D. PRICE IMPACTS OF BLOCK TRADES ON THE NYSE

The basic purpose of the analyses in this part is to determine whether there are significant price changes accompanying block trades on the NYSE; and, if so, whether they reflect a change in the underlying value of the stock or merely reflect the pressures of institutional trading. The methodology used, measurement of the difference between the percentage price change in the stock from one point in time to another and the percentage price change in the market, is generally the same as in chapter X. It is more fully described in appendix A to this chapter.

1. Data Used

a. *Vickers cards*

Most of the analyses in this section are based on the Vickers cards for NYSE block trades in List A stocks from July 1, 1968, to September 30, 1969.[178] The final sample contained 7,009 such blocks.[179] There were 4,810 blocks, or 69 percent of the total, below $1 million in value. Forty-three percent of the total blocks were traded at a price below the previous price. Thirty-four percent were traded at the same price, and 25 percent were traded at a higher price.

Blocks under $1 million were eliminated from most analyses.[180] The analyses were thus mostly conducted for 1,275 blocks between $1 million and $2 million, 691 blocks between $2 million and $5 million and 233 blocks over $5 million. Of these, 1,199 blocks, or 55 percent, traded on minus ticks and 366, or 17 percent, traded on plus ticks (Table XI–97). Since the tick of the block is a good indication of the side that initiated the trade, for purposes of the analyses minus-tick blocks are treated as having been initiated by an anxious seller; and plus-tick blocks, as having been initiated by an anxious buyer.[181]

b. *Forms I–15 and I–16*

The Vickers cards do not specify the presence or magnitude of either block positioning or participation by the NYSE specialist.[182] The data from Forms I–15 and I–16, however, do contain these details.[183] There were sufficient data available for 178 block trades involved in this detailed survey. Seventy-three of them were positioned by the block trade assembler. The NYSE specialist participated in 124. Of the total 178 blocks, 109, or 61 percent, were on minus ticks; 46, or 26 percent, were on zero ticks and 23, or 13 percent, were on plus ticks. These numbers are roughly consistent with the proportions for the Vickers block trades of $1 million and over.[184]

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[178] See sec. B.1.a and ch. X, app. A, above.

[179] About 600 List A blocks were excluded because price data were unavailable, because blocks were dropped in the process of determining leading blocks or because there were errors in the data.

[180] See secs. C.2.a–C.2.c. above.

[181] See sec. C.2.a, above. The active side of zero-tick blocks cannot be determined from the tick alone.

[182] See sec. B.1.a, above.

[183] See subsecs. C.1.b(1)(b) and C.1.b(1)(c), above.

[184] The percentage of minus-tick blocks in all NYSE block trades from the Vickers cards is smaller than in only those block trades of $1 million and over. The percentage of plus-tick blocks is greater. Since the total sample of NYSE block trades in the Study's survey is heavily weighted by the $1 million-and-over subsample and even more so by the $10 million-and-over subsample, the percentage of minus-tick blocks is expectably even greater for the entire sample than for block trades of $1 million-and-over from the Vickers cards. The percentage of plus-tick blocks is even smaller. See subsec. C.1.b(1)(a), above.

Price information for the analyses in this part of the chapter was obtained from the Standard and Poor's ISL daily price tapes.

2. Interday Impacts

The effect of block trades on daily closing prices, before and after the trade, as determined from the block trades on the Vickers cards, is considered first. Price changes are measured from close to close. Time is measured in trading days.

a. *Extent of price changes*

Each individual block trade is a unique event, and the price changes associated with block trades present patterns of great diversity. For many of them it is impossible to tell what happened merely by examining those price patterns (Figures XI–5 to XI–24). Consequently, these price changes must be averaged over many block trades in order to sort out the influences that are systematically present in all of them from those that are unique to particular blocks.

On the average, all block trades of $1 million and over considered as a group had only a very small price change associated with them. By the day of the block trade the closing price of the stock (relative to the market) was, on the average, 0.42 percent different from the closing price 21 trading days before the block. The change from the close on the day before the block to the day of the block was, on the average, 0.34 percent, or less than ¼ on a $40 stock. The close on that day was lower than the previous close only 59 percent of the time. Twenty trading days later the price had changed from the day of the block, on the average, by only 0.21 percent (Figure XI–25; Table XI–97).

This does not mean that block trades have no impact on the market. Rather, when all block trades are analyzed as a group, the positive price changes associated with blocks initiated by anxious buyers and the negative price changes associated with blocks initiated by anxious sellers tend to cancel each other out in the averaging process. Consequently, these different types of block trades must be analyzed separately. For this purpose the blocks are separated according to tick, and price changes can then be detected.

On the day of the block the closing price (relative to the market) of the stocks in which blocks traded on minus ticks was, on the average, 2.02 percent below the closing price 21 trading days before the block. Most of this drop (1.15 percent) occurred on the day of block.[185] The closing price for stocks with blocks trading on plus ticks was, on the average, 5.14 percent above the closing price 21 trading days before the block. The rise on the day of the block was, on the average, 1.29 percent. Zero-tick blocks were, on the average, accompanied by a price increase of 1.37 percent from the closing price 21 trading days before the block, 0.23 percent of this increase occurring on the day of the block. On the day of the block 74 percent of the blocks trading on minus ticks accompanied declines in the closing price, and only 31 percent of the blocks trading on plus ticks accompanied declines in the closing price. An approximately equal number of blocks trading on zero ticks accompanied declines or did not (Figures XI–26 to XI–28; Tables XI–99 to XI–101).[186]

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[185] See sec. D.2.c, below, for a further division of the prior period.

[186] See Table XI–96a for a frequency and percentage distribution of price changes from the preceding close to the close on the day of the block.

The difference between the closing price on the day before the block and the closing price on the day of the block is statistically significant and the case of minus ticks and plus ticks.[187] But it is not necessarily meaningful since the minus-tick and plus-tick samples were chosen on the basis of the direction of the price change between the block price and the last prior trade. These price changes are themselves, of course, reflected in the change for the day. Moreover, some zero tick blocks are likely also initiated by anxious buyers or sellers. Thus, the percentage price changes set forth above overstate the average price change associated with different types of block trades. The important aspect of the analysis is not so much the size of the average price change on the day of the block trade, but the pattern of prices before and after the block trade. It is the latter factor that evidences the existence and magnitude of a market impact.

From the analysis of all minus-tick blocks a new lower level of prices appears to be established after the block trade. On the average, prices come back slightly (about 0.25 percent) within 10 trading days after the block but are still below the original level of prices by more than 1.50 percent. Conversely, plus-tick blocks tend to establish a new higher level of stock prices. In both cases the new level is established rather quickly. The drift after the tenth subsequent trading day is minimal (Figures XI–26 to XI–28; Tables XI–99 to XI–101).

These initial results do not show any evidence of a temporary buying or selling pressure that would be reflected in a temporary rise or fall of prices. On the contrary, prices seem to set a persistent higher or lower level of prices, depending on whether the block was purchased or sold. Thus, the results seem to indicate that the price changes arise from changes in the underlying values of the stock rather than from the pressure of institutional trading. It should be noted, however, that a persistent price change lasting for 20 trading days establishes the likelihood of changes in underlying values but does not conclusively prove them. It is possible that temporary price changes could persist for that period. Moreover, with respect to minus-tick blocks, further analyses indicated that the price change is not even persistent when allowance is made for the occurrence of subsequent blocks.[188]

To determine if the preceding results were affected by the identity of the particular stocks in the sample, the analysis was rerun for List B' stocks and List C' stocks, which are unbiased subsamples from List A,[189] List B′ contains the 27 largest common stocks in terms of the market value of equity listed on the NYSE. List C′ is a random sample of 198 common stocks from the remainder of the stocks listed on the NYSE. The pattern of price changes is the same for the subsamples as for the entire List A. But there is a noticeable difference in the size of the change in List C′ stocks as compared with List B′ stocks. The largest NYSE stocks tend to exhibit a considerably small-

[187] This is true if standard statistical techniques are used. It has been pointed out, however, that such techniques may not be applicable in the analysis of stock price changes. See, *e.g.*, E. Fama, "The Behavior of Stock-Market Prices," *Journal of Business* (Jan. 1965), p. 34.

[188] See subsec. D.2.b(2), below.

[189] See ch. X, app. A, above.

er change, particularly in the case of plus ticks. The magnitude of price changes for List C′ stocks resembles closely the magnitudes for all of List A (Figures XI–29 to XI–32; Tables XI–103 to XI–106). This is consistent with the fact that List A contains a number of specially selected stocks with greater price volatility or trading activity.[190] which apparently offset the smaller price changes in the List B′ stocks.

The analyses described so far found detectable price changes associated with block trades of different types. Much of the remainder of this part will be devoted to determining whether these price changes represent the market impacts of the block trades—that is, whether a causal relationship exists from the latter to the former. First, however, these price changes must be put into context.

In the period studied, large price changes were more frequent on the 5,703 stock days when one or more block trades (10,000 or more shares) occurred than on the 103,290 stock days when no block trade took place. On days when a block trade occurred, price changes (up or down) of 3 percent or more happened on 22 percent of the stock days. By contrast, on stock days on which no block trade occurred, price changes as large as this happened on only 11 percent of the stock days. Only a small percentage of the stock days on which large price changes occurred, however, were also stock days on which blocks occurred. No block trade occurred on 91 percent of the days on which the price changed by 3 percent or more. Specifically, price changes of 3 percent or more occurred on 14,261 stock days. One or more block trades occurred on only 1,271 of them (Tables XI–107 and XI–108).

If one assumed that in the absence of block trades the price changes on the stock days on which they occurred would be like the price changes on days without block trades, eliminating block trades would reduce the frequency of large price changes from 13.1 percent to 12.6 percent of all stock days. Even if one made the more extreme assumption that on days when block trades occurred the price change was always zero, then eliminating these price changes would only reduce the frequency of large price changes from 13.1 percent to 11.9 percent of the days. Unless one assumes that block trades tend to cause large price changes on many stock days in addition to that of the block trade,[191] it seems clear from the above examples that block trading. in itself, cannot account for more than a small minority of the large day-to-day price changes that actually occur in the market. Nevertheless, it is important to ascertain what proportion they in fact cause, and whether those price changes are avoidable.

b. Fundamental change v. liquidity costs

The data in the preceding section gave some indication that the price changes in NYSE block trades of $1 million and over represent, on the average, a change in the underlying values of the stocks. On the other hand, these price changes could represent liquidity costs rather than fundamental changes or some combination of the two. Liquidity costs would include the cost of having a market-maker in-

[190] *Ibid.*

[191] Although there are price changes before and after block trades that are systematically associated with those trades, it is unlikely that the number of such large price changes would drastically alter the figures set forth above.

ventory the stock while it locates new permanent holders or the price concession that may have to be given to new permanent holders to convince them to buy or sell the stock sooner than they might do otherwise. In blocks initiated by anxious sellers the liquidity costs would be evidenced by a rise in the relative price of the stock subsequent to the block trade. In the case of blocks initiated by anxious buyers liquidity costs would be evidenced by a decline in the price subsequent to the block. These price reversals would be the measure sumably not have taken place absent the block. Any fundamental change presumably would have taken place even absent the block trade, although perhaps at a different time.

(*1*) *Price change by size of block.*—Liquidity costs would suggest a correlation between the size of the price change and the size of the block. If block trading tended to accompany fundamental changes in the value of stocks, on the other hand, one would not expect such a systematic relationship.

The average close-to-close price changes in minus-tick blocks increased with the size of the block. Blocks between $1 million and $2 million were accompanied by an average price change on the day of the block of less than 1 percent. Blocks greater than $5 million, on the other hand, were accompanied by an average change of more than 2 percent (Figures XI–33 to XI35; Tables XI–109 to XI–111).[192]

The effect of the size was also tested by the use of regression analysis. There is a statistically significant relation between the size of the price change and the size of the block both in the case of minus-tick blocks and plus-tick blocks. For minus ticks, an increase in the size of the block by $1 million implies an increase in the negative price change of 0.13 percent. For plus ticks, an increase in the size of the block by $1 million implies an increase in the positive price change of 0.13 percent. When one controls for the NYSE volume on the same day as the block and whether or not the block was crossed,[193] the relationship between the size of the block and the price change increases. This is particularly true for minus-tick blocks (Table XI–112a).

(*2*) *Terminal and leading blocks.*—A powerful test involves a classification by the pattern of blocks in the same stock subsequent to the particular block trade being analyzed. Many blocks are followed by additional blocks. If there are substantial liquidity costs to block trades of $1 million and over, additional blocks will put ad-

[192] Although there are price changes before and after block trades that are systematically means and standard errors (in parentheses) of the current impact on the day of the block (day 0) are as follows:

	1-2 million	2-5 million	5+ million
Average Current:			
Impact, Day Zero	−0.0082	−0.0122	−0.0212
Standard error	(.0009)	(.0012)	(.0022)

The difference between any two means is statistically significant at better than the 1 percent level of confidence, even if the larger of the two standard errors is assumed to be the standard error of the difference.

[193] See sec. B.1.a, above.

ditional pressure on prices, thereby impeding a return to the prior level. This could explain the previous finding that the pattern of prices subsequent to the day of the block trade, averaged over all blocks, tends to be flat, which was taken as an indication that stock prices had reached a new level, presumably reflecting a fundamental change.[194]

One way to test the effect of subsequent block trades is to examine the price impacts of terminal blocks—block trades that are not followed for at least 10 trading days by any other transaction of 10,000 shares or more (over or under $1 million) in the same stock. When the pattern of prices is analyzed for minus-tick terminal blocks, there is indeed almost a complete return to the original price within 20 trading days (Figure XI–36; Table XI–113). Moreover, even if the block trade is not a terminal one, the price returns part of the way if no subsequent blocks are over $1 million (Figure XI–113; Table XI–114). Thus, the extent of price return when additional block trades follow depends upon their size. This, of course, is consistent with the finding that the amount of the price change associated with block trades is systematically related in a positive direction with their size.[195]

Plus-tick terminal blocks do not follow this pattern. The price tends to stay at the new higher level regardless of the presence, absence or size of subsequent block activity (Figures XI–38 and XI–39; Tables XI–115 and XI–116). It may be that on the average the interday price impact of plus-tick blocks represents a fundamental change. Moreover, the fact that both terminal plus-tick blocks and all plus-tick blocks, including terminal ones, set new price levels with no further increase within 20 trading days suggests that any such fundamental change may arise from news about the issuer, and that investors who evaluate that news differently are willing to trade blocks of the stock during the next few weeks, on the average, without a further premium or discount.

The findings for minus-tick blocks are substantiated by analyses of leading and non-leading blocks of $1 million and over. Leading blocks are not preceded in the prior three trading days by a block of $1 million or over; non-leading blocks are preceded by a block of $1 million or over in the preceding three trading days. The price change on the day of the block trade is almost exactly the same for those two samples. In addition, the patterns of prices over time are quite similar (Figures XI–40 and XI–41; Tables XI–117 and XI–118). It is difficult to ascribe these results to fundamental changes in the underlying value of the stock. To do so would require that new information accompany each block in some systematic way regardless of the pattern of blocks. It is perhaps sensible to argue that new information accompanies leading blocks, but it is difficult to suggest that blocks shortly thereafter also are accompanied by new information. One may conclude that the average change accompanying these non-leading blocks is due to the blocks themselves—the supply and demand pressures they create, rather than to any shift in the underlying value of the security.

In summary, the finding that price impacts are associated with the size of the block and the finding of a divergent pattern after

[194] See sec. D.2.a, above.
[195] See subsec. D.2.b(1), above.

block trades, depending on the occurrence of additional blocks, are strong evidence that for block trades initiated by sellers—the large majority of block trades—the price changes primarily represent liquidity costs and are caused by the block trades. Thus, it is the anxiousness of the seller to obtain a quick execution rather than changes in the underlying value of the stock that appears to be the principal factor responsible for the observed average price change. Contrarily, the interday price changes accompanying block trades initiated by buyers probably represent fundamental changes and are apparently only accelerated rather than caused by the block trades.

These findings have important practical implications. First, they suggest that under the present structure of markets institutions do affect market prices, although not very frequently. Second, the findings imply that the efficiency with which large blocks of stock are traded is worthy of examination. There sometimes appears to be a substantial cost to the seller in the form of an adverse price change in addition to the commission charge. Third, individual investors who participate in minus-tick block trades along with institutions tend to benefit by buying stock at a bargain. To the extent that the return to the former price is delayed by continued trading pressure on the market, buyers continue to make bargain purchases and sellers continue to incur an additional cost. Finally, plus-tick blocks appear to accelerate a persistent adjustment of the market probably due to fundamental changes. Individual investors who participate on the passive side of those blocks sell at a price level that continues for a substantial period of time. To the extent that any fundamental price adjustment is accelerated by the block, fewer buyers get bargain prices and fewer sellers fail to realize the value of their holdings.[196]

c. *Price change immediately before*

Three trading days before the average minus-tick block trade of $1 million or over, on the average, the price relative to the market begins to fall. Three trading days before plus-tick blocks it begins to rise. For example, in minus-tick blocks the average price decline the third day before is 0.21 percent. On the second day before it is 0.29 percent, and on the day before it is 0.33 percent. The cumulative effect is that by the end of the day before the block the price, on the average, is already 1 percent below the level 20 trading days earlier (Figures XI–26 and XI–28; Tables XI–99 and XI–101).

This pattern could be due to a gradual price drop before each block trade in the sample, or it could be due to a large price change in a few, with no change in the rest. To distinguish between these two possibilities, the price change on the day of minus-tick block trades was plotted against the price change on the day before. On a block-by-block basis, there appears to be very little relation between the two (Figure XI–42).[197] Thus, one can ascribe the average pre-block price

[196] It should be emphasized again that these findings are for "average" blocks. The relationships do not necessarily hold for any particular block trade.

[197] The regression equation that is shown at the bottom of the figure does, however, indicate a slightly significant relationship between the impact on the day of the block trade and the impact on the day before. The r^2, however, is only .01064. There is also a weak positive correlation for plus tick blocks:

$$U(o) = 1.1714 + .1323\ U(-1) \quad r^2 = .0210$$
$$(2.79)$$

drop to the averaging process itself rather than to a consistent pattern for each block.

The different timings of impacts for different blocks that are implied by these findings suggest that some blocks may be "shopped" more expertly than others. If the news is out that a large block is for sale, the price may drop prior to the actual execution of the block itself. This is particularly likely if a speculative trader sells against the block.[198] Another possible reason, that some blocks result from large price drops (that is, a price change due to some other factor—perhaps a previous block—may generate additional blocks), is contradicted by the previous plotting results. In any event, price changes in the few days prior to block trades do not seem to be systematically related to those block trades.[199]

3. Intraday Impacts

The preceding section analyzed the impact of NYSE block trades of $1 million or over on daily closing prices. This section analyzes their effect on prices within the day of the block trade.

a. *Direction and size of price changes*

Price changes are as great, if not greater, within the day of the block trade as in the period of 41 trading days used in the preceding section. As shown on the following figure, in minus-tick blocks of $1 million and over the average price change between the closing price on the previous day and the block price is a decline of 1.86 percent.[200] Within the day there is a price return even when nonterminal blocks are included.[201] The large majority of block trades are probably not followed by another block trade in that stock on the same day. Subsequent to the block, prices rise, on the average, by 0.71 percent.[202] If the stock's price had changed by the percentage change in the market index for the day, its price would, on the average, have fallen only 0.05 percent. Thus, the average net price change for the day, over and above the fall in the market and after the price recovery, is a drop of 1.10 percent, which was approximately the figure used in the analyses of the preceding section.

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[198] See ch. XII.I.3. below.

[199] See sec. D.4.a, below. This analysis was not performed for plus-tick blocks because of lack of time.

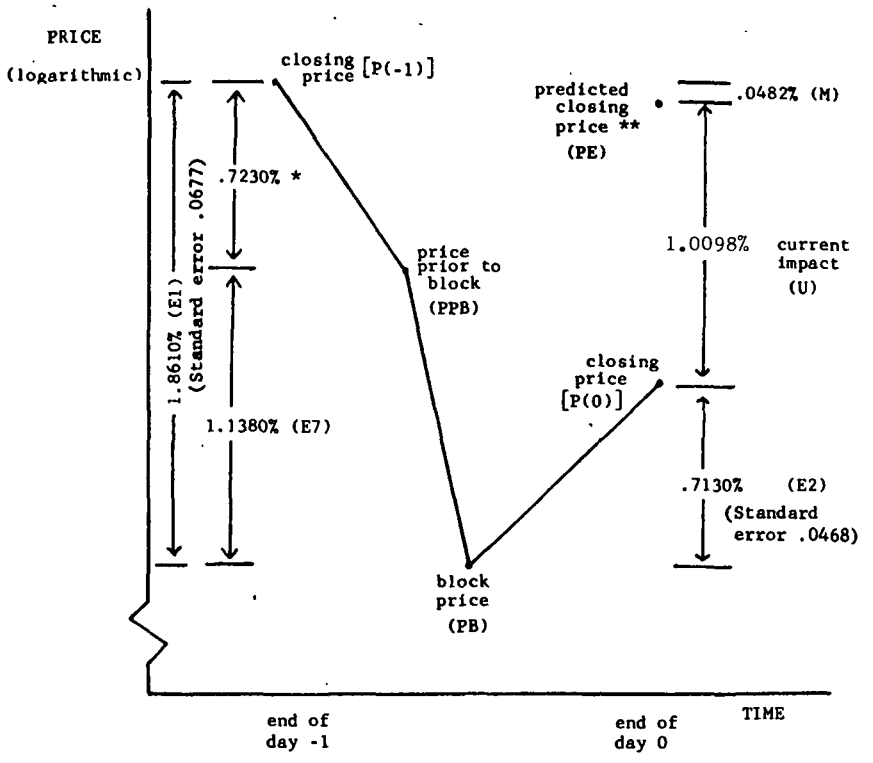
[200] See Table XI–120 for the frequency and percentage distribution. The median and average price changes fall within the same percentage change category.

