Some Contributions of the

Institutional Investor Study
by
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Working Paper No. 7-72

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Introduction

This paper traces some of the critical strands of analyses and findings produced by the Securities and Exchange Commission's Institutional Investor Study in its examination of institutional trading of common stocks. First a background description of the nature of the Study and the issues which focussed attention upon institutional trading behavior is provided. In reviewing the trading impacts of institutions the paper examines the Study's analysis of the extent and nature of trading imbalances generated by institutions and the evidence produced from the Study's several analyses of price effects of institutional trading. From there the paper evaluates the role of institutional trading and of the regulatory structure in affecting the efficiency with which the market making function is performed. Finally, some impacts of the market system upon institutional trading behavior are considered.

The Background

Exactly one year has passed since the remnants of a dedicated staff of economists, lawyers and support personnel completed the Institutional Investor Study Report and sent it to the printer.[1] During the previous eighteen months the staff had managed to mount a momentous effort dedicated to fulfilling a broad Congressional

mandate to determine the effect of purchases, sales and holdings

of securities by institutional investors "upon the maintainance

of fair and orderly securities markets ... the stability of such

markets ... the interests of the issuers ... and upon the interests

of the public ...".[2] In line with what appeared to be the intent

of Congress the Study was designed not as an SEC investigation of

the pathology of securities markets, but rather as an objective

economic analysis of the increasing importance of institutions in

the equity securities markets and of the implications of this

phenomenon for the structure and efficiency of the securities mar-

kets, the securities industry and the investment management industry.

To this end, the core professional staff was formed with an econo-

mist/lawyer ratio of about two.

In designing the Study's scope, content and research strategy,

the staff soon became aware of the paucity of data available on

portfolio holdings and transactions in secondary securities markets,

on new equity financing and on the structural, operational and per-

formance characteristics of large segments of the investment manage-

ment and securities industries. Accordingly, against the advice of

wiser civil servants experienced in the difficulties of data collection,

the Study proceeded into an ad hoc, one shot effort at amassing a

statistical data base that would fill some of these major gaps in

knowledge.

As a consequence, in addition to a 6,000 page report, the Study staff has bequeathed to interested scholars a rich collection of primary data useful for myriad analyses of the structure and behavior of institutional investment managers, and their impacts upon securities markets and corporate issuers. For example, for purposes of analysis of institutions as portfolio managers the Study collected an abundance of information on operational and structural characteristics intrinsic to bank trust departments, investment advisory complexes, insurance companies and internally managed pension plans and endowment funds, as well as detailed data on a large number of accounts sampled from managing institutions and beneficial owners.[3] To implement analysis of the impacts of institutional investing on the securities markets the Study collected 21 months of trading data on 800 equity securities for over 230 institutions, an extensive data base to support the first detailed analysis of the anatomy and price impacts of block trading and substantial information on the operation and profitability of brokerage and market making firms.[4] Extensive data on institutions' participation in the primary equity securities market together with the development of a statistical base for an analysis of personnel, stockholding and business ties between institutions and corporations provided the basis for the Study's treatment of the impact of institutional investors upon corporate issuers.[5]

The collecting, editing and putting in machine-processable form of this massive data base represented, in itself, a major contribution. The time consuming nature of this process obviously constrained the time available for data analysis and writing. Nonetheless, the Study Report does contain many substantial analyses which go to the heart of the hotly debated issues involved in (i) the restructuring of the securities markets (ii) the distribution of powers to financial institutions and securities firms and (iii) the mix of competition and regulation best suited to the development of fair, orderly and efficient financial markets.

The perceived need for a broad based economic study was generated by various concerns with the implications of institutionalization of the securities markets. The increased impact of institutions on secondary markets in the 1960's was a product less of net sales of common stocks from individuals to institutions than of a dramatic increase in institutional trading activity.[6] Observed increases in common stock portfolio turnover rates were frequently attributed to aggressive, institutional portfolio managers chasing short run performance goals. There was a concern that behind specific instances of price manipulation lay systematic patterns of trading which produced large trading imbalances and volatile price behavior. The size of institutional holdings together with institutions' trading behavior seemed to

produce increased lumpiness in transactions as dramatized by the

rapid growth of block trading. The ability of market making mech-

anisms to function effectively appeared to be strained by increased

trading imbalances due to discontinuities in the flow of orders

or to a systematic tendency for institutional managers to trade

in parallel fashion. The following section reviews the Study's

analysis of the parallel trading hypotheses and the evidence

of price effects produced by institutional trading imbalances.

Institutional Trading Patterns and Price Impacts

Net Trading Imbalances

Obviously no trading imbalances can be produced by all mar-

ket participants as a group, but any subgroup of investors will

create imbalances to the extent that sub-group members tend to

trade on the same side of the market in the same stock at the same

time. It is often alleged that institutions do systematically trade

in parallel and, consequently, frequently "gang up" on the same

side of the market in a stock.[7] This tendency is sometimes attri-

buted to performance oriented managers generating leader-follower

trading patterns.[8] Alternatively, an unconscious form of parallel

behavior may arise from many managers and analysts reaching the

same trading decisions based on the same new information or on

market price action.

Institutional trading imbalances were measured monthly for the period January 1968 to September 1969, for 229 institutions trading in 325 common stocks. The institutions (bank trust departments, investment advisory firms, insurance companies and large internally administered portfolios) held nearly 70 percent of the value of common stock portfolios managed in such institutions. The stocks included the 27 largest (by market value) listed on the New York Stock Exchange (NYSE), a random sample of 198 stocks from the remaining NYSE listings and a random sample of 100 from American Stock Exchange (AMEX) listed stocks.[9]

Prior to computing imbalances each institution's monthly purchases and sales in each stock were netted and only the net purchase (or sale) figure was utilized thereafter. Several measures of imbalance were calculated, including in particular, the percentage net imbalance (PNI) defined for a given institutional group, stock sample and stock month as the ratio of total purchases less sales to purchases plus sales. A "stock month" is a unit of observation which refers to trading data for a given stock in a particular month. The magnitudes of imbalances calculated in this way are quite substantial.[10] However, the largest imbalances in the random stock samples occur when only one or a few institutions are trading.[11]

