

economic review

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DIRECT PLACEMENT OF CORPORATE DEBT

Two basic sources of capital funds are available to corporations. Capital funds may be (1) generated internally, or (2) acquired from outside sources. When capital is generated internally, a portion of a corporation's cash flow (net profits and depreciation charges) must be retained. When capital is acquired from external sources, a corporation may choose among alternatives. Thus, funds can be obtained through (1) the sale of equity issues, or (2) by borrowing. In either case, there is the further option of making (1) a public offering, or (2) a direct placement of securities with large institutional investors.

The raising of long-term external capital by means of a public offering of securities (debt or equity) is a familiar method used by corporations. The offering is handled by an underwriting syndicate which, either by competitive bidding or through negotiation, purchases securities from a borrowing company, and in turn sells the securities to individual

and institutional investors. Underwriters assume all of the marketing risk in return for a profit, which is represented by the spread between the price paid to the borrowing corporation and the price paid by the investor minus underwriting expenses.

The alternative to a public offering is the direct placement of securities with large institutional investors, a method that has assumed growing importance in recent years. Direct placement involves direct negotiation between borrower and lender and eliminates the underwriting function. In direct placement, a prospective borrower investigates, often with the aid of an agent, the possible sale of securities to one or a small group of institutional investors.¹ Terms and conditions

¹ An agent (usually a securities underwriter) will often bring borrower and lender together and assist in negotiating terms and conditions of the offering. The agent receives a fee for these services (usually paid by the borrower).

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of the offering are negotiated by borrower and lender, with the exchange of funds and securities taking place directly.

In recent years corporate demands for external capital have increased only moderately. As shown in Chart 1, corporate demands have accounted for a progressively smaller share of increasing total net demands for funds in capital markets.² In the early part of the period shown (through 1953) corporate demands accounted, on an annual average basis, for about 47 percent of total net funds raised. Since 1954, the annual average has been reduced to 22 percent. During the entire 1946-64 period, the ratio of corporate demands to total capital funds raised ranged from a high of 87.5 percent in 1949 to a low of only 8 percent in 1963.

In contrast, corporate bond offerings have represented a consistently large proportion of total corporate demands for external capital funds, averaging 68 percent per year during the 1946-64 period, and accounting in most years for the swings in total corporate demands. Interestingly in 1963, as the chart shows, the increase in the volume of corporate bonds actually exceeded that of total corporate funds raised, indicating a net retirement of corporate stock in 1963.

Corporate preference for borrowed funds (as contrasted to equity funds) when raising external capital has principally reflected the availability of larger amounts of corporate funds generated internally. That is to say, the increased availability of internally generated

² Net funds raised in capital markets include net long-term borrowing by the U. S. Government, state and local governments, nonfinancial corporations, foreigners, and net new mortgage debt.

1.

NET FUNDS RAISED in CAPITAL MARKETS



* Long-term securities and mortgages; 1964 estimated

Source of data: Board of Governors of the Federal Reserve System

funds—arising from larger depreciation allowances, investment tax credits, and the reduction in corporate tax rates—has contributed importantly to the smaller need for external equity capital. It should also be noted that the internal generation of funds through retained earnings improves the capital base and encourages the use of borrowing to satisfy external financing requirements. In addition, as compared with the cost of equity capital, borrowed funds often provide a less costly source of corporate working capital, since interest payments on borrowings are a tax-deductible expense. Moreover, a higher proportion of borrowed funds may exert favorable leverage on a corporation's net income.

Growth in the volume of direct placements of debt issues has been impressive, even though corporate reliance on external funds

has not increased very much in recent years. Table I points up the growing importance of direct placements. A somewhat dramatic comparison is found in the fact that the volume of direct placements (debt issues) in 1964 was 114 percent larger than in 1953. Less dramatic but nevertheless clearly reflecting the trend toward increased emphasis on direct placement of debt issues is the fact that the annual average for 1961-64 is substantially greater than for any other 4-year period shown in the table. Although not shown in Table I, it is noteworthy that direct placement of debt issues accounted for nearly 96 percent of all direct placements (equity and debt) in the 1953-64 period.

For 1953-64 as a whole, of all debt issues, direct placements accounted for an average of nearly 48 percent, with the proportion ranging higher in recent years, and reaching 67 percent in 1964. For 1953-64 as a whole, direct placements of debt issues accounted for 37 percent of all corporate securities sold, with this proportion also ranging higher in recent years, and reaching an all-time high in 1964 (see Table I).

REASONS FOR GROWTH OF DIRECT PLACEMENTS

Why have direct placements of corporate debt increased in importance in recent years? What have been the characteristics of such

TABLE I

New Issues of Corporate Securities, 1953-64

Year	Public Offerings and Direct Placements			Direct Placements of Debt Issues		
	Equity and Debt		Debt Issues* As % of Equity and Debt (Col. 1)	Volume (millions of \$'s)	As % of All Debt Issues (Col. 2)	As % of Equity and Debt (Col. 1)
	Volume (millions of \$'s)	Volume (millions of \$'s)				
1953	\$ 8,898	\$ 7,083	79.6%	\$3,228	45.6%	36.3%
1954	9,516	7,488	78.7	3,484	46.5	36.6
1955	10,240	7,420	72.5	3,301	44.5	32.7
1956	10,939	8,002	73.2	3,777	47.2	34.5
1957	12,884	9,957	77.3	3,839	38.6	30.0
1958	11,558	9,653	83.5	3,320	34.4	28.7
1959	9,748	7,190	73.8	3,632	50.5	37.3
1960	10,154	8,081	79.6	3,275	40.5	32.3
1961	13,165	9,420	71.6	4,720	50.1	35.9
1962	10,705	8,969	83.8	4,529	50.5	42.1
1963	12,237	10,872	88.8	6,158	56.6	50.3
1964	13,381	10,300	77.0	6,900	67.0	51.6
Average 1953-64 . .	—	—	78.3%	—	47.7%	37.4%

*Debt issues include mortgage bonds, unsecured notes and debentures and convertible bonds, notes and debentures.

Source: U. S. Securities and Exchange Commission

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TABLE II

Comparative Costs of Public Offerings and Direct Placements of Corporate Debt Securities

Size of Issue (millions of \$'s)	1951-53-55							1963
	Public Offerings			Direct Placements			Cost Differential	Underwriting Spread on Public Offerings (as a % of proceeds)
	Underwriting Spread (as a % of proceeds)	Other Expenses (as a % of proceeds)	Total	Fees (as a % of proceeds)	Expenses (as a % of proceeds)	Total		
Under 0.3	—	—	—	1.86	1.49	3.35	—	—
0.3—0.4	—	—	—	1.60	1.06	2.66	—	—
0.5—0.9	7.53	3.96	11.49	1.31	0.83	2.14	9.35	4.73
1.0—1.9	5.80	2.37	8.17	0.97	0.59	1.56	6.61	7.89
2.0—4.9	2.37	1.41	3.78	0.69	0.43	1.12	2.66	3.87
5.0—9.9	1.01	0.82	1.83	0.49	0.34	0.83	1.00	1.61
10.0—19.9	0.88	0.64	1.52	0.31	0.32	0.63	0.89	0.89
20.0—49.9	0.85	0.48	1.33	0.22*	0.22	0.44	0.89	0.80
50.0 & Over	0.88	0.32	1.19	—	—	—	—	0.79

*20.0 million dollars and over.

Sources: U. S. Securities and Exchange Commission and Investment Bankers Association of America

placements? In the pages that follow we attempt to answer these questions.

Initial Costs. The cost saving to borrowers is perhaps the most frequently mentioned reason for the growing use of direct placements. While supporting data are admittedly fragmentary, there is evidence that costs involved in negotiating direct placements are significantly less than the costs of floating a registered public offering.

Table II presents some earlier cost comparisons of public offerings and direct placements.³ For the time period studied, the data

indicate that in all comparable size classes the cost of negotiating a direct placement is significantly less than for floating a public offering. The cost differential (column 8) is particularly large for smaller issues, diminishing gradually as the size of issue increases. A major part of the wide differential is accounted for by the relatively high underwriting cost of public offerings (column 2). Nearly all costs of distribution are avoided in direct placements, with the exception of modest fees paid to agents or "finders". The differential is even wider when the services

³ The data for 1951, 1953 and 1955 are from *Cost of Flotation of Corporate Securities 1951-55*, U. S. Securities and Exchange Commission, U. S. Government Printing Office, Washington, D. C., June 1957. Total costs of public offerings include underwriters' compensation and all other fees and expenses incident to the offering, e.g., legal, printing, accounting and engineer-

ing expenses. Total costs of direct offerings include the fees paid agents or finders and other expenses of the offering.