[201] See subsec. D.2.b(2), above.

[202] See Table XI–121 for the frequency and percentage distribution. The median and average price changes fall within the same percentage change category.

FIGURE XI-3

WITHIN DAY PRICE PATTERNS: MINUS-TICK BLOCKS
$1 MILLION AND OVER
AVERAGE PERCENTAGE PRICE DIFFERENCES BETWEEN
SELECTED PRICES FROM THE CLOSE OF
TRADING ON THE PREVIOUS DAY TO THE CLOSE OF TRADING
ON THE DAY OF THE BLOCK



* Indicates derived figure. Other figures are estimated directly. See Appendix B for method of calculation.

** PE is closing price if stock's price had changed by same amount as market index.

The important point made by the figure is that prices, on the average, tend to rise after the minus-tick block. Thus, the intraday analysis further supports the conclusion in the preceding section that the price changes accompanying such blocks primarily represent liquidity costs.[203] Apparently, buyers of minus-tick blocks, on the average, require from the seller some price concession from last sale with the expectation of an immediate substantial recovery. The average concession is in excess of two stock exchange commissions.[204] The average price recovery that day is about one stock exchange commission.

As shown in the following figure, plus-tick blocks exhibited an average price rise from the previous close of the same order of magnitude as the initial price fall of minus-tick blocks: 1.50 percent.[205] But there is no detectable subsequent price decline after the block trade.[206]

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[203] Although the price does not return all the way on the day of the block trade, it does do so once the institutional trading pressure is off the market. See subsec. D.2.b(3), above.

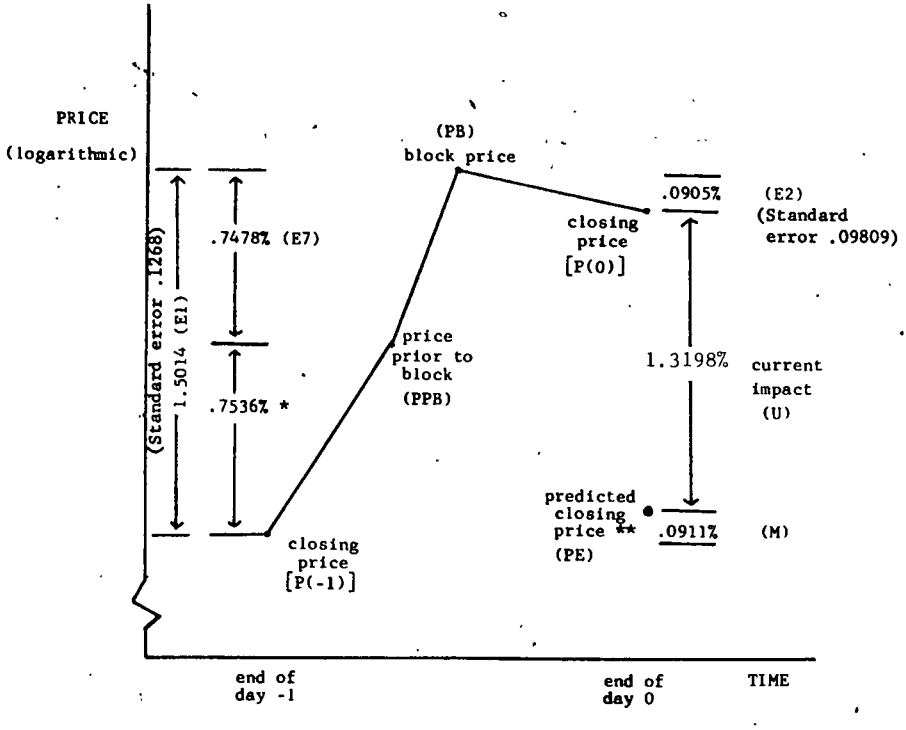
[204] The commission on 10,000 shares of a $40 stock was 0.62 percent of the value of the transaction after the volume discount instituted on December 5, 1968. This is almost twice as great as the average difference between the price of the block and the price prior to the block. The latter price, however, is lower than the last *independent* sale in a number of cases. For example, if the specialist's book was not gapped, the price prior to the block is the lowest limit order to buy on the book that was executed as part of the block. See sec. B.1.a and subsec C.2.c(4)(a), above. The actual discount from last sale, on the average, is something between the average 1.13 percent drop from the price prior to the block and the 1.86 percent drop from the previous day's close.

[205] See Table IX–120 for the frequency and percentage distribution. The median and average price changes fall within the same percentage change category.

[206] The slight decline shown on the figure is not significantly different from zero.

FIGURE XI-4

WITHIN DAY PRICE PATTERNS: PLUS-TICK BLOCKS
$1 MILLION AND OVER
AVERAGE PERCENTAGE PRICE DIFFERENCES BETWEEN
SELECTED PRICES FROM THE CLOSE OF
TRADING ON THE PREVIOUS DAY TO THE CLOSE OF TRADING
ON THE DAY OF THE BLOCK



* Indicates derived figure. Other figures are estimated directly. See Appendix B for method of calculation.

** PE is closing price if stock's price had changed by same amount as market index.

Thus, even within the day of the block trade there is no liquidity cost to the average plus-tick block. The price decline from last sale is not reversed within the day. Again the analysis of the price change on the day of the block trade is consistent with the analysis over 41 trading days presented in the preceding section.

b. *Relationship between price changes before and after*

The preceding section showed that, on the average, minus-tick blocks are followed by a substantial price recovery even on the day of the block trade. This indicates that participation in such block trades by block trade assemblers and specialists represents an opportunity for immediate profit, and that prior knowledge of the block might enable other member firms not required to pay minimum commissions to attempt to purchase part of the block and sell out at a profit on the same day.[207]

Such a profit would be far from assured. In the first place, the price recovery after the block might not take place if there were substantial layoffs on that day by such dealers. Moreover, such dealers would either have to participate in so many blocks that they were able to achieve the average recovery and/or would have to be able to predict with some degree of accuracy the size of the recovery in particular blocks.

The uncertainty of the subsequent price increase in any particular block is indicated by the following: Even when only blocks trading below the previous close are considered, less than two out of every three minus-tick blocks had any price recovery on the day of the block trade (Table XI–119). Moreover, although regression analysis and plots indicate that there is some relationship between the size of the price drop from the previous close and the price recovery to the close on the day of the block, the relationship is very weak (Figures XI–43 to XI–44; Table XI–122).[208] Nor does regression analysis indicate any relationship between the size of the block trade and the size of the subsequent recovery during the day of the trade (Table XI–123). Thus, it is very difficult for any dealer to predict the market response to a particular block trade on the day of the trade.

4. DEALER PARTICIPATION

A potentially important element in the price impacts of block trades is the participation of dealers, particularly those performing a market-making function. Although the Vickers cards do not contain sufficient information to determine the participation for their own account of either block trade assemblers or NYSE specialists, the data collected for the intensive survey of NYSE block trades in Part C do contain this information. As in the second section of this part, the

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[207] The average price recovery on the day of the block trade is of the same magnitude as the minimum commission. Therefore, even on the average, anyone who had to pay one commission to buy and another to sell could not make a profit within the day.

[208] On the plots there is no pronounced tendency for the points to fall along a particular line. The regression equation does indicate a significant relation, but the r^2 is only .0420.

analyses with respect to block positioners and specialists are conducted using closing prices.[209]

a. Block trade assembler

Of the total sample of 178 block trades, the block trade assembler had a positive position immediately after 70 of them, a negative position after three and no position after 105. The block trades not involving any subsequent position were a fairly even mixture of plus and zero-tick blocks, on the one hand, and minus-tick blocks with relatively small average price changes, on the other (Figure XI–45; Table XI–124).[210] The block trades that did involve a subsequent block position by the block trade assembler were primarily minus-tick blocks (Figure XI–46; Table XI–125).[211] Consequently, to analyze the effect of block positioning, it is appropriate to look at the minus-tick blocks alone.

On the average, minus-tick blocks positioned by the block trade assembler exhibited a price decline of 0.58 percent in the three trading days preceding the block trade, a price decline of 2.40 percent on the day of the block trade and no significant change over the next 20 trading days (Figure XI–47; Table XI–126). On the other hand, the average minus-tick block not involving participation by the block trade assembler had a price decline of 1.50 percent in the three trading days preceding the block, a price drop of only 0.74 percent on the day of the block and recovery of 1.00 percent in the next 20 trading days (Figure XI–48; Table XI–127. Thus, minus-tick blocks that were not positioned exhibited a greater price change in the days immediately before the trade than those that were positioned. On the day of the trade the difference was the opposite. The average cumulative change in the two groups was not much different (2.81 percent for blocks with subsequent positions versus 2.16 percent for blocks without subsequent positions). Then, after the day of the block trade, the blocks without subsequent positions exhibited a recovery of about one-half of the previous drop while the blocks with subsequent positions did not recover.

The greater price change for nonpositioned blocks in the few days prior to the trade is somewhat surprising. The fact that, even without controlling for subsequent blocks, the price returns a substantial part of the way indicates that the price change does result from the block rather than from fundamental factors.[212] It also indicates that blocks that are positioned are likely to be "shopped" either less extensively or more expertly than other blocks. The former could arise because of

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[209] Because the entire sample is overly weighted by big blocks, all the average price changes were generally greater than in a random sample of blocks $1 million and over. The average price changes on the day of the block trade were a drop of 1.65 percent for minus-tick blocks, a rise of 0.96 percent for plus-tick blocks and a rise of 0.44 percent for zero-tick blocks. The average cumulative price change for this and the preceding 20 trading days was a drop of 3.01 percent for minus-tick blocks, a price rise of 6.50 percent for plus-tick blocks and a price rise of 1.27 percent for zero-tick blocks. See secs. D.1.b and D.2.a, above.

[210] Fifty of the 105 block trades without subsequent positions were on days when the NYSE closing price for the stock, adjusted for the market, was lower than the previous close. Nevertheless, on the average, the closing price for all blocks was one-fifth of one percent higher than the previous close.

[211] Sixty of these 70 blocks were on days when the close, adjusted for the market, was lower than the previous close. On the average, the difference between the closing prices on the two days was 2.24 percent.

[212] See subsec. D.2.b(3), above.

the relatively recent practice of some block trade assemblers to make initial bids or offers for entire blocks and the time pressures that then arise to execute the transaction as quickly as possible rather than to exhaust every possibility of finding the other side.[213] The latter could arise because of the establishment of many new "block trading departments" after December 5, 1968, by inexperienced firms that did not block position.[214]

It is not clear to what extent the greater price change on the day of the block can be ascribed to the participation of the block trade assembler. Since the assembler is limited in selling at a loss on that day,[215] any price decline from the block trade to the day's close is probably not a result of its layoffs. Although the block trade assembler will usually make its initial bid at a discount from last sale, even in such cases the eventual price of the block is primarily determined by the interaction of the customers on both sides.[216] It may be that the price change on the day of the block simply indicates that a more "difficult" trade is involved.

The difference between positioned and nonpositioned blocks with respect to the recovery of the market price after the block was tested further by an additional analysis. All blocks in which the block trade assembler had a subsequent positive position were divided into two groups: those in which part or all of that position still existed 14 calendar days (10 or less trading days) later and those in which it did not.[217] Thirty-one of the 70 positioned blocks fell into the former category. On the average, these blocks exhibited a substantial market decline (1.06 percent) on the day after the block and a further decline of 1 percent over the next 19 trading days (Figure XI–49; Table XI–128). By contrast, the other positioned blocks averaged no change on the day after the block and in the next 19 trading days a recovery (1.42 percent) of more than one-half of the decline on the day of the block (Figure XI–50; Table XI–129).

The causal relationship between the block trade assembler's layoff transactions and the market for the stock subsequent to the block trade is probably a dual one. The fact that terminal minus-tick blocks, on the average, exhibited a substantial price recovery [218] while positioned minus-tick blocks did not, coupled with the fact that there is a recovery after the position has been liquidated, raises the question whether the block trade assembler's layoff transactions tend to have a depressing effect on the market. The further finding that block positioning generally results in trading losses when measured by ticker tape prices indicates this to be likely.[219] On the other hand, the large price decline to

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[213] See subsec. C.2.c(3), above, and ch. XII.I.3, below.
[214] See ch. XII.I.2, below.
[215] See sec. C.2.d, above.
[216] See subsec. C.2.c(3), above, and ch. XII.I.3, below.
[217] No attempt was made to sort out these blocks by tick. The fact that the block trade assembler bought stock indicated that they were primarily minus-tick blocks. Blocks involving purchases for the block trade assembler's arbitrage account were eliminated. Thus, it is unlikely that the results were distorted to a significant extent by the inclusion of any plus-tick blocks.
[218] See subsec. D.2.b(2), above.
[219] See sec. C.2.d, above, and ch. XII.I.2.e, below. It should also be noted that in 21 out of the 31 blocks with positive positions remaining after two weeks there were substantial layoffs during the two week period.
Another possible explanation is that, on the average, when block positioners acquire positions they misprice their blocks, in the sense that the price subsequently declines to a persistent lower level without regard to their layoffs. If this were generally the case, it is hard to understand why their customers would continue to participate with them on the passive side.

the day after block trades for which positions remained after two weeks but not for other positioned blocks indicates that the speed of disposition of a position may depend upon the ability of the market to absorb it. Thus, in a falling market block positioners may feed their positions out slowly rather than "dumping" much more on the market than it can absorb without a large price change. This would mean that on the average they hold profitable block positions for a shorter period of time than others. The data are not sufficient to assess the relative extents to which the disposition of the position effects the market and to which the market affects the speed of disposition.

b. Specialist

The specialist purchased stock in 124 out of 178 block trades. In 86 of these block trades, or 70 percent, the NYSE close for the day, adjusted for the market, was lower than the previous close. The average decline for all blocks in which the specialist bought stock was 1.22 percent on the day of the block. The price thereafter remained stable, on the average, for the next 20 trading days (Figure XI–25; Table XI–119). Since blocks that were not positioned by the block trade assembler were associated with smaller price changes than blocks that were so positioned, and since the specialist participated in 66 blocks of the 105 in which the block trade assembler did not participate for its own account, there is some indication that blocks in which the specialist alone participated were associated with smaller price changes than blocks in which the block trade assembler alone participated.[220]

These data are not sufficient to explain why the block trades in which the specialist alone participates appear to have the smallest price changes of any blocks with dealer participation. The data analyzed contained the size and side of the specialist's participation but not his prior or subsequent position.[221] Therefore, a purchase could have reduced an existing short position rather than established a new long position or increased an existing one. Moreover, the analysis does not distinguish between block trades in which the specialist merely took a small portion of the block in order to supply stock in the aftermarket and blocks in which the specialist had a substantial role in offsetting the imbalance of public supply and demand embodied in the block.[222] The effect of substantial position changes by the specialist as a market-maker is considered more thoroughly in chapter XII.[223]

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[220] The price changes associated with blocks in which the specialist participated are averages of the individual blocks in which the block trade assembler also participated and those in which it did not. Since specialist blocks constituted such a large portion of the latter group, the average appears to bear a strong relationship to their participation.

Block trades in which they both had a positive position after the block exhibited an average price decline of 2.57 percent on the day of the block, the largest in any category, with no subsequent recovery over the next 20 trading days (Figure XI–26 and Table XI–120). See sec. D.4.a, above.

[221] Such data were collected on Form I–16, but there was not sufficient time to utilize them.

[222] See subsec. C.2.c(2), above.

[223] See ch. XII.F, below.

FIGURE XI-5

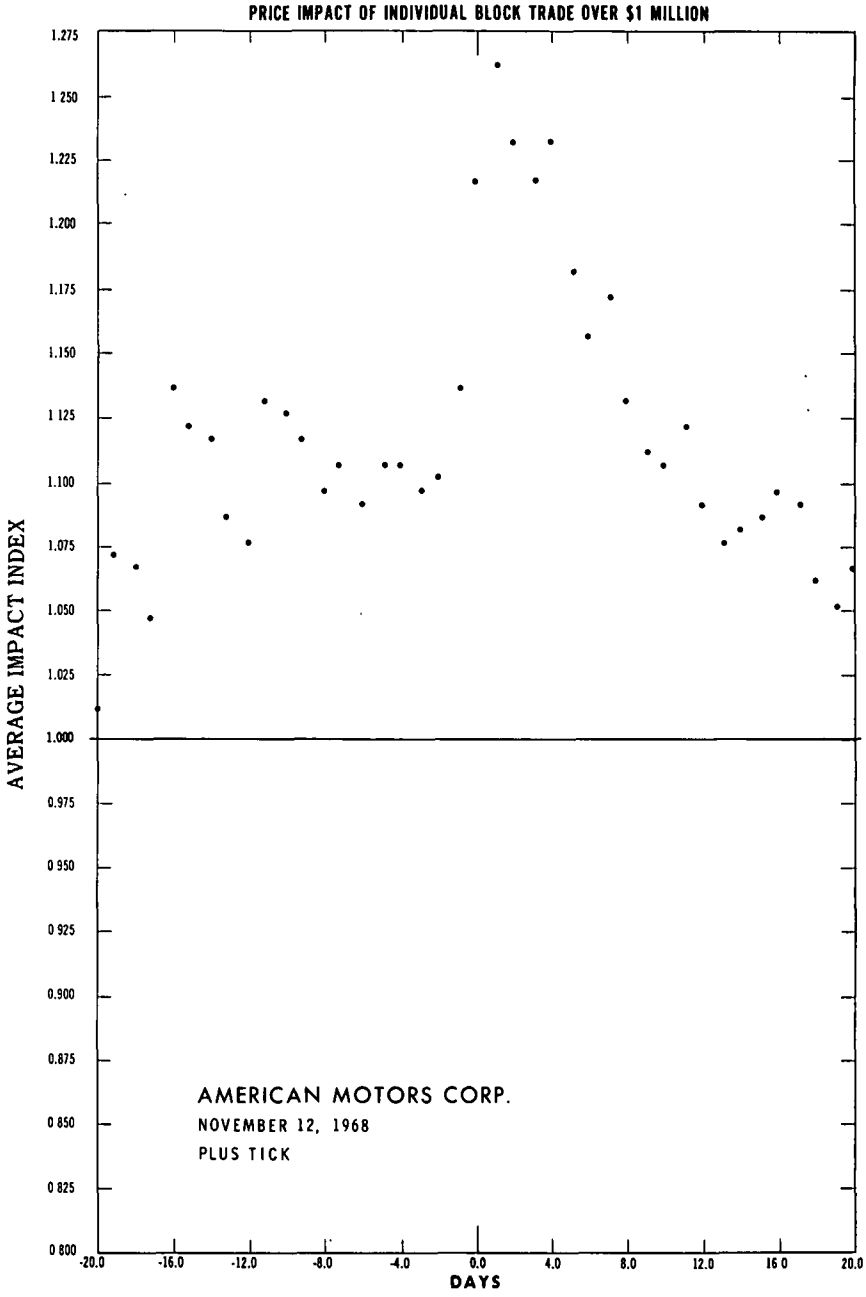

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.275
1 250
1.225
1.200
1.175
1.150
1 125
1.100
1.075
1.050
1.025
1.000
0.975
0 950
0 925
0.900
0.875
0 850
0 825
0 800
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16 0
20.0
DAYS
AMERICAN MOTORS CORP.
NOVEMBER 12, 1968
PLUS TICK