A Test of the Parallel Trading Hypothesis

In order to test whether these sizable imbalances are attributable to systematic parallel trading it is necessary to have as a standard a measure of trading imbalances which would occur in the absence of systematic parallelism. Such a standard is the trading imbalances which would be produced by chance if each institution's trading decisions were independent of every other institution's decisions. Estimation of these chance generated unbalances should be carried out in a manner which preserves the frequency and the volume of an institution's trading activity in a stock over the entire period of observation. Simulations of institutional trading activity which meet these criteria were carried out for each of the three stock samples referred to above. For each institution separate frequency distributions of net dollar purchase and sale activity per stock month were computed for each of the three stock samples. Within the stock samples each stock's trading activity was assumed to be derived from the same population. Given an institution and stock sample (large NYSE, random NYSE or random AMEX) the basic simulation procedure was equivalent to taking a matrix of net trading activity classified by month and individual stock, randomly rearranging the net purchase (sale) data among the cells, and finally combining the rearranged matrices for all institutions in a respondent group.[12]

The extent to which trading parallelism produces imbalances beyond what can be expected by chance can be discerned from comparing actual net imbalances with net imbalances generated by the simulations. Generally the results of such comparisons do not support the hypothesis that conscious or unconscious parallel trading patterns are responsible for institutions' net trading imbalances. Instead, the results are consistent with the hypothesis that the incidences of apparent parallelism are no more frequent than would be expected from chance given independent trading decisions.[13]

Price Impacts of Institutional Trading Imbalances

This lack of systematic parallelism was a surprising and significant finding. It is particularly important because the Study did find significant price impacts accompanying instances of institutional trading imbalances.[14] In an efficient market, parallel trading should not produce price movements in the absence of any reason for equilibrium price to change. However, in a less efficient market where different securities are less than perfect substitutes at equilibrium prices and significant transactions costs exist, parallel trading can necessitate short-run price changes. Assuming such price movements reflect distributional frictions, then any short-run price change should be followed quickly by at least a partial price reversal.

The distributional price impact hypothesis was tested in two

steps. First, the size of the price change, controlling for

market price movements,[15] was related to the direction and

magnitude of net trading imbalances. If the distribution hypo-

thesis is correct, the price change necessary to move the stock

should be directly related to the size of the imbalance. Second,

if there are distributional price impacts it should be possible

to observe a price reversal in the month following the initial

price change produced by parallel trading. Regression analyses

did find significant price impacts associated with trading im-

balances and price reversals for all institutions as a group and

for registered investment companies as a group.[16] For these in-

stitutional categories, parallel action, when it occurs tends to

be price aggressive in the sense that parallel buying tends to

accompany price increases and parallel selling accompanies price

declines. However, regression coefficients for banks as a group

are statistically insignificant, and although the relevant regression

coefficients for investment companies and for all institutions are

significant, the coefficients of determination are small[17] suggesting

that only a small portion of month-to-month price changes can be

attributed to institutional trading imbalances.

Additional Analyses of Price Impacts

Several other studies of institutional price effects were per-

formed. Institutions supplying monthly trading data were asked to
provide trading information on all transactions in selected stocks
in a designated calendar quarter.[18] Data from two samples of
NYSE stocks were analyzed.[19] This data base made it possible
to explore the relationships between the magnitude of price
changes associated with portfolio position changes and various
characteristics of the position changes. A "position change"
refers to a set of transactions resulting in a change in the num-
ber of shares of a given stock held by an investor. Price effects
were measured in two time dimensions: i) intraday and ii) over the
total elapsed time taken to execute a position change.[20] The
intraday price effect of individual trades in a position change
is measured by relating trade prices to closing prices on the
previous day and the trading day in question. Price effects
over the position change are measured by changes in the closing
prices between the first and last trading day in the position
change, adjusted for market price movements.[21]

The most significant finding emerging from the position
change analyses is the surprising absence of any price impact
either in the form of intraday price changes generated by indi-
vidual trades or price impacts over the course of position changes.[22]
This lack of observable price effects suggests, that in effecting
position changes, institutions either have no price effects or

that their trading tends to produce price effects which offset price

movements caused by other traders as often as it generates or accen-

tuates price changes. Consistent with this finding, it is still pos-

sible that certain types of individual large trades (e.g., block

transactions) have significant price impacts. The Study tested

for the existence of liquidity costs or other distributional price

effects of block transactions. If there are distributional impacts,

then it should be possible to observe temporary changes in a stock's

rate of return necessary to call forth sufficient demand (supply)

to clear the market of the block. Such temporary price changes

represent movements away from equilibrium and should be followed

by price reversals. The existence of a price reversal is assumed

to distinguish frictional price impacts associated with block trades

from changes in the equilibrium price produced by new information.

The Study utilized data for block trades of over 10,000

shares carried out on the New York Stock Exchange during the period

July 1, 1968 to September 30, 1969,[23] excluding blocks of less

than $1 million.[24] It appears to be reasonable to regard blocks

trading on minus ticks as blocks that are initiated by sellers

and those trading on plus ticks as initiated by buyers. Using

this classification method, the data indicate that most blocks are

sold.[25]

There is evidence of intra-day liquidity costs associated

with blocks traded on minus ticks. For minus ticks, the mean

price decline from the previous day's closing price to the price at which the block traded is 1.86 percent of which 1.14 percent is attributable to the minus tick itself. The liquidity cost hypothesis is supported by a price reversal of .71 percent to the trade day's closing price.[26] The saving to the buyer is on the order of one brokerage commission.[27] Since, on the average, the market index declined by only 0.05 percent on the block trading day in question, it appears that minus ticks do have a negative price impact on the closing price. For minus tick trades, closing price on the trading day was 2.02 percent lower relative to the market compared to the closing price 20 days previously. Over half of this decline occurs on the trading day.

