Treasury-Federal Reserve Study of the
U. S. Government Securities Market

# DEALER PROFITS AND CAPITAL AVAILABILITY IN THE U. S. GOVERNMENT SECURITIES INDUSTRY, 1955-1965

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May 5, 1967

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## Summary and Conclusions

### A. Profits

The sharply deteriorating trend in earnings of U. S. Government securities dealers from 1961 through late 1966, following on the heels of several extremely successful years, has been offered as evidence that public and private innovations in financial markets have been detrimental to the profitability of the industry. This development has raised some concern about the future effectiveness of the industry in accommodating public ("official") and private activity in the market. This study examined the effects of these innovations, as well as the impact of the economic and institutional environment of the past decade, on the level of aggregate dealer profits and reached several conclusions. These are:

1. A longer view of dealer profit performance, from the late 1940's, reveals a strong cyclical pattern of earnings, suggesting that the recent low levels were not abnormally below other periods at the same stage in the business cycle. Profits in 1950, 1955, and 1956 were virtually zero or negative, and less than net income in 1961, 1962, and 1964. The principal feature of the early sixties was the extended and uninterrupted interval of economic expansion which was accompanied by a generally rising and perhaps more importantly, non-volatile level of interest rates.

2. The sharp reduction in dealer profits, for 1961-1965 inclusive, can be attributed in great measure to the negative effects of cyclically declining security prices on dealer positions, and tightening monetary conditions in general. Treasury bill yields rose in each of the five years (1961 through 1965) and long-term bond yields moved higher in every year but 1962. (In that year, there was some improvement in earnings.) Furthermore, with trading

activity in long-term securities observed to move inversely with monetary tightness, a declining volume of coupon transactions after 1963 led to reduced opportunities for profits on turnover. Finally, as the differential between long- and short-term rates narrowed with higher rate levels, the tendency for profitable carry was minimized and eventually eliminated. While sufficient data are not yet available for a complete analysis, early reports indicate that 1966, with the abrupt drop in security yields late in the year, was a very profitable period for dealers, lending support to the hypothesis that cyclical monetary conditions have dominated dealer profit performance.

3. In assessing long-term profitability in the dealer industry, the effects of public and private innovations in financial markets become relatively more important. Both sectors may have contributed to the most notable change, namely the nature of the business cycle itself. The well-defined and relatively short cycle of the fifties was supplanted by a new pattern, not perhaps as yet entirely visible or identifiable. If this pattern persists, it represents a changed environment for dealer operations and one to which dealers must attempt to adjust. This may mean, for example, longer periods of meager returns followed by a relatively short but highly profitable interval, with the need for catching the turn in the market taking on even greater significance.

One aspect of the changed cyclical environment, attributed to both sectors, which was apparently harmful to dealer earnings though unquestionably valuable on broader grounds, was the stability of interest rates. Not only should bid-asked spreads narrow with diminished volatility, making transactions less profitable, but potential gains from intracyclical price fluctuations (through appropriate, well-timed position adjustments) may decline.

4. The extent to which public innovation, in the broad sense of new and evolving fiscal and monetary action and debt management, guided the prolonged expansion and in doing so affected dealer expectations and perceived market risks, is difficult to measure. As a result, it is unclear whether these essentially exogenous decisions produced greater or less uncertainty about rate movements and thus were a hindrance or help to profitable dealer behavior. Some evidence suggests that dealers may have been less successful in adjusting positions in anticipation of price changes in the 1960's than in the late 1950's. Still, when a major rate reversal occurred in late 1966, dealers reacted swiftly and accurately, expanding their positions accordingly.

5. Developments in the private sector tended to affect dealer profits adversely. Increased access to the Federal fund market, and the advent of negotiable commercial bank certificates of deposit provided short-term lenders with more competitive alternatives to dealer loans and thus contributed to relatively higher financing costs. Both uses competed directly for funds that otherwise might have been more cheaply available to finance dealer positions. Furthermore, the increased competition of these instruments for short-term funds undoubtedly aggravated the pressure on dealers to reduce quoted spreads for short-maturity U. S. Government securities.

During the early 1960's, there was an apparent increase in competition among dealers, arising from the entry of three new bank dealers and the addition of one sizable nonbank dealer. Constrained by an exogenously determined level of aggregate transactions, this expansion in numbers may also have brought increased pressure on spreads, and retarded existing dealers' shares of rising transactions.

B. Capital

This study also investigated the prospects for adequate capital being available to accommodate future market operations,in light of the past deterioration in profits. Insufficient capital would act as a constraint on the desired expansion of positions and concomitant willingness to assume the risks associated with large positions. A circumstance of insufficient capital is presumably detrimental to efficient and effective market performance in accommodating public and private operations. This study found that the amount of capital possessed by nonbank dealers (sufficiently liquid to satisfy margin requirements) plus potentially available bank dealer funds is far in excess of any possible needs in the foreseeable future.

Estimated minimum capital requirements (for positioning average daily gross long positions of $4.6 billion in 1965) were between $40 million and $45 million. Of this total, nonbank dealer positions "required" $29 million. These same dealers reported aggregate invested capital of $261 million in 1965 and specifically allocated $86 million to their operations in U. S. Government securities. It is reasonable to assume that the amount of nonbank dealer capital which could conceivably be employed as margins approaches $100 million. Bank dealers, who accounted for one-third of estimated minimum margin requirements, in fact are not actually subject to such capital requirements since the bulk of their positions is financed with their own funds. These funds may be augmented readily through borrowing in the Federal funds market and issuing certificates of deposit. In short, the amount of capital potentially available for margining securities is enormous and, for the industry as a whole, is not a realistic constraint on the expandibility of these positions.

The adverse trend in earnings in the early sixties certainly had no perceptible effect on capital investment except to the extent that low

profits slowed the capital growth of existing dealers. In fact, three new banks and two nonbank firms entered the industry. The two recorded nonbank dealer departures were for reasons unrelated to market performance. The willingness of both old and new dealers to actually commit available capital to expand positions, however, is largely unrelated to the amount available. With the mobile or liquid nature of these funds, at diversified nonbank dealers as well as bank dealers, such resources may be shifted readily to activities which provide greater opportunities for profitable employment. If expected profits in U. S. Government securities operations are exceeded by potential gains in other activities or at least are not sufficient to adequately compensate for the risks of making markets, dealers are unlikely to commit capital to positioning Government securities. Nevertheless, there is no doubt that capital will be forthcoming if expected profits justify its utilization.

## II. Introduction

For the five years 1961 to 1965, average annual profits from dealer operations in U. S. Government securities fell substantially below the level attained in the previous five year period.[1] The decline in the sixties culminated in a net loss of over $14 million in 1965, when only three of twenty dealers were able to report a profit from these operations. This deterioration has caused some concern about the maintenance of a strong dealer industry and brought into question the effects of increased competition resulting from the entrance of additional dealers over the past few years as well as of recent innovations in official policies and operations. The task of this paper is twofold: (1) to specify and evaluate the factors bearing on dealer profitability, such as changing economic circumstances, industry structure, and operating techniques utilized by the Federal Reserve and Treasury, and (2) to ascertain the sufficiency of dealer capital under current market conditions, with a view to judging, in light of the profit situation, whether adequate capital will continue to be available to the industry so that its capacity to assume risk (and thus continue as a dealer market) and to absorb large official operations will not be impaired.

The discussion in this paper is derived largely from the operations of nonbank dealers due to the more straightforward nature of their activities and the existence of more reliable profit data for these firms; known or suspected variations in bank dealer operations or behavior are noted. The description and evaluation of dealer profit performance is severely constrained by the fragmentation and inadequacies of the data and by the absence of well-defined concepts underlying the data compilation. Much of the dealer data

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1. In this paper, virtually all references to operations in U. S. Government securities also include dealer activities in Federal Agency securities and, commencing in 1961, certificates of deposit. Where data include operations in bankers' acceptances and municipal and corporate securities, which are undertaken by many dealer firms, specific note is made.

presented here is meant to impart to the reader merely some awareness of the magnitude and direction of certain measurable aspects of dealer profits and related variables. The limitations of the data are numerous, and to avoid excessive details, only the more important qualifications are described.

1. Income data

Data on dealer income have been gathered from three separate sources. Differing in their construction and coverage, these disparate series present the most serious constraint to meaningful inter-period income analysis. The earliest series on dealer earnings is found in the study of the Government securities market made by Meltzer and von der Linde for the eleven years from 1948 to 1958.[2] Annual gross income and expense figures are shown for "all reporting dealers" (bank and nonbank) along with several subcategories of income and expense, including net profits. This series incorporates total earnings and expenses of the diversified nonbank dealers but only the U. S. Government securities operations of the banks. Details on reporting procedures and methods of allocating income and expenses are unfortunately absent. The series includes the five bank dealers and twelve nonbank dealers trading with the System Open Market Account in 1958,[3] although this was not the exact composition of "authorized" dealers in each of the eleven years, as is noted in the discussion of dealer capital.

The second series on dealer profits (hereafter the FRB--NY series) was assembled by the Federal Reserve Bank of New York for the six years prior

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2. Meltzer, Allan H., and Gert von der Linde, A Study of the Dealer Market for Federal Securities, Joint Economic Committee, 86th Congress, 2nd Session, (Washington, D. C.; Government Printing Office, 1960).

3. The seventeen dealers were: Bankers Trust; Chemical Bank New York Trust; Continental Illinois National Bank and Trust; First National Bank of Chicago; Morgan Guaranty Trust; Bartow Leeds & Co.; Briggs, Schaedle & Co., Inc.; C. F. Childs & Co., Inc.; C. J. Devine & Co.; Discount Corp.; First Boston Corp.; Aubrey G. Lanston & Co.; New York Hanseatic Corp.; Wm. E. Pollock & Co., Inc.; Chas. E. Quincey & Co.; D. W. Rich & Co., Inc.; and Salomon Bros. & Hutzler. (See ibid, p.2)

to the regular reporting program initiated in 1964. In this series, data for the Government securities operations of individual firms were collected on a monthly basis from 1958 to 1963; procedural and allocative details are again missing. This series was the only one with sufficient observations to permit statistical analysis, which was undertaken despite known shortcomings in the data. Due to the inability of most dealers to separate trading profits from interest income on Treasury bills, and differences among dealers in classifying a number of income and expense components, the series used for measuring profits is that of trading profits plus carry. Of course, use of this combined profit concept, and the absence of a trading profit or carry breakdown between bills and coupon securities, may mask or distort relationships between each component and other variables.

Finally, partially disaggregated data on individual dealers are available from the reporting program initiated for nonbank dealers in 1964 and bank dealers in 1965 by the Market Statistics Division of the Federal Reserve Bank of New York. These figures cannot be directly related to the earlier series but are, nevertheless, a more reliable and detailed statement of actual profit performance. A short analysis of aggregate income statements for these two years is presented in Appendix A. Again, the inability to segregate bill trading profits from interest accrual, plus diverse allocative practices, preclude exact inter-firm comparisons of trading profits or carry.

## III. Dealer Profit Performance

This section schematically describes the elements of dealer income and expense, and then explores the impact of postulated relationships between selected exogenous variables and observed profit performance. The testing of these relationships utilizes both visual and regression analyses; naturally, evaluation of the results must be interpreted as more suggestive than conclusive evidence that the perceived effects are valid.

Briefly, the behavior of net income and its broader contributing components (trading profits, carry, and operating expenses) may be reviewed. The data, presented in Chart I (and Table I) are linked for the three successive series despite several discrepancies. The Meltzer-von der Linde data cover, as previously noted, all operations of participating nonbank dealers while the other two series reflect only the Government securities operations. Net carry, in the FRB--NY figures, had to be combined with trading profits because several dealers reported their bill income with trading profits while others included it with interest earned. In any event, valid estimates of annual net carry throughout the entire 1948-1965 interval were impossible due to the aforementioned problem of separating trading profits from accrued discount on bills.

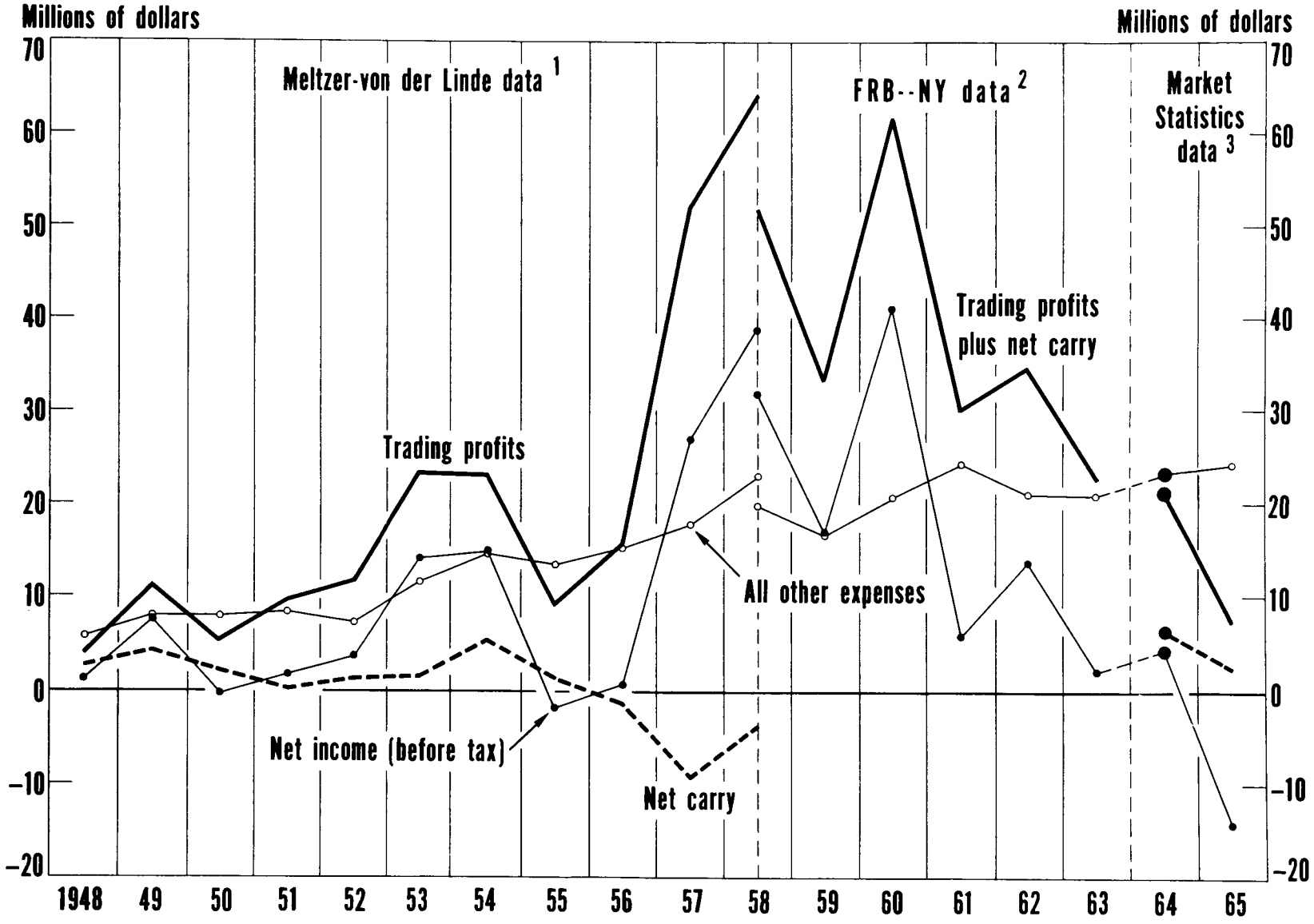
For both the Meltzer-von der Linde and FRB--NY series, gaps in the figures submitted by individual dealers, particularly with regard to operating expenses, necessitated some interpolation from subgroups of dealers in arriving at aggregate income and expense levels. In 1964, as noted earlier, statistics on the bank dealer operations were not collected at all; the industry figures shown in Table I include bank dealer income and expense estimates based on nonbank dealer results and data obtained informally from several dealer banks.

Several conclusions may be drawn from the linked series, however, despite these shortcomings. First, it is quite evident that trading profits have been the primary determinant of net income and that the extreme volatility of the former has led to wide fluctuations in the level of net income.[4] The movement of trading profits, in turn, appears to coincide (inversely) with the business cycle. Years of high trading profits were generally associated with

4. Data on the relative contributions of capital gains or losses and spreads ("turnaround" prices) to these swings in trading profits are not available. However, the behavior of these two components are examined in later sections.

Chart I

# INCOME AND EXPENSES OF U. S. GOVERNMENT SECURITIES DEALERS, 1948-1965*




* See note accompanying Table I for a further description of the data.

1. Figures are for all operations of nonbank dealers and for the U. S. Government and related securities operations of bank dealers.
2. Figures are for operations in U. S. Government and related securities. Trading profit and carry figures were not available separately.
3. Figures are for operations in U. S. Government and related securities. In 1964, bank dealer income and expense data were not collected. Estimates for the industry in that year were based on nonbank dealer data.