FIGURE XI-6

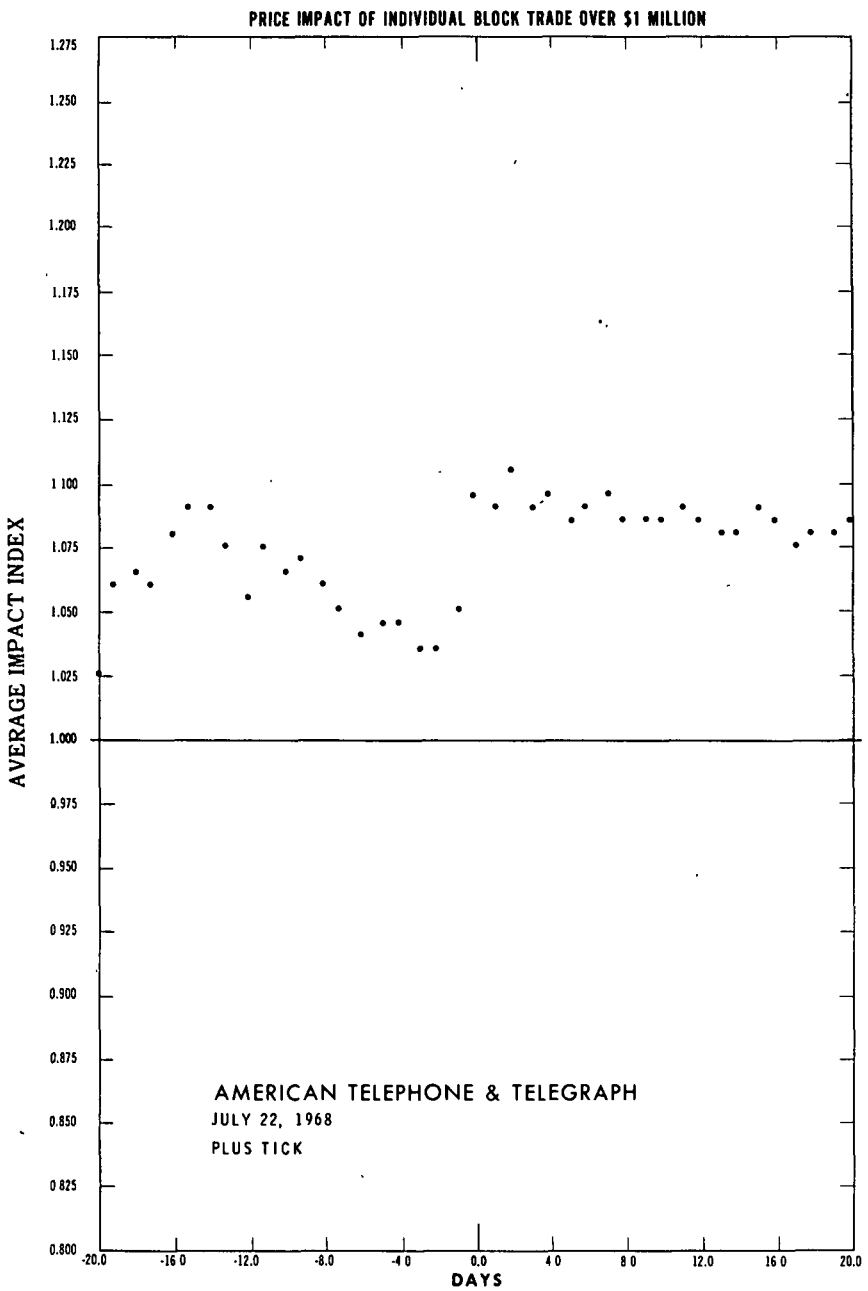

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
AMERICAN TELEPHONE & TELEGRAPH
JULY 22, 1968
PLUS TICK
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-7

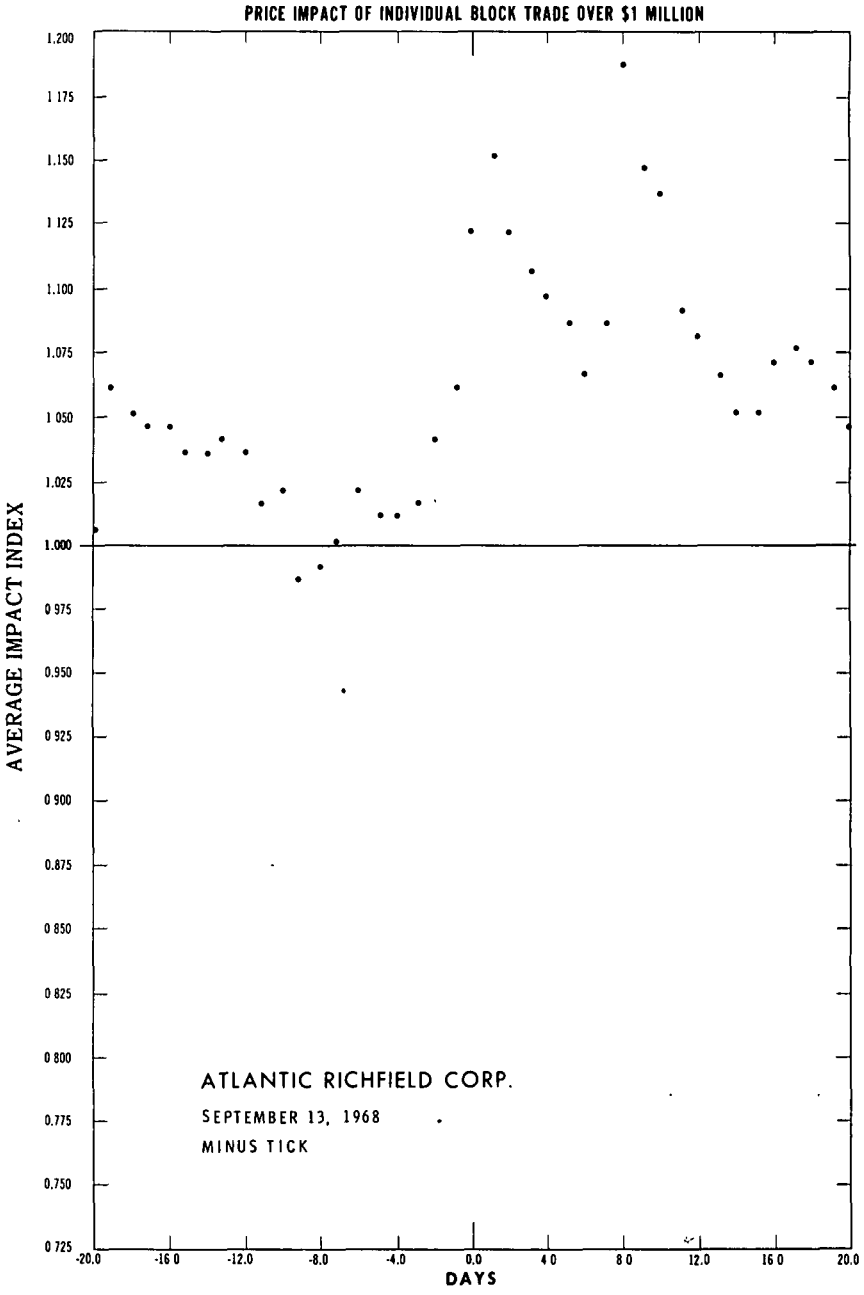

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
0.750
0.725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
ATLANTIC RICHFIELD CORP.
SEPTEMBER 13, 1968
MINUS TICK

FIGURE XI-8

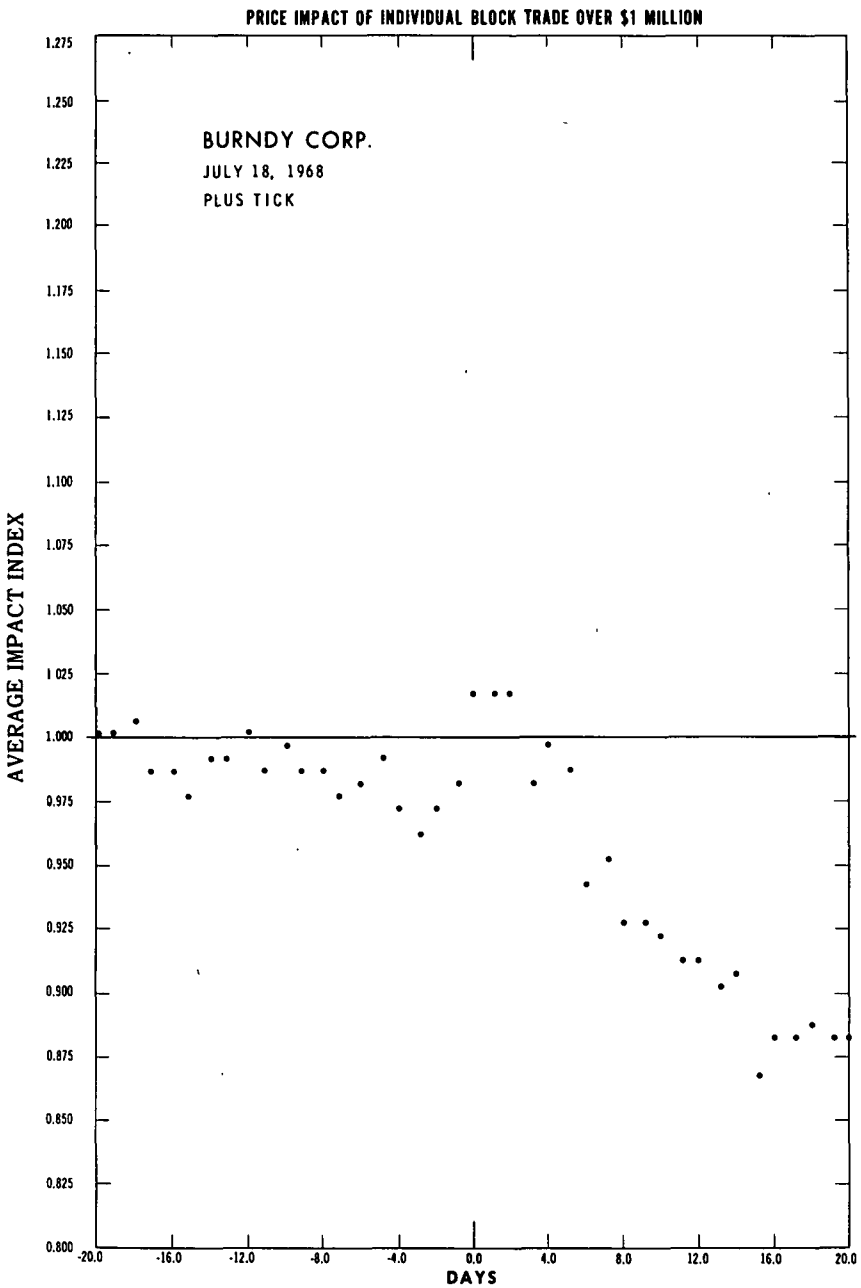

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
BURNDY CORP.
JULY 18, 1968
PLUS TICK
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-9

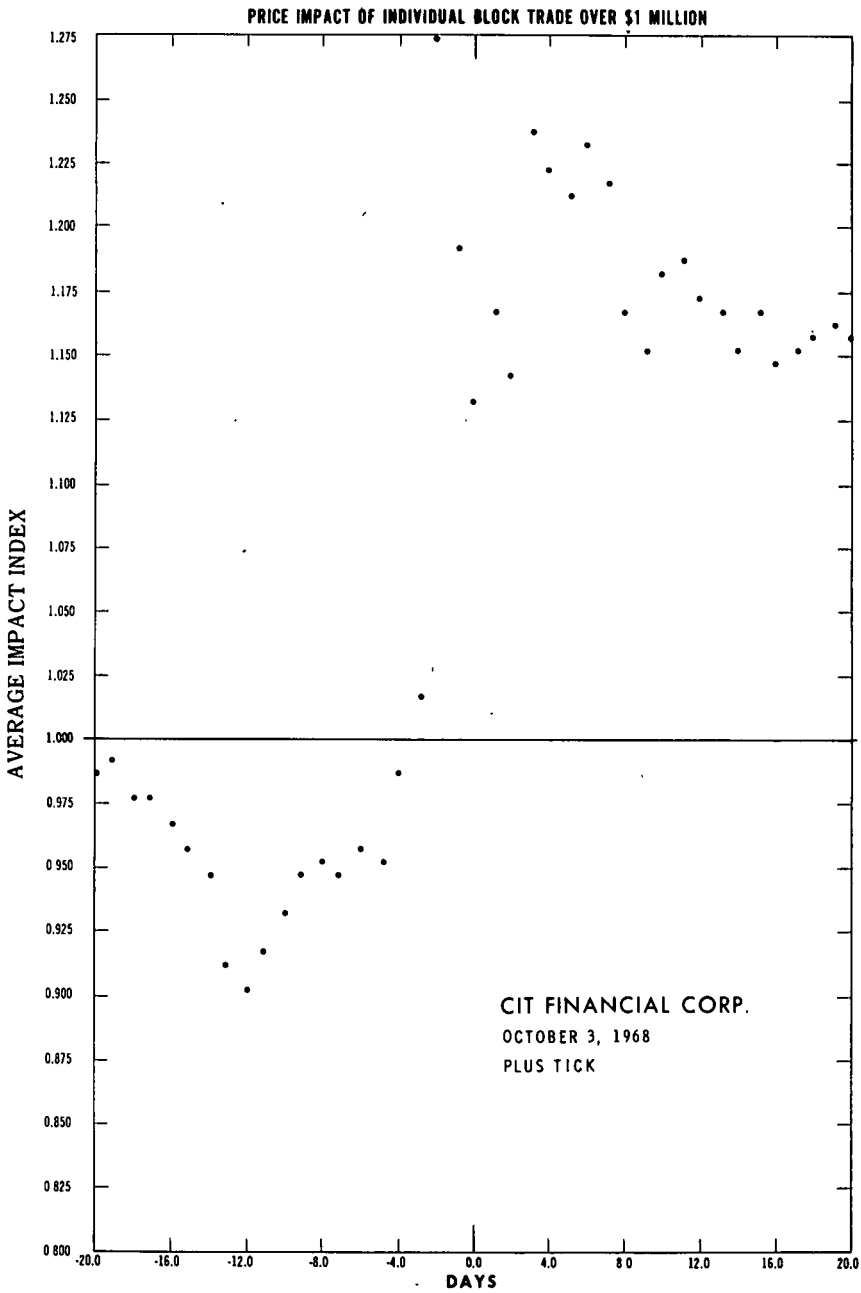

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0 950
0.925
0.900
0.875
0.850
0 825
0 800
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8 0
12.0
16.0
20.0
DAYS
CIT FINANCIAL CORP.
OCTOBER 3, 1968
PLUS TICK

FIGURE XI-10

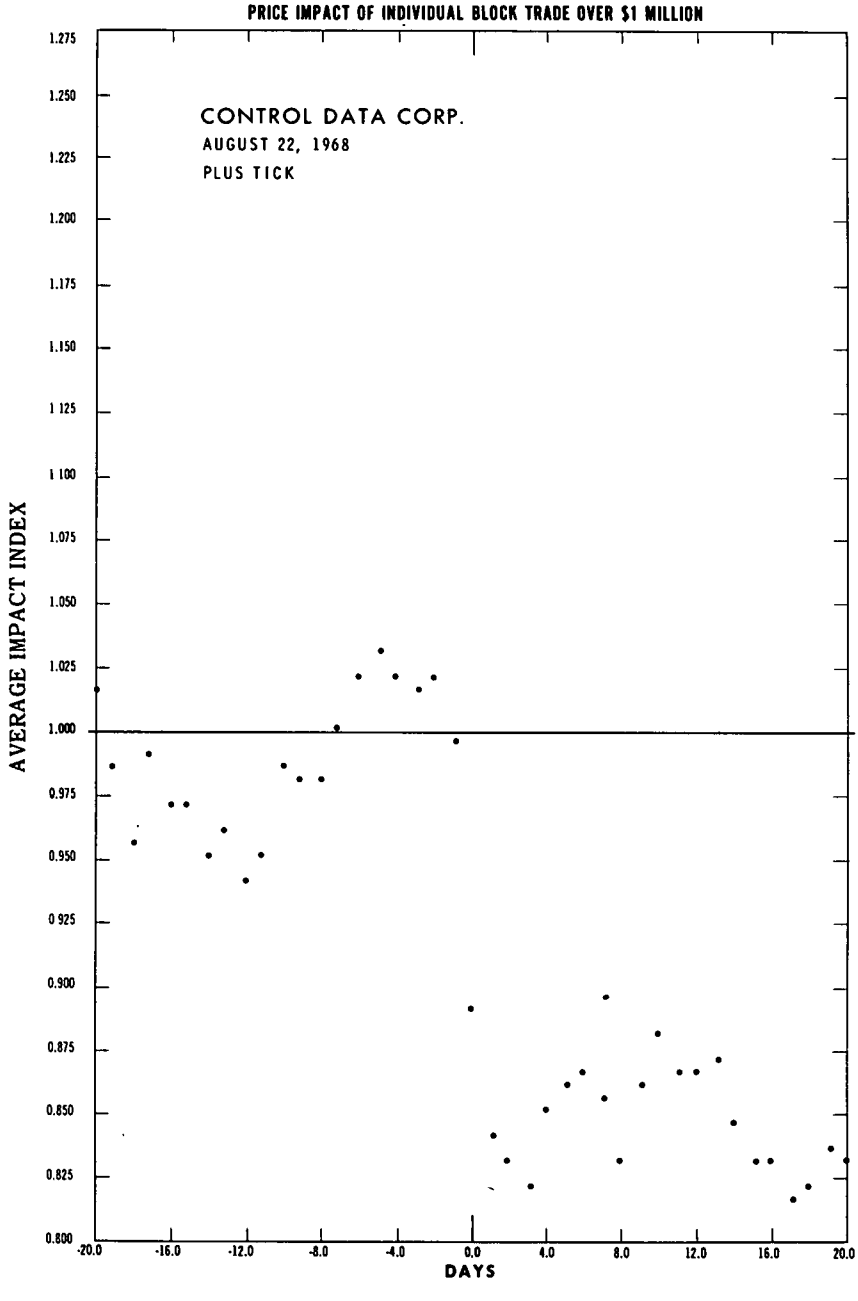

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
CONTROL DATA CORP.
AUGUST 22, 1968
PLUS TICK
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1.200
1.175
1.150
1 125
1 100
1.075
1.050
1.025
1.000
0.975
0.950
0 925
0.900
0.875
0.850
0.825
0.800
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-11

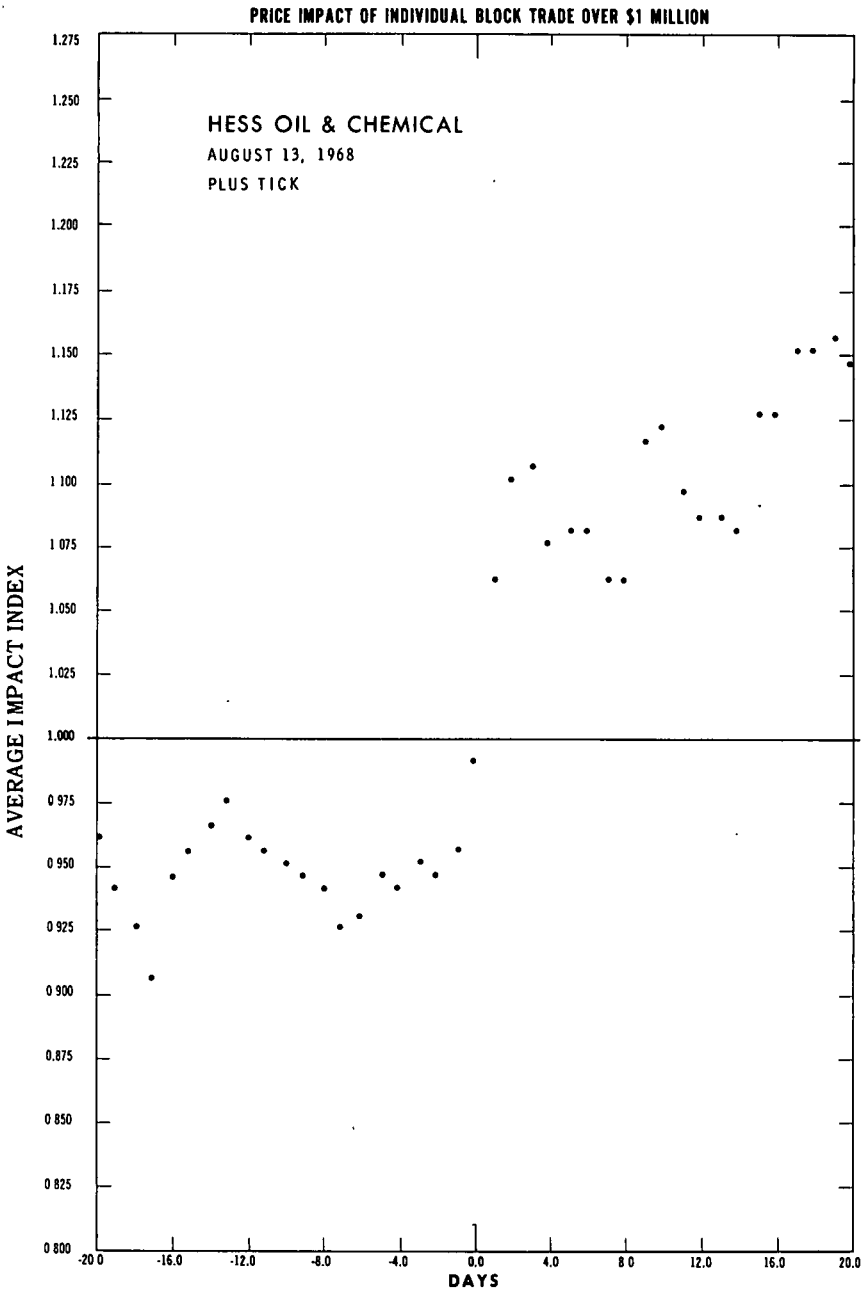

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
HESS OIL & CHEMICAL
AUGUST 13, 1968
PLUS TICK
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1.200
1.175
1.150
1.125
1 100
1 075
1.050
1.025
1.000
0 975
0 950
0 925
0 900
0.875
0 850
0 825
0 800
-20 0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8 0
12.0
16.0
20.0
DAYS