Average closing prices of minus tick blocks do not appear to recover, but rather find a new level.[28] This pattern would seem to be inconsistent with the liquidity cost hypothesis. It is possible, however, that the absence of price recovery is explainable, at least in part, by downward pressure on price exerted by minus tick blocks following closely the block in question. Separate analysis of minus tick blocks for which there were no additional blocks in the stock during the subsequent ten days revealed that a much greater price recovery was realized within ten days and an almost complete return to the original price was attained within twenty days.[29] This

pattern is consistent with the liquidity cost hypothesis. Add-
itional evidence consistent with this hypothesis is found in the sig-
nificant relationship observed between the magnitude of the trading
day price effect and the size of the block; large price effects
being associated with large blocks.[30]

Thus, for minus tick blocks there is evidence of signi-
ficant temporary distributional price impacts produced by the
pressure of institutions' desire to dispose of portfolio positions
in large blocks. However, comparable price impacts are not found
for blocks trading on plus ticks.[31] Moreover, price impacts from
block trades can explain only a quite modest proportion of large
intraday price changes. Thus, for example, no block trade took
place on 91 percent of the stock days in the sample in which
price changes of greater than three percent, (relative to the
market), occurred.[32]

Summary of Price Impact Findings.

To summarize, the Study did produce some evidence of price
impacts created by the pressure of institutional trading; in
particular, price effects result from institutions trading in para-
llel and from block trades initiated by sellers. The significance
of price impacts generated by parallel trading is greatly diminished,
however, by the finding that institutions do not appear to systemati-
cally "gang up" on the same side of the market. The findings for

block trades are clouded somewhat by the fact that price ef-
fects are found only for a subset of minus tick blocks. Further-
more, analysis of price changes associated with institutional posi-
tion changes produced no detectable price effects. Thus, insti-
tutional trading patterns appeared to be much more passive and
much less aggressive, than has been commonly assumed. Overall,
this constituted a surprising, but obviously important set of
findings. Their immediate contribution was to head off mounting
enthusiasm for proposals to somehow restrict the size of insti-
tutional portfolios or institutions trading activity.

These findings also suggest that institutional trading habits
do not generally possess characteristics which strain market making
capacities. This conclusion is corroborated by findings produced
by the Study's direct analysis of the impacts of institutional
investors upon market makers. These studies are reviewed in the
following section.

Performance of the Market Making Function

The Impact of Institutional Trading.

The Study adopted the view that market makers performance
should be evaluated in terms of the extent to which they supply
liquidity in depth.[33] Market makers supply liquidity via changes
in their inventory positions. In order to investigate the market
making behavior of exchange specialists and third market firms,

the study obtained the overnight inventory positions of each active

market maker in 93 NYSE listed stocks for each trading day in a

15 month period, (July 1968 to September 1969). The securities

sample was selected to obtain substantial variation in the volume

of trading, in the degree of institutional interest and in char-

acteristics of the market makers.[34] Institutional interest was

determined from the Study's monthly institutional trading data;

the measure of institutional participation being computed as the

ratio of total purchases plus sales in a stock month by the Study's

sample of institutions to NYSE dollar volume.

Both specialists and third market dealers were found to

behave in a stabilizing fashion in the sense that they sell

stock on the average when prices are rising and buy when prices

are falling. There is a strong inverse relationship between the

change in the price of a stock over a day (relative to the market)

and the net change in market makers inventory.[35] For NYSE special-

ists it was possible to examine the relationship between insti-

tutional participation in a stock and the extent to which special-

ists provide liquidity. As would be expected, given any price

change, the magnitude of specialists net inventory change did

vary directly with the trading volume in a stock.[36] Controlling

for dollar volume, there is strong evidence that for any given

price change, NYSE specialists average net inventory changes vary

directly with the proportion of trading in the stock attributable to institutions.[37]

Furthermore, analysis of day-to-day price changes (relative to the market) indicates that stocks with a high proportion of institutional trading consistently have a lower incidence of large day-to-day price changes, (i.e., price changes in excess of 3 percent in either direction) than stocks with lower levels of institutional interest.[38] However, since day-to-day volatility is not controlled for in this analysis it is not possible to determine to what extent this negative relation between large price movements and institutional trading reflects trading behavior as opposed to the relative volatility of stocks institutions hold and trade. Nonetheless, all the evidence combined suggests that contrary to the conventional wisdom, market makers may face less, not more, uncertainty, when institutions account for a high proportion of trading in a stock.[39]

The Impact of the Regulatory Structure

Thus the trading behavior of institutions per se does not appear to have placed serious strains upon the structure of securities markets or, in particular, upon market makers. In a broader sense, however, competitive pressures generated by institutions seeking market access and the best price available appear to have been a major factor in market fragmentation, i.e., the

dispersal of trading volume in NYSE listed stocks away from the exchange floor to regional exchanges and the third market. In its analysis of block trading the Study found that institutions had numerous reasons for executing blocks in dually traded stocks on regional exchanges, including the desire to avoid wide spread reporting, saving the New York transfer tax, later trading hours on some regionals, and avoidance of undesired participation by the NYSE specialist and the public. But, since the prohibition of customer directed give-ups three years ago, the primary motivation for executing blocks on regionals appears to have been the brokerage commission savings and commission sharing that result from the various forms of institutional membership available.[40] Similarly, third market block volume was found to be largely attributable to cost savings available from the ability of institutions to deal net with market makers on a principal basis and to the substantially lower fees charged by third market firms on the larger riskless crosses.[41]

Efficient market making may have been impaired by the reduction in the quality of reporting which has accompanied market fragmentation. Exchange specialists barred from accepting institutional orders in their specialty stocks,[42] have been increasingly shut off from the flow of orders. Third market dealers and block positioning firms both enjoy the ability to deal with institutions

directly. But third market firms, as well as regional special-
ists, are inhibited in supplying liquidity in depth continuously
by their inability to expose their bids and offers to a substantial
portion of the trading volume.[43] Block positioning has developed
to fill the gap created by the rules preventing specialists from
fully performing the market making function for institutions.
However, block positioners find their trading positions impaired
by questions regarding their right to offset temporary imbalances
of supply and demand while they are disposing of positions, as well
as by the general knowledge of their inventories inferred from
the tape print of block trades and capital pressures to dispose
of blocks quickly.[44] Thus, the regulatory system does not appear
to be structured in a manner that induces deep commitments of
capital by market makers.