Table I
Income and Expenses of U. S. Government
Securities Dealers, 1948-1965

(In millions of dollars)

| | Trading profits (1) | Net carry (2) | Trading profits plus carry (3) | Operating expenses (4) | Net income (before taxes) (5) |
|---|---|---|---|---|---|
| | | | Meltzer-von der Linde data* | | |
| 1948 | 3,796 | 2,687 | 6,483 | 5,689 | 1,051 |
| 1949 | 11,127 | 4,264 | 15,391 | 7,992 | 7,710 |
| 1950 | 5,153 | 2,125 | 7,278 | 8,039 | - 319 |
| 1951 | 9,721 | 99 | 9,820 | 8,449 | 1,829 |
| 1952 | 11,715 | 1,177 | 12,892 | 7,374 | 3,713 |
| 1953 | 23,392 | 1,549 | 24,941 | 11,574 | 14,060 |
| 1954 | 23,215 | 5,414 | 28,629 | 14,680 | 14,924 |
| 1955 | 9,200 | 1,293 | 10,493 | 13,491 | - 1,881 |
| 1956 | 15,746 | -1,315 | 14,431 | 15,333 | 639 |
| 1957 | 52,125 | -9,151 | 42,974 | 17,893 | 27,043 |
| 1958 | 64,288 | -3,827 | 60,461 | 22,960 | 38,840 |
| | | | FRB--NY data# | | |
| 1958 | | | 51,724 | 19,909 | 31,815 |
| 1959 | | | 33,452 | 16,602 | 16,850 |
| 1960 | | | 61,631 | 20,609 | 41,022 |
| 1961 | | | 30,037 | 24,324 | 5,713 |
| 1962 | | | 34,699 | 21,024 | 13,675 |
| 1963 | | | 22,671 | 20,773 | 1,898 |
| | | | Market Statistics data† | | |
| 1964 | 21,100 | 6,400 | 27,500 | 23,300 | 4,300 |
| 1965 | 7,304 | 2,333 | 9,637 | 24,238 | -14,346 |

* Data are for all operations of the 12 nonbank dealers and the U. S. Government securities operations of the 5 bank dealers authorized to trade with SOMA in 1958. "Gross earnings" (not shown) were reported by all dealers; items in the table were extrapolated from complete reports submitted by from 8 to 13 dealers. Trading profits plus carry minus operating expenses do not equal net income due to the omission of "other earnings". Trading profits on Treasury bills were reported with interest income by most, if not all, dealers. The data are derived from the regular dealer financial statements. Since most have different fiscal years, the data for individual dealers do not cover a common time period. (Continued on next page.)

recessions and declining interest rates and years of low returns with expansion and rising rates. Furthermore, poor years have often meant net aggregate losses for the industry, as in 1950, 1955, 1965, and perhaps 1948 and 1956 if profits for the Government securities operation alone are considered.

Second, the peak profit years, 1957, 1958, and 1960, appear as a hump in the earnings picture rather than as the culmination of a well-defined and subsequently reversed trend. It may thus be quite misleading to compare and contrast profits in only the two halves of the decade from 1956 to 1965. Rather than characterizing the 1961 to 1965 period as unusually poor, it would seem just as valid to view average earnings in the earlier five years as abnormally swollen.

A. The income "equation"

Broadly speaking, the net income (before taxes) accruing to dealers from their Government securities operations represents the sum of trading profits and carry minus operating expenses.[5] In order to identify the exogenous variables influencing dealer earnings and to diagnose their effect on earnings over the past decade, the elements of income and expense can be viewed as the products of independent (or possibly interdependent) components.

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(Footnote continued from preceding page.)

# Data are for U. S. Government securities operations of all dealers. Trading profits plus carry were reported by all dealers; operating expenses and net income were extrapolated from complete reports of 5-8 dealers. "Other income" is included in trading profits plus carry. The data are based on calendar-year reports.

† Data are for U. S. Government securities operations of all dealers. Bank dealer income and expenses were estimated for 1964, based on nonbank dealer data in 1964 and 1965, and bank dealer data in 1965. Trading profits on Treasury bills are included in interest earned. "Other income" is not shown. Data on trading profits are adjusted for unrealized capital gains and losses at year-end. The data are based on calendar-year reports.

5. Hereafter, the terms "dealer" and "dealer function" refer only to the Government securities operations of participating firms.

Trading profits, to take the primary element, are the sum of differences between the sale and purchase price of each security sold. The sale-purchase price differential can be conceptually split into two separate facets: (1) the "spread", which represents the bid-offer quotations at which a dealer would simultaneously buy and sell a security; (2) the capital gain or loss associated with the movement of security prices, that is, a shift in both bid and offer quotations while securities are held in position. The contribution of spread to trading profits depends upon sales volume while the effect of price change is contingent on the size and composition of positions at the moment such change occurs.

The second element of dealer income is carry, the difference between interest earned on securities held in position and the interest cost of financing them. Again, carry income (or loss) is the product of the yield-cost differential and the amount of securities financed, summed over time. At this point, no account is taken of the variation in cost among different types of financing.

The final broad element of net income is operating expenses, which consist of fixed and variable components. Fixed expenses include wages, rent, etc., while variable expenses include among others the clearing costs associated with the delivery and safekeeping of securities. The variable component is a function of per-unit sales costs and the volume of sales. Charges are generally attached only to the sale side of transactions.

A dealer profit identity can be constructed to bring these elements into clearer focus. The first two factors relate to trading profits, the third to carry, and the fourth to operating expenses:

$$NI = \sum_{i=1}^{n}\sum_{k=1}^{t} s_{ik}S_{ik} + \sum_{i=1}^{n}\sum_{k=1}^{t} \Delta p_{ik}P_{ik} + \sum_{i=1}^{n}\sum_{i=1}^{t}(Y_{ik} - E_k) - \sum_{i=1}^{n} aS_i - F$$

Where:

NI - net income (before taxes)

s - bid-offer spread, in dollars per bond

S - number of bonds sold (assumed equal to purchases)

i - security issues, n separate issues

k - units of time, arbitrarily small

$\Delta p$ - price change, in dollars per bond

P - positions, number of bonds held (net of gross long and short positions)

Y - interest earned from positions, in dollars

E - interest expense on borrowed funds, in dollars

a - constant of variable expenses associated with trading, in dollars per complete transaction per bond

F - fixed operating expenses, in dollars

Each of these components can now be investigated separately in measuring the impact of changing exogenous variables.

B. Trading profits

1. Spread

The bid-asked spread encompasses both compensation for performing the intermediary "broker" service and a reward for assuming the risks of making markets. Trends in quoted security spreads for several maturity categories since 1950 are presented in Table II. It is evident that quoted bill spreads narrowed throughout the late fifties and early sixties while spreads on coupon securities exhibited mixed behavior over the decade. It should be emphasized that the spreads recorded here are announced quotations which often vary considerably from the actual or "inside" spreads at which trades are effected. Naturally, the possibility of a discrepancy between announced and inside spreads increases as spreads widen, as with longer-term issues.

Table II

Spread Between Dealers' Quoted Bid and Asked Prices
on U. S. Government Securities*

| Year | 3-month Treasury bills (In basis points) | Coupon securities: 6-13 months | 3-5 years | 5-10 years | After 10 years |
|---|---|---|---|---|---|
| | | (Most typical spread, in 32nds) | | | |
| 1950 | 4.5 | n.a. | 1.5 | 2 | 2 |
| 1951 | 5.5 | n.a. | 2.25 | 4 | 3.5 |
| 1952 | 5.25 | n.a. | 2 | 4 | 4 |
| 1953 | 4 | 2 | 5 | 5 | 6.5 |
| 1954 | 3.5 | 2 | 2.75 | 4.5 | 5 |
| 1955 | 3.5 | 2 | 2.75 | 4 | 4 |
| 1956 | 3.75 | 2 | 3.5 | 4 | 4 |
| 1957 | 3.5 | 2 | 5 | 5 | 5 |
| 1958 | 3.5 | 2 | 4 | 7 | 8 |
| 1959 | 4 | 2 | 4.5 | 6 | 8 |
| 1960 | 3.75 | 4.5 | 4 | 8 | 8 |
| 1961 | 2.75 | 2.5 | 4 | 8 | 8 |
| 1962 | 2.25 | 2 | 4 | 8 | 8 |
| 1963 | 2 | 2 | 2.5 | 6 | 8 |
| 1964 | 2.25 | 2 | 3.5 | 4 | 8 |
| 1965 | 2.25 | 2 | 4 | 4 | 8 |
| 1950-1954 | 4.55 | 2.00 | 2.70 | 3.90 | 4.20 |
| 1955-1960 | 3.67 | 2.41 | 3.96 | 5.67 | 6.17 |
| 1961-1965 | 2.30 | 2.10 | 3.60 | 6.00 | 8 |

* Source: Summarization of quarterly data in Ahearn, Louise F., and Janice Peskin, "Market Performance as Reflected in Aggregative Indicators", Treasury-Federal Reserve Study of the U. S. Government Securities Market, 1967, Appendix Table 7.

If price changes and carry rates are presumed to be, for the moment, primarily cyclical phenomena, the long-term profitability of Government securities dealers should depend in some measure on the behavior of spreads. While much detailed empirical analysis remains to be done, it is possible to suggest and tentatively evaluate several factors influencing the width of security spreads.

The service component of spread may intuitively be expected to vary inversely with the degree of competition and the level of variable costs. The behavior of variable costs is examined in the section on operating expenses. Competition, in this case, refers to both the substitutability of alternative instruments and to the degree of competition among dealers for business. It is difficult to assess the impact of either type since competing instruments or new firms rarely spring forth full grown at a particular point in time.[6] Coincident with the narrowing of bill spreads in the sixties, nevertheless, was both a rise in the number of dealers and vastly expanded usage of Federal funds and certificates of deposits as short-term investment instruments. Theoretically, both events should have increased the demand and supply elasticities in the market for U. S. Government securities, thereby narrowing spreads.

The fact that some coupon spreads widened while others narrowed as the early sixties progressed is ascribed primarily to altered supply conditions in various maturity categories, as noted by Mrs. Peskin in her discussion of spread behavior. The net effect of these diverse movements on aggregate dealer income can be evaluated only in the context of the trend in sales volume for each category, however; this exercise is undertaken in the next section.

The second element influencing the width of spread quotations is the risk associated with making markets and maintaining positions under conditions of potential price decline and capital loss.[7] Although risk

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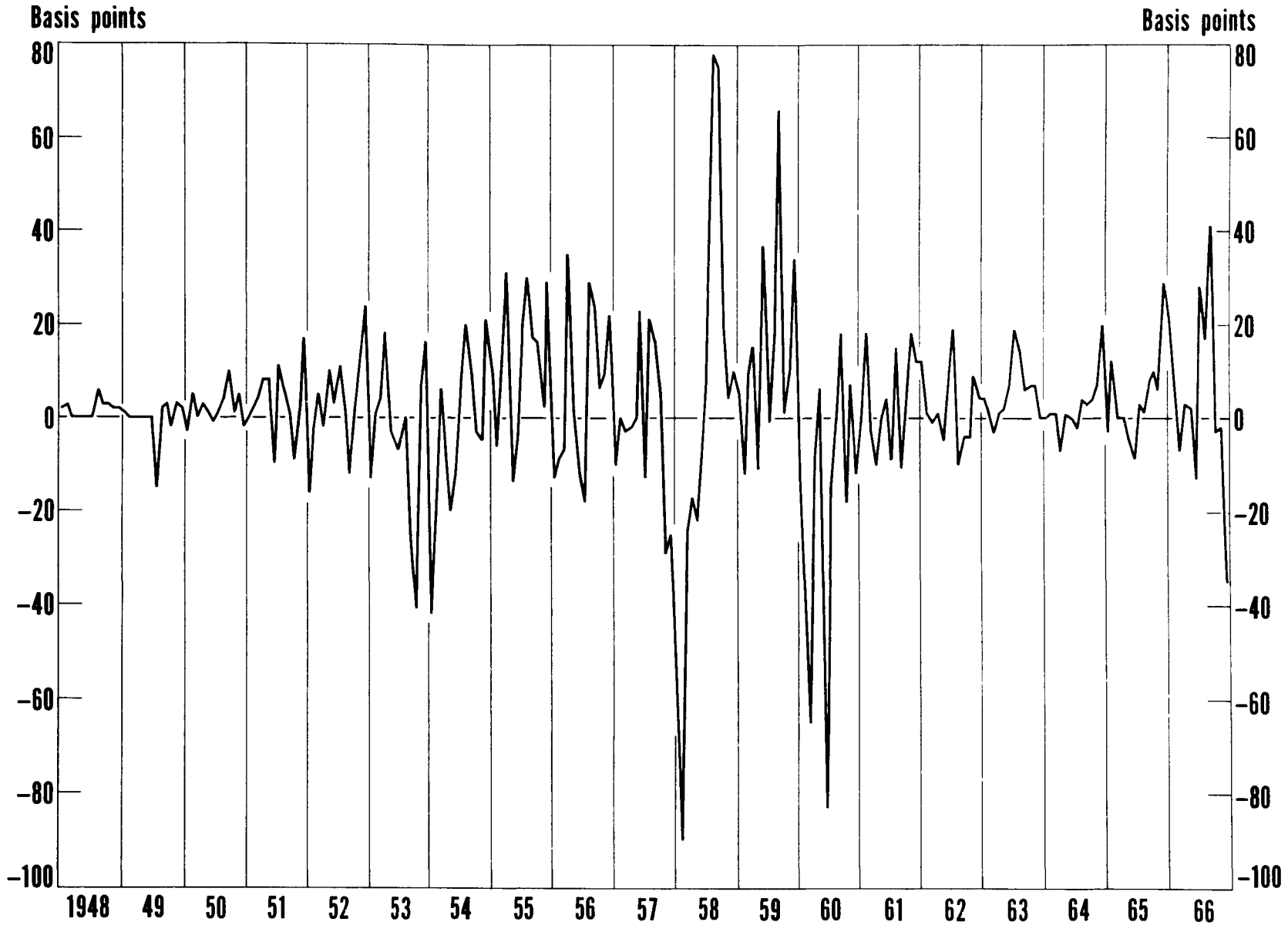
6. Many of the firms now trading with SOMA were active in the Government securities market prior to such participation. It is a matter of conjecture whether the competitive effect of new firms is felt upon "recognition" or prior to it.

7. Risk, as used here, is of the Markowitz-Tobin variety, the standard deviation of expected returns, accompanied by the usual assumption of risk-averting behavior.

Chart II

## CHANGE IN MONTHLY AVERAGES OF DAILY TREASURY BILL RATES, JANUARY 1948-DECEMBER 1966




Source: Board of Governors of the Federal Reserve System.

cannot be measured directly, it should be reflected in the volatility of short-run rate or price changes over time. The pattern of rate volatility is shown in Chart II, as month-end to month-end changes in the three month bill rate. Clearly, volatility dropped considerably in the 1961-65 period from the late fifties. The primary effect of reduced price fluctuation should be to lower the risks inherent in holding positions and therefore to contract the risk component of spread. This will depress profitability, even though the expected value of price changes, or the actual net price change, for either a stable or unstable period might be zero.

According to many dealers, the cause of rate stability in the early sixties was the relatively greater control of interest rates exerted by the FOMC in conjunction with "Operation Twist". It is evident in Chart II that the month-to-month fluctuation in average daily three-month bill rates declined sharply in 1961, when the program was initiated, and remained relatively stable through most of 1965. The only period of commensurate stability (shown on the chart) was from 1948 to 1950, when the Federal Reserve pegged interest rates. Indeed, bill spreads were widest in the years immediately following removal of the pegs. Reduced volatility in the sixties is also evident in Tables 4 and 5 of the Ahearn and Peskin paper; these tables record the frequency of large and small daily price changes.

In examining the financial environment of the sixties, Mr. Ettin concludes that "... more aggressive and flexible response to short-run rate movements by the Treasury and Federal Reserve contributed to a greater stability of yields".[8] As evidence, he notes the increased use of repurchase

8. Ettin, Edward, "The Financial and Economic Environment of the 1960's in Relation to the U. S. Government Securities Market", Treasury-Federal Reserve Study of the U. S. Government Securities Market, January 1967.

agreements by the Federal Reserve in the sixties, which had the effect of eliminating sharp short-term pressures stemming from outright purchases and sales, and the greater care taken by the Treasury in the pattern and timing of its actions.

At the same time, Mr. Ettin attributes a good portion of short-term rate stability during the period to events and innovations in the private sector. Most important was the steady and balanced growth in output with relatively constant prices and costs, which led to stable expectations about interest rates. In addition, substantially expanded usage of Federal funds and certificates of deposit as short-term money market instruments raised the elasticities of supply and demand for Treasury securities, tending to smooth over short-run supply-demand imbalances.

It remains to be seen whether behavior in the public or private sector contributed most to rate stability. Heightened Treasury-Federal Reserve sensitivity to rate volatility, assuming that short-term stability is a continuing policy goal, and the increased mobility of funds and substitutability of instruments in the private sector should permanently lower the risks associated with short-term rate movements. The circumstance of balanced growth and steady rate expectations could well have dominated the observed effect on rates, however, and this situation may not be permanent. If not, the reduction in risk, which implies lower spreads and profits, would be only transitory.

2. Transactions[9]

Juxtaposed to spread in the income equation is the volume of sales. Ceteris paribus, profits should be positively related to sales volume; however, the interplay of changes in spreads and sales in various maturity categories complicate the quantification of each contributing component. Spreads were observed to have declined for bills but widened for some longer term coupon issues; sales alternatively have climbed steeply in bills but behaved erratically for coupon securities.[10] Further clouding the picture, spread profits per unit of sales are many (perhaps 20 or 30) times higher for long-term coupon issues than for bills. To assess the overall trends in gross spread-sales revenues ("spread profits"), sales of U. S. Government securities were multiplied by quoted spreads in each maturity category.[11] The results

9. The data on dealer transactions and positions are those utilized in other papers prepared for this study. Hence, they are subject to the same qualifications. Of particular importance are the revisions of reporting procedures and coverage in 1960 which essentially preclude detailed inter-period (1950's versus 1960's) comparisons of transactions and position effects on profits. Where such comparative analysis is attempted, the effect of these revisions must be kept in mind.

10. It is possible that shifting customer trading patterns may have led to a net reduction in average spreads per unit of observed volume, all other factors constant. In particular, professional (inter-dealer) trading is known to be conducted "close-up", i.e., at minimal spreads. Transactions with "dealers and brokers in U.S. Government securities" has not, however, increased over the past six years. (In terms of all maturity categories, transactions among dealers and brokers as a per cent of total dealer transactions averaged about 30 per cent in each year from 1961-65, inclusive.) Hence, lacking more detailed figures on maturity categories, shifting trading patterns by customer type do not appear to have been a factor leading to narrower average spreads.

