tendency for corporate "uses" to exceed "sources" for the prewar period. If this turns out to be the case, we are naturally faced with the problem of re-examining our basic data. If after re-examination the discrepancy still remains, the question arises whether to show the discrepancy as a separate item or attempt to prorate it among the other items involved.

IV Summary of Commerce Findings

As indicated at the beginning of this paper, we are not yet in a position to present even a tentative set of sources and uses estimates for the prewar period. It is possible, however, to point out a few of the more general characteristics of the postwar period, for which fairly reliable data are available and to indicate how the broad features of this period of financing compare with our rough results for some prewar years.

The total increase in corporate assets in the last four years has required financing of $100 billion, with annual requirements averaging close to $25 billion (Table 1). This is far in excess of capital needs in any comparable prewar period. In the late twenties, for example, annual requirements probably did not exceed an average of $10 billion. As in the past, internal financing satisfied the bulk of capital needs. Retained profits, depreciation and federal tax accruals accounted for well over 70 percent of total requirements in the last two years. The comparable proportion was about two-thirds in 1929.[10]

Of the external sources of funds (short- and long-term borrowing and stock issues), debt financing has been relatively more important in the postwar period (Tables 1 and 2).[11] This is particularly true as compared with the late twenties. Actually, if account is taken of the equity financing through retained earnings as well as through stock issues, the postwar period compares favorably with the late twenties. This is, of course, a reflection of the more conservative dividend policies pursued by corporations in recent years.

Regarding the relatively low component of stock issues in external financing during the postwar period, it might be remarked that on an

[10] The same general picture would be presented if retained earnings were adjusted for inventory profits.

[11] Bank debt financing is not, of course, included in the data shown in Table 2, but the generalization made in the text would still hold true if account were taken of such financing.

Table 1

SOURCES AND USES OF CORPORATE FUNDS, 1946-49[a]
(in billions)

Sources	*1946*	*1947*	*1948*[b]	*1949*[b]
Retained profits[c]	$7.7	$11.6	$12.8	$8.6
Depreciation	4.2	5.2	6.0	6.7
Trade payables	4.0	4.4	.9	−2.2
Federal income tax liability	−1.6	2.3	.8	−2.4
Other current liabilities	1.8	.4	[d]	[d]
Bank loans (excluding mortgages)	3.3	2.6	1.1	−1.6
Short-term	1.9	1.6	.5	−1.2
Long-term	1.4	1.0	.6	−.4
Mortgage loans	.6	.8	.6	.6
Net new issues	2.3	4.4	5.9	5.4
Stocks	1.3	1.3	1.2	1.6
Bonds	1.0	3.1	4.7	3.8
Other net sources and stat. discrepancy	−.1	−1.1	−2.8	−1.5
TOTAL SOURCES	$22.2	$30.6	$25.3	$13.6
Uses				
Plant and equipment	$11.6	$15.0	$17.4	$16.1
Inventories (book values)	11.2	7.1	5.0	−4.6
Receivables	4.8	7.5	2.4	−.4
From business	5.1	5.9	.8	−1.3
From consumers	1.7	1.8	1.4	.9
From government	−2.0	−.2	.2	[d]
Cash and deposits	1.1	2.2	.2	.9
U.S. government securities	−5.8	−1.1	.3	1.8
Other current assets	−.7	−.1	[d]	−.2
TOTAL USES	$22.2	$30.6	$25.3	$13.6

[a] Source: U. S. Department of Commerce based on Securities and Exchange Commission and other financial data. Excludes banks and insurance companies.
[b] Preliminary.
[c] Includes depletion.
[d] Less than $50,000,000.

over-all basis, the terms of equity financing did not compare unfavorably with those in the prosperous period of the middle twenties, although they were substantially higher than in the latter part of that decade (Table 3). The major shift in terms of financing which has occurred over the last two decades has been in the direction of bond financing. The "3 percent" rate that has generally prevailed throughout the postwar period compares with 5 to 6 percent rates in the twenties. This relative change in the terms of debt and equity financing undoubtedly explains, in part, at least, the greater emphasis on debt financing in recent years.

It is interesting to note the changes that have occurred over the postwar period in the proportion of stock in total new issues. Stock financing, which was quite high in 1946, declined relative to total new issues from 1946 to 1948 and has since then increased moderately. Slow to react to the strong upsurge in stock prices which began in mid-1949, stock issues by the second quarter of 1950 again reached proportions comparing favor-

Table 2

RELATION OF STOCK ISSUES TO TOTAL AMOUNT OF NEW CAPITAL ISSUES, BY INDUSTRY GROUPS, 1919-50[a]

(dollar figures in millions)

	INDUSTRIAL & MISCELLANEOUS		PUBLIC UTILITIES[b]	
YEAR	*Total New Issues*	*Stocks as % of Total*	*Total New Issues*	*Stocks as % of Total*
1919	$1,907	74.5%	$ 278	12.5%
1920	2,005	48.8	382	14.4
1921	978	15.4	492	23.8
1922	1,086	24.9	726	38.0
1923	1,350	28.2	888	28.2
1924	1,217	22.8	1,326	37.5
1925	2,224	30.3	1,481	34.3
1926	2,342	26.4	1,598	29.1
1927	2,645	21.0	2,065	37.4
1928	3,117	50.5	1,811	41.8
1929	3,939	66.5	1,932	63.6
1930	1,549	39.0	2,365	32.2
1931	465	11.6	949	26.7
1932	37	32.4	274	2.2
1933	113	99.1	34	20.6
1934	37	91.9	49	.0
1935	245	27.3	83	2.4
1936	811	43.3	124	3.7
1937	840	47.7	153	3.9
1938	580	10.5	273	1.8
1939	235	38.7	61	8.2
1940	322	33.2	268	10.4
1941	411	35.8	399	6.4
1942	432	19.2	157	21.7
1943	298	29.9	18	11.1
1944	527	36.2	48	47.9
1945	1,029	61.5	112	23.2
1946	2,602	51.0	818	17.4
1947	2,553	37.1	2,035	14.0
1948	2,784	18.8	2,886	13.1
1949	2,015	12.1	2,537	27.8
1950[d]	240	28.3	651	22.7

ably with the prosperous period of the mid-twenties. Whereas the "industrial and miscellaneous" companies were most active in the equity market in the early postwar years, more recently public utilities, principally electric and gas companies, have not only issued the largest volume of new securities, but they have expanded their equity financing more than proportionately. Currently, it appears that the equity share of public utility issues compares favorably with that of the mid-twenties.