The Study produced important evidence basic to an appraisal
of the efficiency of regulation of the NYSE monopoly franchise
specialist system. In particular, it found substantial differences
among NYSE specialists in their inventory activity in high volume
stocks. When specialists were classified into three activity groups
the average trading account positions of high activity specialist
units were found to be seven times as great as low activity special-
ists for high volume stocks and four times as great for medium
volume stocks.[45] The magnitude of the average stabilizing inven-

tory change for a given day-to-day price change is persistently

greater for the active specialist units in each category of

stocks classified by trading volume.[46] Finally, large day-to-day

price changes, relative to the market, occurred less frequently

in stocks assigned to high inventory activity specialists units

despite the fact that more volatile stocks appear to be assigned

to more active units.[47] This conclusion is corroborated by

analyses of price changes associated with unusually large posi-

tion changes. The high activity group of specialists appear to

be significantly more willing to adjust inventories to provide

sufficient liquidity to moderate price impacts of trading im-

balances.[48]

Unfortunately the system of regulated franchised specialists

does not appear to produce incentives which can be expected to in-

duce specialists to provide liquidity in depth. Specialists

units provided the Study with gross income data by stock and

month. Dollar volume of trading in a stock is the primary deter-

minant of gross income.[49] Controlling for volume, there are only

modest differences in median or mean gross monthly incomes before

income taxes among the three groups of specialists classified by

activity. However, there are quite large differences in the vari-

ance of income among units, with high activity units having sub-

stantially greater variability.[50] Since high activity specialists

have only slightly greater average incomes with substantially

larger inventory positions, their average gross return on invest-

ment is substantially lower than for less active specialists

while the volatility of their returns are greater.[51] Thus,

although the average rewards to specialists are quite high, the

structure of profits appears to be perverse in terms of its in-

centive implications.[52]

The principal regulatory reward available as an incentive to

specialists is the allocation of security franchises among special

ist units. The Study examined data on the allocation of stocks

among the three groups of NYSE specialist units over a three

year period beginning in mid-1967. For nearly 25 percent of the

dollar volume of stocks assigned to these units, an explicit

allocation decision was made during the three years, yet no

change in the proportion of dollar volume allocated among the

three categories is detectable despite the apparent substantial

differences in their performance records.[53] The Exchange's

authority to withdraw a stock from a specialist unit is very

rarely utilized.

The Impact of the Fixed Minimum Commission Rate

System Upon Institutional Trading

The preceeding review suggests that the problems of the
secondary equity securities market are attributable more to the
market structure itself than to institutional trading impacts.
At the heart of an unresponsive market system lies the practice
of fixing minimum commission rates. This pricing system has gen-
erated numerous by-products, including significant impacts upon
institutions' trading activity. The Study found that turnover
rates for equity security portfolios increased significantly during
the latter half of the 1960's in nearly every class of account
managed by every institutional category.[54] However, the Study's
analysis of the relationship between risk-adjusted investment
performance and portfolio turnover corroborates the conclusion
of other studies that high turnover is not associated with
superior performance.[55]

Nonetheless, under a fixed commission rate schedule in
which commissions on institutional sized accounts substantially
exceed costs, high turnover is attractive to investment managers
able to obtain reciprocal services from brokers, notably in the
form of sales of mutual fund shares and of bank deposits. There
is circumstantial evidence in the Study of the wide ranging impact

of such reciprocal dealings upon trading by investment advisers.
Investment advisory complexes were divided into two groups
depending upon whether or not mutual funds accounted for over
one-third of the assets under management. Multiple regression
analysis of turnover rates disclosed that for each type of ac-
count under management, turnover rates were significantly
higher for accounts managed in complexes in which mutual funds
are important.[56]

Brokerage commission-bank deposit reciprocity has received
additional inducement through the prohibition of interest payments
on demand deposits. Controlling for the size and location of banks,
the Study estimated that over 40 percent of brokers' demand
deposits were directly attributable to free (i.e., undesignated)
brokerage commissions paid by banks.[57] Bank turnover rates appear
to be highest on those classes of accounts, viz. employee-pension-
benefit accounts,for which banks have the greatest freedom in
selecting brokers.[58] Banks obtain other forms of indirect com-
pensation from their trust departments as a result of deposit rate
regulation. The Study found that banks possess peculiar competitive
advantages over other investment managers which derive to a signi-
ficant degree from indirect forms of compensation obtained via
the linkage between trust and commercial operations. This linkage

is forged by the regulatory enforcement of ceilings on deposit rates payable and floors on brokerage commissions charged.[59]

Conclusions

The Institutional Investor Study's results reviewed here have contributed to turning the focus of public attention away from the impact of institutions on the market structure and toward an appraisal of the markets themselves. Particularly significant are the negative findings produced by the Study's testing of the parallel trading hypothesis and the surprisingly limited evidence of institutional price impacts. The Study's analysis of market making indicates that the trading behavior of institutions that impinges upon market makers results from market fragmentation and a regulatory structure which has insulated markets and market makers from each other. Central to this system of anti-competitive barriers is the fixed minimum commission rate system. This rate fixing system is a major impediment to the development' of an efficient, equitable and responsive central market. It is also implicated in anti-competitive practices and conflicts of interest between managers and customers which have developed in the investment management industry.

*University of Pennsylvania. The author was Associate Director of the Institutional Study. In addition to the discussants' remarks, the author has benefitted from comments on the first draft of this paper by Irwin Friend, Morris Mendelson, and Hans Stoll.

[1] Institutional Investor Study Report of the Securities and Exchange Commission, 92nd Congress, 1st Session, House Doc. #92-64, P.O., Washington, 1971. (Hereafter referred to as Study Report.)

[2] Quoted from the joint resolution authorizing the Institutional Investor Study, Pub. L. No. 90-438 enacted July 29, 1968.

[3] Study Report, Volumes 2 and 3.

[4] Ibid., Volume 4.

[5] Ibid., Volume 5.

[6] Trends in the distribution of holdings between institutional and non-institutional portfolios are examined in Study Report, Volume 1, Chapter 3. Detailed tabulations of turnover rates are reported by manager type and account category in Volumes 2 and 3.

[7] For a recent example, see the Wall Street Journal, December 10, 1971, p. 1.

[8] For evidence of this pattern among mutual funds see Irwin Friend, Marshall Blume and Jean Crockett, Mutual Funds and Other

Institutional Investors: A New Perspective, New York: McGraw Hill, 1970, pp. 77-9.

[9]The analysis of institutional trading imbalances is published in Study _Report_, Volume 4, Chapter X. Documentation of the stock samples and institution samples is provided in Appendix A and Appendix B, respectively, to Chapter X.