11. Spread profits for Federal Agency securities were not computed annually due to the absence of specific spread quotations. A rough estimate of such profits in 1965 would be on the order of $10-15 million.

are presented in Chart III.[12] For additional reference, a summary of daily average transactions is included in Table III. Sales figures used for the spread profit calculation were one-half of transactions (inflated to a gross annual basis).[13]

Table III

Dealers' Daily Average Gross Transactions
by Maturity Category, 1955 to 1965*

(In millions of dollars)

| | | Coupon securities | | | | |
|---|---|---|---|---|---|---|
| | Treasury bills | Less than 1 year | 1-5 years | 5-10 years | After 10 years | Total |
| 1955 | 520.7 | 168.8 | 159.7 | 93.5 | 39.3 | 982.0 |
| 1956 | 572.6 | 164.6 | 152.2 | 74.8 | 18.4 | 982.6 |
| 1957 | 664.8 | 177.0 | 123.8 | 30.3 | 18.0 | 1,013.9 |
| 1958 | 682.8 | 238.2 | 186.6 | 95.6 | 43.3 | 1,246.3 |
| 1959 | 829.3 | 164.4 | 225.5 | 49.5 | 21.9 | 1,290.6 |
| 1960 | 817.5 | 152.1 | 236.2 | 40.0 | 22.2 | 1,268.0 |
| 1961 | 1,036.3 | 167.5 | 265.1 | 53.3 | 29.6 | 1,552.3 |
| 1962 | 1,230.3 | 170.7 | 225.1 | 120.9 | 36.3 | 1,782.4 |
| 1963 | 1,199.6 | 119.6 | 215.8 | 141.1 | 49.9 | 1,726.1 |
| 1964 | 1,302.5 | 85.8 | 219.2 | 126.1 | 41.3 | 1,775.0 |
| 1965 | 1,400.3 | 78.8 | 194.7 | 102.0 | 49.6 | 1,825.4 |

* Source: Summarization of quarterly data in Ahearn and Peskin paper.

Over the 1955-65 interval, gross spread profits exhibited several distinct trends. From 1955 to 1958, spread profits rose from $64 million to $98 million, or by slightly more than 50 per cent, as increased volume in all maturity categories combined with widening spreads on coupon securities

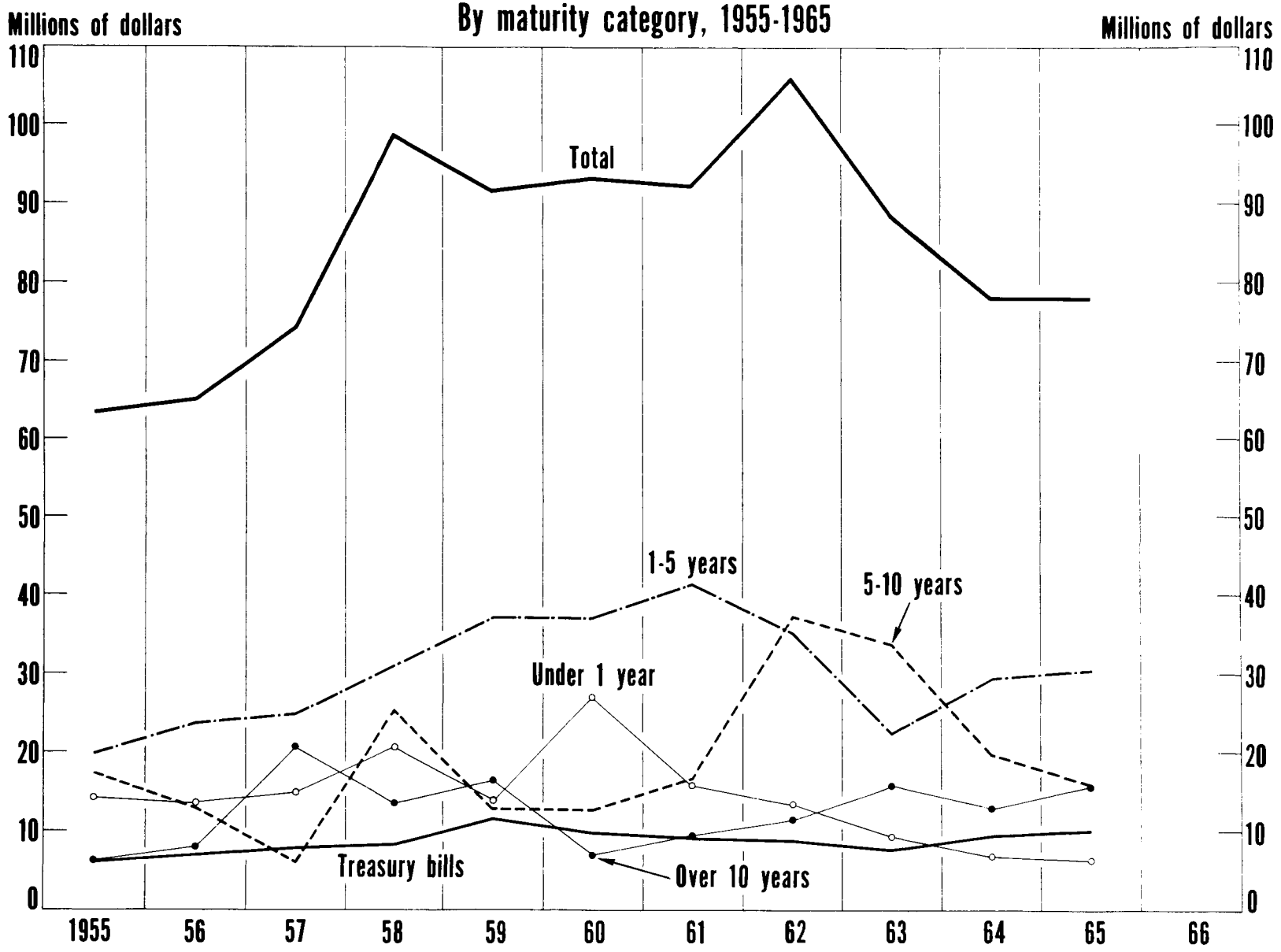
12. These computations are biased upward, perhaps by as much as 50 per cent in coupon categories. The bias stems from the difference between quoted and actual spreads and the narrower spreads encountered in inter-dealer transactions. As noted earlier, as quoted spreads widen, the possibility of a gap between quoted and actual spreads increases; thus, this bias may have become more pronounced in the sixties.

13. Sales figures alone were not available for the entire 11-year period. Sales exceed one-half of total transactions since allotments are not included with purchases. Allotments in auctions and underwritings during 1960 to 1965 amounted to an estimated 5-10 per cent of reported sales.

Chart III

# ESTIMATED DEALER "SPREAD PROFITS"* ON U. S. GOVERNMENT SECURITIES

## By maturity category, 1955-1965




* "Spread profits" represent the product of security sales and the difference between bid and asked spread quotations. Dealer sales were computed as one-half daily average transactions (Table III), inflated to a gross annual basis.

(see Table II)[14]. During the next three years, 1959 to 1961, spread profits dipped to an average $92 million before jumping to $106 million in 1962. Both movements stemmed largely from fluctuations in sales of 5-10 year maturities. Following 1962, spread profits turned down, due on the one hand to narrowing spreads on 5-10 year securities (and 1-5 year issues in 1963), and on the other to declining sales in all coupon maturities after 1963. (From 1963 to 1965, aggregate coupon volume fell 20 per cent).

Contracting spread profits after 1963 clearly depressed dealer income in 1964 and 1965. At the same time, one can hardly conclude from the foregoing analysis that gross spread profits contributed significantly to the reduced level of net income experienced from 1961 to 1965, relative to the preceding five years. Not only did spread profits reach a peak in 1961, but also the average level of spread profits from 1961 to 1965 was $4 million, or nearly 5 per cent, above the earlier five-year period. Furthermore, spread profits on Federal Agency securities were undoubtedly higher in the later period due to expanded sales. Dealers sales of Agency securities generally paralleled the trend in issues outstanding, which grew from $2.9 billion in 1955 to $7.9 billion in 1960 and $13.8 billion in 1965. Dealers' sales of Agency securities doubled in the 1960-65 period alone. Narrower spreads did offset much of the 150 per cent expansion in bill volume from 1955 to 1965. Nevertheless, bill spread profits were a minor component of the total; had spreads been the same in 1965 as in 1960 (the peak year for net income), bill spread profits would have been increased by only $7 million, a small increment to aggregate spread profits.

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14. The year-to-year volatility in estimated spread profits observed in Chart III for individual coupon maturity categories is a function primarily of sales, which in turn may be strongly influenced by variations in the volume of new issues offered by the Treasury. The passage of particular issues from one maturity category to another may also account for some of the annual fluctuations.

Future growth in spread profits will depend, of course, on the trends in spreads and sales of U. S. Government securities. Increased competition from other money market instruments and added dealers is likely to remain. Rate volatility, somewhat greater since late 1965, is difficult to predict, having been based in the early sixties on a peculiar combination of public and private factors. Spreads on Treasury bills widened to about 3 basis points in 1966, although other quoted spreads were generally unchanged.

Sales volume is a function primarily of the level and maturity composition of outstanding marketable debt.[15] Since the turnover of securities (dealers sales/debt outstanding) diminishes as the time to maturity lengthens, future sales growth will be contingent not only on fiscal policy but on debt management policy as well. A $1 billion rise in Treasury bills outstanding during the 1955-65 period led to a $20 million rise in daily average bill transactions, whereas a $1 billion rise in coupon securities stimulated a $3-4 million expansion in coupon trading. Nevertheless, before concluding that growth in short-term issues will benefit dealers more, differences in the profitability of sales in various maturity classes must be considered, along with the effect of debt increases in each class on spreads themselves. Thus, in 1962 for example, a sharp increase in 5-10 year issues initially resulted in enhanced spread profits. Subsequently, however, this expansion is believed to have led to narrower spreads due to the greater availability or liquidity of these securities. At this stage, it is impossible to predict the future aggregate outcome for spread profits resulting from this apparent tradeoff between sales or debt outstanding and spreads.

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15. Ahearn and Peskin, op. cit., p. 11.

Sales volume, particularly in longer-term securities, also varies inversely with the degree of monetary tightness, often represented by the level of interest rates. As the early 1960's progressed, coupon sales turned down in all maturity categories, except over twenty-year issues;[16] from 1963 to 1965, aggregate coupon sales declined almost 20 per cent. In late 1966 and early 1967, when interest rates turned down, coupon sales expanded appreciably above the average level of the preceding two and one-half years.

3. Price (rate) changes; positions

The second, and by far more volatile component of trading profits is the gain or loss associated with price changes of positioned securities. Trading profits vary directly with price changes and are a function of the size and rapidity of such changes, the size and composition of dealer positions, and the success of dealers in anticipating price movements.

Generally, interest rates are a function of economic activity and monetary policy, and it is clear that cyclical swings in rates, hence in trading profits, are accepted as part of the dealers' environment. Rate levels, per se, have possibly an indirect effect on trading profits, via their derivative impact on spreads, transactions, and carry; rate movements, however, have a strong direct effect.

The close relationship between rate changes and dealer revenues is apparent in Chart IV, which presents the year-end to year-end changes in the three-month bill rate (plotted inversely) and the annual level of trading profits plus carry. In years that movements in the bill rate reversed direction (1949, 1950, 1953, 1955, 1957, 1959, 1960, and 1961),

16. Sales of Federal Agency securities rose in every year from 1960 to 1965.

the level of gross profits changed in accordance with (but inversely to) the rate movement. For all other years (except 1958), when the bill rate continued its prior year's direction, the "wrong" movement in gross profits can be largely attributed to a "rebound" effect, since capital gains and losses were not in this sense cumulative from year to year and the magnitude of the rate change was usually diminished.[17] Of course, the size and direction of long-term rate movements in certain years modified the observed bill rate-gross profits relationship. In 1962, for example, the rise in gross profits undoubtedly derived in part from falling long-term bond rates over the year.

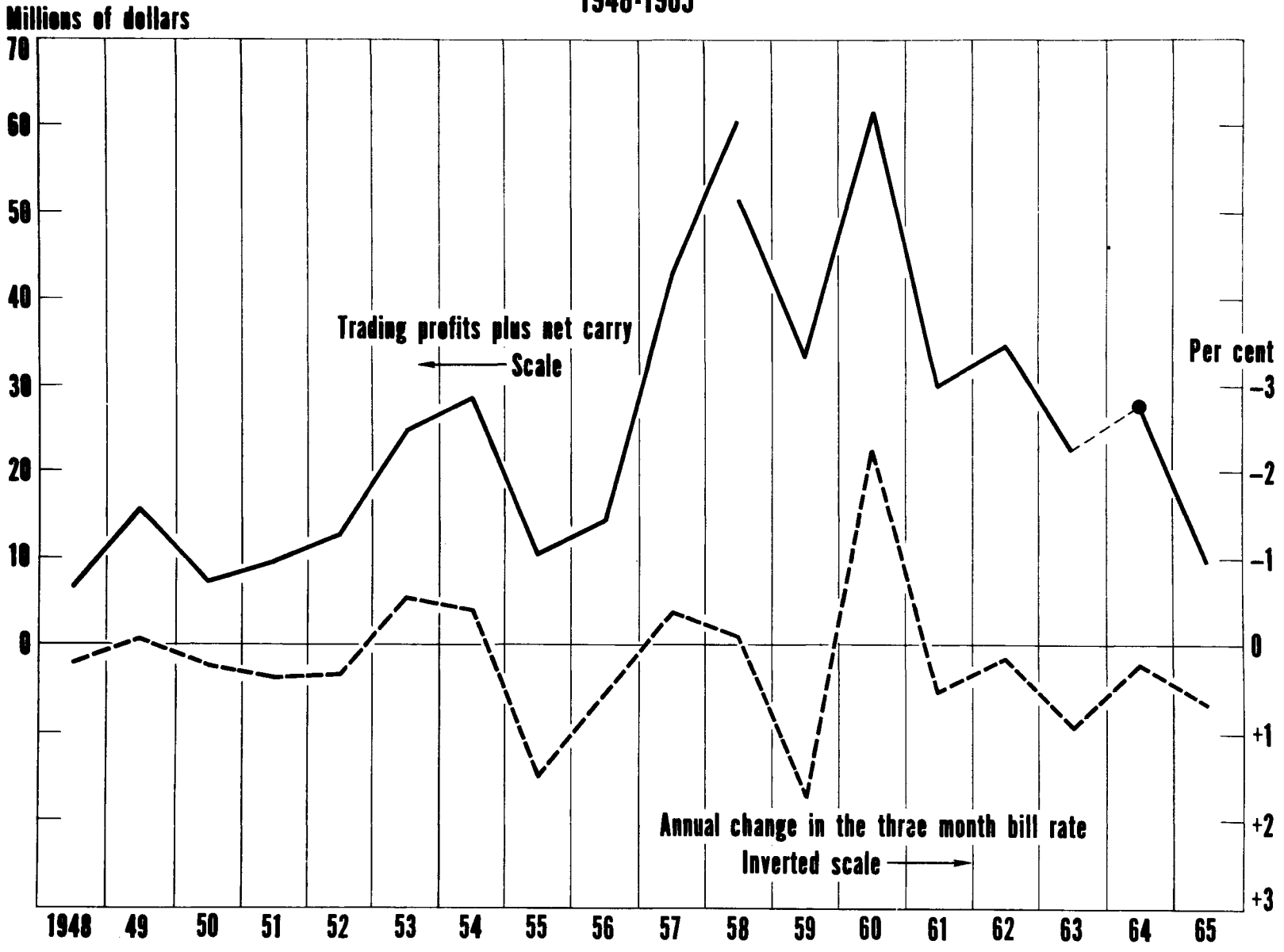
The size and composition of dealer positions determine the impact of a given price change on trading profits. Large positions, particularly in long-term coupon securities, will naturally affect profits more than small positions and in the same direction as prices. The net contribution to profits of capital gains or losses on positions depends on the success of dealers in correctly anticipating the direction and extent of long- and/or short-term price movements and thus adjusting position levels for alternatively increasing and decreasing prices. As the professionals in the market and, in fact, the mechanism for effecting price changes, dealers may be expected to do better than break even in the ebb and flows of prices. Dealer capital gains from a unit price rise should exceed capital losses from a comparable downturn.

The year 1958 offers one clear example of how dealers were able to profit from timely position adjustments during a sharp intra-year fluctuation in security prices. In that year, annual trading profits soared despite a sharp rise in bond rates and a very small net

17. Implicit in the rebound effect is the underlying "normal" contribution of spread profits.

Chart IV

## DEALER TRADING PROFITS PLUS NET CARRY AND ANNUAL CHANGES IN THE TREASURY BILL RATE, 1948-1965*




* See footnote to Table I for description of trading profit plus net carry data. Annual changes in the Treasury bill rate are based on the average daily market rate for the three-month issue in the week containing December 31.

decline in bill rates. Table IV presents average daily positions for all dealers in each quarter of 1958 along with changes in bill and long-term bond rates and quarterly trading profits plus carry for all nonbank dealers.

Table IV

Dealers' Average Net Positions in U. S. Government Securities
Interest Rate Changes, and Nonbank Dealer Trading Profits
plus Net Carry, Quarterly 1958

(Dollar amounts in millions)

| | Dealer positions | | Rate change (in percentage pts.) | | Nonbank dealer |
|---|---|---|---|---|---|
| Quarter | All maturities | Coupon securities | 3-month bill rate | Long-term bond rate | Trading profits plus carry |
| I | 1,932.0 | 1,063.6 | - 1.69 | - .03 | $21,078 |
| II | 2,198.3 | 1,248.5 | - .29 | + .07 | 15,016 |
| III | 1,017.9 | 397.9 | + 1.91 | + .57 | 2,202 |
| IV | 839.5 | 373.4 | - .03 | .00 | 4,165 |

Note: Position data from Ahearn and Peskin paper; rate changes are based on daily average rates for the week beginning and ending each quarter; trading profit plus net carry data from FRB--NY.