FIGURE XI-12

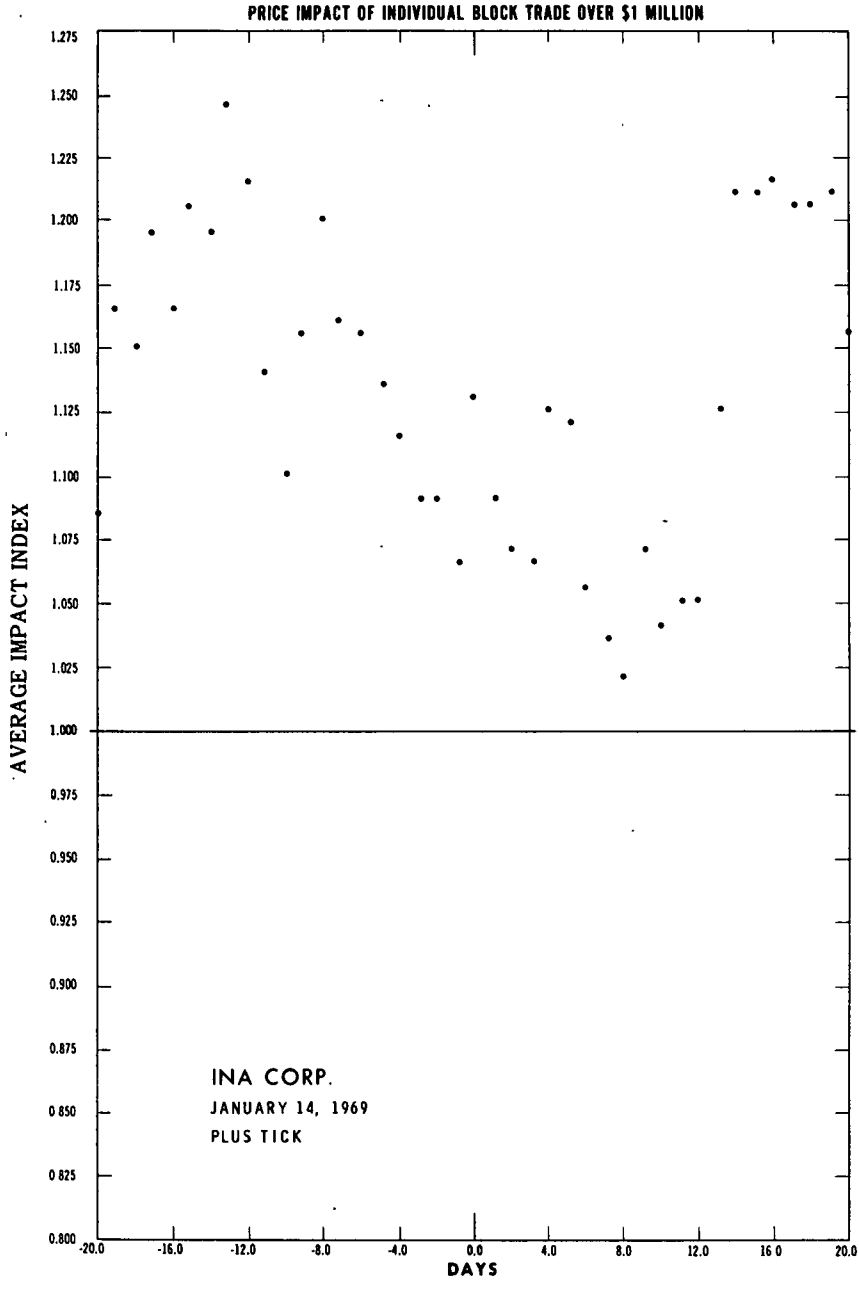

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
INA CORP.
JANUARY 14, 1969
PLUS TICK

FIGURE XI-13

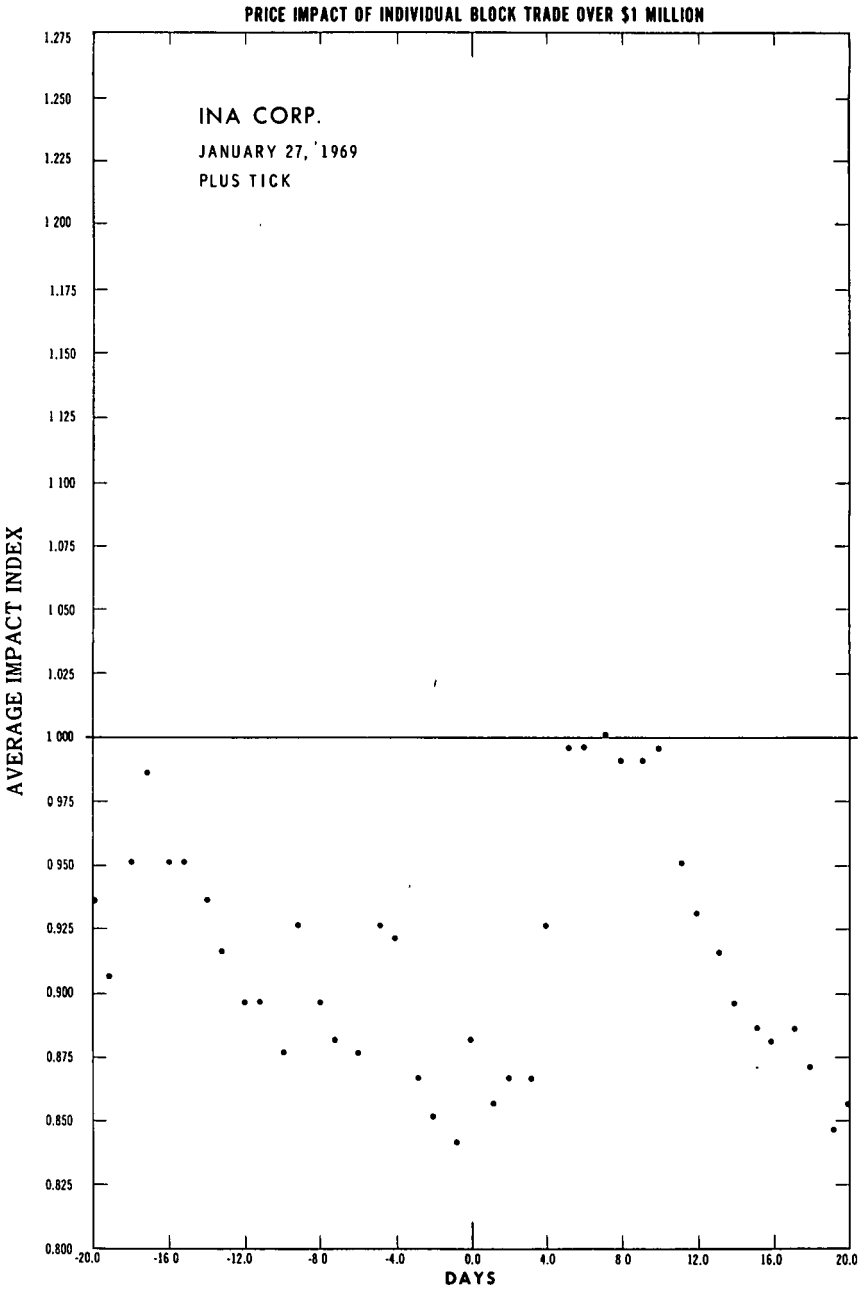

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
INA CORP.
JANUARY 27, 1969
PLUS TICK
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1 200
1.175
1.150
1 125
1 100
1.075
1 050
1.025
1 000
0 975
0 950
0.925
0.900
0.875
0.850
0.825
0.800
-20.0
-16 0
-12.0
-8 0
-4.0
0.0
4.0
8 0
12.0
16.0
20.0
DAYS

FIGURE XI-14

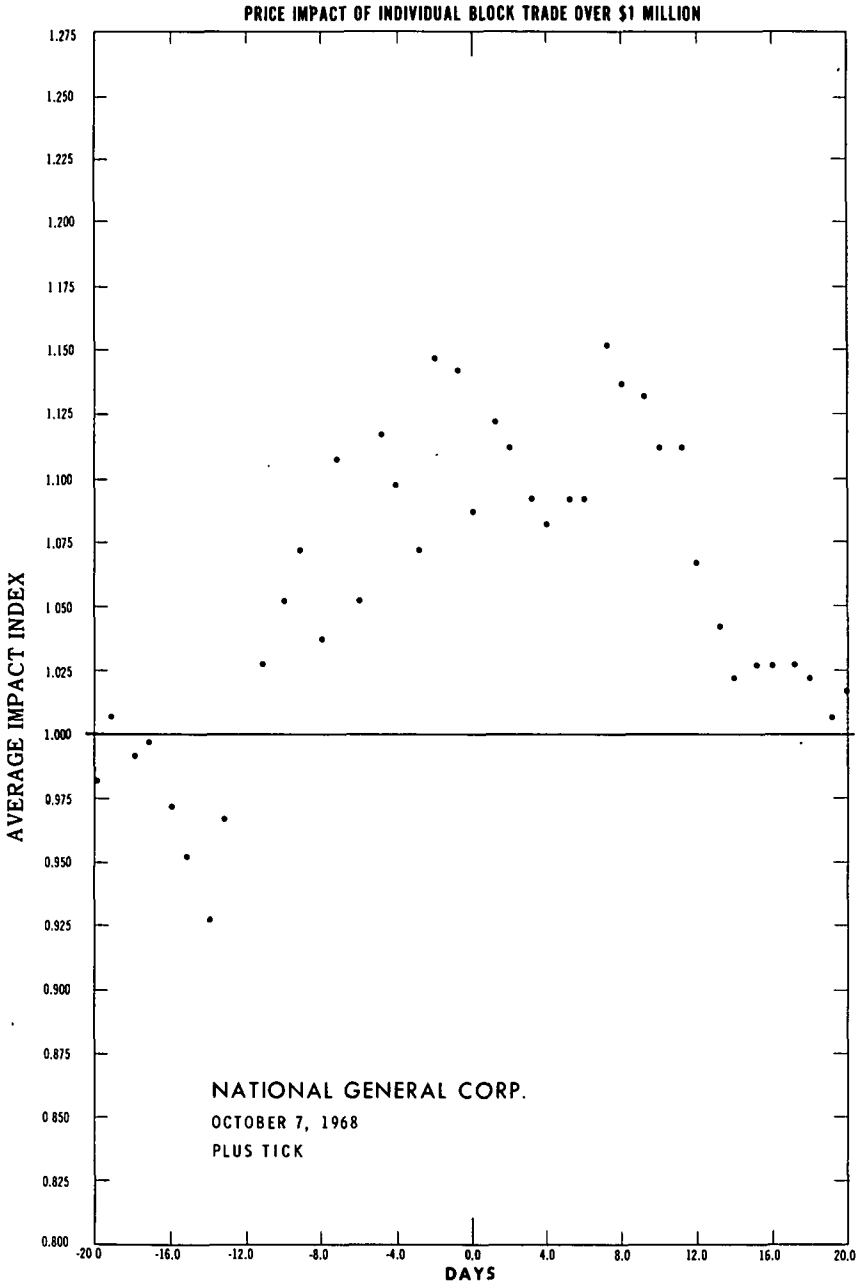

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1.200
1 175
1.150
1.125
1.100
1.075
1 050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0 850
0.825
0.800
-20 0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
NATIONAL GENERAL CORP.
OCTOBER 7, 1968
PLUS TICK

FIGURE XI-15

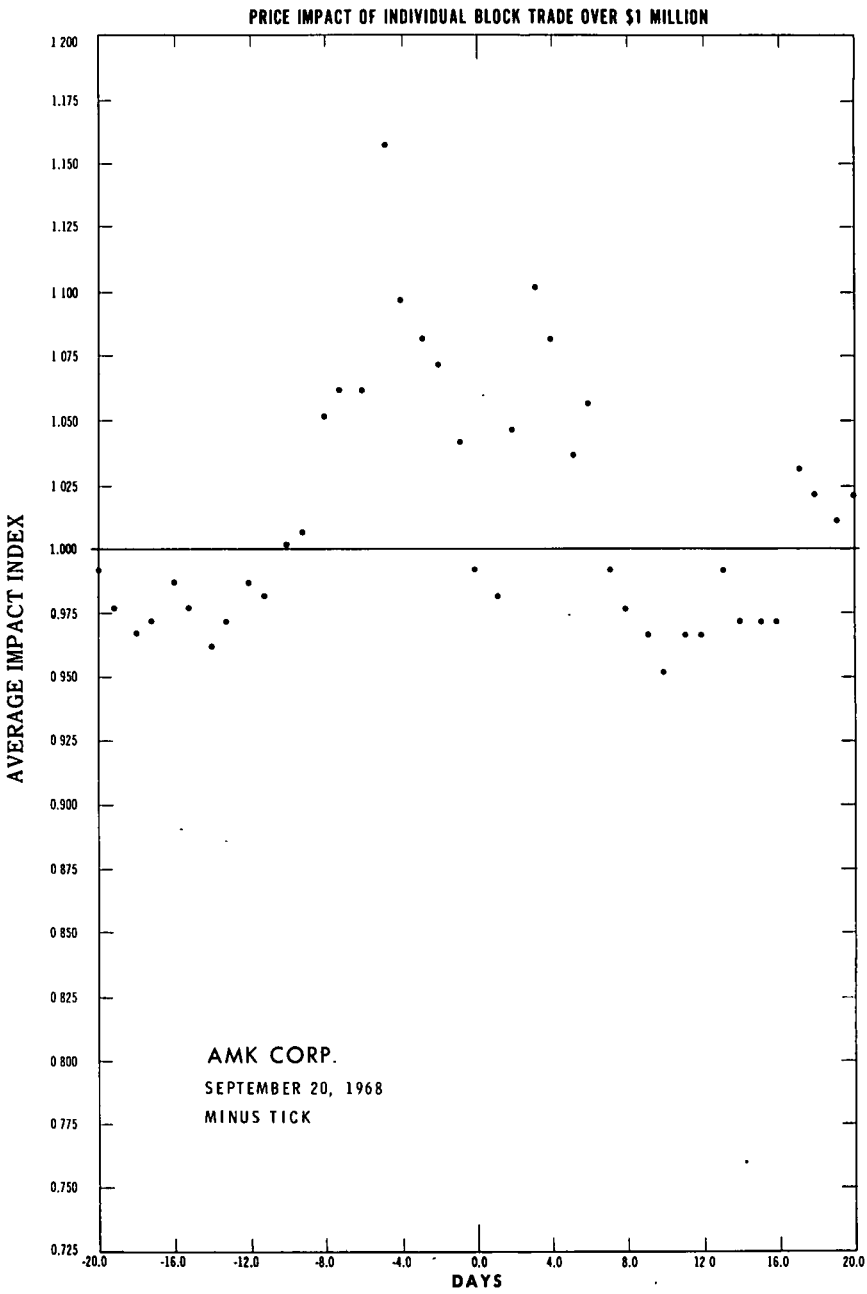

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
0.750
0.725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
AMK CORP.
SEPTEMBER 20, 1968
MINUS TICK

FIGURE XI-16

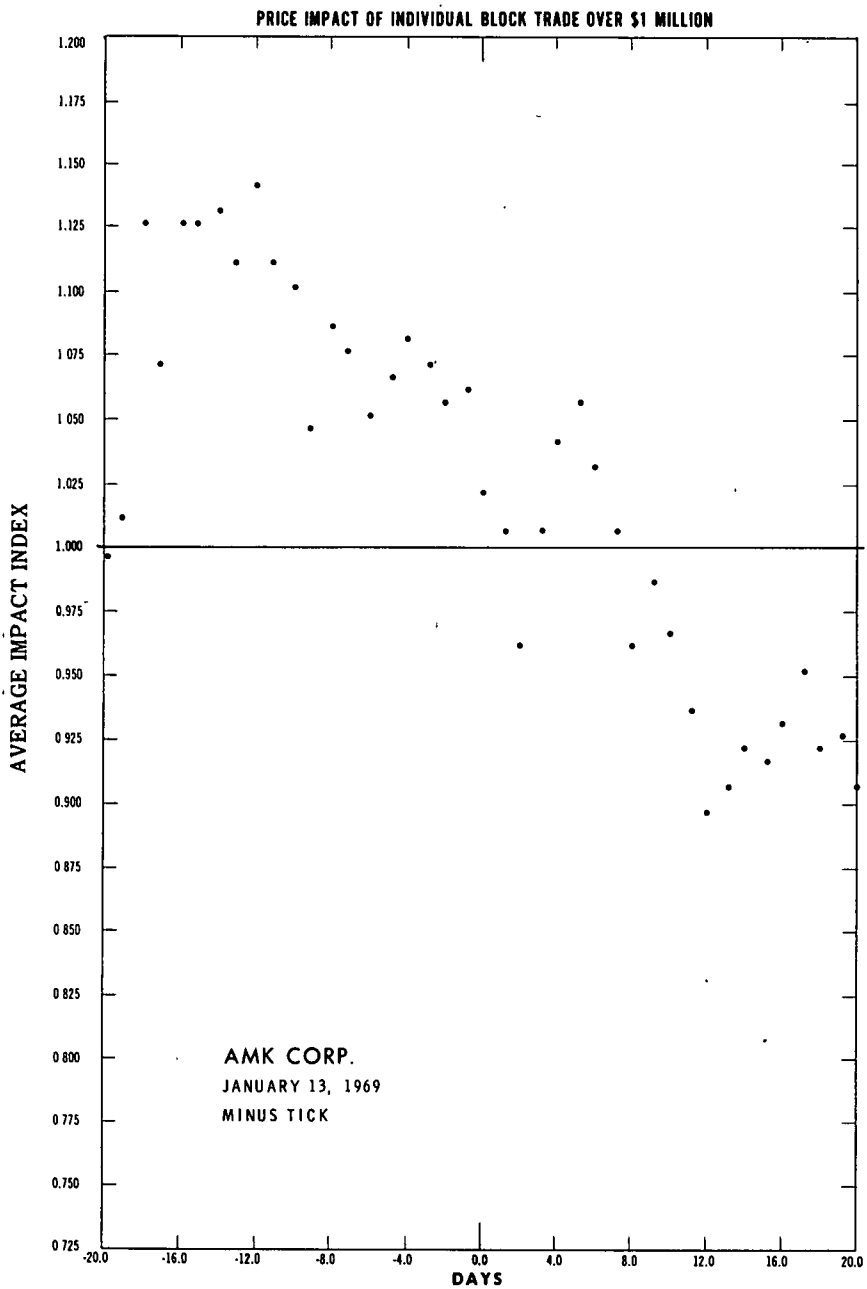

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1 075
1 050
1.025
1.000
0.975
0.950
0 925
0.900
0 875
0 850
0 825
0 800
0 775
0.750
0 725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
AMK CORP.
JANUARY 13, 1969
MINUS TICK

FIGURE XI-17

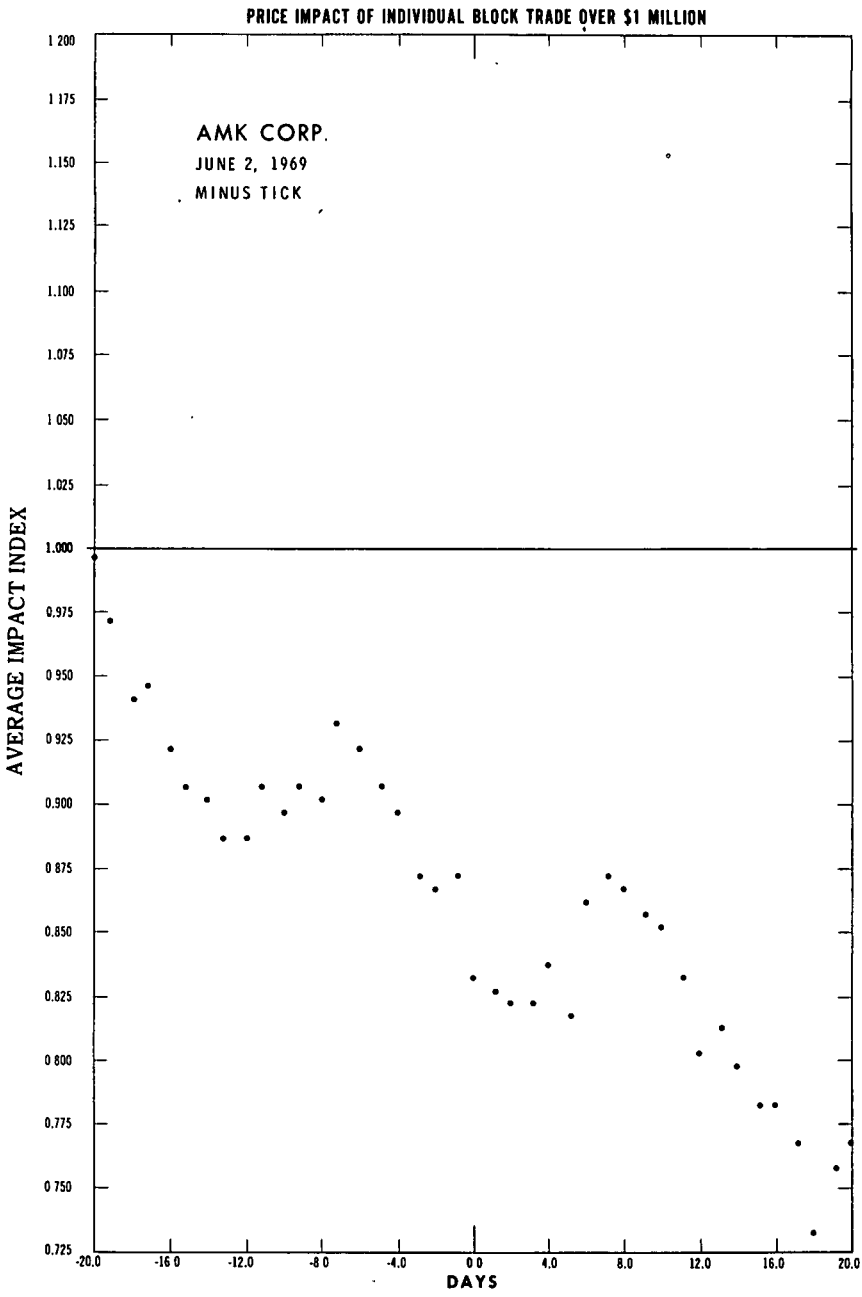

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AMK CORP.
JUNE 2, 1969
MINUS TICK
AVERAGE IMPACT INDEX
1 200
1 175
1.150
1.125
1.100
1.075
1 050
1.025
1.000
0.975
0 950
0 925
0.900
0 875
0.850
0.825
0 800
0.775
0 750
0.725
-20.0
-16 0
-12.0
-8 0
-4.0
0 0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-18