[10]For all institutional respondents as a group the average PNI was 25.5% for the large NYSE stocks, 55.4% for the random NYSE sample and 38.1% in the random AMEX sample. If stock months in which no trading occurred are excluded the respective PNI's are 25.5%, 64.0% and 83.6%. See Study _Report_, Ch. X, Tables X-2 and X-3.

[11]Study _Report_, Chapter X, B.2.f.

[12]A second simulation technique allowed for the fact that there was an observable tendency for institutional gross trading to cluster. This simulation procedure fixed all zero entries in the matrix and only randomly rearranged the non-zero entries. For a complete discussion of these simulation techniques, see Study _Report_, Ch. X, pp. 1412-15 and Alan Kraus and Hans R. Stoll, "Parallel Trading by Institutional Investors," Graduate School of Business, Stanford University, Research Paper No. 9.

[13]See the references in footnote 12.

[14]See Study _Report_, Ch. X. B. 3.

[15]The price change variable $(R_{i,t})$ is the adjusted rate

of return for stock i during month t, i.e.

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} - \frac{I_t - I_{t-1}}{I_{t-1}} \quad ,$$

where $P_{i,t}$ is the closing price of stock i the last trading day of

month t, and I_t is the level of the Standard and Poor's 500 Com-

posite Index on the same day. Price changes were corrected for

stock splits and stock dividends but not for cash dividends. See

the Study _Report_, pp. 1407-8 and Kraus and Stoll, _op.cit_.

[16]See Study _Report_, Tables X-22 to X-24, pp. 1437-9.

These results include regressions using a measure of dollar net

imbalances as a substitute for PNI.

[17]The largest R^2 obtained for any institutional groups are:

.10 in the large NYSE stock sample, .12 in the random NYSE sample

and .28 in the random AMEX sample.

[18]Random samples were obtained in three strata: i) randomly

selected position changes, ii) randomly selected large acquisition

programs and iii) randomly selected large disposition programs. To

control the selection process the Study provided each respondent

with a designated calendar quarter, a list of randomly arranged

stocks (the list being unique to each respondent) and a specific

procedure for selecting stocks. For a description of the sampling

procedures, see Study Report, Ch.X, pp. 1447-9.

[19]The first sample consisted of 25 of the 27 NYSE listed stocks with the greatest market value; the second sample was the random NYSE sample utilized in the parallel trading study.

[20]Position changes were classified as purchase programs or sales programs according to whether dollar purchases or sale were greater over the three month observation period. The period of the position change is then defined as the elapsed time between the first and the last trade corresponding to the program. Trades on the opposite side of the market occurring before the first trade or after the last trade were excluded from the analysis.

[21]For a full description of the price variables employed see Study Report Ch. X, Appendix C.

[22]See Study Report, pp. 1449-59.

[23]The stock sample includes the 27 NYSE listed stocks with greatest market value, the random sample of 198 stocks from the remainder of the NYSE list and 177 stocks selected for their special characteristics, such as issuer involvement in transfers of control secondaries or stocks experiencing large price movements. The stock samples are described and listed in Study Report, Chapter X, Appendix A.

[24]Blocks under $1 million were excluded in order to reduce

the underrepresentation of high price stocks in the sample.
See Study Report, pp. 1721-23.

[25] See Alan Kraus and Hans R. Stoll, "Price Impacts of
Block Trading on the NYSE," Working Paper No. 3-71, Rodney
L. White Center for Financial Research, The Wharton School of
Finance and Commerce, University of Pennsylvania, Table 1.
Cited below as Kraus and Stoll, "Price Impacts."

[26] See Study Report, Figure Xl-3, p. 1729.

[27] After the establishment of the volume discount on
December 5, 1968 the commission on 10,000 shares of a $40 stock
amounted to 0.62% of the value of the transaction.

[28] Results of the interday price impact analysis are pre-
sented in Study Report, Chapter Xl, pp. 1722-8. Also see Kraus
and Stoll, "Price Impacts."

[29] See Study Report, pp. 1725-7 and Kraus and Stoll, "Price
Impacts."

[30] See Study Report, p. 1725 and Kraus and Stoll, "Price
Impacts." This relationship may be consistent with other hypo-
theses as well including the possibility that it reflects the impact
of new information in an imperfect market. See, for example,
Study Report, Figures Xl-38 and Xl-39 and Tables Xl-115 and Xl-116.
Block trades on zero ticks were not analyzed.

[31] See, for example, Study _Report_, Figure Xl-38 and Xl-39 and Tables Xl-115 and Xl-116. Block trades on zero ticks were not analyzed.

[32] Study _Report_, p. 1724.

[33] Study _Report_, Chapter Xll contains the analysis of market makers. For further discussion of performance criteria, see Seymour Smidt, "Which Road to an Efficient Stock Market: Free Competition or Regulated Monopoly," _Financial Analysts Journal_, September/October 1971.

[34] For a full description of the sampling procedure see Study _Report_, Ch. Xll, Appendix A.

[35] Study _Report_, Ch. Xll, D.2.a.

[36] Study _Report_, Ch. Xll, D.2.b.

[37] Study _Report_, Ch. Xll, D.2.c.

[38] Study _Report_, Ch. Xll, E and Tables Xll-B-5 to Xll-B-13.

[39] For explicit development of this hypothesis see Seymour Smidt, _op. cit._.

[40] Study _Report_, p. 1622.

[41] Study _Report_, Ch. Xl.C.4.h.

[42] See NYSE Rule 113.

[43]NYSE Rule 394 requires that members obtain permission prior to . . . "effecting a transaction in a listed stock off the Exchange either as principal or agent." The procedure established to obtain permission effectively proscribes members firms from taking advantage of better quotes of non-member market makers.

[44]Study Report, Ch. Xll, I.e.

[45]Study Report, p. 1957. In this analysis the 30 NYSE specialist units studied were divided into three groups of 10 based upon their inventory activity. Inventory activity was defined as the average net change in closing inventories from day-to-day. The most active group had average daily net inventory activity in excess of $155,000; the comparable average for the least active group was less than $90,000. Stock months were classified by NYSE dollar volume by dividing the stock sample into three percentile groupings using the Study's random sample of NYSE issues as a standard.