In the first half of the year, nonbank dealers had trading profits plus carry of $36.1 million, compared with $6.4 million in the second half. With estimated operating expenses of about $17 million for the year as a whole, it is apparent that, as a group, nonbank dealers suffered net losses in the third and fourth quarters. Yet, they were able to post the second highest level of annual net income in the entire 1948-1965 period.

The sharp dip and recovery of bill rates in 1958 was, to be sure, a cyclical phenomenon. Examination of dealers relative positions before, during, and after the 1953-54 and 1960 recessions indicate that dealers were able at those times also to reap net capital gains. It is, of course, impossible with the data available to measure the net contribution

of these "cycle profits" to the overall long-term level of dealer income. Nor can we begin to explain, in the context of dealer expectations, particular position levels after peaks and troughs or why they were not more or less extreme. Nevertheless, these factors have a crucial bearing on future profitability.

The emergence of an apparently new pattern of economic expansion, of much longer duration than in the fifties and followed by short, sharp rate retrenchments, has altered the flow of profits to dealers. The implied effect on earnings, still, is indeterminate. Less frequent cycles, prima facie, would tend to indicate a drop in long-term profitability and, at the same time, magnify the importance of "catching" the peaks and troughs in rate movements. Greater control of economic growth should also imply decreased amplitude in rate movements which, despite the ability to adjust relative positions correctly at alternate stages of the business cycle, would mean diminished earning opportunities.[18] Potentially offsetting these factors is the extent to which dealers expand and contract positions, particularly in the longer maturity categories, and the timing of these changes.

Two examples of position adjustment are cited to illustrate the role of absolute position levels when rates are changing. In both examples, average position levels are compared for roughly equal but opposite movements in the three-month bill rate around a major turning point.[19] In the first half of 1958, dealers' daily positions averaged

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18. The idea of a reduced amplitude in rate swings would seem thus far to have been discredited by rate behavior in the summer and fall of 1966. It is indeed apparent that future fluctuations will depend on the relative emphases on monetary and fiscal policy and the type of expectations generated by these policies.

19. Rates used for computing changes are daily averages for the weeks at the beginning and end of each period described.

$2.1 billion, during which time the bill rate dropped approximately 2 percentage points. During the following six months, when rates rose almost 2 percentage points, positions averaged $0.9 billion per day. Thus, dealers had on average $1.2 billion (net) of securities "working" for them when rates were falling, which were not in position (incurring capital losses) when rates subsequently rose.[20] In the third quarter of 1966 dealers' positions averaged $2.0 billion. During this period, the bill rate rose about 1 percentage point. After peaking out at 5.52 per cent at the end of September, the bill rate subsequently declined approximately 1 percentage point by the end of February 1967. Over this second interval, average daily positions were $3.9 billion. In this case, dealers had an "extra" $1.9 billion of securities accruing capital gains during the period of declining rates, or almost 60 per cent more than in the 1958 period. Per unit of rate change, the net capital gains were clearly larger in the 1966-67 sequence than in 1958. Thus, it is by no means certain what overall effect changing cyclical patterns will have on profits in future years.[21]

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20. A closer examination of monthly data reveals that dealers were not as accurate in timing their position changes as the text may imply. In addition, of course, position composition and changes in longer-term rates also have an important bearing on aggregate gains and losses.

21. Obviously, the timing of position changes in relation to weekly or monthly rate fluctuations, that is, intra-cyclical position levels, can also lead to net capital gains or losses (with no net change in rates).

C. Net carry

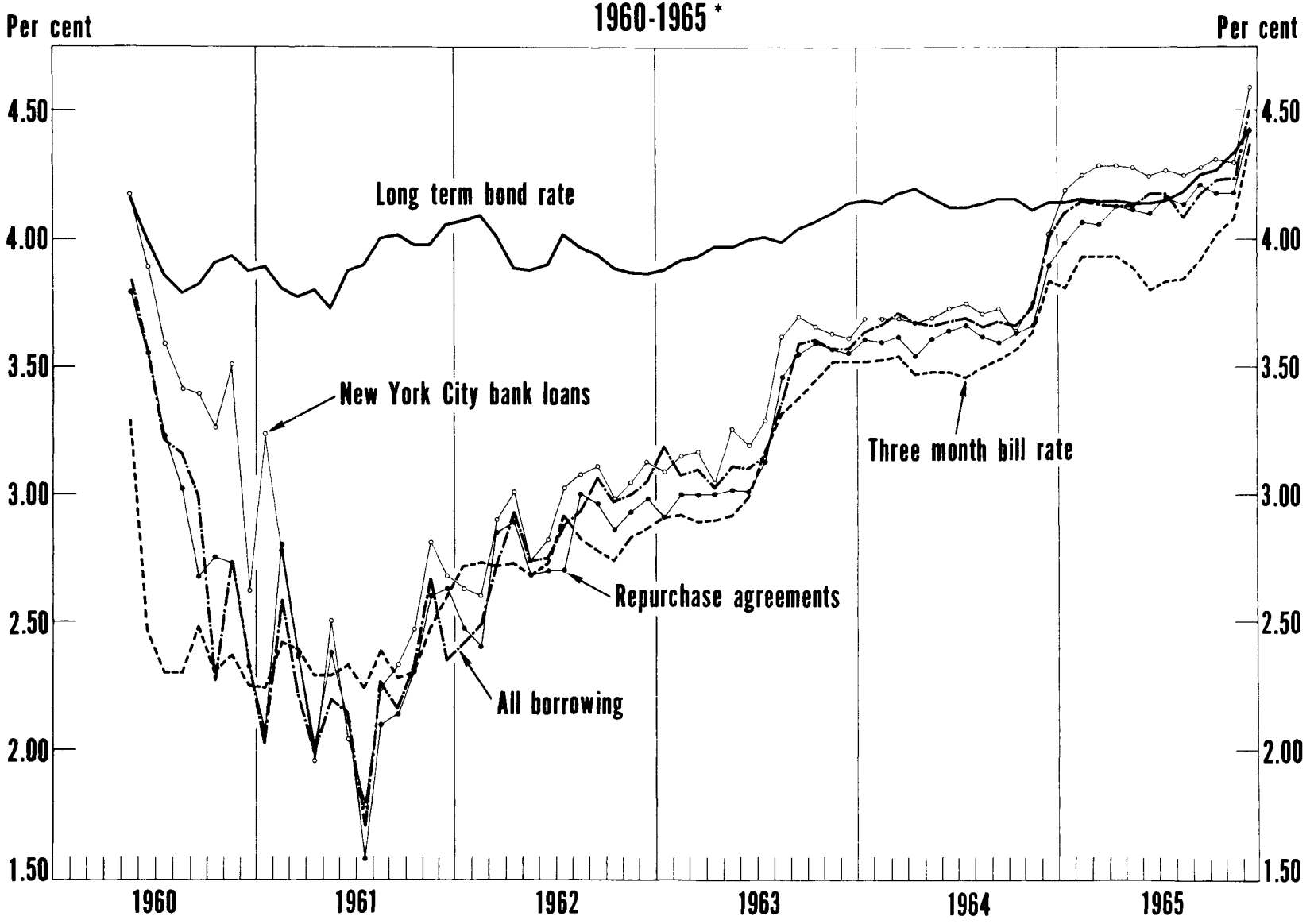
The magnitude of net carry (and its variation over time) is a function of: (1) the structure of interest rates, (2) the size and composition of dealer positions, (3) financing sources, and (4) the variety and substitutability of instruments competing with U. S. Government securities. The contribution of net carry to earnings throughout the period of discussion is impossible to measure accurately, due primarily to the aforementioned inability of many dealers to segregate discount earned (interest) from trading profits on Treasury bills.[22] Despite these shortcomings, it is nevertheless useful to examine the behavior over the past decade of those factors mentioned above.

Since loans to dealers compete with other money market instruments as a source of short-term investment, the cost should be closely associated with rates on these substitutes. Indeed, bank dealers have typically applied the Federal funds or 3-month bill rate in computing the total cost of own bank funds used. Nonbank dealers, for their part, have also financed securities at interest costs approximate to these money market rates, as is apparent in Chart V. Interest costs for different types

22. In the Meltzer-von der Linde data, dealers apparently included all bill income in interest earned. In the FRB--NY data for 1958-1963, several dealers placed bill income with trading profits while others combined it with interest earned; for those years, therefore, it was not feasible to record a series on net carry. Market Statistics data has all bill income incorporated with interest earned. In none of these series did dealers include in interest earned the price appreciation on coupon securities purchased at a discount that represented interest accrual (or make the opposite adjustment for premium prices).

Chart V

# COMPARISON OF RATES ON U. S. TREASURY BILLS AND LONG TERM BONDS WITH SELECTED DEALER BORROWING COSTS 1960-1965 *




Note: The borrowing rates were selected from special reports submitted by a number of nonbank dealers and are believed to be representative of all nonbank dealer borrowing costs. "Repurchase agreements" represent the cost of short-term borrowing from sources other than New York City banks. "All borrowing" is the overall cost of financing reported by one dealer. Overall financing costs of other dealers may vary slightly depending on the particular mix of borrowing from New York City banks and other sources.

* Treasury bill rates are monthly averages of daily rates on the outstanding bill closest to 3-months maturity; the U. S. Government long term bond rate series is the index computed by the Board of Governors.

of dealers' financing (as reported by selected dealers) are shown along with the 3-month bill rate and the F.R.B. long-term bond index. In the absence of direct data on net carry, the difference between the 3-month bill and longer-term bond rates should provide a suitable proxy for tracing relative carry profitability over time for such maturities.

Differences between the 3-month bill rate and both 3-5 year and long-term bond rates (F.R.B. indexes) are plotted in Chart VI. In general, the carry differential widened during recessions (1953-54, 1958, and 1960-61) when interest rate levels were low, and narrowed as rates rose.[23] (During boom periods, the 3-5 year security rate had a tendency to rise above the long-term bond rate, making intermediate term issues relatively less costly to position.) Thus, it is evident that the behavior of aggregate net carry over the past decade has usually compounded the impact on profits of changing prices.[24] In 1961, when security prices declined, carry profits are estimated to have comprised a large part of net income (perhaps $3 million out of total net income of $6 million). In most other boom years, however, such as 1956, 1957, and 1965, it is

23. Volatile bill rates, of course, caused most of the fluctuation in the differentials.

24. In 1961, when the difference between short and long-term rates was quite high, net carry profits were estimated roughly to have been on the order of about $5 million. This estimate was based on average annual interest rates and net dealer positions for several maturity categories of securities, with the assumption that carrying costs were equal to the three-month bill rate.

likely that negative carry profits aggravated already diminished levels of trading profits and net income.

The potential for profitable carry declined steadily from 1961 to 1965. To the extent that public policies brought about this narrowing of rate differentials, it was certainly detrimental to carry profits. In the early part of the period, the Treasury and Federal Reserve did work jointly to increase the relative supply of bills in an attempt to shore up short-term rates for balance of payments reasons. However, it must be noted that these rate differentials have historically narrowed during periods of economic expansion. As a result, it is impossible to accurately assess the relative impact of these two factors.

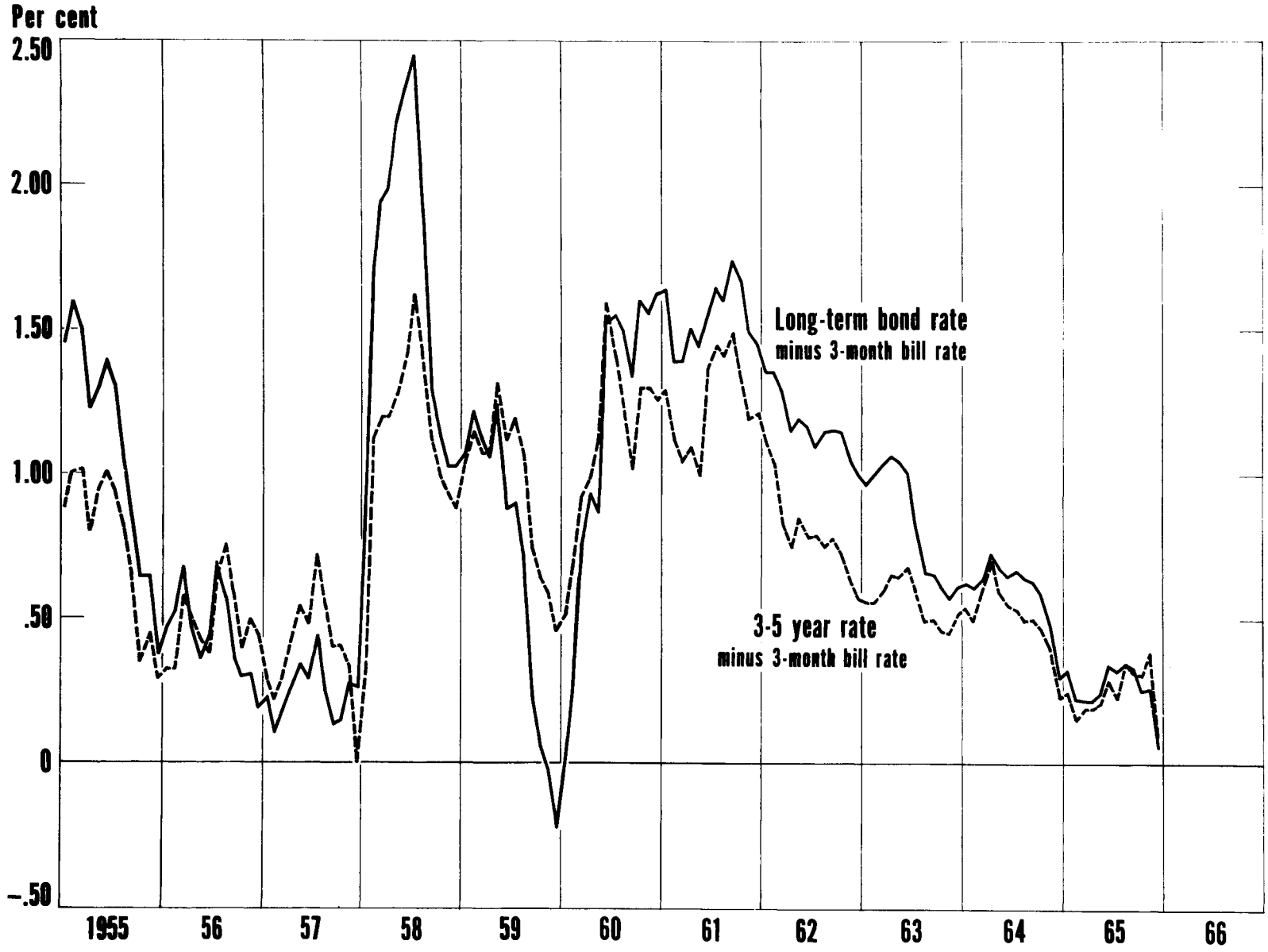
Position size and composition naturally helped or hindered earnings, depending on whether financing costs were higher or lower than security yields. While there may have been some tendency for positions to vary with the sign of the differential, Mrs. Peskin found neither strong nor consistent relationships of the type to be expected. It is probable that the inventory motive and expectations about prices have largely outweighed carry considerations. The fact that significant relationships were found between dealer short positions and carry suggests that dealers may have preferred to use short sales to meet customer needs rather than hold securities with negative carry.[25]

Dealer carry profits (or losses) have also varied with the type and source of borrowed funds. Referring back to Chart V, the cost of repurchase agreements, such as those made with corporations,

25. This observed relationship may be spurious, however, since short sales may be more directly related to the behavior of interest rates.

Chart VI

# ESTIMATES OF RELATIVE NET CARRY PROFITS ON U. S. GOVERNMENT INTERMEDIATE AND LONG-TERM BONDS, 1955-1965*




Note: The 3-month bill rate is used as a proxy for the rate charged for financing dealers' positions.

* Rates on U. S. Government securities are monthly averages of daily figures computed by the Board of Governors of the Federal Reserve System.

was noticeably lower than the rate paid for bank loans. Among bank loans, "out-of-town" rates during most of the late fifties were 1/2 point or more below New York City bank rates. These rate differentials, however, narrowed substantially during the early 1960's and much of this shrinkage has been attributed to the broader usage of competing instruments, notably Federal funds and certificates of deposit. Greater mobility of bank reserves has meant that rates on "out-of-town" bank funds have become more sensitive to and thus moved closer to rates prevailing at New York banks. Likewise, the development of certificates of deposit, which can be tailored to meet specific corporate needs and have rates slightly above short-term bill rates, has virtually eliminated the advantageous position previously held by dealers' repurchase agreements as an outlet for short-term funds.

D. Trends in trading profits plus carry, by type and size of dealer

In order to evaluate relative dealer performance as well as the impact of changing market conditions, trading profits plus carry were deflated by gross annual sales; the results appear in Table V. Ideally, it would have been desirable to segregate trading profits from carry and to examine each of these sources of income for bills and coupons securities individually. As pointed out previously, however, most dealers have been unable to isolate trading profits from accrued discount (interest) on Treasury bills, and only in 1964 and 1965 were dealers asked to separate bill and coupon revenues. Lack of separate data for bill and coupon trading profits has presumably led to an increasing downward bias in aggregate profits per unit of sales due to the relative shift in trading composition over the past decade from coupon securities to bills; in terms of spread, bill transactions are less profitable per unit than coupon transactions.