Data for 1963 on public offerings are from a special study of underwriting spreads on 123 issues of debt securities. See *Statistical Bulletin*, Investment Bankers Association of America, Washington, D.C., June 1964.

of an agent are not required.

Lack of data prohibits a more up-to-date comparison of costs of public offerings and direct placements, but available evidence indicates that the latter continue to be less costly to arrange. A tabulation of underwriting spreads on public offerings of debt issues in 1963 (last column in Table II) shows that there have been only minor changes in this expense since the earlier U. S. Securities and Exchange Commission survey. In four of the seven size classes, spreads were higher in 1963 than in the earlier period, while in three size classes some reduction occurred. If expenses of direct placements and other expenses of public offerings have been essentially unchanged, cost comparisons would continue to favor direct sales, particularly for smaller issues.

Total Costs. While direct sales seem to involve lower initial costs to the borrower, the lack of data on costs of public offerings and direct placements over their life span makes it difficult, if not impossible, to compare total costs of capital raised through the alternative methods. A comparison of this type is important because differential costs of borrowing due to interest costs could appreciably reduce initial advantages.

Some light has been shed on the matter by a study that compared offering yields on public offerings and direct placements of Industrial-Financial-Service (IFS) borrowers, and which showed that yields on direct placements were consistently above yields on public offerings in the 1952-58 period.⁴

⁴ See Cohan, Avery B., *Private Placements and Public Offerings: Market Shares Since 1935*, University of North Carolina, 1961, pp. 16-17.

In that period, the annual spread between yields on public offerings and direct placements of IFS debt of \$1 million and over averaged 51 basis points, with a high spread of 86 basis points and a low of 30 basis points. While this comparison represents only approximate average yields—due to lack of data on such determinants of yield as quality, maturity, size, and time of offering—it does indicate the magnitude of yield differentials that may exist. To whatever extent a yield differential exists, it will at least partly offset the advantage of lower initial costs of negotiating direct placements.

Flexibility. A second important reason cited for the growth of direct placements is the convenience and flexibility provided to both borrower and lender. Because a direct placement involves a limited number of investors (lenders), borrower and lender are closely associated in negotiating terms and conditions of the offering. As a result, terms and conditions can be more precisely tailored to the requirements of both parties.

By paying a small commitment fee, a borrowing corporation can arrange in advance for future capital requirements. An advance commitment provides the issuer some insurance against market uncertainties, while granting the option of canceling the issue if the need for funds does not materialize. An investor is able to earmark funds for future investment and receive an immediate return from the commitment fee. Final negotiations to formulate terms and conditions that best suit the needs of both parties take place at the time of actual takedown.

After an issue has been placed, it is possible to renegotiate terms such as rate and maturity

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in light of changing requirements of either borrower or lender. Similar flexibility is not possible in widely distributed public offerings.

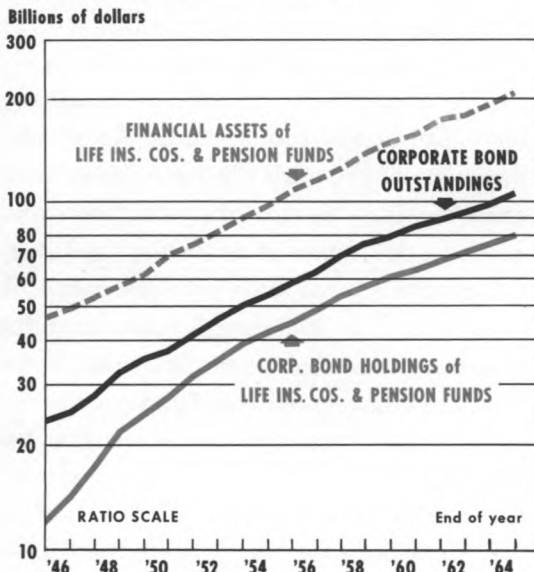
Institutional Demand. Another frequently mentioned reason for growth in direct placements is increased demand for corporate debt securities by institutional investors, which has not been matched by a corresponding increase in supply. As indicated in Chart 2, institutional holdings of corporate bonds more than doubled in the 1945-50 period, while the volume of corporate debt outstanding rose by only 58 percent. Since 1950, the rate of growth in institutional holdings has moderated somewhat, but the increase has more than kept pace with growth in outstanding corporate debt. In the 1945-50 period, corporate bond holdings of life insurance companies and pension funds on average amounted annually

to about three-fifths of total corporate bonds outstanding; since 1950, the proportion has averaged about three-fourths, on an annual basis.

As total assets of life insurance companies and pension funds have mounted in the post-war period, these institutions have faced the continuing task of employing funds in suitable investments until needed to meet claims. Since 1950, growth of total assets of these institutions has outstripped the growth of corporate bonds, as the stream of premium payments has added considerably more to reserves than is required to meet current claims. Since most claims are long-term in nature, investment policy is designed to maximize income, with less emphasis on liquidity and marketability. Corporate debt securities generally are well suited to this purpose, offering acceptable quality and a yield advantage over some other forms of long-term investment.

Institutional preference for corporate bonds is evidenced by the fact that holdings of these securities have constituted a relatively large proportion of the financial assets of life insurance companies and pension funds. For example, corporate bond holdings of life insurance companies and pension funds amounted, on average, to about 41 percent of total assets during 1950-64. Reflecting the slowdown in the rate of growth of corporate bonds outstanding, however, the proportion has declined in each year (with one exception) since 1957. In the way of comparison, the assets of these institutions rose by 67 percent from 1957 through 1964, while the volume of corporate bonds outstanding increased by only 50 percent. Hence, although

2.
FINANCIAL ASSETS of SELECTED FINANCIAL INSTITUTIONS and CORPORATE BOND OUTSTANDINGS



corporate bond holdings of life insurance companies and pension funds increased at a faster rate than outstandings, the ratio of holdings to total financial assets declined from 43 percent in 1957 to 39 percent in 1964.

Simplicity. Another factor that may have stimulated the increased use of direct placements is the burden of registration and disclosure requirements imposed on public offerings by the Securities Act of 1933. Direct placements were exempted from the provisions of the Act, thus providing a way by which borrowers could avoid the expense and inconvenience of compliance. While this factor may have been important initially, it is likely that other reasons cited above have been more important to the sustained increase in direct placements.

CORPORATE DEBT ISSUES AND ECONOMIC ACTIVITY

The pattern of growth in the volume of direct placements (debt issues) in the post-war period has been associated to a large extent with the nation's business and monetary cycles. As indicated in the top panel of Chart 3, direct placements have usually accelerated during periods of business expansion, and leveled off or declined prior to cyclical peaks. This pattern is explained to a large extent by the behavior of debt placements of manufacturing firms, which have historically accounted for a large proportion of direct placements—nearly two-fifths of the total during the 1948-64 period.

As indicated in Chart 3, the volume of direct placements of manufacturing firms has increased during the early stages of business

expansion, a period usually characterized by interest rates that were either declining or below previous highs (as measured by the rate on Aaa new corporate issues). As the economy has changed direction, with accompanying changes in interest rates, direct placements of manufacturing firms have tended to level off or decline, with the pattern often extending beyond a subsequent reversal in business activity as well as in interest rates. Some of this behavior is of course associated with traditionally early peaks in corporate profits during business expansions, in subsequent cutbacks in capital spending, and in correspondingly smaller needs for borrowed capital.

The importance of direct placements of manufacturers is suggested by the fact that in the years when the total volume of direct placements (debt issues) was rising—1951-52, 1956-57, and 1961-64—the former accounted for a larger percentage of the total (44 percent) than in years when volume was declining—33 percent in 1949-50, 1953, and 1958-59.