A feature of postwar debt financing has been the relatively large role played by bank borrowing in outside financing. Bank loan increases from 1946 to 1948 were as large as in the post-World War I inflation of 1919-20. The similarity of the economic conditions of these two periods was of course great, with rising prices, sales and inventories featuring both

Table 2 (concluded)

RELATION OF STOCK ISSUES TO TOTAL AMOUNT OF NEW CAPITAL ISSUES, BY INDUSTRY GROUPS, 1919-50[a]

(dollar figures in millions)

YEAR	RAILROADS		ALL CORPORATIONS[c]	
	Total New Issues	*Stocks as % of Total*	*Total New Issues*	*Stocks as % of Total*
1919	$117	.0%	$2,303	63.2%
1920	322	.0	2,710	38.2
1921	353	.0	1,822	14.7
1922	524	5.2	2,336	24.6
1923	465	5.8	2,702	24.4
1924	780	7.2	3,322	25.0
1925	380	4.3	4,086	29.4
1926	346	11.8	4,286	26.3
1927	506	18.0	5,216	27.2
1928	364	14.6	5,293	45.0
1929	547	24.3	6,417	62.1
1930	797	8.3	4,712	30.4
1931	346	.0	1,759	17.5
1932	13	.0	324	5.8
1933	12	.0	160	74.4
1934	73	.0	159	21.4
1935	73	.0	402	17.2
1936	267	.0	1,202	29.6
1937	232	.0	1,225	33.3
1938	16	.0	869	7.6
1939	85	.0	381	25.5
1940	144	.0	735	18.4
1941	252	.0	1,062	16.3
1942	33	.0	622	18.6
1943	61	.0	378	24.3
1944	88	.0	663	32.3
1945	123	4.1	1,264	52.6
1946	126	.0	3,546	41.4
1947	246	.0	4,828	25.5
1948	578	.0	6,248	14.4
1949	450	.0	4,902	19.4
1950[d]	147	.0	1,038	20.8

[a] Source: *Commercial and Financial Chronicle*. New capital issues include issues for the purchase of existing assets.
[b] Includes communications.
[c] Excludes investment and holding companies subsequent to 1924.
[d] Represents data for first quarter only.

periods and resulting in sharp increases in demand for working capital. It should be noted, however, that whereas in the earlier period short-term bank borrowing predominated, the long-term loan became an important means of financing in the more recent period.

Despite the very substantial postwar increase in debt financing, the current debt position of corporations does not appear to be unduly high. In 1949, interest payments were 8 percent of corporate income before taxes and interest as compared with a figure of about 30 percent in 1929.

Table 3

RELATION OF BOND AND STOCK YIELDS BY INDUSTRY GROUPS, 1919-50[a]

	INDUSTRIALS		PUBLIC UTILITIES[b]		RAILROADS	
YEAR	*Bond Yield*[c]	*Common Stock Earnings Price Ratio*[d]	*Bond Yield*[c]	*Common Stock Earnings Price Ratio*[d]	*Bond Yield*[c]	*Common Stock Earnings Price Ratio*[d]
1919	11.3%	6.2%	8.6%	6.4%	9.9%	6.2%
1920	12.1	7.2	10.7	7.1	5.8	7.1
1921	[f]	7.2	12.2	6.9	10.1	7.0
1922	7.3	5.9	12.3	5.9	8.7	6.0
1923	10.7	5.8	11.4	6.2	12.8	6.0
1924	9.4	5.6	10.8	5.9	11.9	5.8
1925	11.2	5.3	9.6	5.5	12.0	5.5
1926	9.6	5.1	10.0	5.1	12.2	5.2
1927	7.2	5.0	8.2	4.8	8.7	5.0
1928	7.0	4.9	7.2	4.9	9.0	4.9
1929	6.3	5.1	4.5	5.2	8.8	5.2
1930	4.5	5.1	4.7	5.0	6.2	5.1
1931	2.2	5.3	5.1	6.1	1.8	5.8
1932	[f]	6.3	7.2	7.6	[f]	6.9
1933	3.2	6.3	6.4	6.1	[f]	5.9
1934	4.2	5.4	5.4	5.0	[f]	5.0
1935	5.6	4.4	5.8	5.0	[f]	4.5
1936	6.2	3.9	5.2	4.2	3.8	3.9
1937	6.6	3.9	6.1	4.3	1.3	3.9
1938	4.1	3.9	6.3	5.2	[f]	4.2
1939	5.9	3.5	6.7	4.5	2.6	3.8
1940	7.6	3.3	7.2	4.3	5.9	3.6
1941	9.6	3.1	7.9	4.0	15.1	3.3
1942	8.6	3.1	8.9	4.0	31.5	3.3
1943	6.6	3.0	7.3	3.6	20.7	3.2
1944	7.0	3.0	6.7	3.4	13.4	3.1
1945	5.8	2.9	5.9	3.1	6.6	2.9
1946	6.6	2.7	6.2	2.9	3.5	2.7
1947	10.8	2.8	6.1	3.1	8.2	2.9
1948	13.8	3.0	7.6	3.3	10.9	3.1
1949	13.1	2.9	7.4	3.2	7.8	3.0
1950[g]	11.6	2.8	7.0	3.1	2.6	2.8

[a] Sources: Bond yields are from Moody's Investors Service. Dividend yields and earnings-price ratios through 1938 are from common stock indexes, Cowles Commission Monograph No. 3; subsequent figures are extrapolations of the Cowles series based on the movement of stock prices, earnings and dividends as shown by Moody's. Preferred stock yields (high grade) are from Standard and Poor's Corporation.

[b] Includes communications.

One final aspect of the contemporary financial picture may be briefly noted. Despite the rapid expansion of sales and economic activity, the liquidity position of business compares quite favorably with prewar. As is well known, corporations substantially reduced their cash and United States government securities in the months immediately after the war's end. Then followed a period of two years in which little change in these liquid assets occurred while corporate activity and prices continued to

Table 3 (concluded)

RELATION OF BOND AND STOCK YIELDS BY INDUSTRY GROUPS, 1919-50[a]

ALL CORPORATIONS

YEAR	*Bond Yield*[c]	*Preferred Stock Yield*	Common Stock *Dividend Yield*[e]	Common Stock *Earnings Price Ratio*[d]
1919	6.3%	5.8%	10.6%	6.2%
1920	6.8	6.1	10.1	6.9
1921	6.8	6.5	4.2	7.0
1922	6.1	5.8	8.3	6.0
1923	6.1	5.9	11.4	6.0
1924	6.1	5.9	10.3	5.9
1925	5.9	5.2	11.2	5.6
1926	5.8	5.3	10.1	5.4
1927	5.5	4.8	7.6	5.1
1928	5.1	4.0	7.3	5.1
1929	5.1	3.5	6.2	5.3
1930	5.0	4.3	4.7	5.3
1931	5.0	5.6	3.0	6.1
1932	6.1	6.7	.7	6.7
1933	5.8	4.1	3.4	5.3
1934	5.3	3.9	3.9	4.5
1935	4.6	3.9	5.2	4.0
1936	4.3	4.4	5.9	3.5
1937	4.5	4.9	6.2	3.6
1938	4.3	4.3	3.9	3.5
1939	4.2	4.0	5.7	3.3
1940	4.1	5.2	7.2	3.1
1941	4.1	6.2	9.5	3.0
1942	4.3	6.7	10.7	3.0
1943	4.1	5.0	8.0	2.9
1944	4.0	4.9	7.6	2.8
1945	3.7	4.3	5.9	2.7
1946	3.5	4.0	6.2	2.6
1947	3.8	5.1	9.7	2.7
1948	4.2	5.7	12.6	2.9
1949	4.0	6.6	11.3	2.7
1950[g]	3.8	6.2	9.2	2.6

[c] Moody's corporate bond yields, averages of daily figures.