Table V

U. S. Government Securities Dealers: Trading Profits plus Carry per Million Dollars of Sales, 1948-1965

(In dollars)

| Year | Trading profits plus carry | Year | Trading profits plus carry |
|---|---|---|---|
| 1948 | 104 | 1957 | 305 |
| 1949 | 212 | 1958† | 332/297 |
| 1950* | 65 | 1959 | 181 |
| 1951 | 105 | 1960 | 343 |
| 1952 | 123 | 1961 | 141 |
| 1953 | 228 | 1962 | 140 |
| 1954 | 188 | 1963 | 92 |
| 1955* | 82 | 1964‡ | 112 |
| 1956# | 107 | 1965* | 43 |

* Loss years.

\# Despite operating expenses of $112 per million dollars of sales in 1956, a profit was realized due to "other earnings" of $11 per million dollars of sales.

† Three hundred thirty-two and prior figures are from Meltzer-von der Linde; 297 and subsequent figures through 1963 are from FRB--NY. Data for 1964 and 1965 are from Market Statistics.

‡ Nonbank dealers only.

The trading profits plus carry data in the table correspond fairly closely with the aggregate profit trend in Chart I. Discrepancies can be attributed largely to sales behavior and the aforementioned bill-coupon mix. To gain insight into differences in performance among types of dealers, trading profits plus carry per unit of sales were computed from 1958 to 1965 for three separate dealer groups: bank dealers, large nonbank and small nonbank dealers with five firms in each group. The results are shown in Table VI.

From 1958 to 1963, the large nonbank dealers were generally the most profitable of the three groups and had the greatest inter-dealer consistency in performance. Not until 1965 did a large nonbank dealer incur a loss in its Government securities operation. Small nonbank dealers,

nevertheless, were not far behind in 1960-61, and in 1962, 1964, and 1965 their gross earnings per unit exceeded those of the larger nonbank dealers. Judging from an examination of individual dealer performance, it appears that, since 1960, the small dealers were as profitable per unit of sales, or more so, than the large firms but at the same time were more vulnerable to changing conditions. One important source of the enhanced profitability has presumably been the increasing proportion of Federal Agency activity to total transactions of the smaller firms.

Bank dealer gross earnings per million dollars of sales lagged behind the nonbank dealers in every year. This result, and differences between the large and small nonbank dealers, does not necessarily imply varying levels of efficiency or expertise. Bank dealers, rather, have concentrated

Table VI

Trading Profits plus Carry per Million Dollars of Sales, 1958-1965, by Dealer Groups

(In dollars)

| Dealer Group | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 |
|---|---|---|---|---|---|---|---|---|
| Five bank dealers* | | | | | | | | |
| Weighted average | 149 | 95 | 212 | 104 | 103 | 88 | - | 32 |
| Unweighted averages | 154 | 139 | 251 | 119 | 118 | 94 | - | 34 |
| Range - High | 525 | 320 | 505 | 261 | 271 | 160 | - | 66 |
| Low | -109 | - 81 | 20 | 36 | 55 | 23 | - | 3 |
| Five large nonbank dealers | | | | | | | | |
| Weighted average | 400 | 234 | 418 | 181 | 183 | 111 | 125 | 45 |
| Unweighted average | 380 | 237 | 419 | 182 | 183 | 116 | 130 | 56 |
| Range - High | 508 | 314 | 567 | 204 | 216 | 168 | 163 | 121 |
| Low | 279 | 117 | 285 | 162 | 148 | 20 | 91 | - 57 |
| Five small nonbank dealers | | | | | | | | |
| Weighted average | 213 | 119 | 404 | 148 | 198 | 52 | 160 | 109 |
| Unweighted average | 184 | 58 | 377 | 157 | 205 | 26 | 193 | 133 |
| Range - High | 421 | 176 | 667 | 270 | 304 | 133 | 455 | 429 |
| Low | -224 | -219 | 96 | 85 | 111 | -113 | 101 | - 97 |

* Interest expense based on the average rate on Federal funds.

their activity in the bill market, where profits per unit of sales are lowest. Since bill positions require correspondingly less capital than coupon positions, it is difficult to judge at this stage which group in fact was the most profitable, as between bank and nonbank dealers.

In 1964 and 1965, all nonbank dealers reported trading profits (ex carry) on coupon securities separately and five submitted trading profit data for bills. Bank dealers reported coupon profits in 1965, with four of them supplying bill trading profits in addition. These data, per unit of sales, are presented in Table VII. The pattern is much as anticipated.

Table VII

Ratios of Selected Income and Expense Items to Gross Sales, by Dealer Groups, 1964-1965

| | | Dollars per million dollars of gross sales | | |
|---|---|---|---|---|
| | | 1964 | 1965 | |
| Income or expense item | | Nonbank | Bank | Nonbank |
| Trading profit on Treasury bills* | Unweighted average | 40 | 27 | 17 |
| | Median | 37 | 30 | 17 |
| | Weighted average | - | - | - |
| Trading profit on other securities# | Unweighted average | 253 | - 26 | 88 |
| | Median | 271 | 99 | 77 |
| | Weighted average | 252 | 109 | 121 |
| Operating expenses | Unweighted average | 122 | 86 | 126 |
| | Median | 91 | 66 | 96 |
| | Weighted average | 97 | 77 | 96 |

* Based on five nonbank and four bank dealers.
\# Includes Government coupon issues, Federal Agency securities, and C/D's.

Per unit coupon profits are substantially higher than bill profits, and trading profits (not including carry) declined from 1964 to 1965 for both bills and coupons, in line with falling prices. What is perhaps surprising is the higher level of bill profits for banks than for nonbank dealers in 1965. Nonbank dealers have claimed that banks are willing to trade bills less profitably

because of the derivative correspondent benefits. Pending additional dealer data, however, this claim cannot be substantiated by the available information. It is possible, for example, that merely variations in computational methods have led to this observed difference.

E. Operating expenses

Aggregate dealer operating expenses maintained a fairly stable but definitely rising trend throughout the fifties and early sixties (see Chart I). Growth in aggregate expenses, however, was paralleled by an expansion in Government securities transactions, with the result that dealer expenses per million dollars of sales appear to have actually declined slightly over the past decade. Data on expenses, expressed in dollars per million dollars of sales, are presented in Table VIII.[26]

The deflation of dealer expenses by sales substantially eliminates variations in costs stemming from sales volume; what remains are changes in per-unit variable costs over time and per-unit fixed expenses. Clearing charges constitute the principal element of variable costs. Typically, these charges range from $5 to $10 per million of bills to $10 to $35 per million of coupon securities.[27] The higher costs for clearing coupon securities are due to the extra handling efforts involved in checking coupons and the smaller typical size of transaction.[28] Unfortunately, there are no data on

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26. As noted in the introduction, neither item definitions nor reporting procedures are known for the Meltzer-von der Linde and FRB--NY series. Due to obvious discrepancies in and between dealer reports to Market Statistics in 1965(no expense itemization was requested in 1964), a breakdown of expenses was not attempted. Judging from this latter experience, little weight should be attached to the absolute figures in the two earlier studies.

27. Clearing charges are proportional to dollar value and are assessed only on sales. Bank dealers do their own clearing while virtually all non-bank dealers clear through a bank. Most bank dealers, nevertheless, allocate a portion of general clearing expenses to their Government securities operations.

28. The latter determinant suggests that there is, in fact, a fixed plus variable charge for clearing.

Table VIII

Operating Expenses per Million Dollars of Sales,
U. S. Government Securities Dealers, 1948-1965*

(In dollars)

Meltzer-von der Linde Data#

| | Salaries | Other current expenses | Total operating expenses |
|---|---|---|---|
| 1948 | 49 | 40 | 88 |
| 1949 | 60 | 45 | 105 |
| 1950 | 34 | 37 | 71 |
| 1951 | 44 | 45 | 89 |
| 1952 | 46 | 48 | 93 |
| 1953 | 50 | 53 | 104 |
| 1954 | 44 | 51 | 95 |
| 1955 | 46 | 58 | 104 |
| 1956 | 51 | 61 | 112 |
| 1957 | 61 | 63 | 123 |
| 1958 | 59 | 63 | 122 |

FRB--NY Data†

| | Salaries | Clearing charges | Telephone expense | Other operating expenses | Total operating expenses |
|---|---|---|---|---|---|
| 1958 | 40 | 27 | 7 | 26 | 100 |
| 1959 | 40 | 24 | 8 | 26 | 97 |
| 1960 | 50 | 20 | 9 | 39 | 117 |
| 1961 | 43 | 18 | 8 | 28 | 96 |
| 1962 | 40 | 20 | 8 | 28 | 95 |
| 1963 | 37 | 19 | 8 | 38 | 92 |

Market Statistics Data‡

| | | Total operating expenses |
|---|---|---|
| 1964 | Nonbank dealers | 97 |
| 1965 | Nonbank dealers | 96 |
| | Bank dealers | 77 |

* Because of rounding, figures may not add to totals. Figures are weighted averages for Market Statistics data and it is believed that the Meltzer-von der Linde and FRB--NY data were computed in a similar manner. In all three series, there were variations among dealers in the treatment of specific

(Continued on next page.)

the trend in unit clearing charges over the last ten years, primarily because such charges are negotiated between clearing agents and individual customers, and depend largely on the volume or profitability of each customer's business. The concensus of several dealers, however, is that such charges have not changed to any noticeable degree.

While the fixed expenses of Government securities operations have undoubtedly risen since 1955, the rapid expansion of dealer sales appears to have offset these increased costs on a per-unit basis, as suggested in Table VIII. This conclusion may be misleading, however. In the first place, transactions growth has been largely in Treasury bills (entirely so since 1960) where gross spread profits are lowest. In this sense, unit fixed expenses have increased as a proportion of overall spread profits per unit of sales.

Second, it is apparent from comparing Table VIII with Table I that total unit operating expenses are closely related to net income. In

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(Footnotes continued from preceding page.)

expenses. Items included in operating expenses by some may have been charged against trading profits or interest earned (or added to interest paid) by others. Furthermore, in the FRB--NY and Market Statistics data, there may have been considerable error on the part of some diversified dealers in the allocation of overhead expenses to the various firm functions.

\# These data cover all operations of the nonbank dealers and only the activities in U. S. Government and related securities of bank dealers. Nevertheless, these figures have been deflated only by sales of U. S. Government securities for nonbank and bank dealers. Data are extrapolated from complete income statements of from 7 to 13 dealers. The bank-nonbank composition of this group is not known.

† These data pertain to operations in U. S. Government and related securities only of both nonbank and bank dealers. Details are extrapolated from a varying number of dealers' reports.

‡ Operating expenses are for activities in U. S. Government and related securities for all dealers in the groups shown.

most years when profits rose--1949, 1953, 1957, 1958, and 1960--total operating expenses (per unit) advanced also, paced by increases in salaries and "other operating expenses". This flexibility in unit expenses presumably derived from profit-oriented bonuses granted to both officers and employees. The relatively low level of costs per unit of sales in the sixties may thus have been achieved largely at the expense of bonuses. Of course, it it a matter of conjecture whether these salary and wage levels are competitively sustainable; if not, the trend in long-term operating expenses (both aggregate and per unit of sales) has been understated.

The 1964 and 1965 expense data submitted to the Market Statistics Division, as shown in Table VII, displayed marked stability between years (for nonbank dealers) and among dealers in each year.[29] The lower (weighted) average level of unit expenses reported by bank dealers for their Government securities operations in 1965 ($77 versus $96 for nonbank dealers) may derive from certain operating economies inherent in sharing overhead expenses with other related bank activities. Unit operating expenses of the five large nonbank dealers, discussed in the previous section but not shown, averaged $90 and $95 in 1964 and 1965, respectively, while corresponding costs for the five small nonbank dealers were $166 and $165.[30]

The large differences in both years between the two groups of nonbank dealers may be partially explained by economies of diversification, as suggested for bank dealers, since on balance the large dealers were considerably more diversified. Such a finding would have important implications for long-term dealer profitability, as would definite signs of

29. Data for individual dealers are not shown. In 1964 and 1965, seven and nine of twelve nonbank dealers, respectively, had operating expenses between $73 and $105 per million of sales.

30. Unweighted averages.

economies of scale with respect to the volume of transactions. Rank correlation analysis was employed to test for the latter relationship, in terms of both levels and changes (from 1964 to 1965) in transactions and unit operating expenses, but no significant relationships were found. This result casts considerable doubt on the meaningfulness of the described cost differences between large and small dealers. It is very likely that much of these differences may have in effect stemmed from the sales "denominator", wherein varying sales mixes entailed dissimilar unit expenses. The two dealers with the highest unit expenses in 1965, for example, also had the highest Agency/total transactions ratios, and both were small dealers.

F. Regression results

Multiple regression analysis was employed to test some of the assumed relationships in the net income equation, and to estimate the relative importance of the contributing components. The reader is reminded, however, that the observed relationships are in terms of realized profits, although with certain variables, particularly positions, it is the dealers' adjustments to expectations, and the resultant discrepancy between expected and realized profits that should be of crucial concern.

Equations were estimated using the monthly data on dealer earnings furnished for the FRB--NY study. These data encompass the six years from 1958 to 1963 and thus were conveniently divisible into two subintervals, essentially coinciding with the two broad periods under investigation. The general model tested here differs basically from the equation set forth in Section III-A in that: (1) it deals with gross rather than net earnings before taxes, (2) trading and carry profits are lumped together as the dependent variable, and (3) gross earnings are deflated by sales.[31]

31. Only nonbank dealer data were used since bank dealers submitted no figures on interest expense.

A gross earnings concept was substituted for net income due to the unreliability and incompleteness of monthly operating expense data. Judging from the allocative problems associated with preparing the annual dealer reports for the Market Statistics Division for 1964 and 1965, it is doubtful that dealers were able to allocate to their Government securities operations little more than clearing charges on a monthly basis. In addition, two nonbank dealers submitted no expense data at all.

The dependent variable includes both reported trading profits and net carry, since some dealers (as noted earlier) reported aggregate bill income as trading profits while others included it with interest earned. This was unfortunate because the combined figure may obscure certain relationships, particularly with regard to positions. Trading profits plus carry was, furthermore, deflated by monthly aggregate nonbank dealer sales to eliminate the effects of market growth It is expressed as dollars of trading profits plus carry per million dollars of sales ($X_0$). The independent variables tested were as follows:

I. Spread

$X_1$ - Quoted bid-asked spread on three-month bills

II. Transactions

$X_2$ - Sales, all securities, nonbank dealers

$X_3$ - Bill transactions, all dealers

$X_4$ - Coupon transactions, all dealers

III. Rates, rate changes

$X_5$ - Change in end-of-month three-month bill rate

$X_6$ - Change in the monthly average long-term bond rate (FRB index)

$X_7$ - Change in bill rate, last three days of preceding month

$X_8$ - Three-month bill rate

IV. Positions

$X_9$ - Bill positions, all dealers

$X_{10}$ - Coupon positions, all dealers

$X_{11}$ - Total positions, all dealers

V. Others

$X_{12}$ - Dummy variable for 1960 data revision

$X_{13}$ - Dummy variable for advance refunding months

In all, seventeen equations were estimated for each of three time periods--1958-63, 1958-April 1960 and 1961-63--using the same dependent variable and many of the same independent variables. Differences in specification mainly entailed alternative transactions, positions, and rate differential or level variables, due to substantial multicollinearity among variables. Five "representative" equations are presented in Appendix B. In the earlier subperiod, observations were used only through April 1960 due to the discontinuity in the data created by the reporting revisions in the following month.

1. Rate changes

Interest rate change variables (a proxy for realized changes in the value of positions) proved to have the greatest impact on monthly trading profits plus carry. Two such variables were employed in every equation, the month-end change in the 3-month Treasury bill rate ($X_5$) and the change in the monthly average level of long-term U. S. Government bond rates ($X_6$), using the FRB Government bond index. These two series were not highly intercorrelated and each contributed substantially to the total explained variation. Experimentation with various rate change variables indicated that this particular pair yielded the best results.

A third rate change variable was used concurrently, but for a slightly different purpose. Dealers, in calculating monthly income figures

for FRB--NY, may not have included the unrealized appreciation or depreciation on month-end positions. These gains or losses would usually be realized in the succeeding month. On the assumption that dealers turn over their positions every few days, only rate changes occurring at month end would lead to unrealized gains or losses. The change in the 3-month bill rate over the last three days of the preceding month ($X_7$) was therefore included. It proved to be highly significant for the 1958-April 1960 period (and for the full six years), due no doubt to the greater rate volatility in that period, and to the aforementioned reporting procedure.

Several tentative observations may be drawn from the examination of the rate change coefficients. The bond yield coefficient ($X_6$) was consistently larger than the bill yield coefficient ($X_5$), often by a factor of two or more. Bond rate changes were undoubtedly more representative of broad changes in security yields than were variations in the bill rate, and given changes in long-term yields have a greater effect on prices. Second, the rate change coefficients were always larger in the early sixties than the late fifties. This suggests that dealers carried larger positions relative to transactions in the later period.

2. Spread[32]

The spread on Treasury bills ($X_1$) was positively related to gross earnings in all periods tested, although the coefficients were significant only for regressions covering the full six years and were much smaller than the rate

32. The variable serving as a measure of spread was the bid-asked differential on the new 3-month bill, as reported in the Securities Department's "Composite Closing Quotations" for the Thursday following each new auction. Spreads on new bills were typically smaller during the week of auction than in succeeding weeks. The new 91-day bill, for example, might have had a 3 basis point spread on Thursday while the 98-day bill (issued as a 6-month bill) a quoted 6 point spread, reflecting in part the greater dispersion and scarcity of the older issue. The Thursday quoted spread on the new 3-month bill was considered more representative of actual spreads, more sensitive to changing competitive and risk conditions, and less a function of scarcity, than bills which had been fully digested in the market. The monthly spread figure is an arithmetic average of the weekly Thursday figures.

change coefficients. There are several reasons why these two results might be expected. First, the spread on bills may not have been a valid proxy for all spreads; for example, while bill spreads narrowed throughout much of the 1955-65 period, spreads on some coupon issues widened. A coupon spread variable was not introduced because of the difficulty in selecting a meaningful proxy and the fact that trading profits were not segregated for bills and coupons.