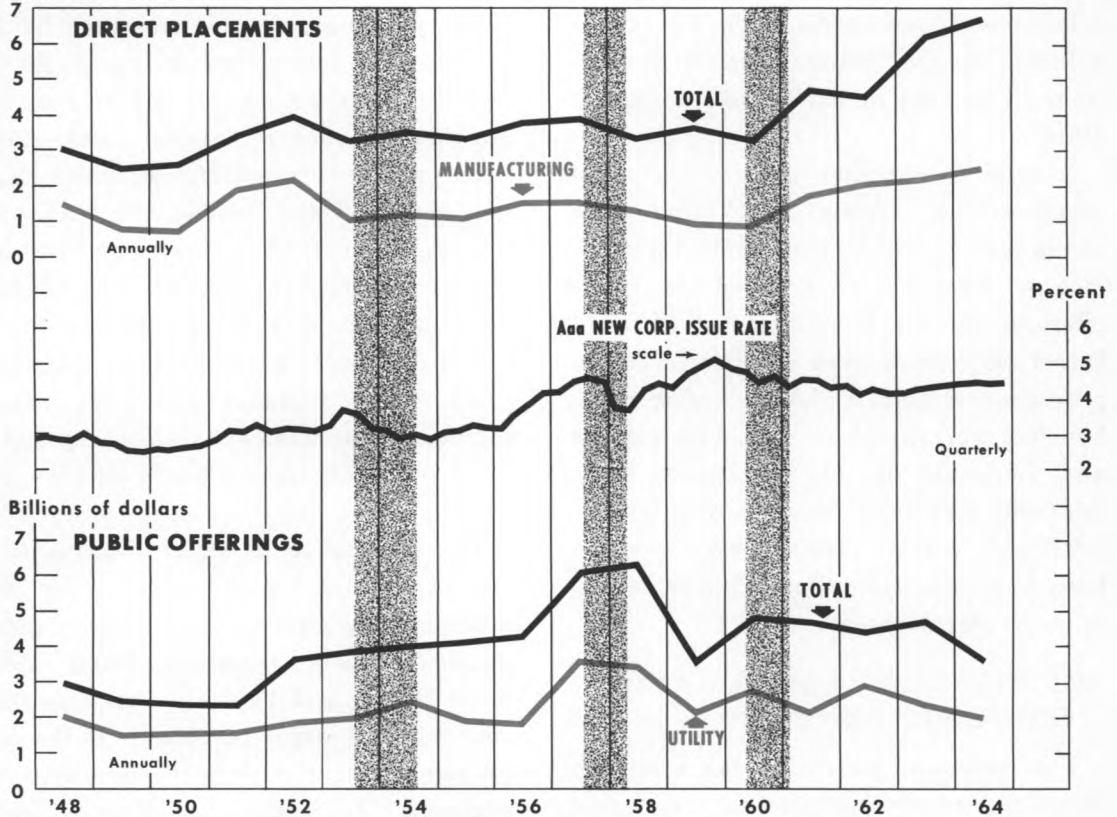
While placements of manufacturing firms have continued to be a major component in the total volume of direct placements, the relative influence has been moderated somewhat in recent years by the growing importance of other types of borrowers (especially real estate and finance firms). For example, while the volume of direct sales by finance and real estate firms accounted for 21 percent of all direct placements in the entire 1948-64 period, the percentage has been on the higher side in each year since 1958, accounting for nearly 29 percent of total placements in 1958-64. Such placements have been

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3.

NEW CORPORATE DEBT ISSUES and RELATED ECONOMIC VARIABLES

Billions of dollars



Sources of data: U.S. Securities and Exchange Commission; Board of Governors of the Federal Reserve System

particularly significant in the sharp rise in the total volume of direct placements since 1960.

Public offerings of corporate debt securities have shown a somewhat different relationship to monetary and business cycles than have direct placements. As indicated in the lower portion of Chart 3, the volume of public offerings has usually risen markedly in the later stages of business expansion, often continuing at high levels through subsequent recessions.

The pattern of public offerings mainly

reflects the behavior of public utility borrowers (gas, electric, water, and communications companies). The volume of offerings of these companies, which accounted for nearly 58 percent of all public offerings in the 1948-64 period, has often expanded during periods when the economy was depressed, in other words, following a peak in business activity. Such periods are usually characterized by improving availability of funds and declining interest rates. The fact that utilities often borrow heavily during periods of depressed economic activity also reflects the stability

TABLE III

Comparative Costs of Public Offerings and Direct Placements of Corporate Debt Securities
 Classified by Size of Issue and Industry of Issuer
 1951-53-55

Size of Issue (millions of \$'s)	MANUFACTURING			UTILITY ^a		
	Public (as % of proceeds)	Direct	Cost Differential	Public (as % of proceeds)	Direct	Cost Differential
Under 0.3	—	2.36	—	—	3.46	—
0.3—0.4	—	2.37	—	—	3.01	—
0.5—0.9	12.12	2.07	10.05	—	2.30	—
1.0—1.9	9.03	1.48	7.55	5.00	1.72	3.28
2.0—4.9	6.16	1.08	5.08	2.23	1.43	0.80
5.0—9.9	3.47	0.71	2.76	1.52	0.93	0.59
10.0—19.9	2.34	0.55	1.79	1.28	0.82	0.46
20.0—49.9	1.71	^b 0.46	1.25	1.20	^b 0.61	0.59
50.0 & Over	1.30	—	—	1.15	—	—

^aIncludes electric, gas, and water companies.

^b20.0 million dollars and over.

Source: U. S. Securities and Exchange Commission

associated with the demand for utility services as well as the near-guarantee of a target rate of return on investment from public utility regulation.⁵ An exception to the usual pattern of public utility offerings occurred in 1957, reflecting in large part the capital spending boom which reached a peak in that year. At that time, public offerings (including utility offerings) increased sharply, despite a rapid rise in the level of interest rates.

The predominance of public utility issues among public offerings, as indicated earlier, reflects in part restrictions that require many

⁵ In most instances, public utilities are not permitted to enter into direct placement agreements. The Public Utility Holding Company Act of 1935 prohibits such agreements by stipulating that specific security issues must be issued via competitive bidding. In addition, many state laws also require public issuance of public utilities securities.

companies to offer securities at competitive bidding. Moreover, costs of flotation in an underwritten offering of utility debt may be considerably smaller than flotation costs for other types of public offerings. This was clearly evident in the 1951-55 period, for example, according to results of the U. S. Securities and Exchange Commission study of flotation costs (see Table III). The relatively lower flotation costs of public offerings of utility issues reflects the generally higher quality of such offerings and the benefit of smaller underwriting spreads.

As indicated in the table, public offerings of manufacturing companies involved higher flotation costs than utility offerings, although the differential narrowed as the size of issue increased. In contrast, costs of direct placements of manufacturers were generally lower than those of direct placements of utility

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TABLE IV

Direct Placements of Corporate Debt Securities
 Distribution by Type of Borrower, Type of Security, and Size of Issue
 1963

<u>Type of Borrower</u>	Number of Issues	Percentage Distribution	Volume of Issues (millions of \$'s)	Percentage Distribution
Manufacturing ^a	453	37.3%	\$2,973	46.3%
Public utility ^b	128	10.5	604	9.4
Finance and real estate	397	32.6	1,787	27.8
All other ^c	239	19.6	1,057	16.5
TOTAL	1,217	100.0%	\$6,421	100.0%
<u>Type of Security</u>				
Mortgage bonds	46	3.8%	\$ 194	3.0%
Other notes and debentures ^d	1,137	93.4	6,125	95.4
Convertible bonds, notes & debentures	34	2.8	102	1.6
TOTAL	1,217	100.0%	\$6,421	100.0%
<u>Size of Issue</u> (in millions of \$'s)				
Under 0.5	244	20.0%	\$ 62	0.9%
0.5—0.9	182	15.0	120	1.9
1.0—2.9	357	29.3	594	9.2
3.0—4.9	124	10.2	455	7.1
5.0—9.9	139	11.4	883	13.8
10.0—24.9	114	9.4	1,603	25.0
25.0 and Over	57	4.7	2,704	42.1
TOTAL	1,217	100.0%	\$6,421	100.0%

^aIncludes mining and extractive companies.

^bIncludes electric, gas, water, and communication companies.

^cIncludes railroads, other transportation companies, commercial, and other businesses.

^dIncludes some issues secured by various kinds of collateral other than real estate.