[46]Study Report, Ch. Xll.E.

[47]Ibid.

[48]Study Report, Ch. Xll. F.4.

[49]For this purpose gross income consisted of floor brokerage plus trading account profits, less the expenses of clearing and transferring stock. For a discussion of this income concept see Study Report, pp. 1914-15.

[50] Study Report, Ch. Xll.G.3.

[51] Study Report, Ch. Xll.G.4.

[52] The average gross return before taxes on investment in high dollar volume stocks was nearly 200 percent per annum for low inventory activity specialists compared to 29% for high activity specialists. However, if two units with exceptionally large overnight positions are excluded, the high inventory activity group has an average return of 88% per year. See Study Report, Table Xll - 24 and p. 1959.

[53] Study Report, Ch. Xll.H.

[54] See, for example, Study Report, Ch. V, Table V-20, Ch. VI, Tables VI-111, 118, 120, 122, 124, 126 and 160, Ch. VIII, Tables VIII - 49, 131 and 175. These data are summarized in Lawrence D. Jones, "Impacts of the Investment Performance Phenomenon," American Statistical Association, Proceedings of the Business and Economics Section, 1971, Tables 1 and 2.

[55] The Study reported performance results for samples of mutual funds, bank managed commingled accounts and life insurance company separate accounts. See Study Report, Ch. IV. I, Ch. V. P. 3 and Ch. VI. F.5.b and Lawrence Jones, op cit. The performance measure utilized in the analysis of the relationship of turnover

and performance was Jensen's alpha (see Michael C. Jensen,

"The Performance of Mutual Funds in the Period 1945-1964," Journal

of Finance, Vol. 23, May 1968, pp. 389-416). This measure has

come under considerable criticism recently; see Irwin Friend

and Marshall Blume, "Measurement of Portfolio Performance

Under Uncertainty," American Economic Review, Vol. LX, September

1970, pp. 561-75 and Fischer Black, Michael Jensen and Myron

Scholes, "The Capital Asset Pricing Model: Some Empirical Tests"

in Michael C. Jensen, ed., Studies in the Theory of Capital Markets,

New York: Praeger. Using multiple regression analysis the Study

found a significant negative relationship between turnover and

performance for the mutual fund and bank accounts and no rela-

tionship for the insurance accounts. Similar results for mutual

funds can be found in Irwin Friend, Marshall Blume and Jean Crockett,

Mutual Funds and Other Institutional Investors, McGraw Hill, 1970,

Ch. Three and C. Hoff Stauffer, Jr., and Robert C. Vogel, "Para-

meters of Mutual Fund Performance " (mimeo), 1969.

[56] Study Report, Ch. IV.B.14. Eight account categories were

distinguished. The 't' values are significant for each category.

[57] Study Report, Ch.V. pp. 469-71.

[58] See Study Report, Ch.V. Tables V-12 and V-20.

[59]This evidence is summarized in Lawrence D. Jones, "Bank Trust Departments and the Public Interest," prepared for The Commission on Financial Structure and Regulation June 1971, forthcoming in a University of Toledo Law Review Symposium issue.

Discussion: Some Contributions of the

Institutional Investor Study

by

Marshall E. Blume*

Professor Jones, correctly to my mind, has observed that one of the most important contributions of the Institutional Investor Study was the collection and editing of a vast quantity of new data. Because of limitations of time and resources, the staff of the study was unable to analyze these data as thoroughly as they might have wished. It was the hope of many investigators, both within and outside the Securities and Exchange Commission that these data, collected at great cost to the government and possibly at an even greater cost to the respondents, would eventually be made available for more complete analysis.

So far, only one of the myriad of files developed by the study has been made public and then in such an aggregated form that many types of empirical investigations are precluded. The SEC appears to be devoting very little, if any, resources towards making these files available to "interested scholars."

The next part of Professor Jones' presentation highlights one of the major weaknesses of the Study. The policy recommendations contained in it appear generally quite reasonable at least on the surface, but it is not always clear how these recommendations follow from the empirical analyses. Further, a discussion of the interrelationships of the different chapters is almost non-existent. This lack of integration of the Study undoubtedly stems from the pressures of deadlines and the resulting fragmentation of

the efforts of the different members of the staff. These remarks are not meant as a hostile criticism but rather as an indication of the limitations of the Study.

Today Professor Jones has very neatly summarized most of the empirical findings which have to do with the effect of institutional trading upon the prices of securities in the market. This summary supplies the empirical support for the Study's recommendation that there is no need for "imposing generalized limitations on the volume of institutional trading or on the size of institutional transactions."

However, other recommendations of the study, such as using modern communication devices to tie "geographically separated trading markets" to obtain "a strong central market system" do not appear to follow from any of the empirical analyses. Possibly an expanded NASDAQ-type communication system is the answer to obtaining in some sense a better market place, but unfortunately the study does not seem to provide any data on the operating characteristics, the technical feasibility, or the economic efficiency of such a system.

Turning from Professor Jones' remarks to the Study itself, one is impressed with the sheer size and weight of its numerous volumes. In the short space alloted to me, it would be impossible to comment on each part. Rather, I shall comment on several areas

of current relevance.

My first comment will be on the analysis discussed by Professor Jones and contained in Chapter XII on the success of the specialists and the third market makers in stabilizing day-to-day price fluctuations. By relating changes in the inventory position of these market makers to the daily price changes adjusted for market movements, the chapter reaches the conclusion that these market makers, including those in the third market, have a stabilizing effect. It is recognized correctly that stabilization per se does not necessarily lead to efficient markets if it delays a valid price adjustment; however, their tests do not clearly distinguish those large price changes which represent valid adjustments from other large changes. Thus, it can only be concluded that these market makers contribute to price stability which may or may not be consistent with economic efficiency.[1] It would have been interesting to have analyzed these stabilization effects as a function of the risk or volatility of the traded stocks, as measured by, say, the beta coefficient, but they did not do this.