[d] Total reported earnings on common stocks as percent of total market value.

[e] Total yearly dividends on New York Stock Exchange common stocks as percent of total market value of these stocks, based on average price during year.

[f] Deficit.

[g] Represents data for first quarter only.

increase. With the moderate recession in activity during 1949, business was again in a position to add to its holdings of cash.

At the present time, liquid holdings of cash and United States government securities are close to the volume held at the end of 1945. These holdings represent about 11 percent of sales — about the same as at high levels of activity before the war — though with the increase in prices and activity which has occurred since that time, one might expect somewhat

lower current ratios. Other measures of liquidity, such as the relation of current assets to current liabilities, indicate a somewhat greater improvement over this period.

Thus, the over-all picture of corporate financing appears to indicate that, in the limited historical perspective investigated, the financial position is generally sound, internal sources comparatively high, and external financing available on relatively favorable terms. However, the very substantial easing in senior money rates has been associated with an increase in the proportion of debt to total external financing. Some of these generalizations apply, of course, to corporations as a whole, and not necessarily to individual cases or to specific industry and size groups.

Discussion

F. C. DIRKS, *International Monetary Fund*

I shall not comment on the findings of Mr. McHugh and his historical predecessors — except to demonstrate the potentialities of alternative approaches.

Statistical work on business finance has proceeded in the past on three levels of perspective, ranging from the total economy down to the individual firm. At the highest level, which includes the global figures of Mr. McHugh and the Commerce Department, the integrated analysis of business finance is fairly recent, having been preceded by much attention to particular series such as capital formation, inventories, cash, bank loans, security financing, and profits and dividends. At the next level of perspective, consisting of data for homogeneous groups of firms, analytical attention has usually focused on problems of financing. At the third level have been the case studies of individual firms, including interviews with business officials to evaluate the personal and fortuitous elements in business policies, factors which are generally omitted in the broader studies. Work at each of these levels has been motivated by different objectives and has encountered different kinds of problems.

Mr. McHugh's paper deals primarily with the global level, and reflects the interest of the Commerce Department in the stability and trend of the national economy. I should like to add some notes on historical work at the levels of individual firms and groups of firms, since the problems of tabulation and estimation at these levels deserve more attention than Mr. McHugh's paper has given them.

First, however, let me submit some reflections on the sources and uses apparatus, which is the basic tool of analysis at all levels of work. Mr. McHugh passes over this quickly because, he says, it is "generally well understood." I am inclined to suspect that the prevailing "understanding" of it – at least among lenders and prospective investors – contains some distortion of emphasis that has aggravated the financing difficulties of small business.

TWO ANALYTICAL APPROACHES

The sources and uses of funds analysis is not a uniquely defined system of calculations, nor does it even represent a single analytical approach in visualizing business operations. Rather, it has a split personality. One aspect of such analysis is a concern with the distribution of assets and of claims against them, and with changes in this distribution; the other is concerned less with balance sheet patterns than with business operations, that is, with the temporal flow of funds. The analyst who undertakes to follow through and explain what he sees under either approach will end up at the same point, that is, with a dynamic picture of an organism in motion. For this reason, the flow approach to sources and uses analysis appears to be somewhat closer to life than the static approach. The analyst who stops with a surface description of the data, however, retains a somewhat different view of business finance, depending on whether he started with a predilection for asset patterns or for operational flows. For this reason, I am inclined to think that the ultimate objectives of corporate financial analysis may be furthered by persuading those who are familiar with one aspect of the split personality to become more familiar with the other.

If we view the business process with our eye on the subject, the flow approach is predominantly an affair of the income statement. The great bulk of the funds passing through a business comes from sales and the great bulk of the expenditures goes to cover operating outlays. Reference to the balance sheet is needed only for relatively small amounts of capital transactions and nonoperating adjustments. With this orientation, the range of analytical inquiry begins with factors affecting sales – quantities, prices and selling techniques – and extends through factors affecting the quality and cost of labor, materials, managerial and planning services and the whole category of capital equipment and real property, including the manner and timing of payment for these items.

Not all of this detail comes within the field of inquiry of every analyst, of course. Some will focus on particular uses of funds such as production costs, capital expenditures or liquidity position; others may focus on particular sources such as sales expansion, the use of security markets or

trade credit, while still others may be interested primarily in the tied relationship of particular sources and uses such as trade receivables and payables. Historically, there have been relatively few analysts interested in an integrated picture of all sources and uses of funds.

With such specialization of interest, the analyst is likely to lump together all items outside his focus, thus arriving at a more or less net statement. Indeed, this practice is so common that we can hardly find in the published literature any figure purporting to be the sum total of sources of funds — whether for a single business, a group, or for the whole economy — that is more than a small fraction of the actual total of funds flowing from all transactions. Nearly all analysts of the integrated sources and uses picture take the position that business operations are of little concern except as they effect changes in the size and distribution of assets. As a result, the sum total of sources of funds is generally conceived as the change in total liabilities and equity plus the allocation to depreciation reserve, while the sum total of uses is conceived as gross capital expenditures plus the net change in all assets other than the property account. (Revaluations and bookkeeping transfers may or may not be excluded.)

This ignoring of the bulk of funds flowing in from sales and flowing out through expenses seems a little curious: the total of these operations is generally many times as large as the change in total assets, and the significance (or insignficance) of the latter may need to be appraised in terms of the over-all size of operations. This initial lack of interest in the income statement is puzzling, too, because the analyst who earnestly seeks a reason for various asset changes is ultimately driven back to a closer look at the operating transactions. It would be an interesting inquiry in the historical development of financial analysis to find out whether the typical lender's preoccupation with asset collateral may have been responsible for the prevailing emphasis on balance sheet changes with only incidental reference to the income statement to calculate gross capital expenditures.

The practical importance of being oriented with respect to operations, rather than to asset patterns, was brought out during the war by the experience of contractors. Much of the wartime expansion of output was financed on a short-term basis through advances on contracts, progress payments, guaranteed bank loans, and the accrual of income tax liabilities. On business balance sheets, the asset expansion was mainly in current items — inventories, receivables, and accumulations of cash resulting from profits and from limitations on capital expenditures; fixed assets expanded relatively little because much of the additional plant was government-owned. In terms of customary balance sheet analysis, the result was that dollar working capital went up rapidly, but the current ratio of short-term assets

to short-term liabilities went down. The divergent movement of these two indexes, which normally had moved in the same direction, produced a great deal of headshaking among business analysts as to whether the financial situation of war producers was improving or deteriorating.