Source: Investment Dealers' Digest

issues. As a result, the differential cost advantage in the use of direct placements was quite sizable for manufacturing issues, although the differential diminished as the size of issue increased.

EXPERIENCE IN 1963

Since the most recent complete data available on the volume of directly placed corporate debt issues are for 1963, a review of the experience during that year is presented

here to highlight the major characteristics of direct placements. The volume of direct placements of debt securities of domestic corporations amounted to \$6,421 million during 1963, representing a total of 1,217 individual issues.⁶ Table IV summarizes offerings in 1963, and presents a distribution of direct placements by type of borrower, type of issue, and size of issue.

In terms of both number of issues and dollar volume, manufacturing industries accounted for the largest share of direct placements in 1963, while companies in the finance and real estate field were second most important. These two categories of borrowers accounted for more than two-thirds of the number and nearly three-fourths of the dollar volume of direct placements during 1963. Public utilities accounted for only about 10 percent of both the number and volume of issues, while all other borrowers accounted for less than one-fifth of the number of issues and only one-sixth of the volume.

The pattern of direct placements is in marked contrast to public offerings in 1963, where public utility issues accounted for slightly more than one-half of the dollar volume and manufacturing firms for only one-fifth. Offerings by finance and real estate firms and all other borrowers accounted for

⁶ See "Corporate Financing Directory", *Investment Dealers' Digest*, Section II, July 29, 1963 and February 3, 1964. While totals reported are amounts contracted for in 1963, the latter are taken down over a period of time. For this reason, the total derived for domestic corporate debt issues does not correspond to that reported by the Securities and Exchange Commission. Despite an overstatement of volume, reported characteristics of the issues are revealing. The volume of foreign borrowing is not included.

the remainder of the volume of public offerings.

The summary of direct placements of corporate debt by type of security in Table IV shows that in 1963 the bulk of both the number and dollar volume took the form of unsecured borrowing (principally notes and debentures). The relatively small remainder was accounted for by mortgage bonds and debt obligations with some form of conversion privilege.

While relatively small issues accounted for the bulk of the number of placements, dollar volume was centered in a small number of large placements. Placements of more than \$10 million constituted about two-thirds of the dollar volume but only 14 percent of the number, while placements of less than \$3 million accounted for nearly two-thirds of the number but only 12 percent of the dollar volume.

Analysis of the size distribution of placements by type of borrower indicates there is no uniform pattern among industry classes (see Table V). Compared with other industry groups, a larger proportion of the placements of manufacturers was centered in large issues. Large issues (over \$10 million) accounted for nearly three-fourths of the total dollar volume of placements by manufacturers, compared with an average of about three-fifths for the other industry groups. A similar situation existed with respect to number of issues sold.

The dollar volume of issues in the intermediate size class (\$3 million to \$10 million) represented a fairly uniform proportion of placements of each industry group except manufacturers, where the degree of concentration was somewhat lower. The use of small

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TABLE V

Direct Placements of Corporate Debt Securities
 Percentage Distribution of Number and Dollar Volume
 By Size of Issue and Type of Borrower
 1963

Size of Issue (in millions of \$'s)	Type of Borrower							
	Manufacturing		Finance and Real Estate		Public Utility		All Other	
	Number	Volume	Number	Volume	Number	Volume	Number	Volume
Under 0.5	17.9%	0.8%	20.2%	1.1%	24.2%	1.0%	21.8%	1.2%
0.5—0.9	13.9	1.4	16.6	2.4	10.2	1.3	16.7	2.6
1.0—2.9	30.9	7.8	31.2	11.6	27.3	9.1	24.3	9.4
3.0—4.9	9.0	5.2	9.6	7.7	10.9	8.4	13.0	10.6
5.0—9.9	11.0	11.1	11.3	15.6	14.1	17.7	10.9	16.0
10.0—24.9	11.3	25.7	6.0	16.8	10.2	31.0	10.9	33.1
25.0 and Over	6.0	48.0	5.1	44.8	3.1	31.5	2.4	27.1
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Number	453	—	397	—	128	—	239	—
Total Volume (millions of \$'s)	—	\$2,973	—	\$1,787	—	\$ 604	—	\$1,057

Source: Investment Dealers' Digest

issues was most prevalent among finance and real estate concerns.

Using maturities and coupon rates as criteria, Table VI presents a summary distribution of direct placements during 1963 (maturity and/or coupon rate were not reported for all offerings). As shown by the table, a large number of issues were uniformly distributed among the three longest maturity classes, with nearly 85 percent of all issues due to mature in more than 10 years from date of issue. The dollar volume of placements was also heavily concentrated in over-10-year maturities, and the bulk of the total dollar volume (one-half in 1963) was accounted for by issues maturing in 20 years or longer.

While net interest costs of direct place-

ments cannot be evaluated because of lack of data, the distribution of reported coupon rates does provide an approximation of the range of borrowing costs in 1963 (see Table VI). Nearly three-fifths of the number and three-quarters of the dollar volume of placements carried coupon rates ranging from 4½ to 6 percent. Placements carrying rates of 4½-5 percent accounted for the largest single share of total dollar volume (nearly 29 percent), while the heaviest concentration in number of issues was in the 5½-6 percent range (nearly 26 percent). Issues carrying rates in excess of 6 percent accounted for a large share of the number of placements but a small part of the dollar volume.

Data on maturity and coupon rates by type

TABLE VI

Direct Placements of Corporate Debt Securities
 Distribution by Maturity and Coupon Rate
 1963

Maturity Class	Number of Issues	Percentage Distribution	Volume of Issues (in millions of \$'s)	Percentage Distribution
No maturity reported	77	6.3%	\$ 307	4.8%
Under 5 years	36	3.0	141	2.2
5 to less than 10 years	73	6.0	233	3.6
10 to less than 15 years	348	28.6	688	10.7
15 to less than 20 years	348	28.6	1,844	28.7
20 years and Over	335	27.5	3,208	50.0
TOTAL	1,217	100.0%	\$6,421	100.0%
Coupon Rates				
No coupon reported	116	9.5%	\$ 524	8.2%
Under 4.00%	2	0.2	10	0.2
4.00—4.49%	31	2.5	619	9.6
4.50—4.99%	175	14.4	1,846	28.7
5.00—5.49%	231	19.0	1,480	23.0
5.50—5.99%	315	25.9	1,378	21.5
6.00—6.49%	242	19.9	354	5.5
6.50% and Over	105	8.6	210	3.3
TOTAL	1,217	100.0%	\$6,421	100.0%

Source: Investment Dealers' Digest

of borrower reveal considerable variation in the distribution of direct placements among several industry groups (see Table VII). For example, public utility borrowing was heavily concentrated in long maturities and relatively low interest rates; the latter reflects the generally high quality of public utility obligations.

While not as heavily concentrated as those of public utilities, placements of manufacturers and finance and real estate firms were also centered largely in longer-term maturities. In contrast, offerings of borrowers in the all-other category were noticeably shorter

in maturity than those of other industry groups (possibly due to the relatively high proportion of such placements for which maturity was not reported).

For a relatively high proportion of non-utility placements the coupon rates were not available. Incomplete information indicates, however, that such placements generally carried higher rates than those of public utilities. For example, only 14 percent of the volume of public utility placements carried rates of more than 5 percent, compared with an average of 56 percent of the volume for other industry groups.