Although controlling for beta in this last analysis would probably not have changed their conclusions substantially, failure to control for beta in their subsequent analyses sometimes led to ambiguous and possibly misleading conclusions. For instance, the

chapter reaches the conclusion that "institutional trading does not cause, and may even tend to decrease, the frequency of large day-to-day price fluctuations." Although it is recognized that institutions may tend to trade in stocks with smaller day-to-day fluctuations, presumably stocks with lower values of beta, it is asserted without any empirical backing that this bias would not be large enough to change the conclusion. Whether this bias is small enough to be ignored or large enough to support the opposite conclusion is not at all obvious to this observer. In any case, the sensitivity of this potentially important conclusion to this bias can easily be examined with the data files when they are made available publicly. Even if institutional trading does reduce day-to-day fluctuations possibly by overt action, the reduction in fluctuations may hinder valid adjustments.

To summarize this point, the Study presents reasonably strong evidence that the specialists and third market makers contribute to day-to-day price stability. However, the conclusion that the trading of institutions does not create larger day-to-day fluctuations in prices requires further analysis. Explicitly one must control for volatility before this conclusion can be accepted as valid.

My second comment concerns the conclusion in Chapter IX that institutional investors tend to hold stocks of large market

value "in proportions greater than their market values." This

conclusion was surprising in that this tendency was more pro-

nounced for 71 investment advisors with the largest registered

investment complexes than any other group of institutional in-

vestors with the exception of the 26 largest life insurance

companies. Because of the legal requirement for diversification

of mutual funds, one might have expected different results.

A little arithmetic shows that their measure of concen-

tration, a so-called "concentration index," may lead to their

conclusion even if it were wrong. Instead of going through this

arithmetic here, it seems more expeditious to present a new analy-

sis which avoids the difficulties associated with their "concen-

tration" index.

This new analysis is based upon one of the data files collected

for a previous study under the sponsorship of the Twentieth Century

Fund [4]. This file contains quarterly holdings of individual mu-

tual funds from the third quarter of 1964 through the first quarter

of 1968. For each calendar quarter, the following statistic was cal-

culated: the elasticity of the ratio of the market value of the

non-zero holdings of stock i to stock j for each fund with respect

to the ratio of the market value of the shares outstanding of stock

i to stoci j. The ratio of the beta coefficients and the dollar

volumes of stock i to stock j was held constant in estimating

this elasticity. An elasticity of one would indicate that

the size of an individual holding increases in proportion to

the market value of the stock outstanding. An elasticity great-

er than one would indicate that the investment in an individual

holding is more than proportional to its market value -- a find-

ing which if true would be consistent with the conclusion of the

Study.

The quarterly estimates of this elasticity, presented in

Table 1,[2] were remarkably stationary over time and almost always

significant. The average of the estimates for all quarters was

0.21, which suggests that a mutual fund does increase its holdings

of a particular stock as the market value increases but at a

less than proportional rate. This result is consistent with the

Twentieth Century Fund Conclusion that mutual funds on average out-

performed value weighted random portfolios but were outperformed

by equal weighted random portfolios over most of the last decade.

This type of analysis does not answer questions like the

following: Do institutional investors, and in particular mutual

funds, tend to hold equal amounts of stocks with relatively high

market values and shun stocks of very low market values? But then

neither does the analysis of the Study because of their measure

of concentration.

TABLE 1

Regressions of Ratios of Holdings on Betas, Outstanding, and Volume

REGRESSIONS

DATE

III-64
$$\ln \frac{H_i}{H_j} = -0.137 + 0.356 \ln \frac{\beta_i}{\beta_j} + 0.252 \ln \frac{O_i}{O_j} - 0.026 \ln \frac{V_i}{V_j} \qquad \bar{R}^2 = 0.25$$
$$(-2.3) \qquad\quad (2.2) \qquad\qquad (7.4) \qquad\qquad (-1.8)$$

IV-64
$$\ln \frac{H_i}{H_j} = -0.186 + 0.466 \ln \frac{\beta_i}{\beta_j} + 0.415 \ln \frac{O_i}{O_j} - 0.309 \ln \frac{V_i}{V_j} \qquad \bar{R}^2 = 0.19$$
$$(-2.7) \qquad\quad (2.2) \qquad\qquad (5.6) \qquad\qquad (-3.4)$$

I-65
$$\ln \frac{H_i}{H_j} = -0.167 + 0.292 \ln \frac{\beta_i}{\beta_j} + 0.193 \ln \frac{O_i}{O_j} - 0.022 \ln \frac{V_i}{V_j} \qquad \bar{R}^2 = 0.16$$
$$(-7.4) \qquad\quad (5.8) \qquad\qquad (15.8) \qquad\qquad (-2.6)$$

II-65
$$\ln \frac{H_i}{H_j} = -0.096 + 0.076 \ln \frac{\beta_i}{\beta_j} + 0.060 \ln \frac{O_i}{O_j} + 0.175 \ln \frac{V_i}{V_j} \qquad \bar{R}^2 = 0.16$$
$$(-4.1) \qquad\quad (1.4) \qquad\qquad (2.7) \qquad\qquad (6.1)$$

III-65
$$\ln \frac{H_i}{H_j} = -0.143 + 0.277 \ln \frac{\beta_i}{\beta_j} + 0.092 \ln \frac{O_i}{O_j} + 0.159 \ln \frac{V_i}{V_j} \qquad \bar{R}^2 = 0.16$$
$$(-6.1) \qquad\quad (5.2) \qquad\qquad (4.6) \qquad\qquad (6.4)$$

IV-65
$$\ln \frac{H_i}{H_j} = -0.154 + 0.330 \ln \frac{\beta_i}{\beta_j} + 0.113 \ln \frac{O_i}{O_j} + 0.114 \ln \frac{V_i}{V_j} \qquad \bar{R}^2 = 0.13$$
$$(-6.9) \qquad\quad (6.5) \qquad\qquad (6.0)$$

TABLE 1 (continued)