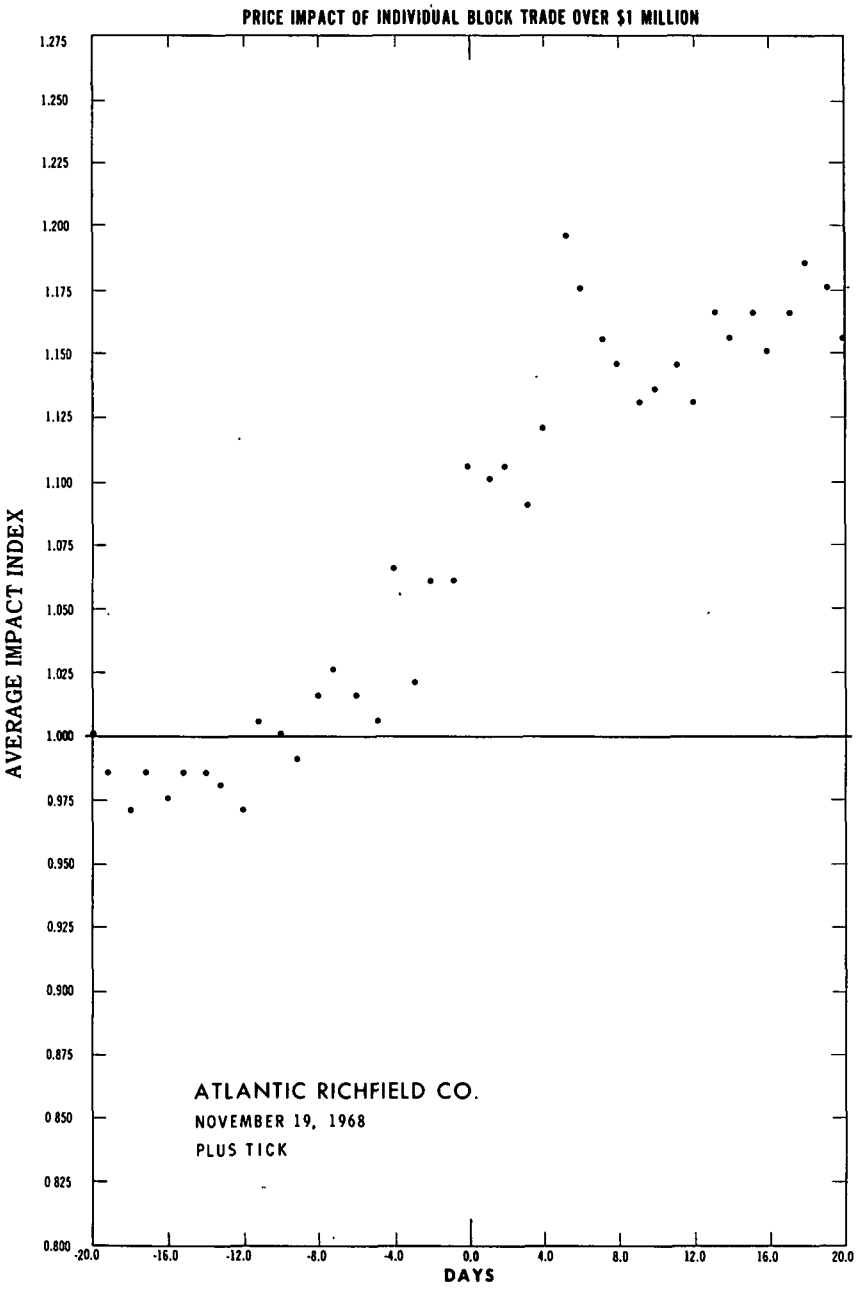

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.275
1.250
1.225
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
ATLANTIC RICHFIELD CO.
NOVEMBER 19, 1968
PLUS TICK

FIGURE XI-19

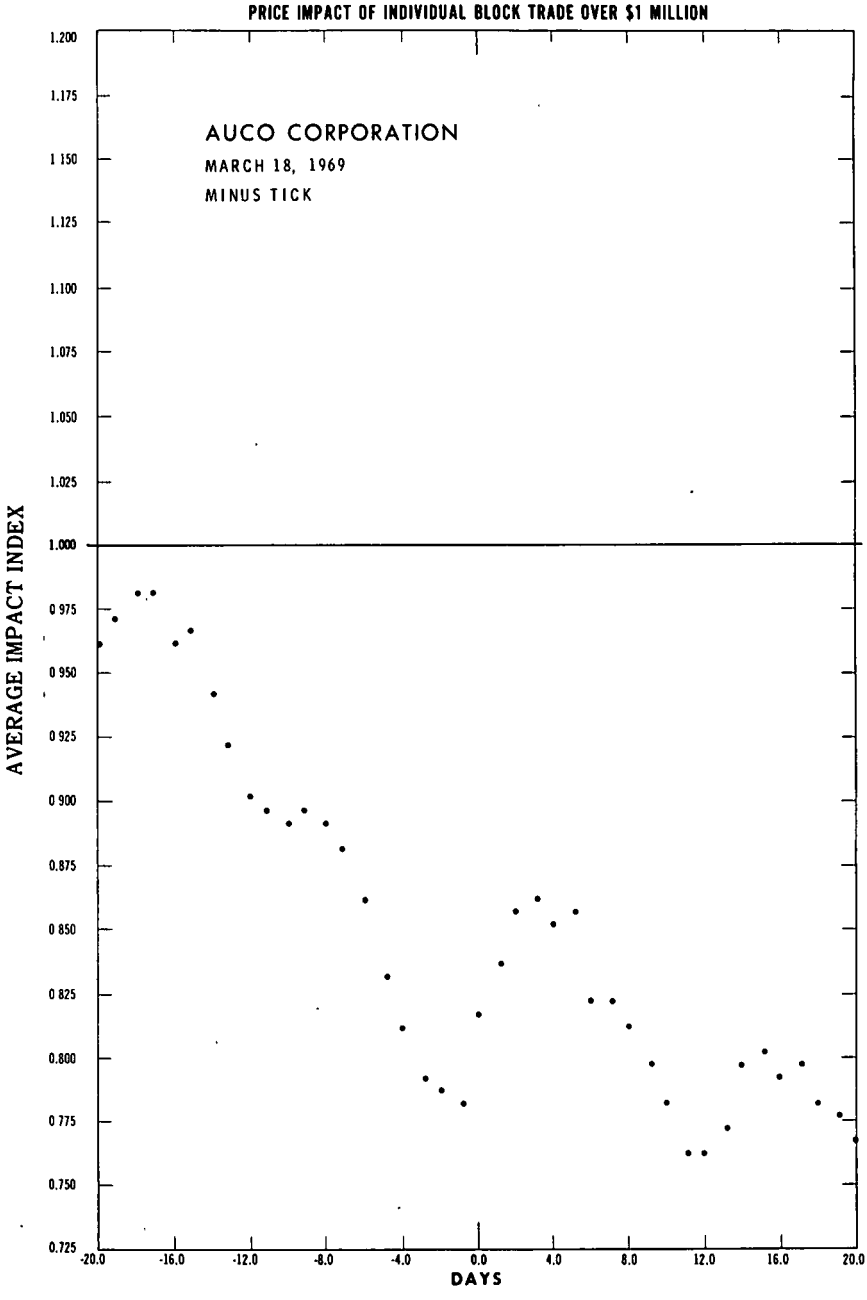

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AUCO CORPORATION
MARCH 18, 1969
MINUS TICK
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
0.750
0.725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-20

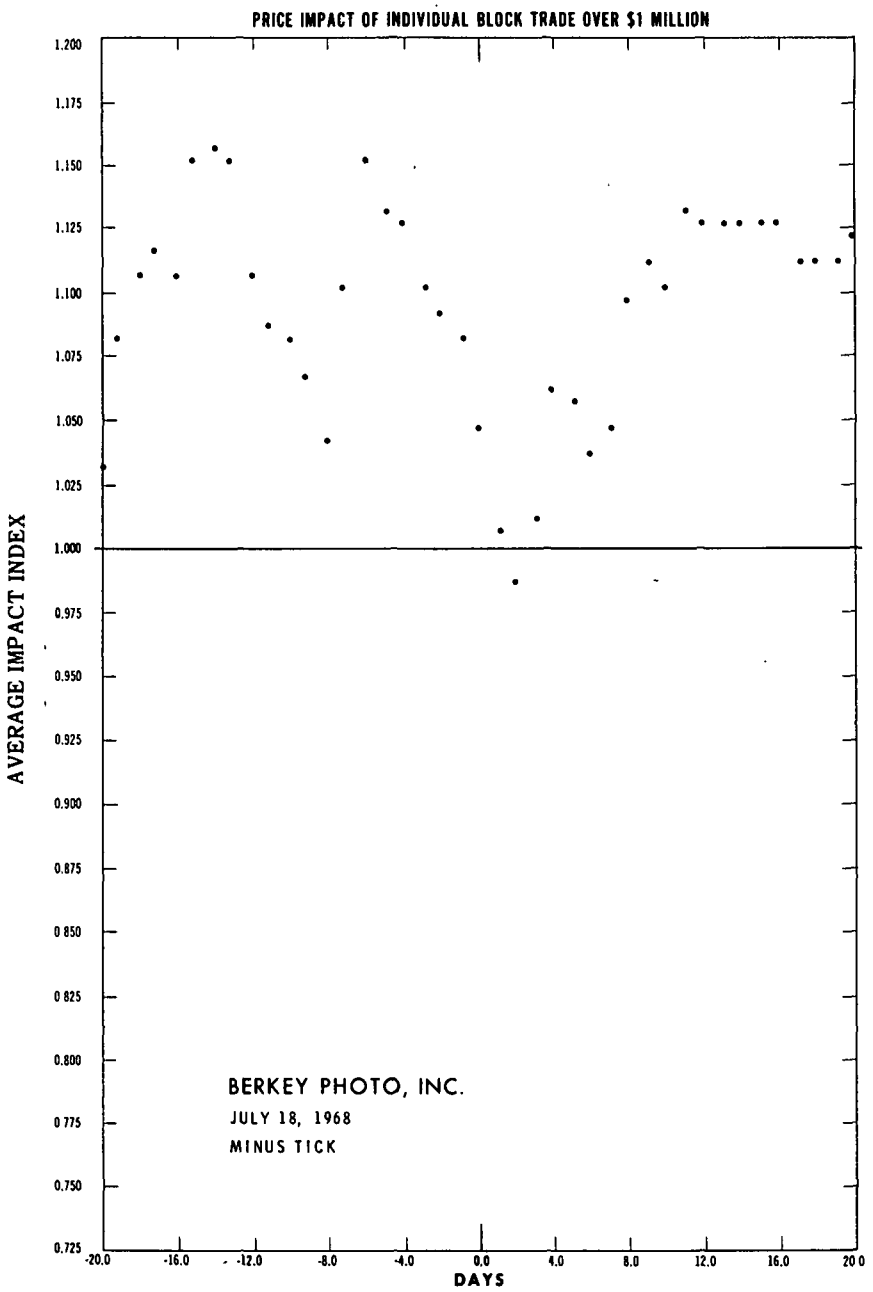

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
0.750
0.725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
BERKEY PHOTO, INC.
JULY 18, 1968
MINUS TICK

FIGURE XI-21

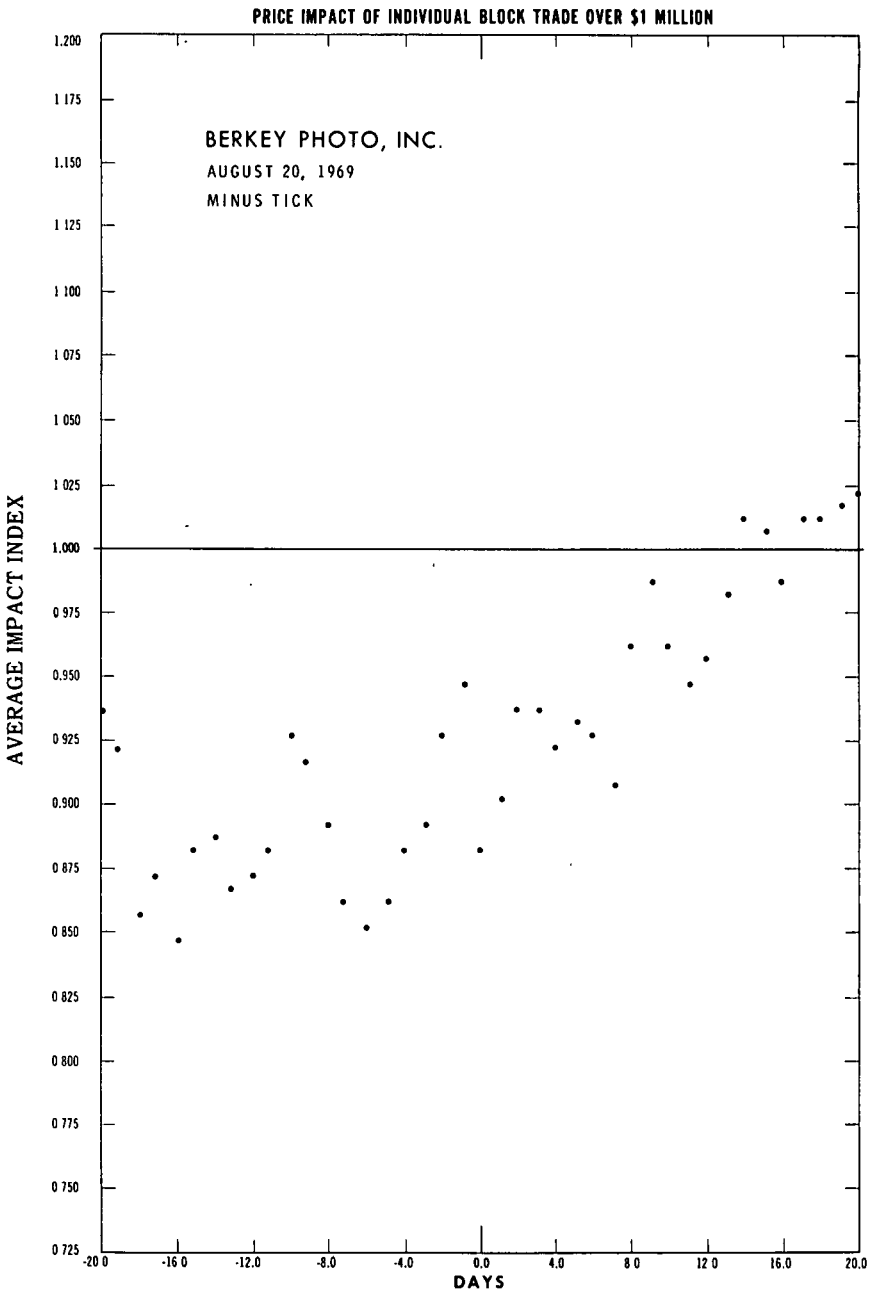

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
BERKEY PHOTO, INC.
AUGUST 20, 1969
MINUS TICK
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
0.750
0.725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-22

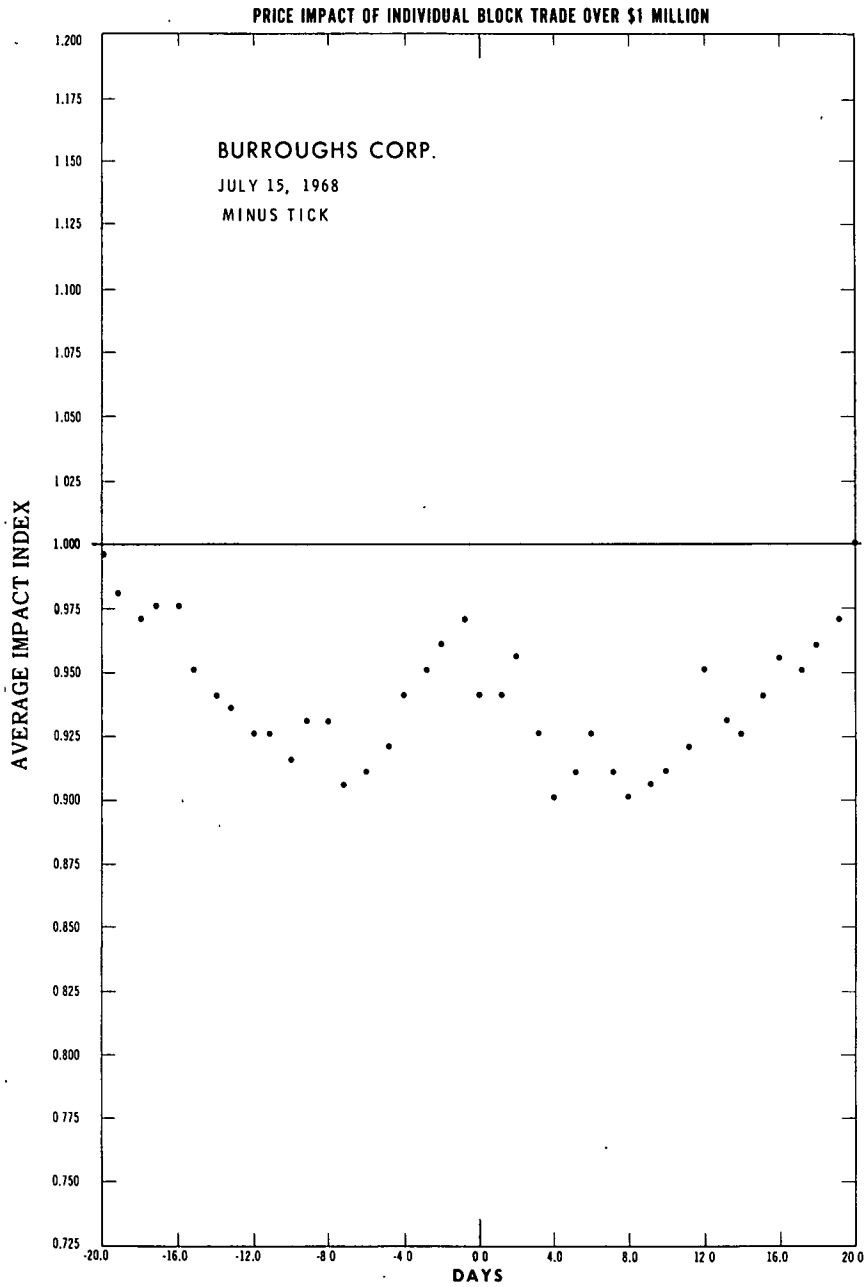

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
BURROUGHS CORP.
JULY 15, 1968
MINUS TICK
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
0.750
0.725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-23