TABLE VII

Direct Placements of Corporate Debt Securities
 Percentage Distribution of Number and Dollar Volume
 By Maturity and Coupon Rate and By Type of Borrower
 1963

Maturity Class	Type of Borrower							
	Manufacturing		Finance and Real Estate		Public Utility		All Other	
	Number	Volume	Number	Volume	Number	Volume	Number	Volume
No Maturity Reported . . .	6.6%	4.2%	5.8%	1.9%	3.9%	1.0%	7.9%	12.6%
Under 5 years	1.4	0.7	4.7	3.5	2.3	0.2	3.4	5.5
5 to less than 10 years	7.5	2.4	5.8	4.0	—	—	6.7	8.5
10 to less than 15 years	26.0	10.4	40.8	15.7	3.1	0.5	26.8	8.9
15 to less than 20 years	38.6	37.6	22.7	23.0	9.4	6.1	29.7	27.2
20 years and Over . . .	19.9	44.7	20.2	51.9	81.3	92.2	25.5	37.3
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Coupon Rates								
No Coupon Reported . . .	9.3%	6.1%	11.8%	8.2%	0.8%	0.1%	10.9%	18.6%
Under 4.00%	0.3	0.1	0.3	0.6	—	—	—	—
4.00—4.49%	1.3	7.5	1.3	3.8	9.4	44.7	3.3	5.4
4.50—4.99%	9.7	24.5	11.8	38.3	45.3	41.2	10.9	17.6
5.00—5.49%	19.2	26.8	19.9	16.9	21.1	7.8	15.9	31.4
5.50—5.99%	29.8	29.8	24.4	15.9	17.2	2.2	25.5	18.3
6.00—6.49%	24.7	4.7	16.9	7.7	3.9	0.5	24.3	7.1
6.50% and Over	5.7	0.5	13.6	8.6	2.3	3.5	9.2	1.6
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Number	453	—	397	—	128	—	239	—
Total Volume (in millions of \$'s) . . .	—	\$2,973	—	\$1,787	—	\$ 604	—	\$1,057

Source: Investment Dealers' Digest

TABLE VIII

Corporate Bond Authorizations
Direct Placements
Reporting Life Insurance Companies

Year	Total Authorizations (millions of \$'s)	First Quality		Second Quality		Third Quality		Fourth Quality		Unclassified	
		millions of \$'s	% of Total	millions of \$'s	% of Total	millions of \$'s	% of Total	millions of \$'s	% of Total	millions of \$'s	% of Total
1960	\$2,271	\$16	0.7%	\$110	4.8%	\$593	26.1%	\$ 973	42.9%	\$579	25.5%
1961	2,702	30	1.1	160	5.9	676	25.0	1,260	46.7	576	21.3
1962	3,360	7	0.2	201	6.0	610	18.2	1,762	52.4	780	23.2
1963	3,408	18	0.5	223	6.6	676	19.8	1,713	50.3	778	22.8
1964	3,995	60	1.5	255	6.4	650	16.3	2,122	53.1	908	22.7

Source: Life Insurance Association of America

YIELD AND QUALITY CHARACTERISTICS

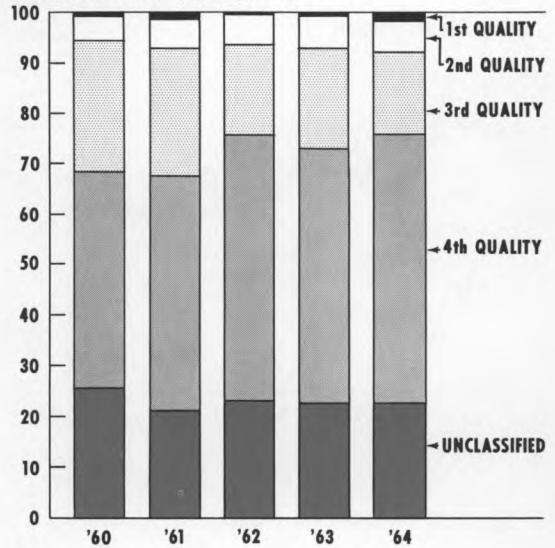
Additional insight into selected characteristics of direct placements of corporate debt is provided in data from the monthly reports of the Life Insurance Association of America. These reports present information on direct placement authorizations of life insurance companies, and are available beginning in 1960.⁷ As indicated in Table VIII, reporting insurance companies have committed increasing amounts of funds each year to the purchase of corporate bonds that are direct placements. During 1964, commitments totaled nearly \$4 billion, or 76 percent more than in 1960. In addition, the table shows that a smaller proportion of recent commitments has been made in direct placements that are in the higher quality grades.⁸ The quality distribution of authorizations of direct placements is depicted in Chart 4.

⁷ Data are from reports of "Average Yields on Directly Placed Corporate Bond Authorizations", published monthly by the Life Insurance Association of America since January 1960. The report is a tabulation of statistics on direct placements of corporate debt obligations for which commitments were made during each month by life insurance companies holding approximately two-thirds of the assets of all United States life insurance companies. The data cover bonds contracted for but not actually taken down during the months. The data are used here with permission of the Life Insurance Association of America.

⁸ Monthly volume and yield are reported on the basis of first, second, third, and fourth quality issues (corresponding to Moody ratings), and issues unclassified as to quality, including those with quality lower than fourth grade, convertible obligations, foreign corporates, oil production loans, and issues with which stocks or warrants are received. Higher quality issues, as used above, refer to those in the first through third quality grades.

4. CORPORATE BOND AUTHORIZATIONS Direct Placements

Reporting Life Insurance Companies
Percent distribution by quality ratings



Source of data: Life Insurance Association of America

The reduced proportion of commitments in higher quality obligations is at least in part a reflection of the less attractive yields available on these obligations, compared with other issues. It may also reflect the relative shortage of higher quality bond issues. As indicated in Chart 5, average yields on direct placement commitments of life insurance companies were consistently higher than those on both newly offered Aaa corporate bond offerings and outstanding issues of Baa rated bonds in 1960-64. The differential between the Aaa corporate new issue rate and that on direct placements averaged 1.16 percent during the period. The weighted average yield on direct placements also exceeded the average market yield on Baa rated corporate bonds (the differential averaged .58 percent in the 1960-64 period). In

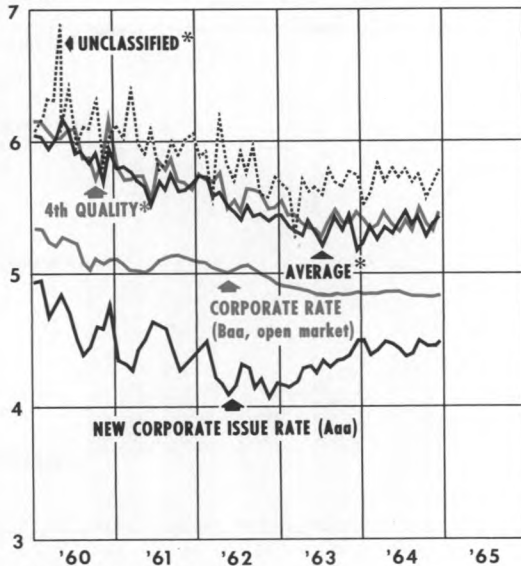
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5.

CORPORATE BOND YIELDS

Direct Placements and Public Offerings

Percent



*Yields on direct placements

Sources of data: Life Insurance Association of America; Board of Governors of the Federal Reserve System

addition, yields on first, second, and third quality direct placements (not shown in chart) were consistently above the Aaa new corporate issue rate, although the yield differential was considerably smaller.

Although yield comparisons show that yields on direct placements have exceeded rates on public offerings, the differential

narrowed considerably in the 1960-64 period. For example, the differential between the average rate on direct placements and the average rate on Aaa new corporate offerings declined from a high of 1.30 percent in 1962 to .92 percent in 1964. Compared with yields on Baa rated corporates, the spread also narrowed, from a high of .77 percent in 1960 to .53 percent in 1964. A narrowing differential reflects in part increased demand for direct placements, which in turn has exerted downward pressure on interest rates. In addition, increasing institutional acceptance of this type of financing, coupled with ready availability of funds, has resulted in a downward adjustment in the historical relationship between yields on direct placements and on public offerings. The average yield on direct placements of life insurance companies has been in a declining trend throughout the period under review, while the volume of such issues has risen in each year. The yield on direct placements in 1964 averaged 60 basis points less than the average yield in 1960. In contrast, the rate on marketable Aaa new corporate offerings in 1964 was only 24 basis points less than the average yield in 1960.

INPUT-OUTPUT RELATIONS OF THE AUTO INDUSTRY

The relative importance of the auto industry in the American economy is indicated by its contribution to the fluctuations of a number of major economic series.¹ If industries closely allied to autos were also taken into account, the role of autos obviously would be correspondingly larger. In this connection, 1963 data indicate that car sales, accessory equipment including tires, petroleum products, and the various services and fees associated with purchasing and maintaining automobiles, amounted to about 8.3 percent of Gross National Product, as compared with "auto product" as such, which accounted for 4.2 percent of Gross National Product.