This confusion was greatest among those analysts who were firmly oriented on asset patterns rather than on operational flows. An interesting contrast came from the military and government people concerned with getting out war production. Less concerned with the trappings of financial sophistication, they felt the important thing was to get operations up, and to devise ancillary methods of financing. It scarcely occurred to them that maintenance of particular balance sheet ratios had any independent importance.

Similarly, in approaching the financial changes involved in reconversion, many business analysts were deeply disturbed by the wartime distortion in asset and liability patterns, and wondered whether firms with such patterns could safely be entrusted with further bank credit to tide over the reconversion. In the interpretation of wartime financing and its implications for reconversion, as published in the *Federal Reserve Bulletin,* however, the sources and uses technique was utilized to view the problem in terms of *prospective operations,* and it was urged that financing be devised primarily with a view to facilitating these operations, without too much concern for (prewar) balance sheet norms.

I suspect that this wartime experience of fluid balance sheet patterns may also characterize the expanding small concern in peacetime. From the standpoint of the small businessman, the main job is to expand operations; the raising of funds is a subsidiary process to be determined by expediency. Where this is true, the patchwork way in which asset and liability patterns may develop during a period of aggressive growth reflects merely an historical conjuncture of each businessman's peculiar background, personal contacts, community institutions and the like. It follows that *average* behavior has little significance as a norm for sound or unsound development.

These are some of the reasons why a sources and uses of funds analysis that is preoccupied mainly with balance sheet changes may sometimes fail to be meaningful. *A fortiori,* preoccupation with the rigid conventions of ratio analysis may lead the analyst even farther away from understanding the dynamics of business finance.

PREVIOUS WORK BELOW THE GLOBAL LEVEL OF ANALYSIS

While I cannot at the moment provide a comprehensive review of previous sources and uses analyses with all the credit that is due to pioneer analysts, there are two important contributions that Mr. McHugh's paper overlooks.

One of these is the work of Ruth Prince Mack in the middle 1930's, which was later published under the title, *Flow of Business Funds and Consumer Purchasing Power;* the second is the developmental analysis by Federal Reserve Board economists over fifteen years, using sample data to construct a global analysis.

Mrs. Mack's study covered all three levels of analytical perspective, including extensive interviews with company executives, a grouping of financial statements of fifty-four large companies by industry, their comparison with global BIR data and, finally, the collation of these observations with independent estimates of capital formation and other series into a daring synthesis of inferences for the whole economy. At the time Mrs. Mack's book was published in 1940, I recall some readers who looked down their noses at the insubstantial statistical basis for Mrs. Mack's inferences. As we meet here ten years later, with the comforting knowledge of ten or perhaps fifty times the statistical data that she had, we can be less troubled by the thinness of some of her bases and recognize more fully the stimulating and rewarding hypotheses that fill her analysis.

Since Mrs. Mack's book came out there have been many statistical inquiries into the sources and uses of funds in particular industries. Mr. McHugh has mentioned the studies of five industries by Charles Merwin; there have of course been many other first-rate pieces of analysis done under the aegis of the National Bureau. Well known also are the continuing studies of the oil industry at the Chase National Bank, of the aircraft industry at the Harvard Graduate School of Business Administration, and a number of one-time studies at other universities.

The sources and uses analysis at the Federal Reserve Board is one of the ventures of longest standing in this field and had an interesting genesis. Back in the middle 1930's, when attention was centered on inventories and capital expenditures as a possible path out of the depression, some government officials were attracted by the popular view that changes in business inventories could be gauged by changes in bank loans, that capital expenditures were financed very largely by new security issues, and that changes in business cash were a measure of profit trends. There was considerable discussion as to the correctness of such pairing of particular assets and liabilities, but it could not be challenged effectively without statistical data. At that time (I think it was in 1936) Winfield Riefler suggested to Arthur Hersey at the Federal Reserve Board that he examine the financial statements of a few large companies which comprise a significant part of the total economy.

Hersey began with about fifty companies, tracing their sources and uses of funds from 1929 through the depression years. This period involved serious problems of estimation because of drastic revaluations of

assets, reorganizations and mergers. Descriptive footnotes in the investment manuals were frequently inadequate to determine the extent to which balance sheet changes represented bookkeeping transfers rather than flows of funds.

During the later 1930's, the SEC operated a WPA project which tabulated balance sheet and income accounts for nearly 900 companies covering the years 1935 to 1940. These tabulations were not available until one and a half to two years after the end of the period to which they referred, so that their use in analyzing current business developments was greatly limited. Casual inspection of the data showed also some inconsistencies in the classification of items from one large company to another and inadequate notes to discriminate between bookkeeping transfers and cash transactions. In some instances the surplus shown in the WPA tabulation for a particular group of companies differed appreciably between the end of one calendar year and the beginning of the next calendar year.

In view of these limitations in the SEC-WPA tabulations, the Federal Reserve Board analysts undertook a detailed review of the 900 companies in the tabulation, regrouped them by size and industry and, for years after 1939, continued the series by direct tabulation from published financial statements so as to have the data ready for analysis within six months of the end of each calendar year.

The next step in obtaining more significant data on sources and uses of funds was to improve the coverage of major industries by adding small companies. A cooperative arrangement was worked out with the Robert Morris Associates, an association of bank credit analysts, whereby their regular annual sampling of financial statements from bank credit files would be made available to the FRB for tabulation and analysis. Usefulness of back data from the Robert Morris Associates files was limited, however, by the lack of identification of firms, which prevented collating successive annual statements for a sources and uses analysis. To meet this difficulty and also to provide the necessary flexibility in reporting new wartime financial practices, new tabular forms were worked out providing space for five consecutive years of income and balance sheet data, all in the space of one and one-half letter size pages. Inevitably, of course, such a tabular form represented a compromise between the great detail available and potentially significant for large companies, and the rough grouping of all assets and liabilities under a few headings which represented the bookkeeping capabilities of some of the smallest firms. Under this cooperative arrangement, financial statements for as many as 2,700 manufacturing and trade companies became available for analysis for the five years 1940 through 1944. As was carefully pointed out in publishing the results, the sample of small firms did not include proportionate representation of

the unsuccessful small firms, but it did appear to be acceptably representative in terms of the relation of cash and plant accounts to sales.

Analysis of these data provided results of considerable significance to government policy formation. By the summer of 1943, for example, the Federal Reserve inquiry into the reasons for the shift from declining liquidity in 1941 to increasing liquidity in 1942 had disclosed factors which made it clear that the trend of liquidity was likely to continue upward for the rest of the war. In January 1944, the *Federal Reserve Bulletin* published the finding that in war industries the expansion of profits, total assets, and liquidity had proceeded more rapidly among small firms than among the larger companies. Subsequent published analyses showed how normal asset and liability patterns had been distorted by the impact of the war, and indicated some of the financial problems of reconversion which bankers and businessmen needed to begin considering. Still later in 1944, the sources and uses analysis, coupled with other data on industrial capacity, provided a basis for the judgment that there would be room after the war for a considerable amount of plant expenditures, and probably also for external financing, despite the large wartime expansion. A revision of this study was published in 1946 under the title *Private Capital Requirements*. Although the findings expressed in these articles were substantially contrary to popular impressions at the time, they have been vindicated by subsequent developments.