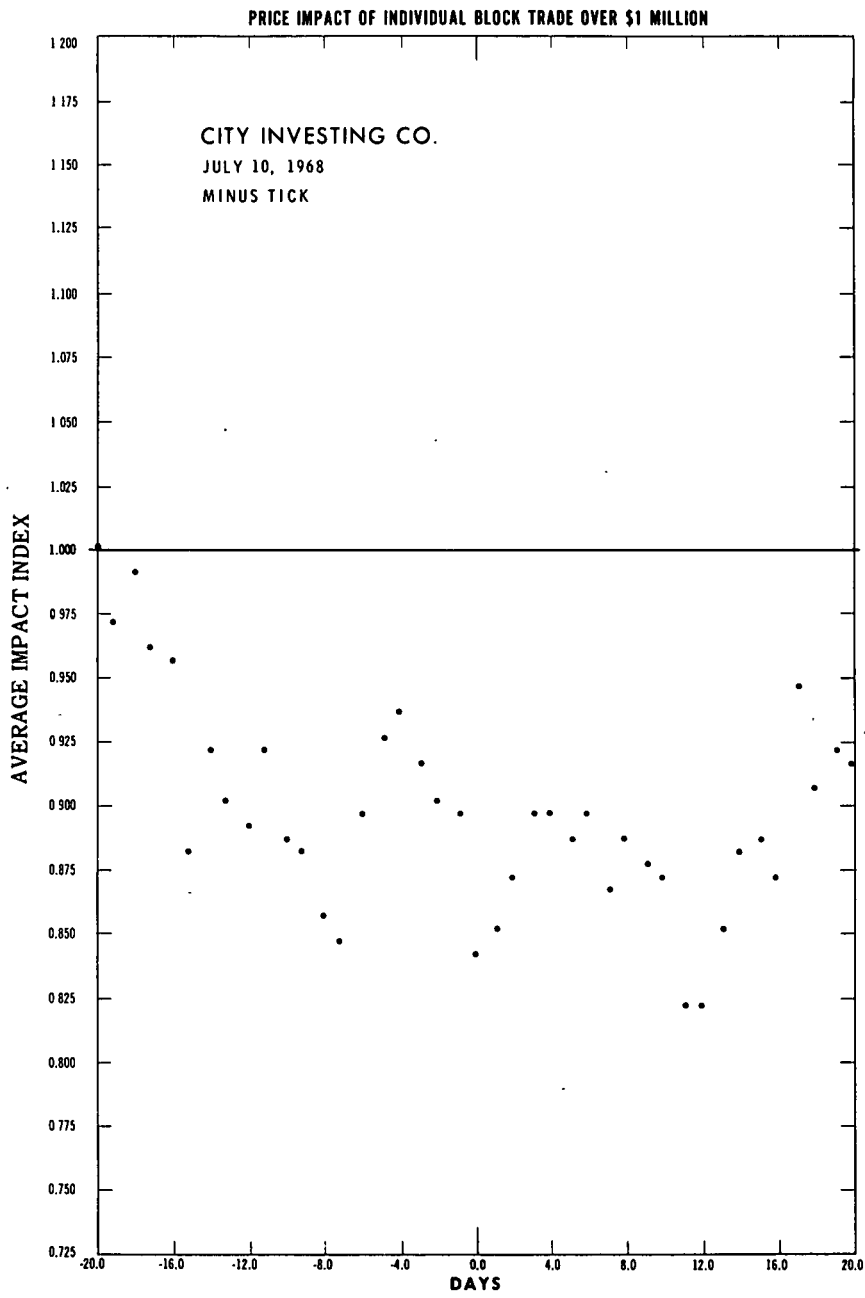

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
CITY INVESTING CO.
JULY 10, 1968
MINUS TICK
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
0.750
0.725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-24

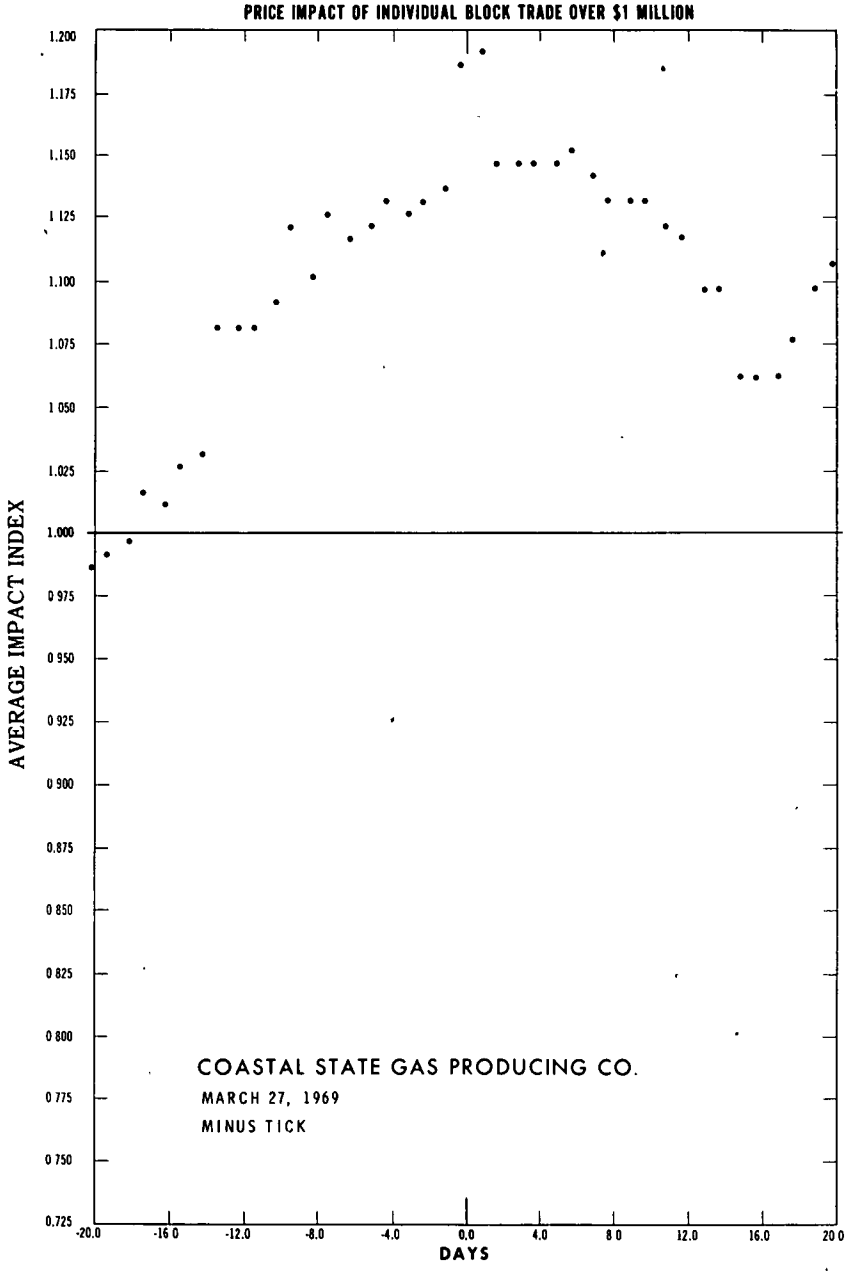

PRICE IMPACT OF INDIVIDUAL BLOCK TRADE OVER $1 MILLION
AVERAGE IMPACT INDEX
1.200
1.175
1.150
1.125
1.100
1.075
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
0.750
0.725
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
COASTAL STATE GAS PRODUCING CO.
MARCH 27, 1969
MINUS TICK

FIGURE XI-25

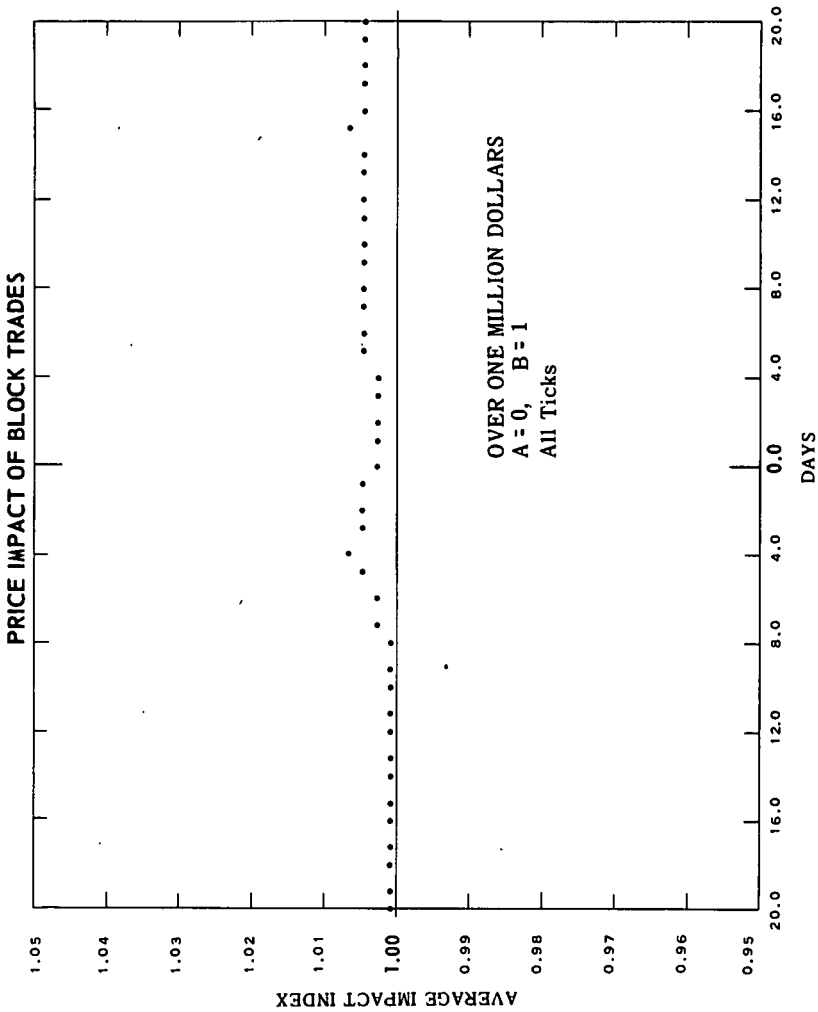

PRICE IMPACT OF BLOCK TRADES
OVER ONE MILLION DOLLARS
A = 0, B = 1
All Ticks
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
20.0
16.0
12.0
8.0
4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-26

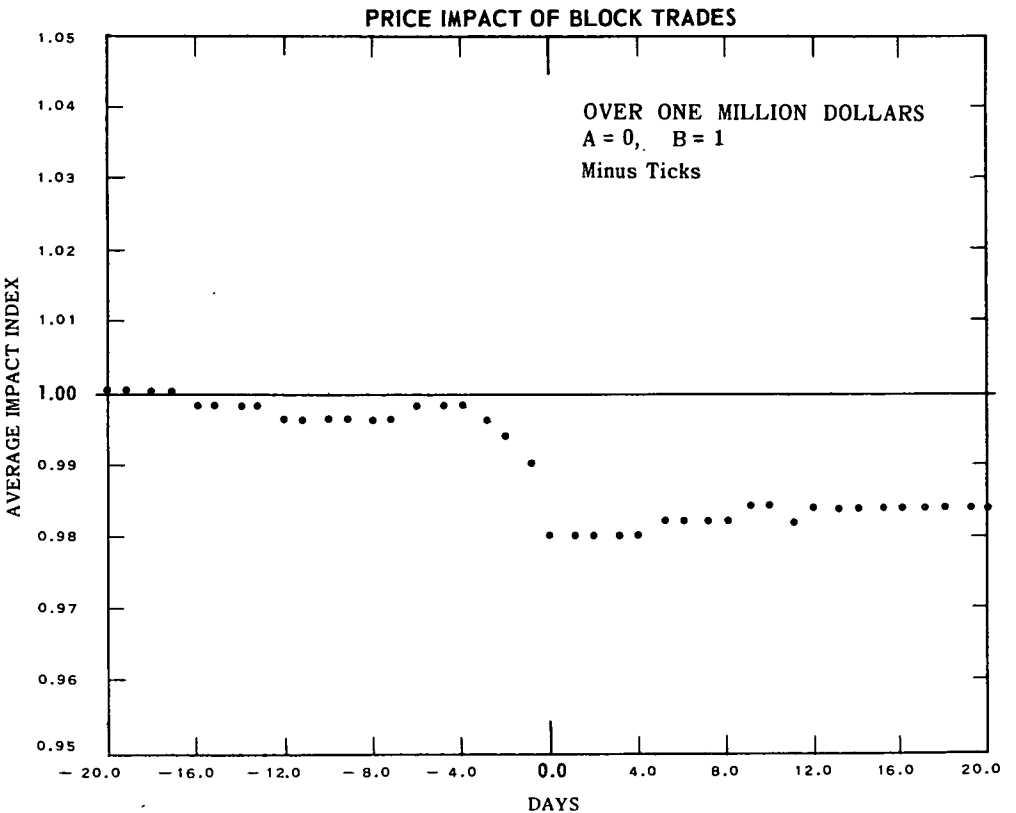

PRICE IMPACT OF BLOCK TRADES
OVER ONE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
− 20.0
− 16.0
− 12.0
− 8.0
− 4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-27

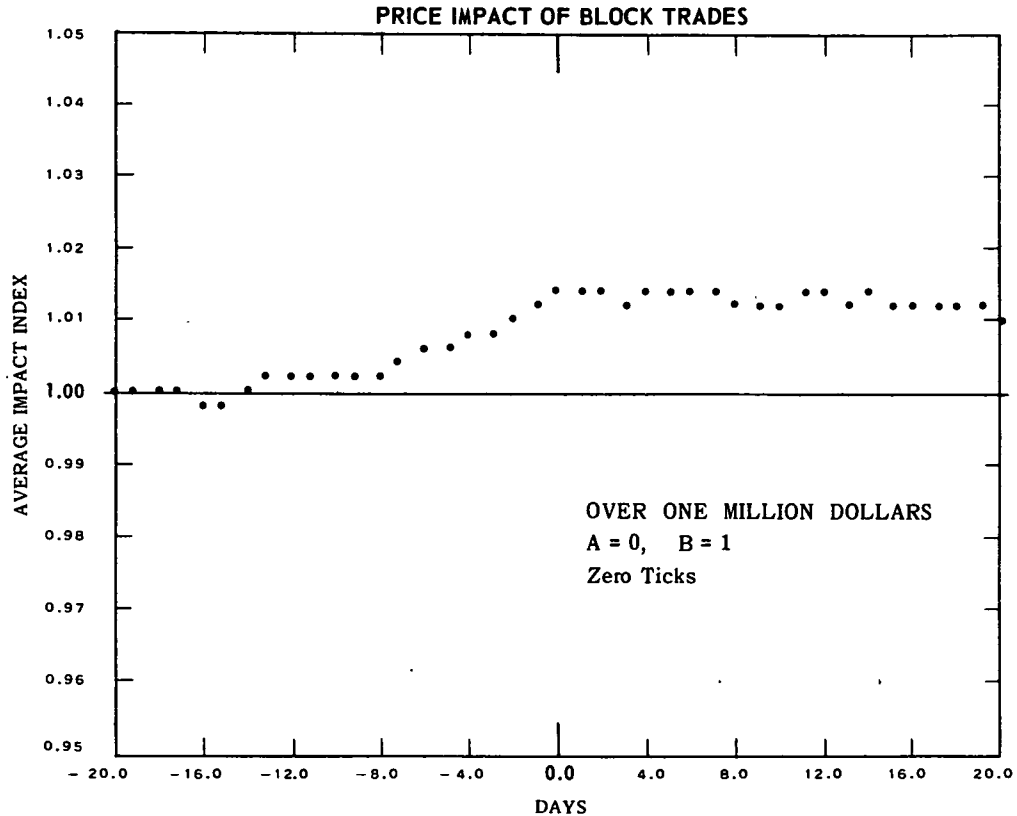

PRICE IMPACT OF BLOCK TRADES
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
OVER ONE MILLION DOLLARS
A = 0, B = 1
Zero Ticks
- 20.0
-16.0
-12.0
-8.0
- 4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-28

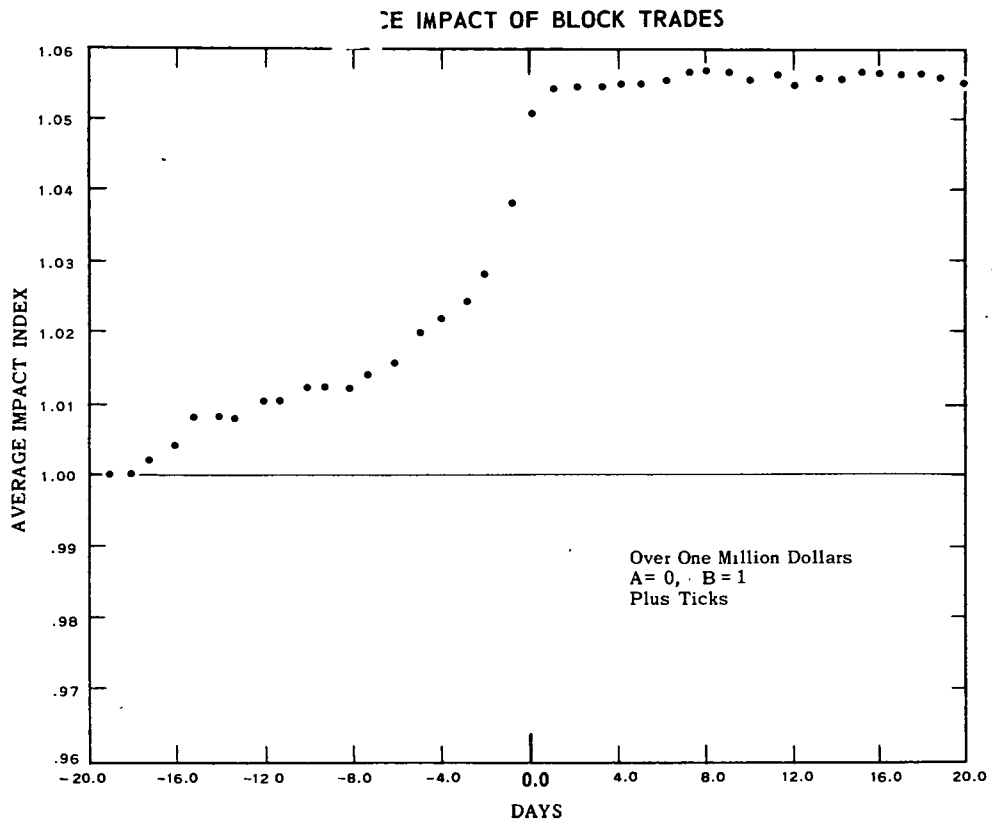

E IMPACT OF BLOCK TRADES
AVERAGE IMPACT INDEX
1.06
1.05
1.04
1.03
1.02
1.01
1.00
.99
.98
.97
.96
-20.0
-16.0
-12 0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
Over One Million Dollars
A= 0, B = 1
Plus Ticks

FIGURE XI-29

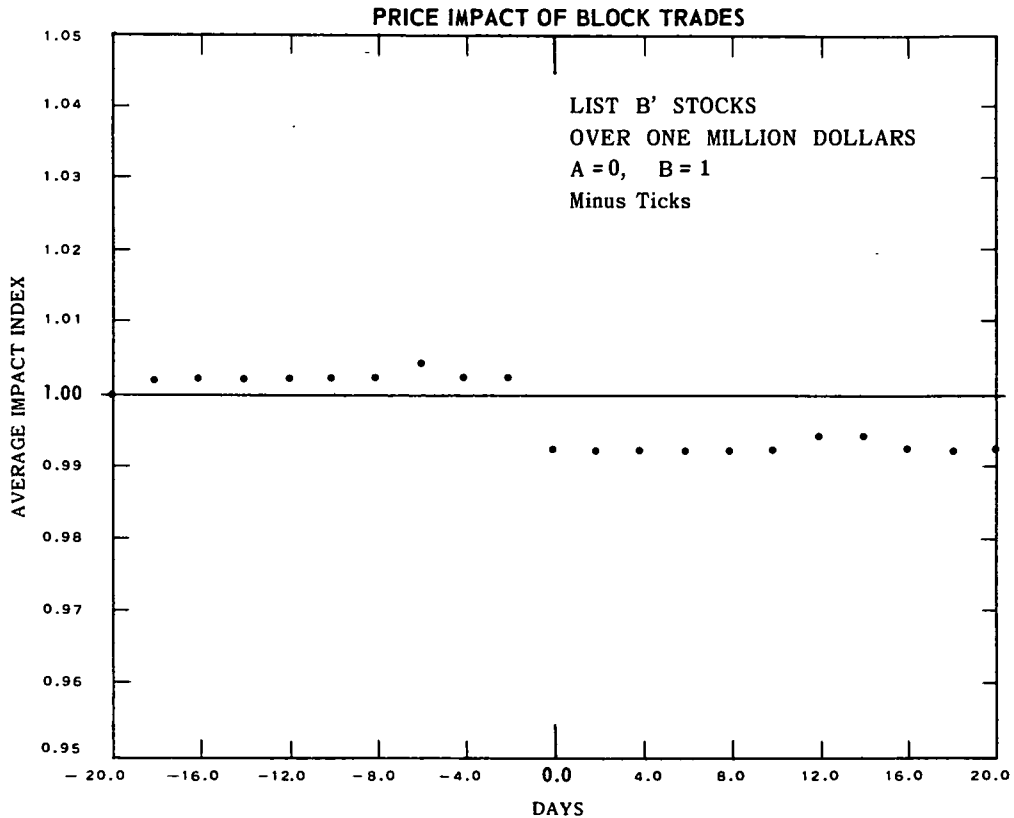

PRICE IMPACT OF BLOCK TRADES
LIST B' STOCKS
OVER ONE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
– 20.0
–16.0
–12.0
– 8.0
– 4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-30