The second reason may be the lack of month-to-month variation of bill spreads, particularly in the '61-'63 period. (Quoted coupon spreads varied even less.) As a result, much of the importance of spread contributions to income may have showed up in the constant terms, which were typically similar in magnitude to the rate change coefficients. In addition, use of monthly data, as opposed, say, to annual data, has undoubtedly led to an underestimation of spread influence relative to changes in interest rates.[33]

3. Carry rates

In pilot regression runs, the spread between the FRB index of long-term bond rates and the 3-month bill rate was tested as a proxy for net carry. The variable coefficients were never significant and occasionally had the wrong sign. Furthermore, due to the relative stability of the bond rate, the rate spread variable was found to be very highly correlated with the 3-month bill rate itself. Hence, in the final set of regressions, the bill rate ($X_8$) was substituted for the rate differential, representing not only carry but general monetary conditions as well. The results were

33. On a monthly basis, interest rates fluctuated more widely than did quoted spreads. Were annual data used, the relative magnitude of spread changes would increase while the gains and losses associated with monthly rate changes would cancel out to some degree. The annual "net" of monthly changes in trading profits plus carry would therefore be more sensitive to variations in spread.

occasionally significant, with the expected sign; however, the variable contributed very little to the explanatory power of the set of independent variables.

4. Transactions

Trading profits plus carry per unit of sales were regressed against three transactions variables--bill and coupon transactions of all dealers and total sales of nonbank dealers--to estimate the effect of trading volume on profitability.[34] With gross earnings already deflated by sales, these variables might be expected to reflect changes in bid-asked spreads not "picked up" by the spread variable itself.[35] The coefficient for coupon transactions ($X_4$) was found to be positive in all periods, significantly so for the six-year and initial three-year intervals. The coefficients for total sales ($X_2$) and bill transactions ($X_3$) turned out to be negative and significant, for the same periods.

The results may be interpreted in several ways. One hypothesis is that higher transactions, ceteris paribus, imply wider spreads. Alternatively, higher volume may tend to reduce spreads as liquidity increases, particularly during periods of Treasury financings. The observed behavior of coupon and bill transactions in the regressions could be, indeed, intuitively "fitted" to these two hypotheses but the association is rather tenuous.

It is more likely that the observed effect stemmed rather from the nature of the data involved. The dependent variable incorporates profits and transactions of both bills and coupon securities.

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34. Neither bill-coupon sales breakdowns nor transactions data were readily available for nonbank dealers alone.

35. Shortcomings in the spread variable are discussed on pages 36 and 37.

Since coupon transactions are considerably more profitable than bills (per million of transactions), the dependent variable should vary with the bill-coupon composition of total sales. As the proportion of "low profit" bill transactions rises, the numerator may therefore not rise in the same proportion as total sales. Since coupon transactions were observed to be more sensitive to interest rates than bills, it is quite likely that changes in transactions composition over time led to the particular regression results at hand.

A dummy variable ($X_{13}$) was introduced for the eight months in which advance refundings occurred in the 1958-1963 period. The coefficient was consistently positive and significant for regressions covering the six-year period but neither consistently positive nor significant for the 1961-1963 interval, in which six refundings were conducted. With coupon activity substantially heightened during refunding months, higher profits per unit of total sales might be expected on the basis of the foregoing argument. The fact that the coefficients for the 1961-1963 period were not significantly different from zero suggests, assuming that the number of refunding observations was not inadequate, lower coupon spreads during refunding months.

5. Positions

Dealer position variables were inserted alternately with the bill rate ($X_8$) as proxies for net carry profits, with the assumption that all capital gain or loss effects associated with position levels had been "removed" by the rate change variables.[36] The results were mixed and generally insignificant. The bill position coefficient ($X_9$) was negative, and the coupon position coefficient ($X_{10}$) positive for the six-year period, as might

36. Position data were for all dealers since nonbank dealer figures alone were not readily available for 1958-60.

be expected, with a positively sloping yield curve.[37] At the same time, however, both coefficients were positive in the late fifties (1958-April 1960) and negative in the early sixties (1961-63). Examination of spreads between dealer loan rates at banks (New York City and "out-of-town") suggests that the average excess of these over the 3-month bill rate was greater in the earlier period, implying higher negative carry on bills at that time. In light of these results, there is a strong possibility that coefficients in the two sub-intervals may have in fact been influenced by factors other than relative rates, such as capital gains and losses associated with position levels.[38]

## IV. Dealer Capital: Capacity in the Industry

The term "capital" most commonly refers to the total net worth of a firm, that is, to the accounting residual of dollar assets and liabilities. This residual is often employed as a base for calculating the profitability of equity capital which, in turn, may serve as a rough guide for allocating capital among different enterprises.[39] Broadly speaking, it also functions as a measure of and constraint on a firm's ability to borrow. Unfortunately, conceptual and statistical difficulties prevent a valid application of accounting capital either for assessing profitability

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37. Although the 3-month bill rate was used as a proxy for financing costs in the discussion of net carry, financing costs have typically exceeded that rate. See footnote 24.

38. Revisions in data coverage and reporting procedures may also have affected the results.

39. Marginal profitability is a more valid parameter for allocating capital but it is impossible to measure in most instances.

or for estimating the potential asset expansion of dealer operations in U. S. Government and related securities.

The appropriate measurement of capital for either purpose is complicated largely by the type of firms operating as primary dealers and the way they employ capital. All but one or two of the nonbank dealers and, of course, all bank dealers are engaged in a variety of other activities. Each of these additional operations requires some capital underpinning. For nonbank dealers, difficulties in segregating capital for the Government dealer function arise both because of the intermingling of activities in an operational sense and because capital often "flows" from one activity to another depending on the relative profitability of each at any point in time. Bank dealers, for their part, would present similar complications but, as a rule, they regard capital (i.e., some portion of net worth) as neither a relevant operational constraint on positions nor a suitable standard for assessing the dealer function's profitability.

Historical data on nonbank dealer capital are available only for aggregate net worth, i.e., accounting capital, and, in the subsequent analysis of the trend in invested capital over the past two decades, it is therefore, necessary to use this broad concept.[40] At

40. Nonbank dealer "capital" includes not only capital and surplus as stated in the balance sheet but also permanent-type reserves, long-term debt, and unrealized appreciation (or depreciation) on securities in position. This rather broad interpretation of net worth was selected for two reasons. First, permanent-type reserves and long-term debt are incorporated in net worth by the Federal Reserve Bank of New York for credit purposes. Dealers may be awarded securities in regular auctions or other offerings to the value of fifty times net worth, in lieu of the two per cent deposit required of all other (nonbank) bidders. Second, discrepancies among dealer financial statements in the treatment of the above items, particularly unrealized gains and losses, necessitated the broad definition to attain greater uniformity.

the same time, the specification of more meaningful measures of capacity and profitability, in terms of capital for nonbank dealers and alternative criteria for banks, may lend some perspective to the analysis and point up the potential shortcomings in the data surveyed. A discussion of nonbank dealer capital measures and the arguments for the inapplicability of such formulations to bank dealers is presented in Appendix C. In brief, the concepts of capital available and capital in use are developed for estimating nonbank dealer expandability and deriving a meaningful rate of return on equity, respectively. Capital available is essentially the maximum amount of net worth available to cover margins. The portion of net worth representing the book value of furniture or stock exchange memberships, for example, is not eligible. Capital in use is that portion of net worth actually in use as margins, the excess of the purchase price of positions in U. S. Government and Agency securities and C/D's over borrowing.

The primary defect in using accounting capital to gauge industry size is the inability to detect secular shifts among competing firm functions. To the extent that these possible shifts represent permanent or semi-permanent commitments, inhibiting fluidity, the trends in capacity growth will be misstated. Nevertheless, for nonbank dealers active prior to 1960, the dealer function constituted an important part (if not the most important part) of these firms' activities suggesting that observed trends in accounting capital should validly reflect the behavior of capital available. For those firms "recognized" since 1960, including two very large firms having net worth far in excess of the amounts needed to maintain their dealer operations, sufficient information is available to roughly estimate capital available.

In the subsequent discussion, aggregate capital investment in the industry since 1949 is reviewed, along with an examination of the sources of and trends in capital growth. For this purpose, estimates of capital available are used for incorporating the bank dealers. Then a schedule of margin rates for various types of securities and maturity categories is constructed and applied to aggregate dealer positions for 1960 to 1965 to derive a measure of capital in use. Following this section, relative levels and trends in available capital and required capital are appraised in the context of expected profit performance. In the final section, the rate of return on capital is discussed.

A. Invested capital

The expansion of assets through borrowing is a function of the amount of capital available and the nature of assets which may serve as financing collateral.[41] The Government securities industry represents an extreme in this utilization of borrowed funds or leverage, typically maintaining a capital/asset ratio of less than 5 per cent. The ability to operate with this exaggerated leverage is based, of course, on the highly liquid and minimum risk characteristics of the dealers' collateral assets, namely U. S. Government securities. Expansion is limited, nevertheless, since nonbank dealers are required to provide margins to the lender as a protection against potential price declines on collateral securities.[42] These capital (or margin) requirements vary according to type and maturity of collateral, with higher margins on longer term securities due to the greater price risk incurred by the lender. In sum, the expandability of dealer positions depends on the amount of capital available for margins, the size of required margins, and, in conjunction with the latter, the maturity composition (and types) of securities held by dealers.

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41. Assuming sufficient funds for desired financing are available.

42. Collateral securities are necessary for long positions or short positions. Of course, for short positions the margin provides protection against price increases in the loaned securities. Bank dealers also have expansion constraints but not of exactly the same nature. See Appendix C.

1. Sources of change in invested capital

Distinctive changes in the level of capital invested in nonbank dealer firms over the past two decades have resulted from varying profit performance, the entry and exit of firms, and, in regard to capital accumulation, decisions about the retention or disbursement of earnings. Marginal factors include the addition or withdrawal of capital by individual officers or partners, the issue of long term debt, and unrealized appreciation or depreciation. Table IX shows the year-end level of aggregate nonbank dealer net worth from 1948 to 1965, based on two overlapping series.

The first series, from 1948 to 1958, was compiled by Meltzer and von der Linde, largely on the basis of annual financial statements, and includes what appears to be net worth plus recognizable reserves. The second series, 1955 to 1965, was compiled by the author from both financial statements and supplementary data available on a confidential basis to the Credit Department of the Federal Reserve Bank of New York. Much of the discrepancy between the two series (note 1955 to 1958) stems from the broader coverage of permanent-type reserves in the second series. In addition, some variation may be due to different treatment of unrealized gains or losses in each case.

The figures on net worth generated by Meltzer and von der Linde cover the twelve nonbank dealers "designated for handling transactions in U. S. securities (with SOMA)" in 1959. Only five of these dealers were so designated in the 1948 to 1952 period, while more than twelve were trading with the Federal Reserve at one time or another from 1952 to 1955; thus, net worth, according to our definition of the industry, was overstated in the Meltzer-von der Linde series for 1949 to 1952 and perhaps slightly understated for 1953 and 1954. The discrepancy would probably be on the order of 10 per cent or less, however. For the two periods examined more thoroughly, 1955-60 and 1960-65, the net worth figures (from the Federal Reserve Bank of New York) reflect all "authorized" nonbank dealers.

Table IX

Total Net Worth of Nonbank Government Securities Dealers

(In millions of dollars)

| Year | Meltzer-von der Linde | FRB of New York* | Year | Meltzer-von der Linde | FRB of New York* |
|---|---|---|---|---|---|
| 1948 | 54.6 | - | 1957 | 67.3 | 74.1 |
| 1949 | 58.1 | - | 1958 | 73.8 | 84.4 |
| 1950 | 53.1 | - | 1959 | - | 88.7 |
| 1951 | 51.9 | - | 1960 | - | 95.7 |
| 1952 | 53.8 | - | 1961 | - | 110.4 |
| 1953 | 59.2 | - | 1962 | - | 137.0 |
| 1954 | 64.2 | - | 1963 | - | 127.6 |
| 1955 | 69.3 | 72.1 | 1964 | - | 237.3 |
| 1956 | 61.4 | 67.2 | 1965 | - | 260.9 |

* Includes capital, undivided profits, long-term debt, permanent-type reserves, and unrealized appreciation or depreciation on securities.

2. Changes in invested capital, 1948 to 1955

From 1948 to 1952,[43] there were ten "recognized" dealers, five nonbank firms and five dealer departments of commercial banks. The net worth of the five nonbank dealers at the end of 1952 was an estimated $45 million, and in each firm a considerable portion of activity was devoted to the Government securities operation. Judging from their participation in sales and positions at that time, the five bank dealers probably "contributed" an additional $10 to $15 million of capital.[44]

In 1953, capital and other requirements for trading with SOMA were eased, and nine additional nonbank dealers received such authorization. These firms added an estimated $10 million of capital. Three firms, each with net worth under $500 thousand, lasted three years or less; two departures resulted from the death of a principal officer and a subsequent withdrawal of capital

43. The end of the calendar year is used as the reference for inclusion or exclusion of "authorized" firms.

44. This and subsequent estimates of bank dealer "capital" are in effect capital available, approximately the amount that would have been necessary to conduct the operation on an independent basis.

from the firm. The six other firms have remained in the industry to this day. One bank dealer commenced trading with SOMA in 1954 but ceased at the end of 1955 due to a lack of interest. With the addition of a small nonbank dealer in the middle of 1955, the industry at year-end was represented by five bank and twelve nonbank dealers with aggregate capital of perhaps $85 to $90 million, including an estimated $15 to $18 million for bank dealers.

3. Changes in invested capital, 1955 to 1960

From 1955 to 1960, the membership of "authorized" firms remained unchanged. Total nonbank dealer net worth rose from $72 million to almost $96 million, a gain of 33 per cent. During the period, about $1.3 million of new capital was invested in dealer firms. Several million, perhaps $6 or $7 million, was withdrawn, the bulk of which represented the death or retirement of participating partners and officers. With long-term debt declining about $2 million, from $3.3 million to $1.4 million, it is apparent that between $25 and $30 million of earnings was retained in the industry. This implies an annual growth rate of about 5 per cent. However, while annual earnings figures are not available for most of the firms for this period, total earnings were considerably larger, perhaps double the amount of retained earnings.

Dividend or disbursement policies clearly differed among nonbank dealers. First Boston Corporation alone earned $20 million from 1955 to 1960 but paid out 88 per cent in dividends. Discount Corporation similarly paid out 80 per cent of $6.4 million in net profits. Largely as a result of this policy, the net worth of these two firms grew only 7 and 8 per cent, respectively. Other firms, however, expanded their net worth considerably, six by 50 per cent or more. Perhaps significantly, First Boston and Discount are the only publicly owned firms. Size per se does not appear to have been a factor in the decision to retain earnings and expand capital, except to the extent that many of the

smaller firms were more likely dominated by a few individuals who, perhaps for reasons of prestige, or potential growth in earnings, wished to expand their firm's capital and operations. As a result, the growth in capital from 1955 to 1960 might be characterized as passive. New capital was not immediately attracted to the industry by virtue of a high rate of return.

Long-term debt was outstanding at only four firms during the period, all of whom were in the middle-to-small size category. At three of these firms, such debt declined from 1955 to 1960, leaving a total of only $1.4 million for the industry in the latter year. While there may be a variety of reasons for not issuing long-term debt, it is apparent that it has not played a significant role in underwriting the market.

4. Changes in invested capital, 1960-65

Between 1960 and 1965, the dealer industry experienced several membership changes, resulting in a substantial net addition to accounting capital. Three bank and two nonbank dealers joined the industry, one nonbank dealer merged with a large brokerage firm, and two nonbank dealers withdrew. Both withdrawals from the industry were for reasons totally unrelated to firm performance in the Government securities market. By 1965, the number of bank dealers had risen from five to eight while nonbank dealer membership stood unchanged at twelve.

Total net worth of all "recognized" nonbank dealers jumped from $96 million in 1960 to $261 million in 1965. Of the net $165 million increase, $148 million represented the entry of two dealers plus the merging brokerage firm, $25 million came from the increase in net worth of these three firms, and $12 million represented capital accumulation at the nine previously existing firms. Partially offsetting this rise was a drop of $20 million in net worth from the two departures and partial capital withdrawal from the merged dealer.

Examining the nine previously active dealers alone, net worth advanced from $71.7 million to $83.6 million from 1960 to 1965, an increase of 16.6 per cent. This growth compares with a $17.5 million (32 per cent) rise during the earlier period. Three of the nine firms experienced a net decline in net worth from 1960 to 1965, however, and $10.4 million of the $11.9 million gross increase was concentrated at two dealers. Again, there is no way to determine either the amount of earnings generated over the period or the withdrawal policy for most firms. The FRB--NY data are incomplete with regard to five of the nine dealers for 1961 to 1963. For the final two years, 1964 and 1965, these nine firms reported to the Market Statistics Division a combined net income of $20.1 million from all activities before taxes.[45]

Dealer capital could presumably have grown faster had dealers retained a greater share. At the same time, fragmentary evidence suggests that in the 1960's a substantially smaller proportion of total earnings generated by the nonbank dealers accrued from the Government securities operation. For 1964 and 1965 combined, for example, Government securities operations of nonbank dealers resulted in a net loss of $6.8 million whereas aggregate income from all sources (before taxes) amounted to $128 million ($100 million of which was earned at Merrill Lynch). It is thus quite possible that capital available could have contracted during the period; at the very least, earnings performance provided little incentive for dealers to expand capital in their Government securities operation.