PROBLEMS OF TABULATION AND ESTIMATION

In this historical development of sources and uses data, the analyst has had to handle three types of problems. One has been to devise the most compact possible tabular form. For each company all the significant data for several successive years must be arranged on a single sheet sufficiently small to be manipulated readily. This requires consolidating many items with possible loss of significant information. Whether the loss of such information is serious depends, of course, on whether the development in question is sufficiently widespread so that its identification as a separate item would show up in aggregates for industries and for the weighted total of all industries. This means that the analyst cannot limit himself to examining industry totals, but must continually go behind them to individual company statements so as to be aware of new practices which may justify modifying his tabular form and issuing new instructions to his transcribers.

A second general problem of tabulation is to make comparable the financial statements of all the companies in a group. This requires first adjusting items in the financial statements to exclude the effect of revaluations and bookkeeping transfers, and then the regrouping of a variety of accounting practices (such as plant retirement charged to income, and

capitalized developmental expenses) so as to secure uniform treatment.

A third general analytical problem arises from the great diversity of asset and liability patterns, even within minor industrial subgroups, which makes almost every sample unrepresentative in some respects. This unrepresentativeness shows up in comparisons of the sample with related global totals (such as the Bureau of Internal Revenue data) in which cash, inventories, receivables, and plant accounts of the sample will each represent different percentages of the respective global totals. The analyst's dilemma in this situation is that if he uses a single ratio for blowing up all the items in his sample he will emerge with no discrepancy between estimated total sources and total uses, but his blown-up sample will not conform to the known facts regarding the global distribution of assets and liabilities. On the other hand, if he uses different ratios to blow up the several accounts in his sample, he will generally emerge with a discrepancy between total sources of funds and total uses — also a situation incompatible with reality.

I do not believe, however, that the problem posed by blowing up a sample warrants discarding the integrated sources and uses from such data as an approach to the global analysis and substituting what seems to be the Commerce Department's approach of attempting to reconcile independently established series of capital expenditures, cash, inventories, bank loans, security issues, and the like. Many of these established series are based mainly on statistics for medium-sized and large companies, with the experience of small firms being filled in by more or less tenuous assumptions. Even for such a series as bank loans, which appears to be based on 100 percent reporting, there is, I understand, some uncertainty as to the distinction between a loan and an investment.

In this connection, it seems significant that the blown-up sample data of the Federal Reserve on sources and uses of funds provided estimates of capital expenditures for the period 1935-39 which agreed within a very few percentage points with Terborgh's commodity flow estimates. The sample financial statements thus afforded the basis for a presumably reliable series extending through the war, when discontinuance of the Census of Manufactures made it impossible to continue estimating capital expenditures on the basis of commodity flows. To be sure, the estimates based on financial statements were higher than those estimated by the War Production Board on the basis of data reported to it. Subsequent investigation suggested, however, that the WPB estimates were low because of substantial evasion in reporting on the use of scarce materials, an evasion which was not carried through in the conventional financial statements.

This experience points, I think, to the conclusion that disparities among established global series of business operations can and should be handled by going back to a fully integrated analysis of sample data. Pro-

rating the disparities among independent series – a solution suggested by Mr. McHugh – merely glosses over the problem; it contributes nothing to our understanding. The basic problem here is variability in the pattern of sources and application of funds. We need more analysis of why this variability is so great, and it is a little disappointing that the Commerce Department has not thought it worth while to take up the global analysis of business finance by continuing the extensive sample tabulations developed at the Federal Reserve during the war.

True, the intensive analysis of individual company and industry vagaries is an expensive proposition and there may be some merit in the view that, with so many analysts focussing primarily on the individual company and individual industry, a government agency with a global viewpoint need not deal with data below the global level. Nevertheless, if we are to improve global estimates and to advance our understanding of the rich and complex matrix of business development, the global analyst does need to step down to the next lower level of perspective, and to work with small industry groups where there is virtually no disparity between total sources and uses of funds. In the same way, analysts of group movements will sometimes find that substantial differences are traceable to one or two concerns which may be shown by case analysis to be unique. Taking account of this fact will enable the analyst to improve the reliability of his blown-up sample.

In urging this viewpoint, I realize that I may be open to the criticism of advocating herculean labors to surmount mole hills. From a pragmatic standpoint, a rough prorating of disparities may be entirely reasonable in a policy-forming agency. In my own experience in drafting policy statements on the basis of statistical analysis, I have observed that recommendations are seldom affected by errors of 10 percent in the data, and sometimes a difference of 25 or even 50 percent will not alter the practical conclusions.

ELI SHAPIRO, *University of Chicago*

I should like to give, briefly, first some general observations on business financing which are related to Mr. McHugh's paper, and second some comments on specific points in that paper.

1

There is a generally widespread concern today over what has come to be known as the "shortage of equity capital." Arising from this concern is a

growing body of literature centered around the causes of this shortage and the fiscal and financial measures proposed as its remedy. In contrast, the two contentions which underlie the concern itself – namely, that a shortage of equity capital does exist, and that this shortage is bad – are not receiving the attention they deserve. One reason for this neglect stems, no doubt, from a tendency to treat these propositions as almost too obvious for discussion. This in turn is partly due to a logical confusion over the two senses in which the concept of equity funds can be used.

"Equity capital" refers sometimes to the proceeds from sale of new stock issues and sometimes to the amount of total non-debt (owner) component in a corporation's capital structure. It is in the first sense only that there is perhaps an obvious "shortage of equity." But it is only in the second sense that a shortage of equity can be said to be "bad."

The use of the term "bad" in the context of the above discussion relates solely to the availability of funds for financing gross private capital formation. Corporate savings which are equity funds enable firms to finance their investment plans just as surely as if their funds were obtained by stock issues in the capital markets.[1] There may be other reasons on grounds of economic and social policy for considering corporate savings undesirable, even though they permit capital formation to take place. Circumvention of the capital markets may lead to a less than optimum use of existing resources. Moreover, retained earnings may facilitate the growth of large firms which in turn leads to a concentration of control over economic activity. The relationship of corporate savings to the broader policy questions is not considered here.[2]

It is not obvious that a shortage of equity in the second sense exists.

[1] Some people have argued that internal sources of equity funds minimize the financing risks of management "since there is not even an implied commitment to pay out dividends on an increased number of shares." See J. I. Bogen, "The Importance of Equity Financing in the American Economy," *The Journal of Finance,* Vol. V, No. 2 (June 1950), pp. 171 ff.

[2] See R. F. Fowler, *The Depreciation of Capital* (P. S. King & Son, Ltd., London, 1934), p. 110. "If it is desirable to maximize the productivity of capital and to equate the marginal productivity of capital in all uses, it is clearly not desirable to obtain capital at below the market rate by 'ploughing back' dividends and depreciation quotas."