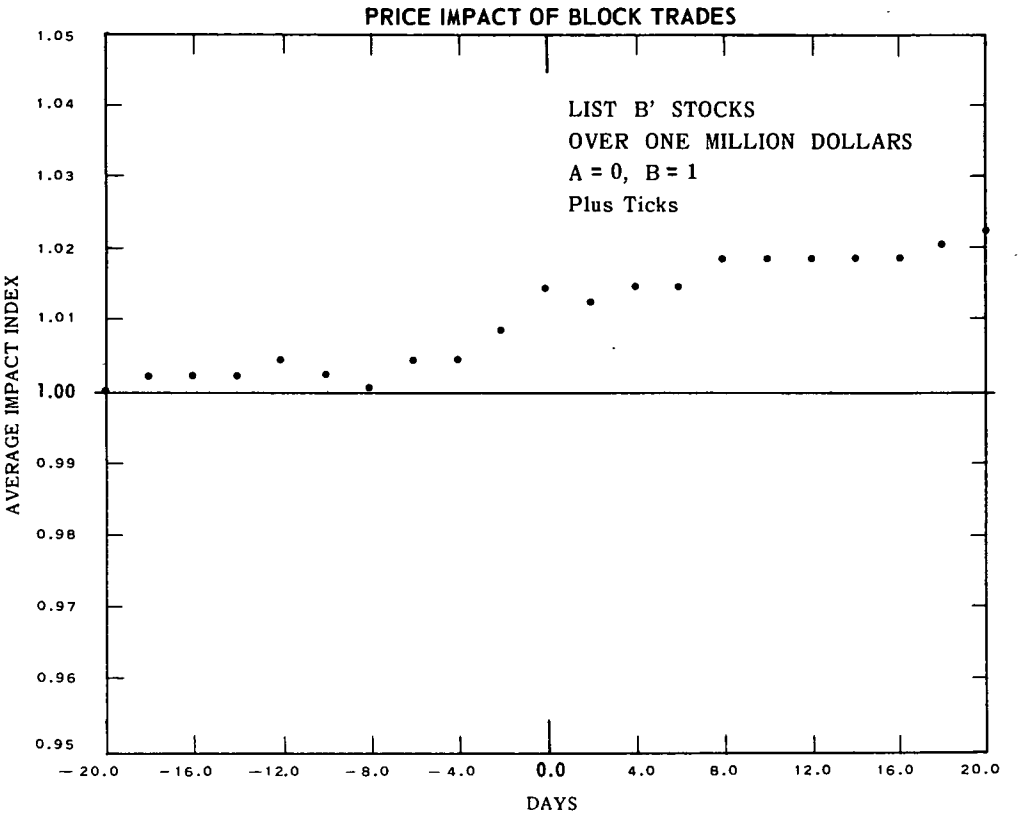

PRICE IMPACT OF BLOCK TRADES
LIST B' STOCKS
OVER ONE MILLION DOLLARS
A = 0, B = 1
Plus Ticks
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-31

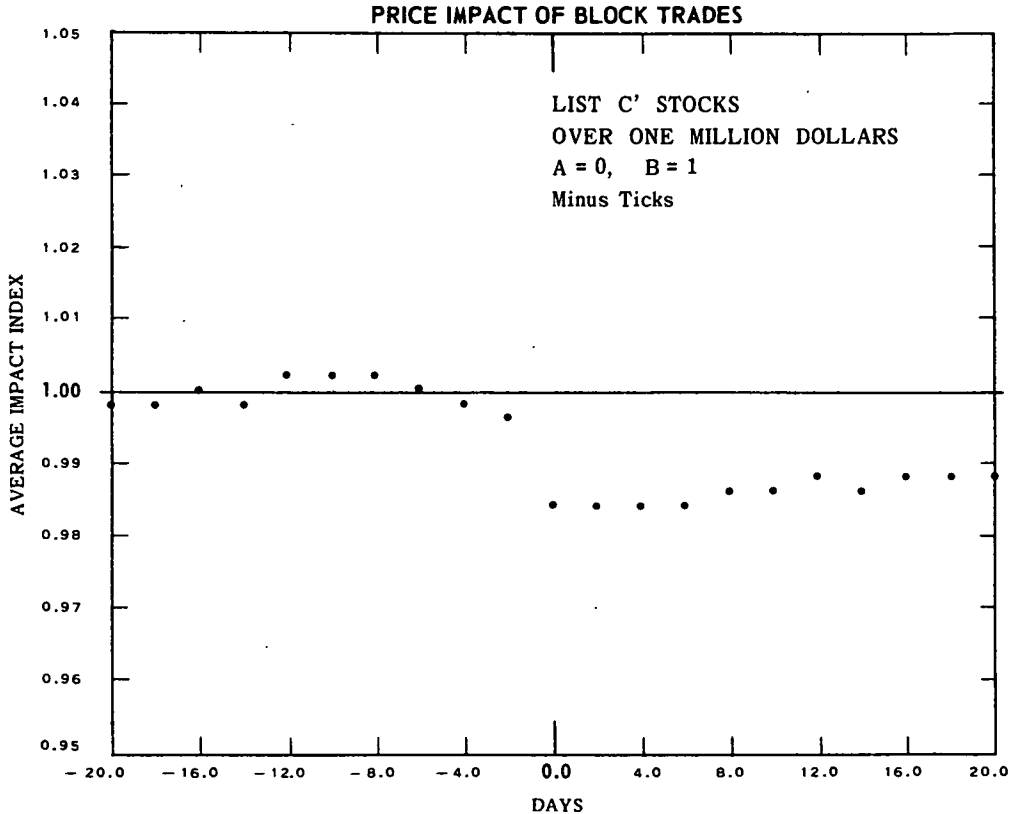

PRICE IMPACT OF BLOCK TRADES
LIST C' STOCKS
OVER ONE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-32

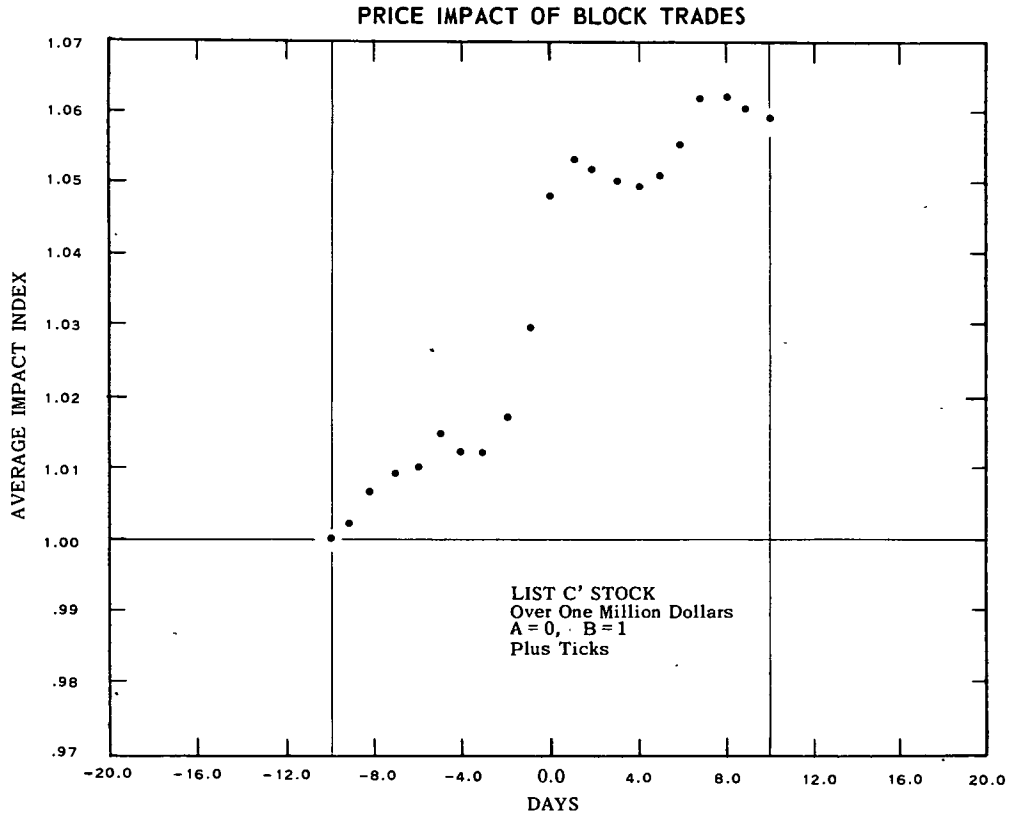

PRICE IMPACT OF BLOCK TRADES
AVERAGE IMPACT INDEX
1.07
1.06
1.05
1.04
1.03
1.02
1.01
1.00
.99
.98
.97
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
LIST C' STOCK
Over One Million Dollars
A = 0, B = 1
Plus Ticks

FIGURE XI-33

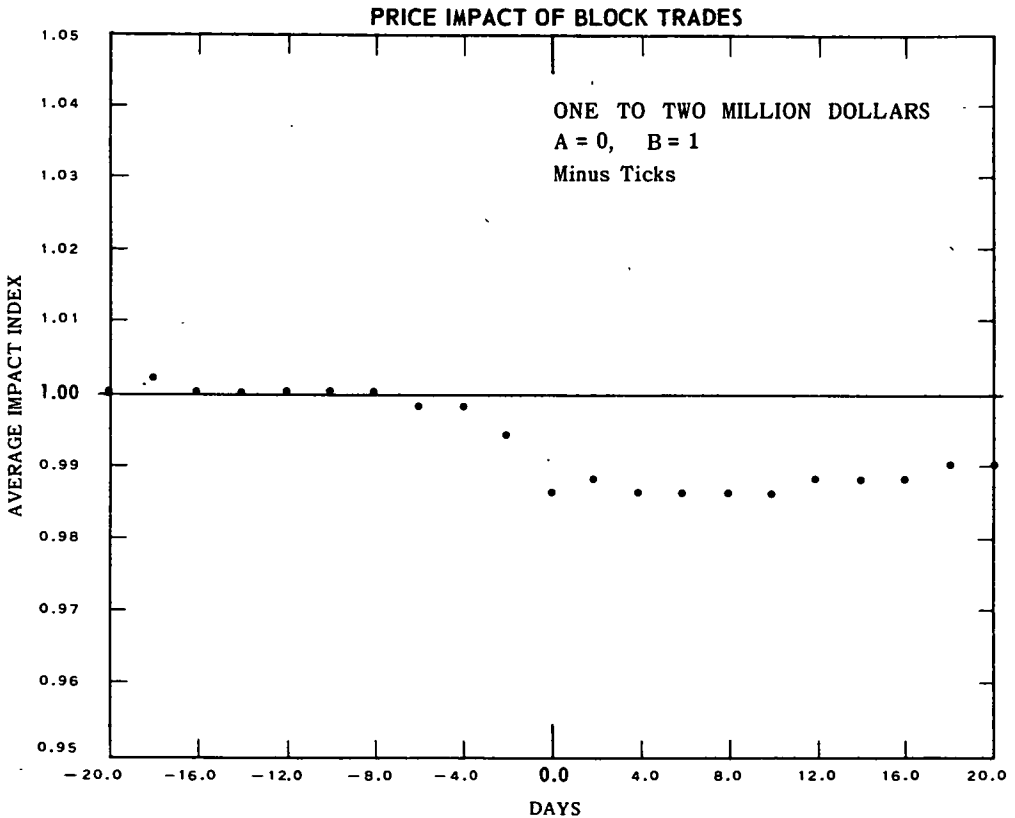

PRICE IMPACT OF BLOCK TRADES
ONE TO TWO MILLION DOLLARS
A = 0, B = 1
Minus Ticks
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
−20.0
−16.0
−12.0
−8.0
−4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-34

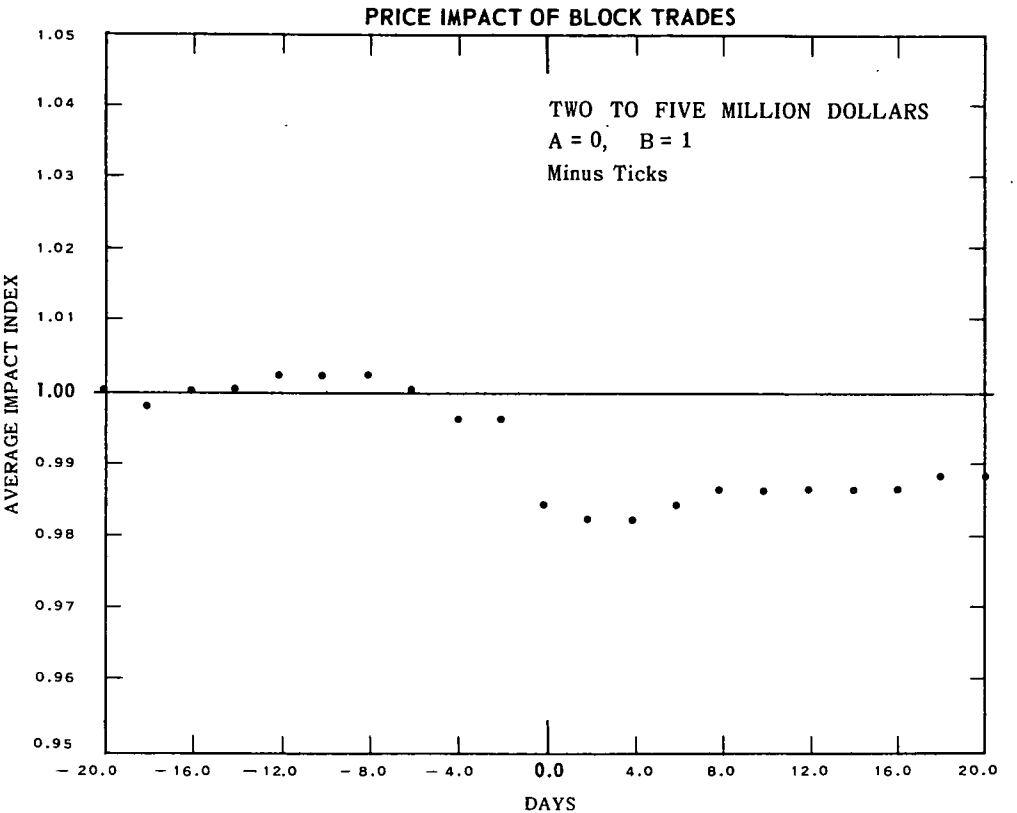

PRICE IMPACT OF BLOCK TRADES
TWO TO FIVE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
− 20.0
− 16.0
− 12.0
− 8.0
− 4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-35

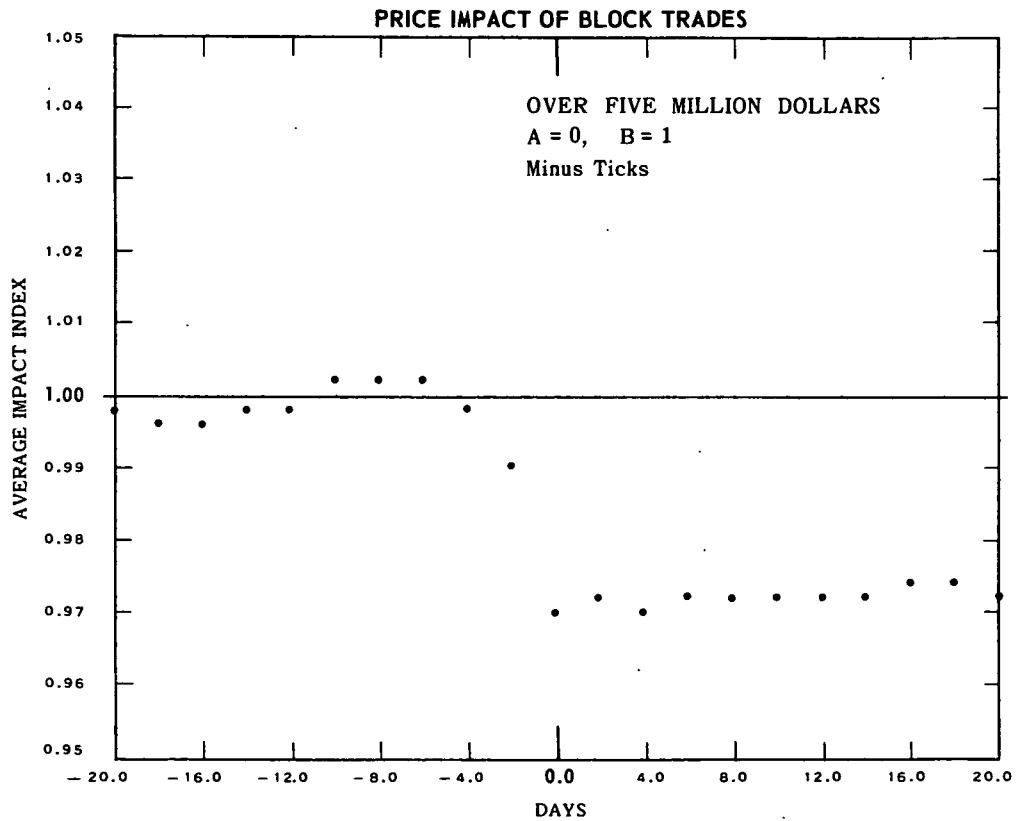

PRICE IMPACT OF BLOCK TRADES
OVER FIVE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-36

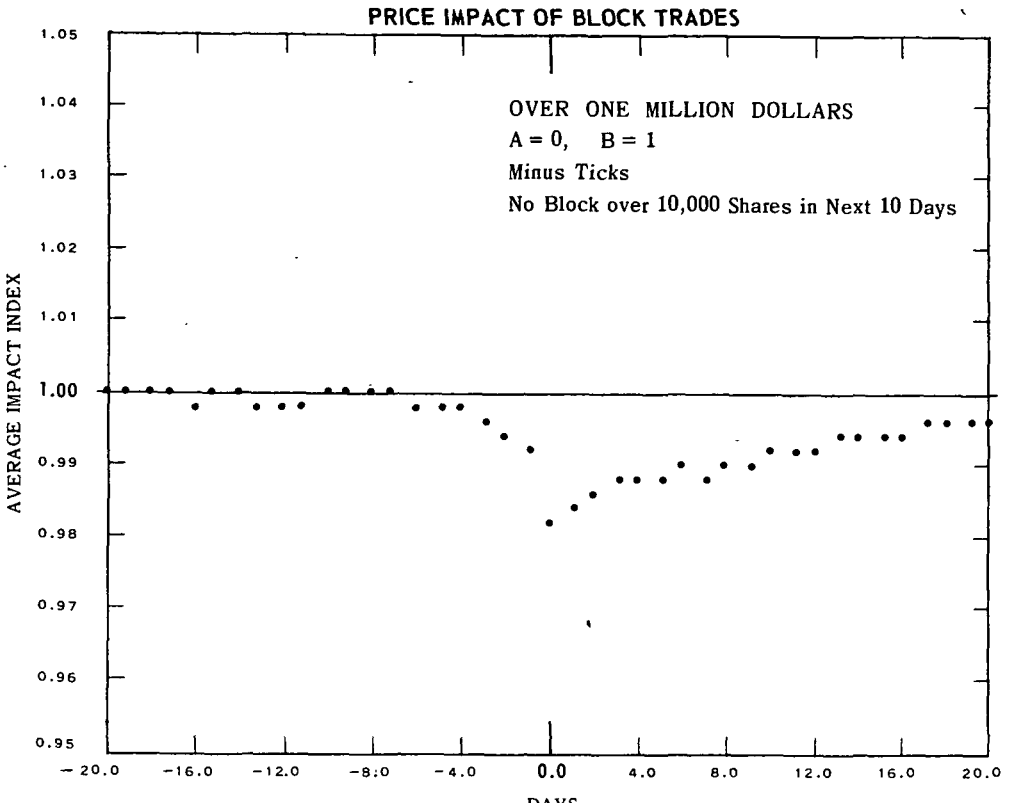

PRICE IMPACT OF BLOCK TRADES
OVER ONE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
No Block over 10,000 Shares in Next 10 Days
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-37

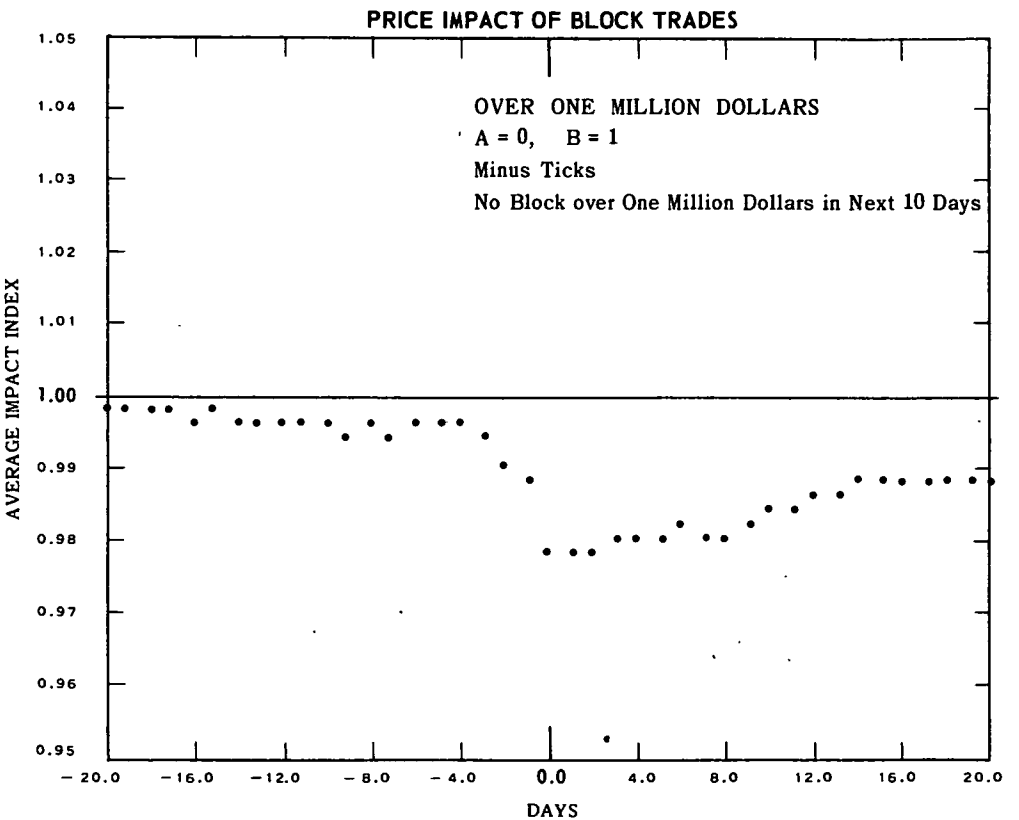

PRICE IMPACT OF BLOCK TRADES
OVER ONE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
No Block over One Million Dollars in Next 10 Days
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-38