As previously noted, five banks were primary dealers from 1955 to 1960; between 1961 and 1965, three additional banks became primary dealers and were "authorized" to trade with SOMA. Using gross transactions as a measure of size, the five older bank dealers grew approximately 23 per cent from 1955 to 1960 and

45. For 1961 through 1965, First Boston Corporation earned $16.0 million, of which 90 per cent was paid out in dividends; Discount Corporation earned $2.2 million, paying out 113 per cent in dividends.

34 per cent from 1960 to 1965. Since transactions growth was primarily in the bill sector, where margin requirements are minimal, estimates of "capital" expansion need not be as large; thus, bank dealer capital available, estimated at $15-18 million in 1955, was perhaps $20 million in 1960 and, for the same previously existing five bank dealers, $25 to $27 million in 1965. In 1965, the three new bank dealers accounted for 27 per cent of total transactions by bank dealers, implying an additional $8 million of employed "capital". This combined bank dealer "capital" investment of $33 to $35 million is close to the figure of $35 million, estimated by the banks themselves in 1965 as necessary for their operations.

Summarizing these trends in dealer capital, the total net worth of active nonbank dealers plus the assumed "capital" investment of the bank dealers rose from $85 to $90 million in 1955 to about $115 million in 1960. Using capital available figures for the entering nonbank dealers, the 1965 figure for capital funds employed in Government securities operations by bank and nonbank dealers was about $140 million. This represents an approximate increase of 60 per cent over the decade. For perspective, over the same interval, net positions and gross transactions for all dealers (after some adjustment for reporting revisions) are estimated to have expanded on the order of 67 per cent and 100 per cent, respectively. The two increases stemmed largely from changes in Treasury bills.

Capital growth in the industry, 1955 to 1960, came about almost entirely through the retention of earnings. In the later period, the major share (perhaps two-thirds) of new capital devolved from new entrants, as growth in the older firms slowed due to declining earnings. While observed capital appears to have risen in line with market activity (in terms of positions and transactions), it is not as certain, even with the additional firms, that

capital available has expanded at a comparable pace, particularly in the 1960 to 1965 period.

B. Margin requirements

The adequacy of dealer capital depends on the relationship between available capital and required capital. The latter is a function of the size and composition of dealer positions as well as the cost, in terms of capital margins, per dollar of securities held. How large can positions grow before margin requirements exhaust the available capital, assuming a desire on the part of dealers to expand inventories to that point?

The assumption of dealers' desire to expand positions is crucial. Capital available operates as a broad constraint on position levels, as evidenced by the strong positive relationship between the size of individual dealer's capital and positions. The level of positions held at any particular time, however, is a function of expected profits or profitability, as determined by transaction volume, spreads, expected price changes, and other factors. Expected profits involve both return and risk. Unless expected returns are high and/or risks low, dealers may not be induced to expand positions to what might be considered, on other criteria, the most efficient level. In this investigation, we are limited to an estimate of the degree to which positions could be expanded, given favorable conditions, before encountering the absolute capital constraint. As noted in Appendix C, this exercise is valid for nonbank dealers, but a different set of criteria must be developed for judging the expandability of bank dealer positions.

1. Margin Rates

The most striking feature about quoted margin rates for Government securities dealers is the diversity of quotations for each of the various maturity categories and the apparent flexibility in their application. Schedules

of approximate rates, as reported in earlier studies and more recently by three dealers and two clearing banks, are presented in Table X. They are approximate because in many instances individuals were quite vague about minimum requirements. The concensus of persons interviewed was that margin requirements had, if anything, narrowed over the past decade. Several noted that current requirements were in practice below the "official" margins set a number of years ago. Of course, there is some tendency for margins to narrow or be less strictly enforced during periods of relatively stable rates, as in the early 1960's.

The maturity of the collateral (U. S. Government securities) was easily the overriding factor in the determination of margin requirements, and despite variations among lenders, "advertised" margins seemed to be granted to all Government securities dealers without discrimination. At the same time, there was some indication from discussions with dealers and clearing banks that preferential treatment, in the form of borrowers not always meeting minimum requirements, was extended by some lenders on the basis of business received or the size of the borrower (in terms of capital). Size was a factor in that lenders were typically more careful in checking, on a day-to-day basis, the adequacy of margins provided by small dealers. Large dealers might be under-margined one day, and simply asked to provide more coverage the next. It is doubtful, nevertheless, that large dealers were able to operate on continuously narrower margins than small dealers over any extended period of time.

In order to estimate minimum aggregate capital requirements for past position levels, it is necessary to assign margin rates to each maturity category or type of position activity. Margin rates against Treasury bills, certificates of deposit, and other securities maturing in less than 1 year ranged from

Table X

## Margin Requirements on Collateral Loans and Repurchase Agreements*

(In per cents or points)#

| Type of security used as collateral | Source of Margin Quotation: New York Clearing House Assn. (1957) | Mr. Girard Spencer-"Hearings" (1958) | Meltzer-von der Linde (1959) | A (1966) | B (1966) | C (1966) | D (1966) Long | D (1966) Short | E (1966) |
|---|---|---|---|---|---|---|---|---|---|
| **Collateral loans** | | | | | | | | | |
| Treasury bills | 0 | Discount accrual | 1/4% | 0-1 pt | 0 | 0 | 0-1 pt | 1 pt | 0 |
| Certificates of deposit | - | - | - | 0 | 0 | 0 | - | - | 0 |
| Certificates of indebtness | 1 pt | - | 1/2% | - | - | - | - | - | - |
| Notes and bonds | | | | | | | | | |
| Under 1 year or Under 5 years | - / 1 pt | Accrued interest / - | - / - | (<18 mo.) 1 pt / - | 0 / - | 0 / - | 1 pt / - | 1 pt / - | 0 / - |
| One to 5 years | - | 2 pts | 1 pt | (>18 mo.) 2 pts | 1-2 pts | (<3 yr.)1/2pts | 2 pts | 2 pts | 2 pts |
| 5 - 10 years or Over 5 years | 2 pts / - | 2 pts / - | 2 pts / - | - / - | 2 pts / - | (>3 yr.) 1 pt / - | - / 3 pts | 2 pts / - | - / 5 pts |
| Over 10 years | 3 pts | - | 3 pts | 3 pts | 3 pts | 2 pts | - | 3 pts | - |
| Federal Agency | | | | | | | | | |
| One year or less | - | | - | 2-3 pts | Same as U.S. Gov'ts. | Same as U.S. Gov'ts. | Same as U.S. Gov'ts. | † | 0 |
| Over 1 year | - | | 5 pts | 2-3 pts | | | | | 2-5 pts |
| **Repurchase agreements** | | | | | | | | | |
| One year or less | | | | (3 mo.) $25/mil. (6 mo.) $50/mil. | 0 | 0 | | | 0 |

* The sources for the quotations identified by letters would prefer not to be disclosed publicly.
\# Per cent denoted by %, points by "pts".
† Federal Agency securities have not been used as a rule as collateral for borrowing securities.

zero to as much as 1 point.[46] Typically, bill margins are set by taking the current market value of the bills (in terms of their bid price) and rounding down to the nearest convenient number.[47] The margin on CD's is computed similarly, although the requirement may vary with the source of the CD, that is, the issuing bank. For coupon securities maturing in less than one year, accrued interest in effect serves as a margin, since it is rarely counted as part of the collateral value. In order to reflect the "convenience" factor in financing bills and CD's and the addition of accrued interest on under 1 year coupon securities, 1/4 of 1 per cent was applied to bills and CD's and 1/2 of 1 per cent to the coupon securities.

For coupon securities maturing after one year, financing is again handled on a "flat" basis (excluding accrued interest). For one-to-five year issues, margins ranged from 1/2 point to 2 points, with the more frequent quotation nearer one point. To make some provision for accrued interest, 1 1/2 per cent was selected for our computations. For issues maturing in 5-10 years, quotations ranged from 2 to 5 points but were generally on the lower side. Again, allowing for convenience and accrued interest, 3 per cent was applied to this category. In the over-10-year issues, margin rates were quoted from 3 to 5 points. In this case, 4 per cent was used for 10-20 and 5 per cent for over 20 year issues.

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46. Zero margin generally means that the loan is covered by an equivalent dollar amount of collateral securities, valued at the bid price. While a computational distinction between points ($10,000 per million par value) and per cents exists, the overriding convenience factor has rendered the distinction virtually irrelevant; in this memorandum, there need be no computational distinction because position totals used to compute dollar margin requirements were reported on the basis of par value. Because bill positions were reported at par value, however, aggregate margin requirements for bills may be slightly overstated. In Congressional hearings in 1958, a survey indicated that initial margins for loans at commercial banks against collateral (U. S. Government securities) maturing in 1 year or less were as follows: of $1.95 billion of financing, 47 per cent was financed at zero initial margin, 23 per cent at 1/4 point or less, 24 per cent at 1 point, 10 per cent at 2 points, and 6 per cent at 3 points or more.

47. For example, a 180-day bill bid at 98.321 might be valued at 98.250 for collateral purposes.

Federal Agency securities, having become much more actively traded and widely held, appear to have experienced declining margin requirements over the past decade. In the Meltzer-von der Linde study, 5 per cent was applied uniformly to all types and maturities. Today, several sources said Agencies were accorded the same margins as comparable-maturity Governments. For Agency securities maturing in less than one year, a 1 per cent margin was used, while 3 per cent was applied to all Agencies maturing in more than one year.

Margin rates for borrowed securities again depend on the maturity of the collateral, although they are slightly lower in the longer maturity sectors than margins for straight financing. Less risk of adverse price movements is involved in covering securities borrowed because the prices of these securities move in the same direction as the collateral prices. (The dollar value of a loan, of course, does not change with security prices.) Margins range from virtually zero on bills to 3 points for securities maturing in over ten years. Typically, however, a rule-of-thumb 2 points is applied to the total "collection" of securities submitted as collateral against borrowed securities, largely because of the inconvenience entailed in calculating margin allowances for individual issues. Two points was therefore applied when estimating aggregate margins on dealers' short positions.

2. Minimum capital requirements

Applying the margin rates selected in the last section, minimum capital requirements were estimated for average dealer positions from 1960 to 1965, and for the week of highest average daily positions, August 17-21, 1964.[48]

48. Data for years prior to 1960 were available only on a net basis, precluding meaningful analysis or inter-period comparisons. Reported on a commitment basis, the position data lead to some overstatement of capital requirements since new security issues are typically taken into position several days (or more) prior to actual issue and payment. This practice occurs largely in bills, however, where the impact on capital is relatively small.

Position data are for all dealers, even though bank dealers financed the bulk of their positions themselves and hence were not subject to margin requirements; the importance of this procedure will be noted later. Two methods of calculation were employed, the primary one being based on dealers' gross long positions and the second, used as a comparative check, on the gross short plus net long positions. The results of the first method are presented in detail in Table XI, as are the summary figures for the second method.

A necessary assumption for minimum capital utilization is that dealers borrow to the fullest extent possible. This entails using the entire gross long positions as collateral against either direct loans or borrowed securities.[49] Aggregate margins required on the gross long position, then, are a first approximation of the minimum amount of dealer capital needed to support the observed level (and composition) of positions, without regard for the relative size of the short position. Using this method, dealer capital requirements rose from over $23 million in 1960 to over $40 million in 1965, or by 74 per cent. When net long positions were at their peak during this period, in the week ended August 21, 1964, requirements were $57 million.

When dealers borrow securities to sell short, the proceeds of the short sales can be used to repay outstanding loans, and the released collateral can, in effect, be shifted to collateralize the borrowed securities. Several aspects of providing collateral for borrowed securities may alter aggregate margin requirements. On the other hand, as noted earlier, margin rates on long-term collateral securities are lower than when applied to borrowed securities than to direct loans. Also, bills sold short are often financed by "due bills", which are unsecured borrowings requiring no margins at all. On the other hand,

49. Minimization of capital used does not necessarily imply the least-cost combination of capital and borrowing.

Table XI

Minimum Aggregate Capital Requirements for Financing Dealer Positions, 1960-1965 and August 17-21, 1964, by Maturity Category. Based on Average Daily Position Figures

(In millions of dollars)

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | August 17-21, 1964 |
|---|---|---|---|---|---|---|---|
| Method of Gross Long Positions (including long-term RP's) | | | | | | | |
| Treasury bills | 4.14 | 5.09 | 6.50 | 6.31 | 7.02 | 7.17 | 7.21 |
| Coupon securities | | | | | | | |
| Under 1 year | 1.68 | 2.42 | 2.70 | 1.80 | 1.48 | 1.31 | .92 |
| 1-5 years | 10.04 | 7.72 | 6.24 | 8.20 | 7.52 | 5.29 | 10.93 |
| 5-10 years | 3.14 | 2.66 | 4.73 | 7.15 | 8.39 | 8.30 | 15.62 |
| 10-20 years | 1.15 | 1.29 | 1.45 | 1.24 | .44 | .75 | .79 |
| Over 20 years | 1.24 | 1.16 | 1.94 | 3.14 | 6.00 | 10.86 | 16.30 |
| Agency securities | | | | | | | |
| Under 1 year | 1.19 | 1.04 | 1.72 | 2.16 | 2.23 | 2.54 | 2.51 |
| Over 1 year | .77 | .88 | 1.24 | 1.49 | 1.51 | 3.85 | 2.50 |
| Certificates of deposit | - | - | - | .10 | .53 | .56 | .55 |
| Total | 23.35 | 22.26 | 26.52 | 31.59 | 35.12 | 40.63 | 57.33 |
| Method of Gross Short plus Net Long Positions (including long-term RP's)* | | | | | | | |
| Gross short position | 5.07 | 9.13 | 9.88 | 11.51 | 12.39 | 13.79 | 9.20 |
| Net long position | 20.04 | 15.56 | 19.36 | 21.97 | 24.49 | 31.20 | 49.74 |
| Total | 25.11 | 24.69 | 29.24 | 33.48 | 36.88 | 44.99 | 58.94 |

* A margin of 2 points was applied to the entire short position; then selected margins were applied to net long positions in each category.

there are greater risks involved in using bills as collateral against longer term securities borrowed because of potential price rises; this would imply higher margins for bills than in the case of direct loans. Applying the straight 2 point margin (frequently used as a rule of thumb by lenders of securities) to dealers' gross short positions and then the previously selected margins to net long positions in each maturity category, aggregate minimum capital requirements were again estimated. The results, shown in Table XI, were consistently above the totals computed from gross long positions but not by very large amounts; the differences ranged from 5 to 11 per cent. The higher margins "imposed" on short positions in bills weighed more heavily than reduced margins on long-term collateral securities but the variation between the two methods is certainly not sufficient to consider the relative size of the short positions an important determinant of capital requirements.[50]

C. Capital adequacy

A primary task of this study was to ascertain the sufficiency of dealer capital under current market conditions and to judge its expected availability for accommodating the near-term requirements of public and private market participants. The foregoing analysis of invested capital and minimum requirements surely indicates that adequate capital was available in 1965 for positioning securities. Although capital requirements grew at a faster rate during the sixties than did the proxies for capital available, the absolute gap between them widened. Far from seeing a withdrawal of invested capital in dealer firms, most firms grew in size from 1960 to 1965 and six firms entered the industry. Furthermore, since bank dealers finance

50. Both techniques are subject to similar types of error, not only with regard to the validity of margin rates applied, but also in terms of the practical problems of daily financing activities. In the latter sense, both methods probably underestimate needed capital by implicitly assuming a degree of flexibility and efficiency in the distribution of collateral among lenders not practically feasible under current clearing arrangements. In part, however, the "generous" estimates of margin rates may offset this bias.

the bulk of their positions with their own funds, the potential capacity of the industry grew substantially with the addition of three new bank dealers. Indeed, of the $18 million increase in required capital from 1960 to 1965, bank dealers accounted for $9 million. In 1965, the actual amount of capital required, i.e., the requirements of nonbank dealers, was just under $29 million. This can be compared roughly with total nonbank dealer capital of $261 million and capital allocated to Government securities activities of $86 million. With the mobility of funds among firm functions, there is little doubt that there is sufficient capital available to meet any foreseeable needs in the near future.

The crucial factor, as mentioned earlier, in determining whether public and private operations will be accommodated efficiently is the expected profitability of such accommodation. When profit expectations are favorable, resources can be shifted to Government securities operations by dealers, even to the point of bank dealers raising additional funds in the CD and Federal funds markets. Alternatively, when prices are expected to decline or bid-asked spreads narrow to the point where they do not cover the risks of holding securities, dealers may be unwilling to expand their positions to accommodate official or private operations and may divert resources to other, more profitable uses. Nothing in the analysis of profits in the early sixties, however, indicated that dealer net income (and return on capital) would remain at permanently low levels, so it is likely that future dealer behavior will continue to respond to profit opportunities as they arise. Nevertheless, efforts to prevent deterioration in market performance, however defined, can succeed only if there is reasonable assurance of adequate profits. Capital will be more than sufficient if this occurs.

## V. Rate of Return on Capital

Computing a meaningful rate of return for capital employed by dealers in their U. S. Government securities operations is severely hampered by the problems inherent in specifying and measuring the appropriate capital base and in properly allocating income and expenses among this and closely related firm functions. Additionally, it is virtually impossible to assess the intangible returns which may accrue to the diversified dealers by virtue of their making markets in U. S. Government securities. Nevertheless, to comply with the request of this study's prospectus to discuss the magnitude of returns to firms having U. S. Government securities operations, the rates of return reported by Meltzer-von der Linde for 1948 to 1958 are presented in Table XII and additional material appears below for later years. (The Meltzer-von der Linde data refer to income from all operations of nonbank dealers, however.)