REGRESSIONS

DATE		
I - 66	$\ln \dfrac{H_i}{H_j} = -0.176 + 0.293 \ln \dfrac{\beta_i}{\beta_j} + 0.058 \ln \dfrac{O_i}{O_j} + 0.163 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (-7.3)\quad\ \ (5.8)\qquad\qquad\ (2.7)\qquad\qquad (5.8)$	$\overline{R}^2 = 0.11$
II - 66	$\ln \dfrac{H_i}{H_j} = -0.113 - 0.082 \ln \dfrac{\beta_i}{\beta_j} + 0.070 \ln \dfrac{O_i}{O_j} + 0.111 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (-1.3)\quad (-0.4)\qquad\qquad (0.9)\qquad\qquad (1.0)$	$\overline{R}^2 = 0.12$
III - 66	$\ln \dfrac{H_i}{H_j} = 0.016 - 0.023 \ln \dfrac{\beta_i}{\beta_j} + 0.124 \ln \dfrac{O_i}{O_j} + 0.058 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (0.2)\quad (-0.1)\qquad\qquad (1.9)\qquad\qquad (0.7)$	$\overline{R}^2 = 0.10$
IV - 66	$\ln \dfrac{H_i}{H_j} = -0.149 + 0.331 \ln \dfrac{\beta_i}{\beta_j} + 0.224 \ln \dfrac{O_i}{O_j} - 0.066 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (-4.1)\quad\ \ (3.8)\qquad\qquad (6.3)\qquad\qquad (-1.5)$	$\overline{R}^2 = 0.12$
I - 67	$\ln \dfrac{H_i}{H_j} = -0.111 + 0.091 \ln \dfrac{\beta_i}{\beta_j} + 0.070 \ln \dfrac{O_i}{O_j} + 0.073 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (-3.1)\quad\ \ (1.4)\qquad\qquad (2.4)\qquad\qquad (1.9)$	$\overline{R}^2 = 0.07$
II - 67	$\ln \dfrac{H_i}{H_j} = -0.069 + 0.115 \ln \dfrac{\beta_i}{\beta_j} + 0.066 \ln \dfrac{O_i}{O_j} + 0.113 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (-1.8)\quad\ \ (1.8)\qquad\qquad (2.1)\qquad\qquad (2.6)$	$\overline{R}^2 = 0.10$
III - 67	$\ln \dfrac{H_i}{H_j} = -0.062 + 0.175 \ln \dfrac{\beta_i}{\beta_j} + 0.057 \ln \dfrac{O_i}{O_j} + 0.173 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (-2.2)\quad\ \ (3.3)\qquad\qquad (2.4)\qquad\qquad (5.4)$	$\overline{R}^2 = 0.11$
IV - 67	$\ln \dfrac{H_i}{H_j} = -0.213 + 0.190 \ln \dfrac{\beta_i}{\beta_j} + 0.110 \ln \dfrac{O_i}{O_j} + 0.189 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (-7.8)\quad\ \ (3.9)\qquad\qquad (5.1)\qquad\qquad (6.6)$	$\overline{R}^2 = 0.19$
I - 68	$\ln \dfrac{H_i}{H_j} = -0.026 + 0.386 \ln \dfrac{\beta_i}{\beta_j} + 0.034 \ln \dfrac{O_i}{O_j} + 0.487 \ln \dfrac{V_i}{V_j}$ $\qquad\quad (-0.3)\quad\ \ (1.9)\qquad\qquad (-0.4)\qquad\qquad (4.1)$	$\overline{R}^2 = 0.26$

My third comment deals with the measure of investment

performance which the Study used in its analysis of mutual funds

and the collective funds of banks. The study should be faulted

for using a particular one-parameter measure of performance

without disclosing the potential problems associated with it.

This failure to point out the biases of this one-parameter measure

may have helped to give an _imprimatur_ to the indiscriminate use

by the investment community of this one-parameter measure to eval-

uate investment performance.

The one-parameter measure of investment performance used

by the Study was first proposed by Michael Jensen in 1968 [5].

Since that time, various studies have presented substantial evi-

dence that the theoretical model upon which it is based, namely,

the traditional capital asset pricing model, provides a poor

description of the expected returns on financial assets (Cf. [2],

[3]). The evidence has become so overwhelming that even Jensen

in a paper with two colleagues [1] has rejected the capital asset

pricing model in the form used by the Study. Therefore, the avail-

able evidence suggests that the one-parameter measure of invest-

ment performance implied by this model is highly suspect. Since

at least some of this evidence was available at the time of the

Study, the limitations of this measure should have been pointed

out explicitly.

My last comment concerns the Study's conclusion that net

sales of mutual funds are positively related to performance

-- a popular part of market folklore. Besides the fact that

net sales according to their results are positively but in-

significantly related to performance, their measure of net

sales is so defined as to induce a positive relationship. It

includes the reinvestment of capital gain and dividend distri-

butions. Because of tax laws, much of the investment performance

of mutual funds is attributable to these distributions. Thus,

one would expect a positive relationship in their analysis even if

there were no relationship between the properly defined variables.

In ending this comment, I would like to say that I found

the Study a very interesting document. I recommend it to others.

FOOTNOTES

[*]Associate Professor of Finance at the University of Pennsylvania. The author wishes to thank the Rodney L. White Center for Financial Research of the Wharton School for financial support.

[1]The Study did analyze the price behavior of stocks over a forty-one day period surrounding large position changes of NYSE specialists. It is difficult to determine from these tests whether specialists hindered or helped valid price adjustments although the evidence does suggest that specialists, when they took unusual positions, were not destabilizing on average.

[2]For each of five beta classes -- below 0.4, 0.4-0.8, 0.8-1.2, 1.2 to 1.6 above 1.6 -- all distinct combinations of the holdings of individual funds were used in the analysis. Combinations between beta classes were not used because of cost considerations. The beta coefficients were calculated anew for each quarter using previous monthly returns.

REFERENCES

[1] Black, Fischer, Michael C. Jensen, and Myron Scholes.
    "The Capital Asset Pricing Model: Some Empirical
    Tests," in Michael C. Jensen, ed. Studies in the Theory
    of Capital Markets. New York: Praeger (forthcoming).

[2] Blume, Marshall and Irwin Friend. "A New Look at the
    Capital Asset Pricing Model." Rodney L. White Center
    for Financial Research Working Paper No. 1-71 Revised.

[3] _____ and _____. "Measurement of Portfolio
    Performance Under Uncertainty," American Economic
    Review (September, 1970).

[4] _____, _____ and Jean Crockett. Mutual Funds
    and Other Institutional Investors: A New Perspective.
    New York: McGraw Hill Book Co., 1970.

[5] Jensen, Michael. "The Performance of Mutual Funds in the
    Period 1945-64," Journal of Finance, Vol. 23 (May, 1968).