This type of measurement, however, throws little light on the interindustry relationships in which the auto industry is involved; such relationships should be examined in order to improve understanding of both direct and

indirect factors surrounding the role played by the auto industry in the economy. In recent years, development of input-output tables has facilitated the study of such industrial interrelationships. Pioneered by Harvard economist Wassily Leontief, the input-output approach reveals, for a particular industry, both the utilization of goods and services from supplying sectors and the distribution of its output to other industries and final markets.

A comprehensive set of input-output tables, pertaining to the American economy of 1947, was published in 1952 by the Bureau of Labor Statistics. In 1964, a new, preliminary set of tables for the 1958 economy was issued by the Office of Business Economics of the U. S. Department of Commerce.

Since input-output tables indicate the detailed interdependence of industries, they are, in essence, studies of production functions; in other words, input-output tables

¹ See "Some Perspective on Autos", *Economic Review*, Federal Reserve Bank of Cleveland, January 1965.

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indicate how much output can result for individual industries, given certain quantities and combinations of inputs. Because the tables represent only a single year, however, they provide a technological portrait of the economy only at a particular time.

The input-output approach has several advantages. For the individual firm, the tables are useful in comparing the distribution of the firm's output with that of the entire industry in order to ascertain relative marketing emphasis. Also, the tables can show the permeating effects of factor price changes, particularly labor costs. In addition, it is possible to trace the effects of foreign trade on the domestic economy through examination of the inputs and outputs of those industries involved in foreign competition. Finally, since the tables indicate the requirements for increases in production, they can be especially important in times of national mobilization.

On the other hand, the tables possess certain inherent constraints. The most important, perhaps, is the assumption that all industries have a constant cost function, or in other words, that the cost per unit of output does not vary with changes in aggregate production. Also, it is implicitly assumed that price changes in particular factors of production will not induce the substitution of other factors. Moreover, there is the implication that technical coefficients of production do not change appreciably over time, which they probably do in a number of cases. The latter is an important consideration because of the lag that usually exists between the year to which the figures pertain and the publication date of the tables.

DIRECT INPUTS AND OUTPUTS

A concise picture of the auto industry, based on 1958 relationships, can be obtained by selecting appropriate items from the standard input-output tables.² Auto industry purchases from and sales to various industrial groups are indicated in Table I.³ In addition, the input side shows the value added by the auto industry while the output side reveals the distribution of output according to final demand.⁴

² The tables are shown in "The Interindustry Structure of the United States; a Report on the 1958 Input-Output Study", *Survey of Current Business*, November 1964, Office of Business Economics, U. S. Department of Commerce.

³ The industry is officially described as the "Motor Vehicles and Equipment Industry" in the 1958 Input-Output Tables. References to the industry in this article utilize the designation "autos".

⁴ "Inputs" do not include capital equipment. All capital purchases are treated as final expenditures and are included in the "gross private fixed capital formation" category of final demand of the supplying industry. (See output side of Table I.) This is done for two reasons: (1) it is consistent with procedures used in the National Income Accounts, and (2) since capital equipment obviously will produce output for more than one year, the relationship between capital purchases and output in a particular year will not be stable.

As an illustration of how capital equipment is treated in the input-output tables, assume General Motors buys a computer from Sperry Rand and sells a locomotive to New York Central Railroad. The purchase of the computer will be classified under the "gross private fixed capital formation" heading of final demand for the "Office, Computing and Accounting Machines" industry. But the transaction does not affect the accounts of the automotive industry. The sale of the locomotive will be classified the same way, but for the "Motor Vehicles and Equipment" industry.

TABLE I
Input-Output Schedule for the Auto Industry

<u>Inputs</u>	<u>Percent</u>	<u>Outputs</u>	<u>Percent</u>
Purchases from:		Sales to:	
Mining	0.1	Agriculture	0.2
Construction	0.3	Mining	*
Auto industry	29.0	Construction	*
Other manufacturing	30.1	Auto industry	29.0
Transportation, communications, & public services	2.6	Other manufacturing	0.4
Wholesale & retail trade	3.1	Transportation, communications, & public services	0.4
Finance, insurance, & real estate	0.7	Wholesale & retail trade	0.7
Services	2.7	Services	4.8
Govt. enterprises	0.2	Govt. enterprises	0.1
Other industries	2.1		
Total purchases	70.9%	Total sales	35.6%
Value added	29.0%		
		Final demand	
		Personal consumption	
		expenditures	39.2
		Gross private fixed capital	
		formation	15.2
		Net inventory changes	— 2.3
		Gross exports	3.9
		Federal government purchases	1.3
		State & local govt. purchases	1.9
		Total final demand	59.2%
		Transfers to other industries ^a	5.0%
TOTAL INPUTS^b	99.9%	TOTAL OUTPUTS^b	99.8%

*Negligible

^aRefers to the output of goods considered secondary to the industry, that is, those that would not come under the definition of goods produced by the "Motor Vehicles and Equipment Industry". Such goods are treated in this manner, rather than being redefined as the primary output of another industry, because of the difficulty of isolating the inputs necessary for the secondary goods. The assumption is made that the secondary output of an industry is a constant portion of its total output.

^bTotals are less than 100 percent because of rounding.

Source: Tables 1 and 2 in "The Interindustry Structure of the United States; a Report on the 1958 Input-Output Study", Survey of Current Business, November 1964, Office of Business Economics, U. S. Department of Commerce

It should be noted that although only 39.2 percent of the auto industry's output was distributed to consumer final demand, this figure represents only direct sales to consumers and does not include intra-industry transactions, for example, sales of bodies and accessories by subcontractors, for the purpose of furthering the production of other final demand goods. Chart 1 shows both the direct and indirect allocation of the auto industry's

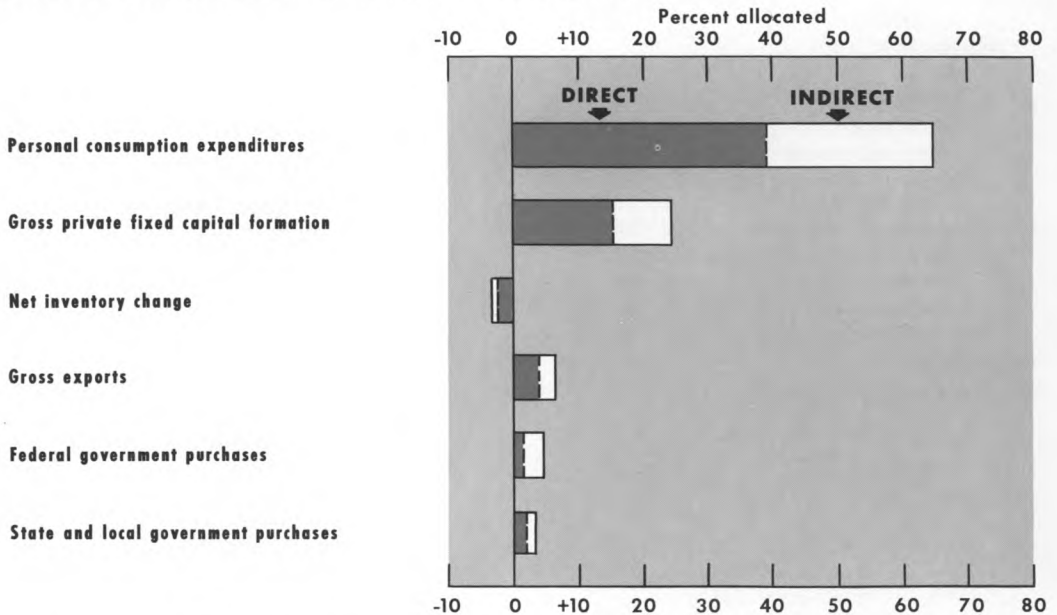
output to various final demand categories. Including the indirect aspect, it can be seen that 64.7 percent of the industry's output was devoted to personal consumption expenditures. (Note that the parts of the bars on the left side of Chart 1 correspond to the final demand portion of "Output" in Table I.)

It is evident from Table I that in terms of both inputs and outputs, the manufacturing sector of the economy is important to the

ECONOMIC REVIEW

1.

ALLOCATION of AUTO INDUSTRY OUTPUT to FINAL DEMAND



Source of data: Table B, "The Interindustry Structure of the United States; A Report on the 1958 Input-Output Study", *Survey of Current Business*, November 1964, Office of Business Economics, U.S. Department of Commerce

auto industry. Table II (A,B) shows the distribution of the sources of manufacturing inputs as well as the distribution of outputs to manufacturing. The auto industry provides to itself 29.5 percent of its total input requirements and nearly half of its requirements from manufacturing industries (29.5 percent compared with 59.1 percent). The remaining half of requirements from manufacturing industries is distributed widely among several industries. On the output side, virtually all of the auto industry's production allocated to the manufacturing sector is self-consumed.