Table XII

Ratio of Aggregate Net Income (before taxes) to Net Worth (including long-term financing), Nonbank Dealers, 1948-1958*

(In per cents)

| | | | | | |
|---|---|---|---|---|---|
| 1948 | 1.2 | 1952 | 7.8 | 1956 | .2 |
| 1949 | 17.0 | 1953 | 25.6 | 1957 | 42.4 |
| 1950 | - .8 | 1954 | 24.2 | 1958 | 58.1 |
| 1951 | 4.3 | 1955 | 2.3 | | |

* Ratios are based on complete reports from 7 to 10 dealers. Net income is after special charges or gains. In 1955, bank dealers had a net loss in their Government securities operations, which led to a loss for the whole industry.

Source: Meltzer-von der Linde, p. 133.

The FRB--NY study did not provide sufficiently detailed figures to permit meaningful calculations of return on capital from 1959 to 1963. Capital data were for nonbank dealers only while income data were for all dealers. Clearly, the return was very high in 1960 and quite low in 1963.

For 1964 and 1965, nonbank dealers estimated capital allocated to their Government securities operations of $82.2 and $85.5 million, respectively. Based on these figures, the rates of return were 3.7 per cent in 1964 and -12.3 per cent in 1965 before taxes. Examining the combined operations of each nonbank dealer, however, the rates of return on accounting capital averaged 26 per cent (1964) and 27 per cent (1965). In both years, the highest rates of return were, as might be expected, achieved primarily by the larger, diversified firms. In 1965, when 10 of the 12 nonbank dealers reported losses in the Government securities operations, five had overall profits, and four of these were the large diversified dealers.

The study prospectus also requested some comparison of rates of return in similar fields such as among brokerage or investment firms. Any comparison of this nature, however, suffers from more extensive difficulties than simply capital and income allocation. Foremost are the problems of average versus marginal measurement, and the specification of a risk differential. Currently available data on income and capital allow computation only of average rates of return for extended periods of time. The crux of efficient capital allocation, however, is the marginal rate of return, i.e., the change in income per marginal change in capital. In a diversified dealer firm, where considerable portions of capital are mobile, average rates of return to various functions may differ while marginal rates are equal. Similarly, average rates may differ among firms yet marginal rates be equal. Thus, differences in observed average rates of return provide no predictable clue about potential capital movements.

The second and perhaps more important constraint to inter-industry comparisons is the problem of assigning a risk component to rates of return in order to reflect the riskiness of various types of enterprise. It may be reasonable that U. S. Government securities dealers should receive greater risk

compensation per unit of invested capital (given the risks associated with highly leveraged positions and volatile prices) than, say, brokerage firms with minimal capital risk exposure; how much greater the compensation, nevertheless, is a matter of conjecture. Indeed, given the very wide cyclical earnings swings, and the difficulties in quantifying nonmarket factors (Federal Reserve support of rates immediately following World War II, for example), it is impossible at this stage even to generate a reliable long-run rate of return for the U. S. Government securities industry alone.

# Appendix A

## Summary of Dealers' Income and Expenses, 1964 and 1965

Aggregate income statements covering the U. S. Government securities operations of the twelve nonbank dealers in 1964 and 1965 and the eight bank dealers in 1965 are presented in Table A-1. In 1965, nonbank dealers incurred an aggregate loss of $9.9 million (before allowance for income taxes) from these operations with only two of the twelve dealers realizing a profit. In contrast, nine firms showed a profit in 1964 and combined pretax net income totaled $3.1 million. Bank dealers had similar difficulties in 1965, losing $4.5 million in the aggregate with but one bank reporting a net gain.

The primary cause of net losses in 1965 was the extremely low level of trading profits, particularly on coupon securities. Spread profits, based on annual sales and quoted spreads of the several coupon maturity categories, were estimated at $68 million for total coupon sales, although substantial downward adjustment, perhaps by about one-half, is necessary to account for the fact that actual spreads were well inside the announced quotations. Still, all dealers had combined coupon trading profits of only $9.4 million, or little more than one-fourth of potential gross revenues had there been no capital losses; declining prices of securities held in position in effect wiped out three-quarters of the estimated spread profits.

Trading profits on Treasury bills, included in interest income in these figures, were not separated from accrued discount (interest) by most firms. Based on the performance of five nonbank dealers and four bank dealers who were able to segregate trading profits from discount (interest) earned on bills, aggregate bill trading profits in 1965 were estimated to be about $6 million.

Table A-1

Dealers' Income and Expenses on Government Securities Operations* and Nonbank Dealer Net Income from All Other Activities, 1964 and 1965

(In thousands of dollars)

| Government securities operations | Nonbank 1964 | Nonbank 1965 | Bank 1965 |
|---|---|---|---|
| Income | | | |
| Trading profits on coupon securities | 14,600 | 6,762 | 2,645 |
| Unrealized appreciation or depreciation on securities owned | 493 | - 910 | - 1,193 |
| Interest, dividends, and discount earned | 102,590 | 113,569 | 35,941 |
| (Income from Treasury bills) | (67,859) | (75,091) | (20,183) |
| Other income | 46 | 173 | 82 |
| Total Income | 117,728 | 118,594 | 37,475 |
| Expenses | | | |
| Interest on borrowed funds | 98,023 | 112,286 | 33,891 |
| All other expenses | 16,630 | 16,169 | 8,069 |
| Total expenses | 114,653 | 128,455 | 41,960 |
| Net income before taxes | 3,076 | - 9,862 | - 4,484 |
| Net income before taxes from all other activities | 56,611 | 78,615 | |

Note: Figures may not add to totals due to rounding.
* Includes Federal Agency securities and certificates of deposit.

This compares with potential spread profits of $10 million.[1] The relatively smaller contraction of trading profits on bills vis à vis coupon securities presumably stemmed in part from the smaller impact on bill "prices" of a given change in interest rates.

Based on the estimated $6 million of bill trading profits, $4 million for nonbank dealers and $2 million for bank dealers, net carry for all dealers was approximately $-3.7 million. Nonbank dealers sustained the entire loss while

1. The quoted spreads on Treasury bills, used for estimating spread profits are probably quite close to actual spreads.

bank dealers were estimated to have broken even on the financing of their positions. Bank dealers typically employed as the cost of carry the Federal funds or three-month bill rates which in 1965 were somewhat below nonbank dealers' borrowing rates.

# Appendix B

## Table B-1

## List of Independent Variables for Multiple Regressions

| Symbol | Variable | Unit |
|---|---|---|
| $X_1$ | Quoted bid-asked spread on the new three-month Treasury bill, monthly averages of Thursday observations | Basis points |
| $X_2$ | Total sales, nonbank dealers, monthly averages of daily data[1] | Millions of dollars |
| $X_3$ | Bill transactions, all dealers, monthly averages of daily data | Millions of dollars |
| $X_4$ | Coupon transactions, all dealers, monthly averages of daily data[1] | Millions of dollars |
| $X_5$ | Change in end-of-month three-month bill rate | Percentage points |
| $X_6$ | Monthly change in long-term U. S. Government bond rate (FRB index), monthly averages of daily data | Percentage points |
| $X_7$ | Change in three-month bill rate, last three days of preceding month | Percentage points |
| $X_8$ | Three-month bill rate, monthly averages of daily data | Percentage points |
| $X_9$ | Bill positions, all dealers, monthly averages of daily data | Millions of dollars |
| $X_{10}$ | Coupon positions, all dealers, monthly averages of daily data[1] | Millions of dollars |
| $X_{11}$ | Total positions, all dealers, monthly averages of daily data[1] | Millions of dollars |
| $X_{12}$ | Dummy variable, +1 for all months, January 1958 - April 1960 | |
| $X_{13}$ | Dummy variable, +1 for refunding months in 1960-1963 | |

1. Includes Federal Agency securities and certificates of deposit.

Table B-1

Multiple Regression Results Explaining Nonbank Dealer Trading Profits Plus Carry

| Equation | Period | $R^2$ adj. | Durbin-Watson ratio | Constant (Standard error of $X_0$) | Net regression coefficients and standard errors | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $X_5$ | $X_6$ | $X_7$ | $X_1$ | $X_{13}$ | $X_2$* | $X_3$ | $X_4$ | $X_9$* | $X_{10}$* | $X_{11}$* | $X_8$ | $X_{12}$ |
| I | 1958-1963 | .69 | 1.95 | 465.41 (116.78) | -250.65† (43.23) | - 776.54†† (192.82) | -598.85†† (153.33) | 48.26†† (21.51) | 88.70† (47.04) | -0.023†† (.009) | | | | | | -45.71†† (20.76) | 13.51 (47.99) |
| | 1958-4/1960 | .61 | 1.32# | 492.63 (144.95) | -258.13†† (65.07) | - 491.46† (323.54) | -719.87†† (224.83) | 42.87 (34.89) | - | -0.027 (0.021) | | | | | | -31.66 (29.10) | |
| | 1961-1963 | .31 | 2.42 | 374.71 (91.64) | -308.03†† (158.34) | - 890.66†† (311.39) | - 9.75 (479.69) | 12.29 (56.08) | 50.56 (45.50) | 0.004 (0.011) | | | | | | -73.04† (49.03) | |
| II | 1958-1963 | .67 | 1.91 | 380.12 (120.26) | -257.54†† (44.38) | - 715.82†† (200.45) | -689.59†† (149.16) | 44.00†† (22.14) | 100.03†† (49.69) | -0.033†† (0.010) | | | | | 0.036 (0.036) | | 43.43 (58.44) |
| | 1958-4/1960 | .64 | 1.43 | 411.59 (140.24) | -249.71†† (63.34) | - 434.47† (309.55) | -725.59†† (205.40) | 37.84 (33.33) | - | -0.04† (0.02) | | | | | 0.010† (0.06) | | |
| | 1961-1963 | .44 | 2.61 | 387.54 (82.63) | -350.20†† (141.37) | -1176.46†† (279.90) | -101.88 (428.77) | 2.45 (49.75) | - 4.38 (44.87) | 0.01 (0.01) | | | | | -0.13†† (0.04) | | |
| III | 1958-1963 | .68 | 2.02 | 374.60 (119.34) | -248.54†† (44.50) | - 656.25†† (203.38) | -626.64†† (156.61) | 38.19†† (22.36) | 89.74† (49.85) | -0.031†† (0.010) | | | -0.005 (0.046) | 0.112† (0.065) | | | 28.34 (58.98) |
| | 1958-4/1960 | .62 | 1.39 | 402.86 (143.46) | -251.47†† (65.15) | - 452.69† (324.42) | -744.58†† (222.60) | 37.57 (34.11) | - | -0.04† (0.02) | | | 0.13 (0.13) | 0.08 (0.11) | | | |
| | 1961-1963 | .44 | 2.69 | 358.73 (82.65) | -322.93†† (144.03) | -1068.24†† (300.34) | -145.28 (431.07) | 2.63 (49.76) | 4.63 (44.88) | 0.01 (0.01) | | | -0.14†† (0.04) | -0.04 (0.10) | | | |
| IV | 1958-1963 | .70 | 2.02 | 449.57 (115.19) | -246.31†† (42.32) | - 730.90†† (191.60) | -607.54†† (151.22) | 39.07†† (22.06) | 80.19† (46.66) | | -0.505†† (0.169) | | | | | -11.41 (25.72) | 129.97†† (54.07) |
| | 1958-4/1960 | .67 | 1.40 | 716.72 (133.06) | -249.18†† (56.08) | - 483.40† (296.47) | -757.61†† (205.23) | 28.45 (32.01) | - | | -0.80†† (0.33) | | | | | -35.94 (40.39) | |
| | 1961-1963 | .31 | 2.37 | 350.59 (91.87) | -313.68†† (159.28) | - 872.43†† (309.47) | 49.41 (479.77) | 11.38 (58.39) | 48.49 (45.28) | | -0.02 (0.24) | | | | | -79.71†† (46.73) | |
| V | 1958-1963 | .68 | 2.01 | 453.97 (118.41) | -263.86†† (43.77) | - 697.21†† (197.08) | -607.34†† (158.69) | 40.60†† (21.50) | 57.25 (51.12) | -0.039†† (0.010) | | 0.23†† (0.13) | | | | | -30.58 (54.66) |
| | 1958-4/1960 | .63 | 1.49 | 496.73 (141.18) | -269.72†† (62.89) | - 411.41 (312.11) | -604.12†† (244.06) | 38.69 (33.57) | - | -0.052†† (0.024) | | 0.348† (0.225) | | | | | |
| | 1961-1963 | .26 | 2.44 | 216.56 (94.91) | -351.06†† (164.01) | - 954.67†† (329.71) | -101.79 (492.53) | 31.43 (56.75) | 35.54 (59.61) | -0.014 (0.013) | | 0.087 (0.21) | | | | | |

* Two-tailed test for significance. All other variables have one-tailed test.
\# Low Durbin-Watson ratio indicative of significant positive serial correction at .05 confidence level.
† .10 level of significance for Student's t value.
†† .05 level of significance for Student's t value.

Appendix C

1. Nonbank dealer capital measures

The broadest measure of nonbank dealer capital is the accounting capital concept discussed previously. It has the advantage of being easily calculated and does provide an indication of risk protection afforded creditors and size of firms having dealer operations. Furthermore, it is the only measure of dealer capital available for the 1948 to 1963 period.

In seeking a more definitive and meaningful measure, we must narrow the capital concept to bring out the allocative feature. A second approach to the specification of dealer capital is the notion of capital available. This conceptually represents the amount of capital which management is able or willing to commit to the financing of Government securities positions. Capital available, if not formally allocated by management, is essentially accounting capital minus all assets not serviceable as loan collateral to finance securities positions, such as furniture and fixtures, good faith deposits, stock exchange memberships and minimum capital requirements for such memberships and for other firm activities. In essence, capital available is a yardstick of funds suitable for satisfying margin requirements.

Finally, a third potential measure, capital in use, is the amount of firm capital actually committed to the financing of positions in the form of collateral margins. In practice, it is the excess of market value of securities positions (including accrued interest) over the value of loans against which these securities have been pledged.

There is considerable evidence, as will be specified shortly, that all three concepts were used in the most recent figures on allocated capital collected by the Federal Reserve Bank of New York. Some dealers, lacking allocative guidelines, presented figures unrelated to any of these concepts.

Capital available is undoubtedly the appropriate measure for position expandability, unless there is a policy limit set by management on the amount of capital which may be devoted to Government securities financing. As for calculation, it should not be difficult for management to provide a realistic estimate of the amount of capital which is potentially available. A serious drawback to the use of such a figure as a guideline to expandability, however, is that capital available may not be stable but be a function of the perceived profitability of a particular situation and of the relative profitability of alternative uses of funds at any particular time. For example, a lucrative corporate underwriting may pre-empt capital normally committed to financing a Treasury refunding operation.

In specifying the most meaningful base which could be applied uniformly to all dealers to measure profitability, potential biases exist in both the capital available and capital in use concepts. (Accounting capital is clearly unrealistic for computing a rate of return on just one firm activity.) With capital in use, any capital not efficiently employed in other activities (i.e., some additional amount of capital available) due to its being held in reserve for financing Government securities, will not be incorporated in the base. In this case, profitability would be overstated. Alternatively, a capital figure for diversified firms will certainly include funds which are normally used for other purposes, leading to an overstated base and understated profitability figure. At nondiversified firms, of course, both concepts result in the same capital figure.

Dealers with other activities may not necessarily squeeze borrowings to the limit, that is, always borrow with minimal margins, siphoning off or adding capital as the level of positions requires. In questioning whether or how much capital in excess of the minimum required is included in observed capital in use by diversified dealers, a feasible normative assumption is suggested,

namely that dealers, faced with alternative applications of limited capital, equate the marginal benefits of allocating funds to each activity.[1] Thus, capital will be committed to maintaining Government securities positions when it is profitable to do so. When competing needs for capital are slack, presumably borrowings will be minimized, but this will be a function of financing charges.

2. Measuring bank dealer profitability and position expansion

The selection of a capital measure for bank dealers is not only difficult but virtually meaningless. Capital does not function as a constraint on position expansion nor is it used for calculating profitability. In sum, the concepts of capital available and capital in use have no useful interpretation in the bank dealer situation.

The expansion of Government securities positions in the dealer operations of banks is constrained in the extreme by formal or informal position limits set by management, usually for several maturity categories. Under certain conditions, these maximum levels may be exceeded at the discretion of management; alternatively, dealer position expansion may be restrained by factors not directly related to the "dealer" role. In particular, several bank dealers provide considerable assistance to their banks' reserve adjustment needs, often through short sales or the placing of repurchase agreements. Even though the dealer operation is theoretically divorced from management of the investment portfolio, it is often integrated both physically and operationally with the money management centers. In short, no matter what the formal maximums may be, expandability may be determined in large part by bank liquidity needs, which may run counter to securities market considerations, even when profitability of the latter is adequate.

1. Dynamically, capital flows are "created" by shifts in the marginal revenue functions of various activities arising from changing market conditions, expectations, and opportunities for capital use in each activity.

In trying to estimate bank dealer profitability, we are confronted with several difficulties. In the first place, bank dealers may borrow more heavily in the Federal funds market purely to support dealer positions, on the theory that the larger borrowings are offset by the liquidity of these positions. To this extent, no bank capital is committed at all; the "margin" in this case is simply the good name of the bank. Secondly, there is the problem of defining an appropriate opportunity cost for that amount of funds in use, be it deposits (and capital) or borrowing, which would have been allocated to other bank activities.[2] This is perhaps one reason why bankers, only recently experimenting with functional cost analysis, have not developed standards for judging dealer profitability. To quote one banker, "...a black figure is good; the bigger, the better."

Finally, banks differed in their use of the dealer operation for servicing customers and, as previously noted, in their assistances in adjusting reserve positions. Since many dealers are operationally integrated with other money management functions, the difficulties of properly allocating expenses, combined with the tangible costs and intangible returns from servicing customers and assisting reserve adjustment, render any statement of profitability tenuous at best.

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2. Differences in risk between U. S. Government securities operations and other uses of funds would also have to be taken into account in comparing returns on funds in use.