Also, M. Compton and E. M. Bott, *British Industry* (Lindsay Drummond Ltd., London, 1940), pp. 189-90. "Yet, where this criticism of financial manipulation by industrialists is stated, probably one of the most significant facts in the relationship between 'big business' and finance is that the development of the former has provided the initial money for the huge concentrations which have followed and also for the development of control over industry which, for some, is essentially financial."

Nor is it obvious that the shortage of equity in the first sense creates a situation which needs to be remedied. The two separate issues at stake are: 1) Is the industrial expansion taking place today being too heavily financed by fixed-liability (debt) forms of capital as against traditional risk-bearing (equity) forms? and 2) Does the current shortage of the new-stock-issues component of equity capital present a problem which requires remedy by changes in the fiscal-financial framework?

Historical series on sources and uses of corporate funds are of interest to a variety of persons for a multiplicity of reasons. One use of such data would be to compare the debt and equity sources of funds employed by corporations in this country over a period of years. This series would at least permit study of the respective sources of funds over the course of several cycles. It is to be hoped that the data can be carried back for a sufficient number of years to enable detection of any secular drift.

However, before the different sources of funds can be discussed in statistical terms, several words of caution about the uses of the data are in order. In the first place there is no "absolute" criterion against which we can judge the present proportion of equity to debt sources. There do exist some arbitrary numerical criteria which have been created to serve as standards of safety for institutional purchasers of securities. But these vary not only from industry to industry, but from one authority to another as well as from one decade to another. At best they are subjective interpretations of previous experience. It is my conviction that there is an unfortunate absence of any qualitative thinking about the appropriate volume of debt and equity funds needed to achieve high and steadily progressive levels of employment. Much more needs to be done by way of ascertaining the optimum volume and distribution of debt and equity sources of funds by industry and size of firm.

The historical relationship between equity and debt is the only standard of comparison we have available. Utilization of past data poses numerous problems. Reasonably reliable evidence of debt-equity sources of funds may be developed only for the period 1921 onward. This period shows a singular lack of uniformity and contains a succession of contrasting phases, none of which can be considered "normal." Moreover, the entire period contains at least two marked secular drifts which are both pertinent to the issue at stake but which cannot be taken into numerical account in a macroscopic study of "all corporations." These are: (a) a change in the nature of industry as a whole, with a relative growth in the public utility segment which traditionally employs a heavier debt structure than the trade and manufacturing sectors, and (b) a growth in the institutionalization of individual saving.

In the light of the problems raised above, even when an accurate series on corporate sources and uses of funds is published, there will of necessity be many limitations to be taken into account in interpreting the data. I am not asserting, but am merely suggesting as a hypothesis, that to be as well off as we were in the late twenties – judged by comparative sources and uses of funds – may not be as desirable as some would have us believe. It is possible that the methods of financing business in that earlier period contributed to the magnitude of the decline and the duration of the Great Depression.

2

In this part of the discussion, I want to comment on some specific points in Mr. McHugh's paper. I agree that Terborgh's residual method of estimating external sources of funds is fraught with the hazards of statistical error. I am sure that the Commerce people are already working on an independent estimate of external sources of funds, particularly new domestic capital issues for "real" investment. When this is completed the Terborgh data should be helpful as one of a series of benchmarks for comparison.

One troublesome problem about the late twenties is the amount of bank credit that was employed to finance individual purchases of new stock issues. While the sale of stock, however financed, supplies equity funds to corporations, the increase in individual debt resulting from bank lending for stock purchases may have serious repercussions on the economy even though it does not show itself in the financial structure of corporations. I expect this is a qualitative factor that will have to be considered in connection with the interpretations of the data on "real issues."

I am particularly pleased that Mr. McHugh has pointed out that the terms of equity financing in the postwar period are not far out of line with those prevailing in the middle twenties. Actually, it would appear that in the postwar years it is not that equity money is so dear as that debt appears to be so much cheaper than in the twenties. In other words, the spread between stock and bond yields has widened primarily because of a decline in bond yields.

If we are concerned that the cheapness of debt relative to equity may encourage debt financing and view this latter method of financing as undesirable because, by introducing rigidities in the cost structure, debt intensifies a downturn in economic activity, then the monetary and fiscal authorities, by keeping interest rates down, may be achieving short-run stability in economic activity at the potential cost of long-run instability. This argu-

ment rarely appears in discussions on the course of monetary and fiscal policy since 1945.

It is interesting to note that industrial stock yields in the postwar period were considerably higher relative to the twenties than were yields on utility common stocks over the same period. By virtue of price regulation, the propensity to retain earnings was less for the utilities than for the industrial corporations after 1945. Since industrials were able to obtain equity funds by retaining earnings, it was a fortunate circumstance that the cost of issuing common stocks for utilities was not noticeably higher after 1945 than it was during the twenties. Thus utilities which had large investment plans but were not able to raise the funds internally were not at a disadvantage as compared with the twenties in tapping the capital markets to sell common stocks.

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The work on the growth of business firms being done at the Johns Hopkins University[1] suggests an important phenomenon that is being overlooked in current discussions of sources and uses of funds analyses. The phenomenon is this: in the growing firm a definite association appears to exist between the stage and rapidity of its growth on the one hand and its sources of funds on the other. Failure, therefore, to take account of this association can lead to erroneous interpretations of aggregate sources and uses of funds data.