The relatively high consumption by the auto industry of its own production should perhaps be explained. Automotive manufacturing can be characterized generally as the assembling of components produced by either

a firm's own subsidiaries or by independent manufacturers. Since the output of a component firm or division (producing, for example, sparkplugs, batteries, engines, frames, etc.) is considered final production from the viewpoint of the firm itself, there occurs a disproportionate amount of intra-industry sales. The high proportion of auto industry output allocated to self-consumption thus refers to sales of components rather than industry usage of cars or trucks.⁵

⁵ Only two other industries consume more of their own output than does the auto industry — "Broad and Narrow Fabrics, Yarn and Thread Mills" which consumes 33.9 percent of its own output and "Primary Nonferrous Metals Manufacturing" which consumes 29.6 percent. (See Table 1, "The Interindustry Structure of the United States; A Report on the 1958 Input-Output Study," *Survey of Current Business*, November 1964, Office of Business Economics, U. S. Department of Commerce.)

TABLE II
Auto Industry and Selected Other Industries

	Direct Purchases as % of Total Inputs of Auto Industry A	Direct Sales to Other Industries as % of Total Output of Auto Industry B	Direct Purchases as % of Total Output of Named Industry C	Direct and Indirect Requirements Per Dollar of Delivery to Final Auto Demand D
Manufacturing				
Motor vehicles & equipment	29.5% ^a	29.0% ^a	29.0%	\$1.43
Primary iron & steel manufacturing	8.5	0	10.3	0.20
Other fabricated metal products	3.5	0	12.5	0.06
Stampings, screw machine products & bolts	3.0	0	18.8	0.05
Rubber & miscellaneous plastics products	2.8	0	9.1	0.05
Misc. electrical machinery, equipment & supplies	1.5	*	21.0	0.02
Primary nonferrous metals mfg.	1.1	0	2.6	0.05
Metalworking machinery & equipment	1.1	0	7.0	0.02
Glass & glass products	1.0	0	10.6	0.02
Misc. fabricated textile products	0.7	0	6.6	0.01
Machine shop products	0.6	0	8.4	0.01
General industrial machinery & equipment	0.6	0	2.8	0.01
Radio, TV, & communication equipment	0.5	0	1.9	0.01
Aircraft & parts	*	0.2	0	*
Farm machinery & equipment	0.1	0.1	0	*
Nonmanufacturing				
Wholesale & retail trade	3.1	0.7	0.7	0.08
Business services	2.4	*	2.3	0.05
Gross imports of goods & services	2.3	0	4.9	0.06
Transportation & warehousing	2.0	0.4	1.2	0.07
Electric, gas, water & sanitary services	0.5	0	0.5	0.03
Business travel, entertainment & gifts	0.4	0	1.5	0.02
Auto repair & services	*	4.8	0.1	*
State & local government enterprises	*	0.1	0.1	0.01
Livestock & livestock products	0	0.1	0	*
Other agricultural products	0	0.1	0	0.01

*Negligible

^aConceptually, the direct purchases of an industry of its own output should equal the industry's direct sales to itself. However, a slight deviation is incurred because of computational procedures.

Source: Tables 1, 2 and 3 in "The Interindustry Structure of the United States; a Report on the 1958 Input-Output Study", *Survey of Current Business*, November 1964, Office of Business Economics, U. S. Department of Commerce

Of the various industries that contribute to automotive production, many are highly dependent on this industrial buyer. Table II (C) lists various industries and the percentage of their output going to the automotive industry. Excluding the fact that the automotive industry is its own biggest supplier,

the industry is the biggest single customer of the output of four other industries: Rubber and Miscellaneous Plastics Products; Stampings, Screw Machine Products and Bolts; Metalworking Machinery and Equipment; and Miscellaneous Electrical Machinery, Equipment and Supplies.

ADDITION OF INDIRECT REQUIREMENTS

Through utilization of the particular input-output table that shows total requirements (both direct and indirect) for various industries, it is easy to ascertain the effect that a change in production of one industry will have on others. For example, as Table II (D) indicates, a one dollar increase in final demand of the automotive industry will necessitate a 5-cent increase in the output of the rubber industry, a 20-cent increase in primary iron and steel manufacturing, a 7-cent increase in transportation and warehousing, and an 8-cent increase in wholesale and retail trade. Total requirements (both direct and indirect) per dollar of delivery to final demand of the automotive industry amount to slightly over \$2.65.⁶

At first glance, it may appear inconsistent that it should require \$2.65 of goods and services to produce one dollar of final demand. However, it must be kept in mind that the requirements' figure represents the total sales activity that leads to a specific amount of final output; the one dollar addition to final demand is the increment to Gross National Product while the \$2.65 is the financial sum of the intermediate steps in the production process that led up to the final demand output.

A simple hypothetical illustration can show the difference between direct and indirect requirements. Assume that the auto industry obtains all of its direct requirements from only three industries: rubber, steel, and glass.

⁶ Table 3, 1958 Input-Output Study, *Survey of Current Business*, November 1964, Office of Business Economics, U. S. Department of Commerce.

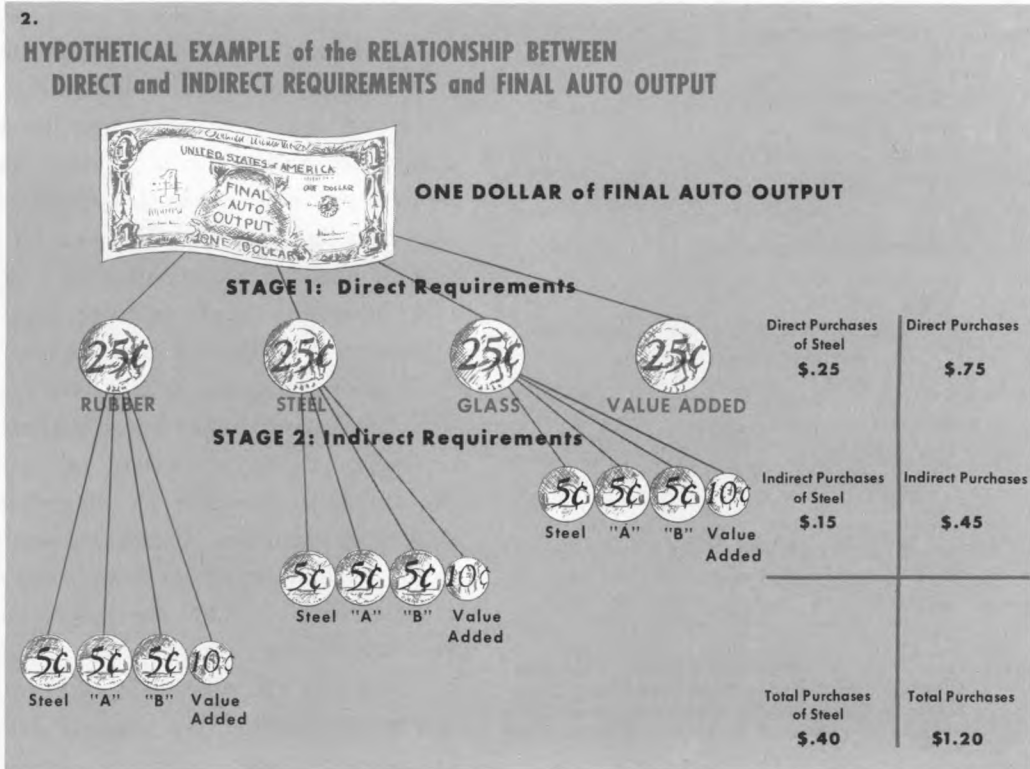
(See Chart 2.) These industries, in turn, obtain their direct requirements from the steel industry and two other industries. Thus, in stage 1, one dollar of auto output might necessitate 25 cents each of rubber, steel, and glass output.⁷ In stage 2, however, 25 cents of rubber production requires 5 cents each of steel, industry "A", and industry "B". The same holds true for obtaining 25 cents' worth of steel and glass. Therefore, considering only these first two simple stages, the hypothetical illustration would show that one dollar of final auto output necessitates 25 cents' worth of steel directly and an additional 15 cents' worth of steel indirectly. Also, the total purchases involved in order to produce one dollar of final auto output add up to \$1.20.

MEASUREMENT OF IMPACT ON OTHER INDUSTRIES

The auto industry ranks 7th out of 82 industries in relation to the amount of total requirements needed per unit of delivery to final demand. (See Table IV.) However, of the industries listed in Table IV, the auto industry contributes more to final demand than any other industry with the exception of "food and kindred products".⁸

⁷ The figures used for illustrative purposes here and in Chart 2 are much larger than would actually be found for individual industries involved in the second stage. In most cases the figure for an individual industry would be a fraction of a cent, in the context shown above. However, for all 82 industries the cumulative effect would not be negligible. See Table III for an example, using actual figures at the second stage for only three industries.

⁸ Table A, "The Interindustry Structure of the United States; A Report on the 1958 Input-Output Study," *Survey of Current Business*, November 1964, Office of Business Economics, U. S. Department of Commerce.



In view of the industry's absolute contribution to the economy and the relatively high amount of total requirements needed per unit of auto output, it can be concluded that changes in demand for automotive products would have more pervasive effects on the economy than would changes in demand for other products. This becomes especially important since it is known that changes in the demand for autos are more likely to take place than are changes in most consumer products. Since the replacement of a car is not an immediate necessity for most people, automotive purchases can be postponed in a recessionary period. For example, the industry's final sales declined to 4,244,000

units in 1958 from 6,115,000 the previous year.⁹

The pervasiveness of automotive manufacturing also can be demonstrated by looking at the value added of the industry relative to other industries. Value added, which is mainly comprised of labor costs, capital consumption allowances, and profits, represents what the industry adds to its total purchases to achieve its own final output. Since an inverse relationship exists between value added and dependence on other industries, a low value added figure indicates a relatively greater involvement with other industries. Of the 82

⁹ *Ward's Reports*.

TABLE III**Partial Example of Stage 2 Computation****One Dollar of Final Auto Output****Stage 1**

Direct Requirements:

Steel	\$.08543
Rubber	.02788
Glass	.01001

Stage 2

\$.08543 of Final Steel Output:

Steel	\$.01940
Rubber	.00027
(e.g., .08543 x .00318, which is rubber sales to steel per dollar of steel output)	
Glass	.00001

\$.02788 of Final Rubber Output:

Steel	\$.00006
Rubber	.00086
Glass	.00018

\$.01001 of Final Glass Output:

Steel	—0—
Rubber	\$.00004
Glass	.00048

Source: Table 2, in "The Interindustry Structure of the United States; a Report on the 1958 Input-Output Study", *Survey of Current Business*, November 1964, Office of Business Economics, U. S. Department of Commerce

industries listed in the 1958 input-output tables, only 7 have a lower value added per dollar of gross output than the auto industry.

Although there are 7 industries with a lower value added figure than the auto industry, an argument can be made that automotive production has a greater diffused effect on the economy. This can be accomplished through examination of how much of an industry's inputs is being supplied by a particular number of contributors.

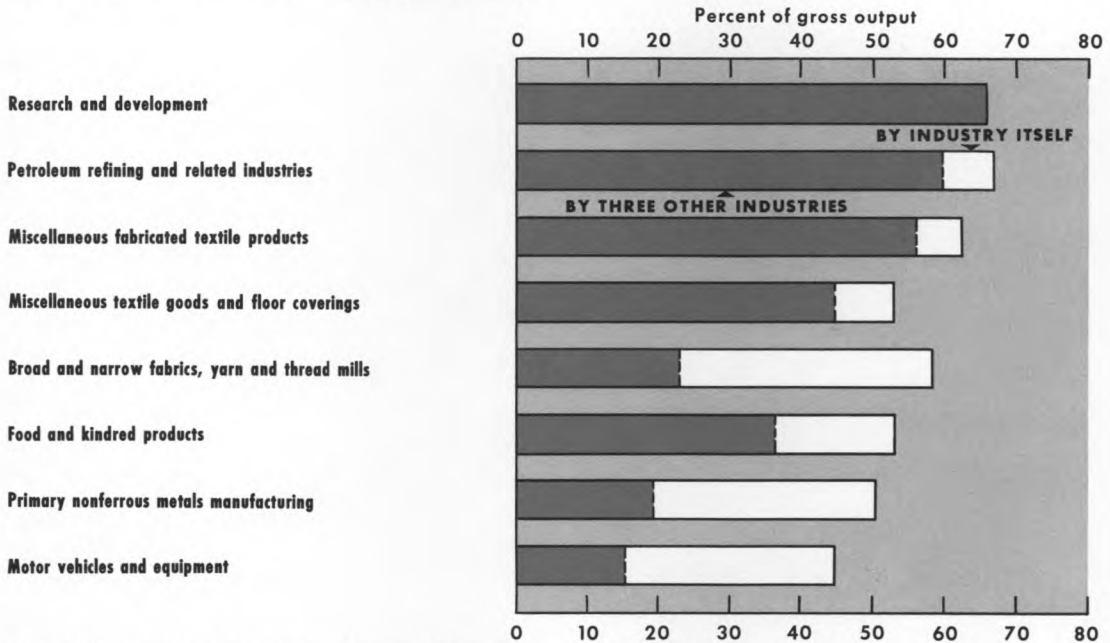
Chart 3 shows the auto industry and the 7 industries with lower value added figures in relation to the percentage of their direct requirements provided by their 4 leading supplying industries. It can be seen that all of the 7 other industries have more of their requirements provided by only 4 suppliers than has the auto industry. The significance of Chart 3 is that relative to other industries low in value added, the needs of automotive

TABLE IV**Industries Ranked in Order of Highest Total Requirements, Direct and Indirect, Per Dollar of Delivery to Final Demand**

<u>Industry</u>	<u>Total Requirements</u>
Office supplies	\$3.17407
Business travel, entertainment, and gifts	3.02038
Research and development	3.00884
Miscellaneous fabricated textile products	2.99101
Broad & narrow fabrics, yarn & thread mills	2.78866
Food and kindred products	2.66911
Motor vehicles and equipment	2.65126
Miscellaneous textile goods and floor coverings	2.58047
Apparel	2.54437
Metal containers	2.44158
Wooden containers	2.41874
Livestock and livestock products	2.41749
Lumber & wood products (except containers)	2.41471
Paints and allied products	2.40278
Ordinance and accessories	2.40194
67 other industries	lower values

Source: Table 3, in "The Interindustry Structure of the United States; a Report on the 1958 Input-Output Study", *Survey of Current Business*, November 1964, Office of Business Economics, U. S. Department of Commerce

3.
DIRECT REQUIREMENTS PROVIDED by the FOUR LEADING SUPPLYING INDUSTRIES
to the INDUSTRIES HAVING LOWEST VALUE ADDED



Source of data: Table 2, "The Interindustry Structure of the United States; A Report on the 1958 Input-Out Study", *Survey of Current Business*, November 1964, Office of Business Economics, U.S. Department of Commerce

production are spread throughout the economy. Consequently, a change in the industry's output would tend to have more widespread effects than would a change in the output of an industry that has a high value added and obtains most of its supplies from only a few sources.

SUMMARY

The pervasive impact of the auto industry has been shown through examination of several factors revealed in the input-output tables. Automotive production is highly dependent on other manufacturing industries; the total requirements, both direct and indirect, for a unit of auto output are quite high; the high ratio of total purchases to total in-

puts (which is the same as a low value added/inputs ratio) also contributes to the diffused economic effects of the industry. This is particularly significant in that a comparison of the 1947 and 1958 tables indicates that the percentage of personal consumption expenditures attributed to the industry has virtually doubled (1.67 percent compared with 3.17 percent).¹⁰

¹⁰ The industrial categories in the 1958 tables are quite different from those utilized in 1947. However, reference to the Standard Industrial Classification codes indicates that the 1958 category of "Motor Vehicles and Equipment" is equivalent to the 1947 categories of "Motor Vehicles", "Truck Trailers", and "Automobile Trailers". Therefore, the output of the single 1958 category was compared with the aggregate output of the three 1947 categories.