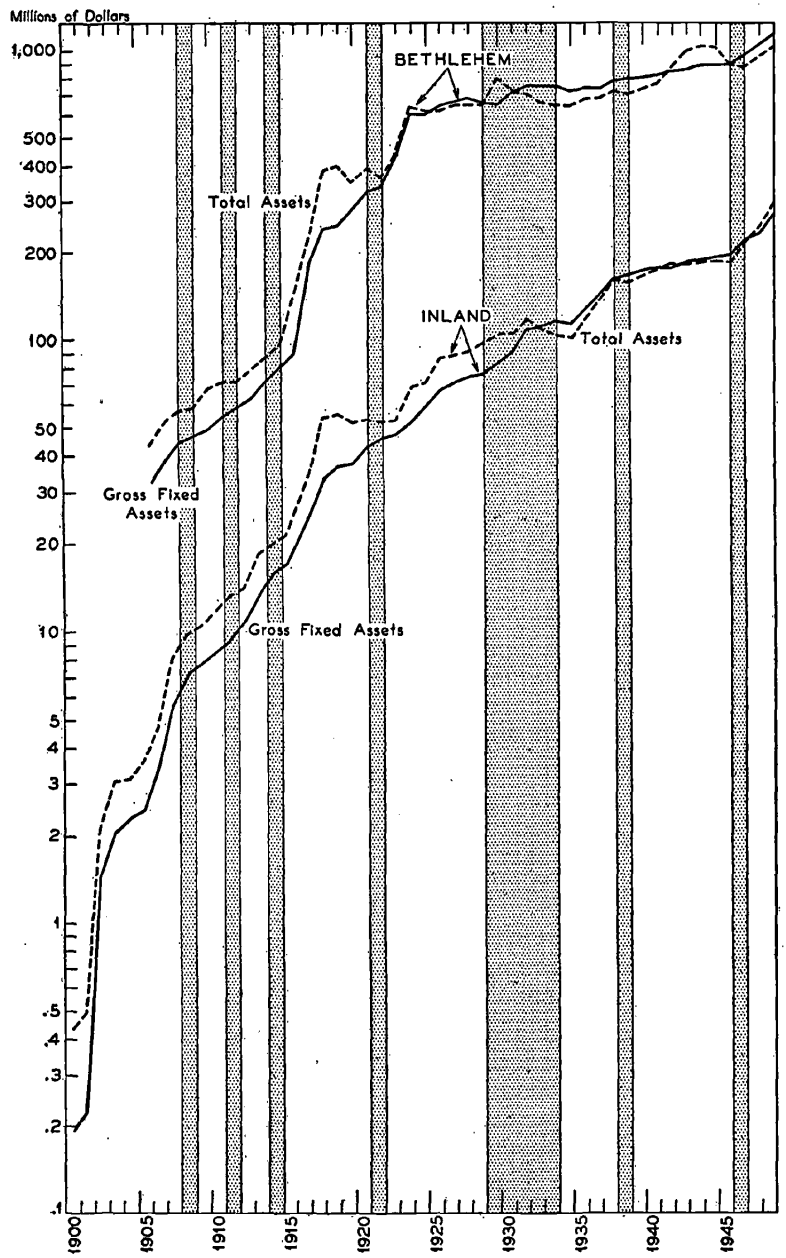
Perhaps I should preface an elaboration of the point with a few comments about our studies of the growth of business firms. We have experimented with a number of measures of growth, which are listed in Table 1. Each of the measures has drawbacks that need not be discussed here. I need only say that so far we have found one of the asset measures — namely, gross fixed assets — to be the best general measure of growth. Chart 1 shows the growth curves developed for two companies — the Bethlehem Steel Corporation and the Inland Steel Company.[2]

In studying growth, not only must the sources of funds for growth be determined, but the "immediate" and the "ultimate" sources of asset

[1] Under the supervision of Professor Fritz Machlup and the author, with the aid of a grant from the Merrill Foundation.

[2] For compilation of the figures on which the charts are based, I am indebted to two research associates. Gertrude Schroeder contributed the data on steel companies and Edgar O. Edwards the data on chemical companies.

Chart 1 – Total Assets and Gross Fixed Assets:
Bethlehem Steel Corporation and Inland Steel Company



A shaded year is one in which national income was lower than in preceding year.

Table 1

MEASURES OF GROWTH

1 PHYSICAL MEASURES

Capacity
Units produced
Units shipped
Units carried

2 ASSET MEASURES

Total assets = net tangible property (i.e., gross property account less depreciation, depletion, and amortization reserves) + cash + securities + inventories + current receivables + goodwill and patents when they represent a legitimate cost

Net assets = total assets − current liabilities

Gross fixed assets (i.e., the property account) = total tangible property in use = cumulative total of cash expenditures for new construction and property + the gross book value of fixed assets of acquired firms − gross book value of properties sold or scrapped

3 "OPERATIONAL" MEASURES

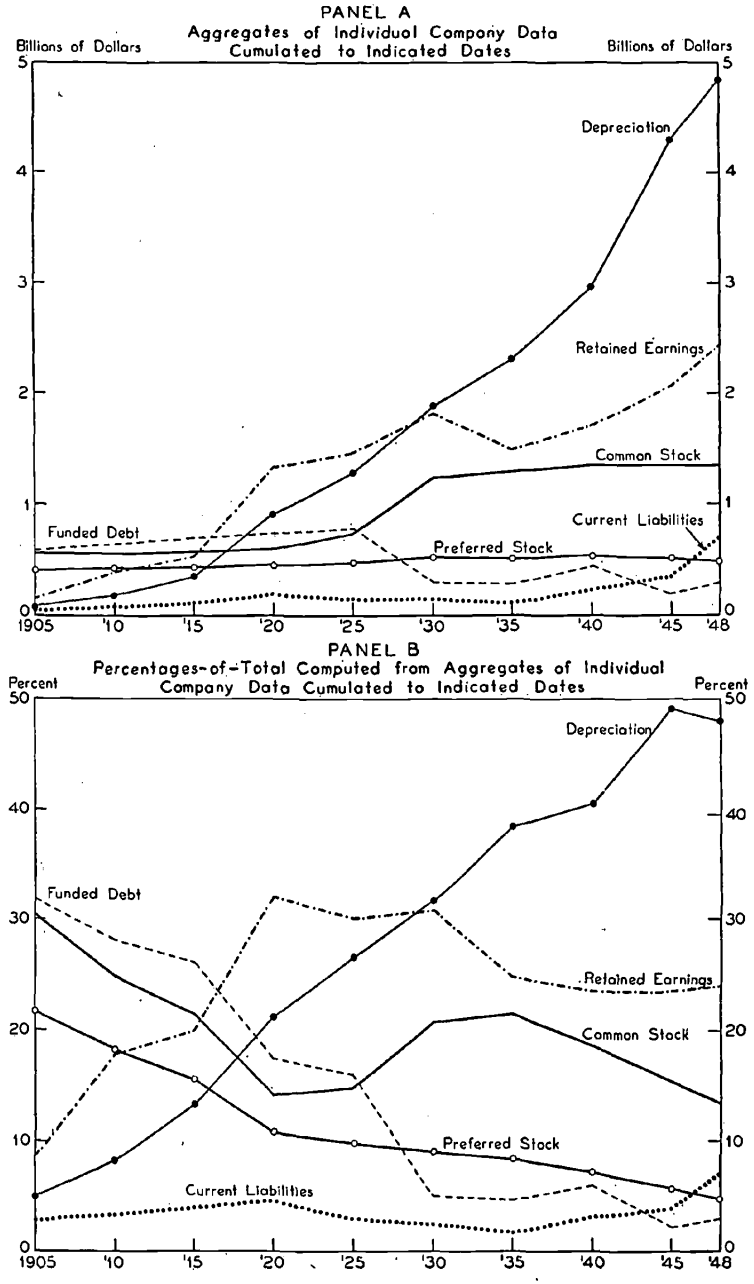
Gross revenue
Earnings before both interest and income and excess profits taxes
Average annual number of employees

financing must be ascertained. For the Bethlehem Steel Corporation, for example, we estimate that stock issues have provided about 26 percent of the "immediate" funds for gross plant additions, bonds and notes about the same percent, and retained earnings and depreciation about 48 percent. With the passage of time, bonds were paid off and other financial maneuvers took place.

The problem then arises: How should one show for any given date the sources of funds (that is, the "ultimate" rather than the "immediate" sources of funds) for asset financing? The next problem is to relate the sources of funds to the changing rate of growth of the firm.

Our work on the methods of computing the "ultimate" sources of funds has just begun, and we are far from clear about the best procedure. We have been experimenting with various forms of cumulative sources and uses of funds statements. Serious objections may be raised to cumulating sources and uses of funds statements that are designed to show short-period changes. The main point is that major revaluations of assets and unusual write-offs are frequently appropriately ignored in the short-period computations, but they should not be overlooked in the long run. Rather than treat these theoretical problems now, I merely want to present a few charts

Chart 2 — Chief Sources of Funds for Asset Financing: Six Steel Companies



that indicate an hypothesis to be tested when our study of financing is put on a firmer theoretical basis.

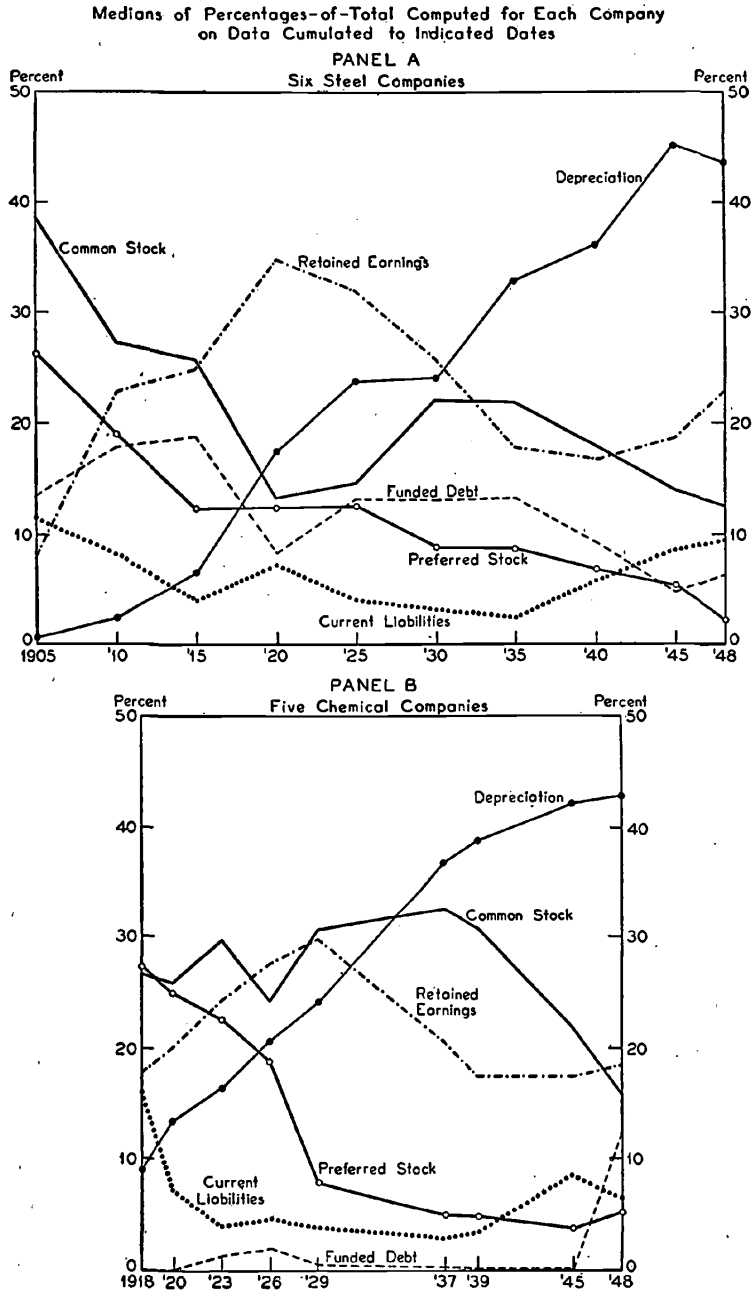
Chart 2 relates to six steel companies – Armco Steel Corporation, Bethlehem Steel Corporation, Inland Steel Company, Pittsburgh Steel Company, Republic Steel Corporation, and United States Steel Corporation. It shows the sources of funds for asset financing as revealed by the cumulative figures derived from annual sources and uses of funds statements. Panel A is in terms of dollars and as such is heavily weighted by the U. S. Steel Corporation. Panel B merely puts Panel A into percentage form. For Panel A of Chart 3, which also relates to these six steel companies, the percentages-of-total were computed for each company on the annual data cumulated at five-year intervals; the medians for each category were then computed and plotted. The panel shows, for example, that retained earnings by 1920 supplied the average steel company with approximately 35 percent of the funds for asset financing. These figures cannot be used without great care and knowledge of their limitations.

Now a word of explanation. All of the sources except depreciation are net. The retirement of preferred stock, for example, has been treated as a negative source rather than as a use of funds. The depreciation figures, however, are – with the exception of some minor adjustments – merely a cumulation of the annual depreciation charges against income. The other major point to keep in mind when looking at these charts is that mentioned in the beginning: namely, major revaluations and unusual write-offs have been ignored.

To see the similarity, if any, between two industries with large fixed assets, some data on five chemical companies (Atlas Powder Company, American Cyanamid Company, Hercules Powder Company, Mathieson Chemical Company, and Union Carbide and Carbon Corporation) were put together (Panel B of Chart 3). One important aspect in which Panel B of Chart 3 differs from Panel A of Chart 3 and Chart 2 should be mentioned: we decided not to cumulate the data at regular intervals but rather to cumulate to the peaks of successive business cycles – with war periods treated as a unit. The decision to use war terminations and business cycle peaks as points of compilation followed from preliminary exploration of cyclical and war patterns of financing.

Our work on firms that have grown rapidly and show much the same pattern of growth is still in its preliminary stages. Yet it seems permissible to offer the tentative hypothesis that asset financing during both the early and the very rapid stages of growth is carried on largely through stock and bond issues; that thereafter retained earnings are likely to become very important and, finally, that annual depreciation charges bulk large as a

Chart 3 — Chief Sources of Funds for Asset Financing: Six Steel Companies and Five Chemical Companies



source of funds for gross additions to plant. The rates of growth shown in Chart 1 and the changing "ultimate" sources of funds suggested in Charts 2 and 3 should be re-examined with this point in mind.

If later work confirms the hypothesis, failure to take account of the stages and the rapidity of the growth of the firms aggregated for a sources and uses of funds analysis could lead to erroneous conclusions. Let me illustrate. If companies are grouped by size (or industry) for study by means of sources and uses statements – a usual procedure – it might be shown that in a given period companies of a certain size (or industry) were relying upon stocks and bonds for their financing. Such an association could well be true, and yet be unimportant. The companies in the group might have been resorting to external financing because they were expanding rapidly – not because they were in a certain size (or industry) group. My proposal is not for an abandonment of the traditional size and industry groupings, but for a realization that knowledge of the rates and stages of growth of the concerns in a group may contribute to a fuller understanding of aggregate sources and uses of funds data.