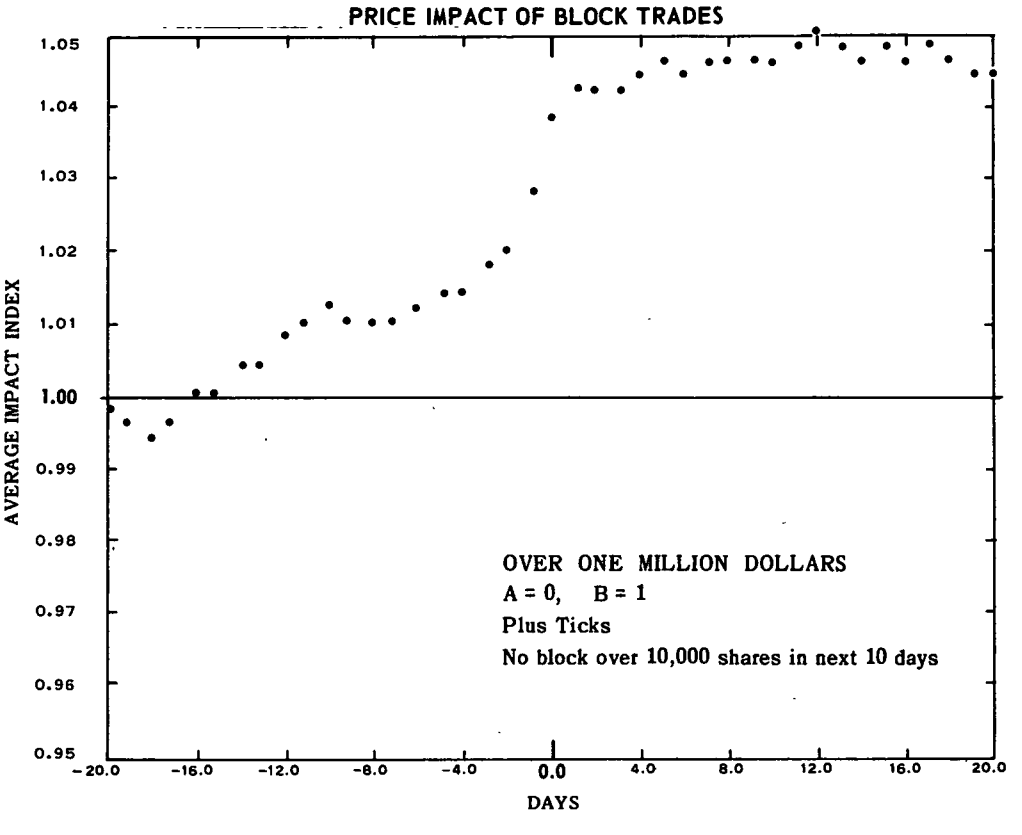

PRICE IMPACT OF BLOCK TRADES
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS
OVER ONE MILLION DOLLARS
A = 0, B = 1
Plus Ticks
No block over 10,000 shares in next 10 days

FIGURE XI-39

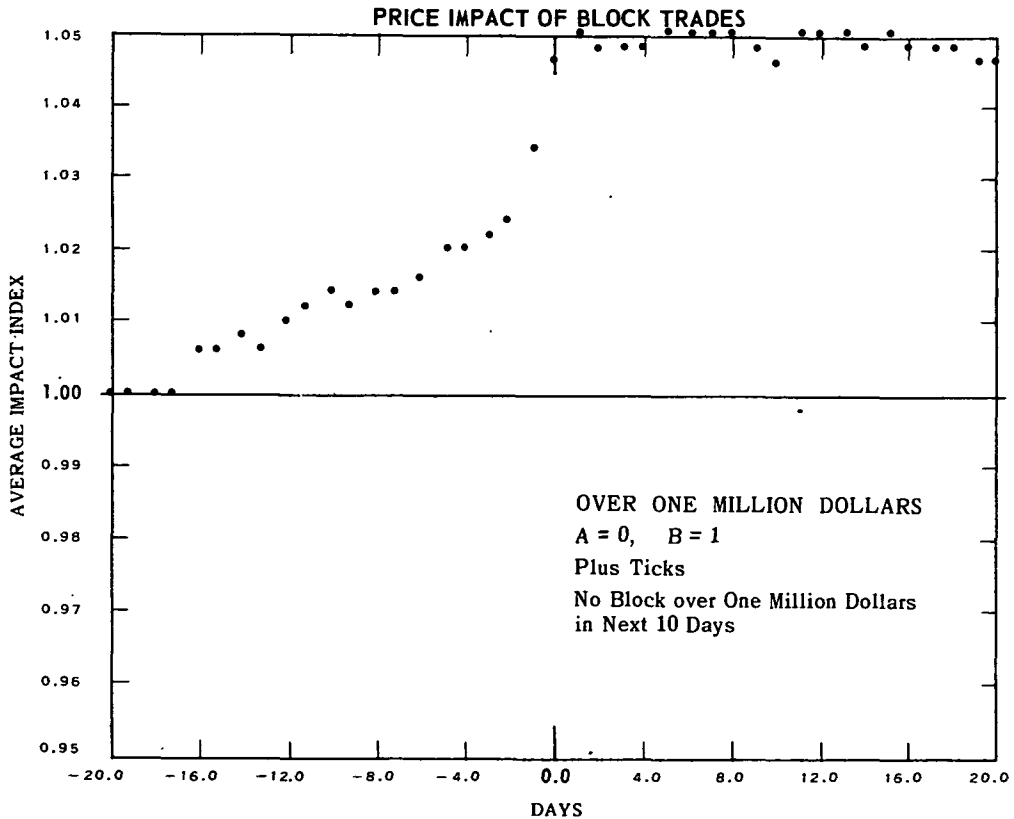

PRICE IMPACT OF BLOCK TRADES
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
OVER ONE MILLION DOLLARS
A = 0, B = 1
Plus Ticks
No Block over One Million Dollars
in Next 10 Days
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-40

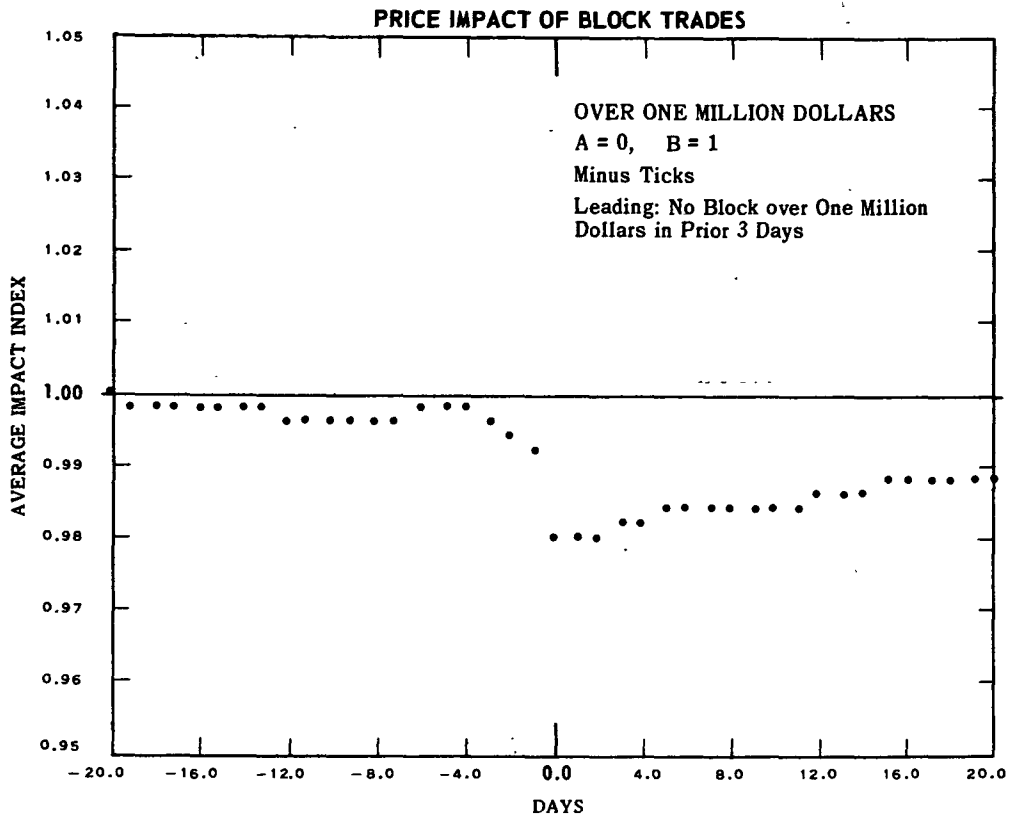

PRICE IMPACT OF BLOCK TRADES
OVER ONE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
Leading: No Block over One Million Dollars in Prior 3 Days
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-41

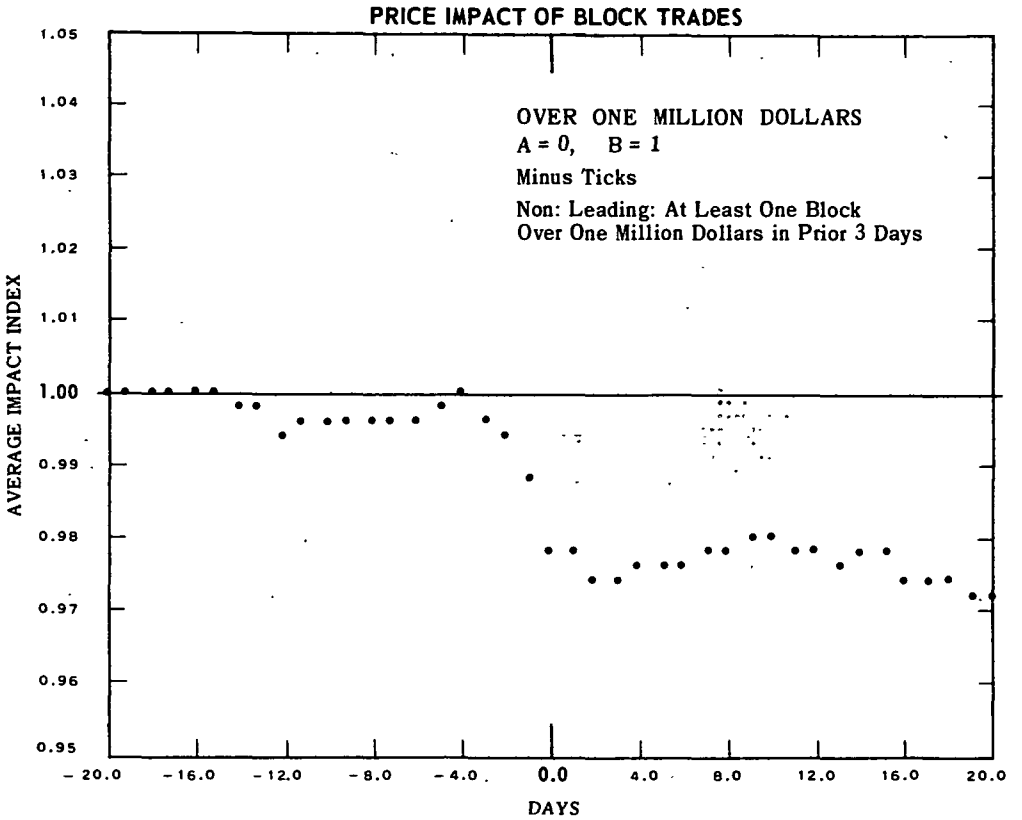
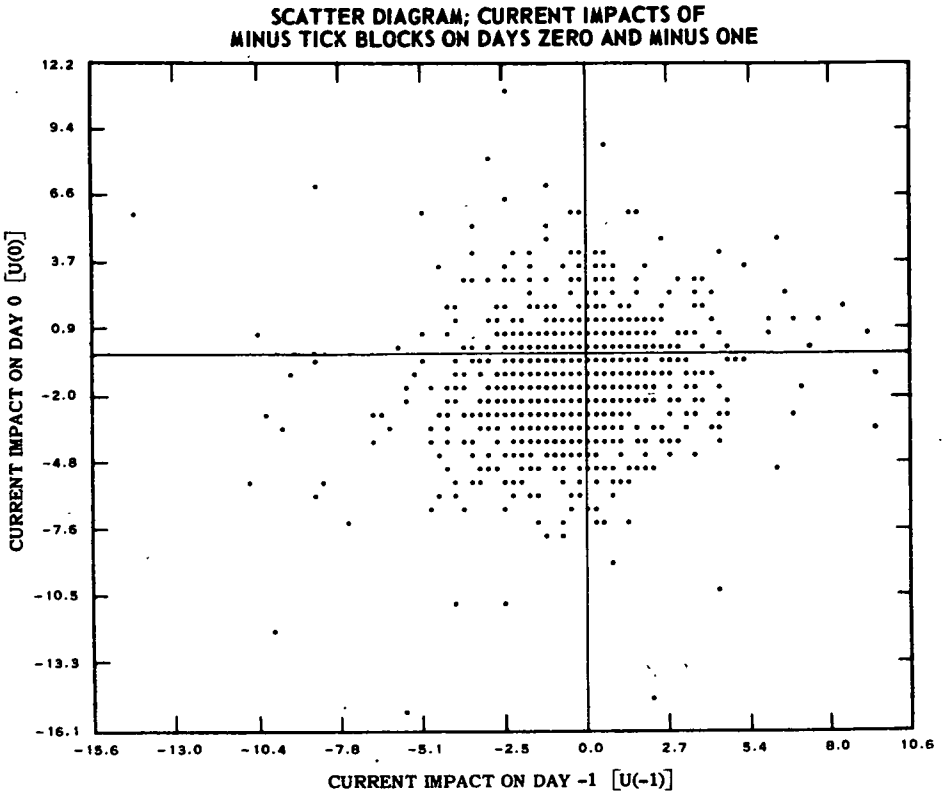

PRICE IMPACT OF BLOCK TRADES
OVER ONE MILLION DOLLARS
A = 0, B = 1
Minus Ticks
Non: Leading: At Least One Block
Over One Million Dollars in Prior 3 Days
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
- 20.0
- 16.0
- 12.0
- 8.0
- 4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-42



NOTES: U(0) = -1.134 + .1131 U(-1) $r^2 = .01064$
(3.59)

FIGURE XI-43

SCATTER DIAGRAM: CHANGE FROM PREVIOUS CLOSE
TO BLOCK PRICE COMPARED TO CHANGE FROM BLOCK PRICE
TO TRADE DATE CLOSE: ALL BLOCKS OVER $1 MILLION (2199)

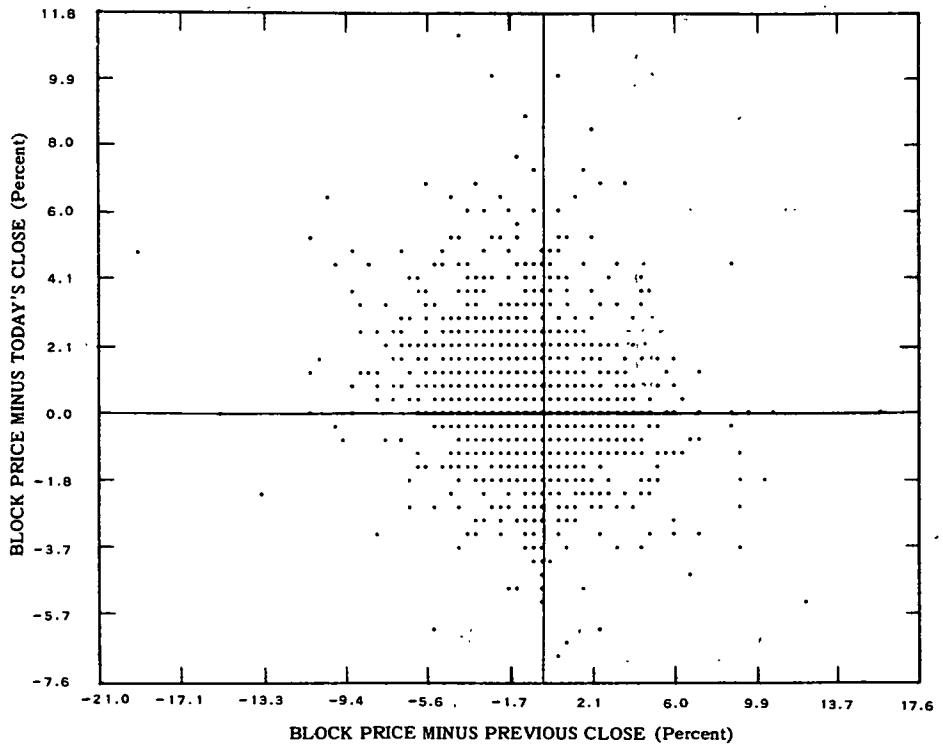


FIGURE XI-44

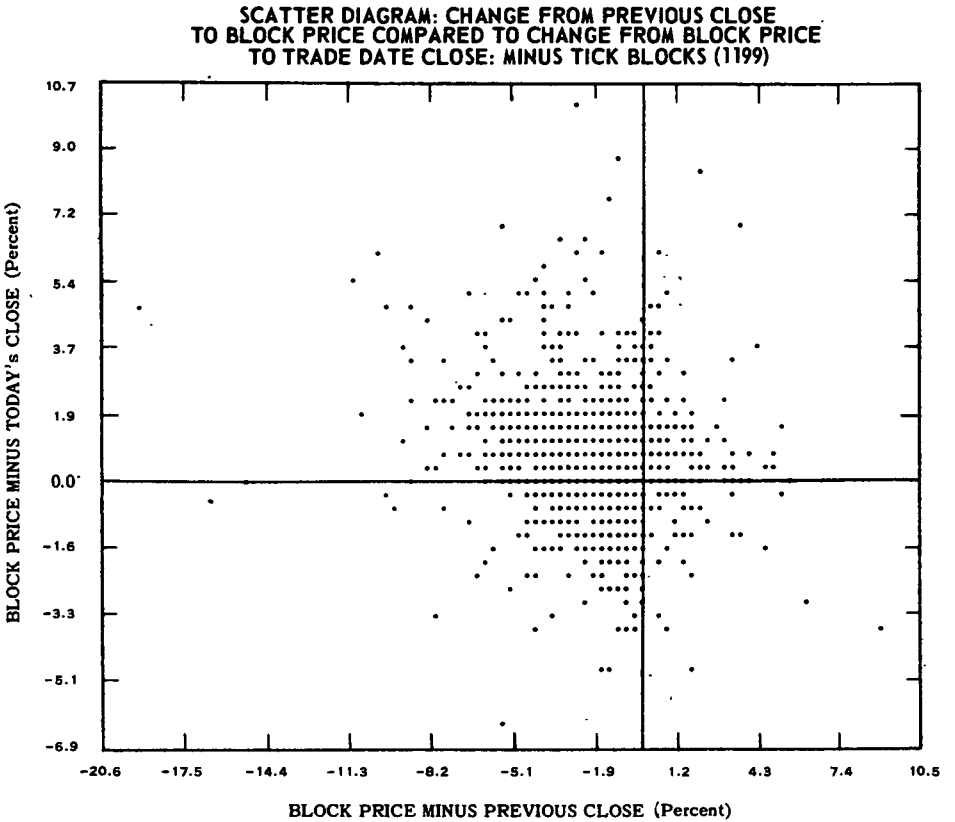

SCATTER DIAGRAM: CHANGE FROM PREVIOUS CLOSE
TO BLOCK PRICE COMPARED TO CHANGE FROM BLOCK PRICE
TO TRADE DATE CLOSE: MINUS TICK BLOCKS (1199)
BLOCK PRICE MINUS TODAY's CLOSE (Percent)
10.7
9.0
7.2
5.4
3.7
1.9
0.0
-1.6
-3.3
-5.1
-6.9
-20.6
-17.5
-14.4
-11.3
-8.2
-5.1
-1.9
1.2
4.3
7.4
10.5
BLOCK PRICE MINUS PREVIOUS CLOSE (Percent)

FIGURE XI-45

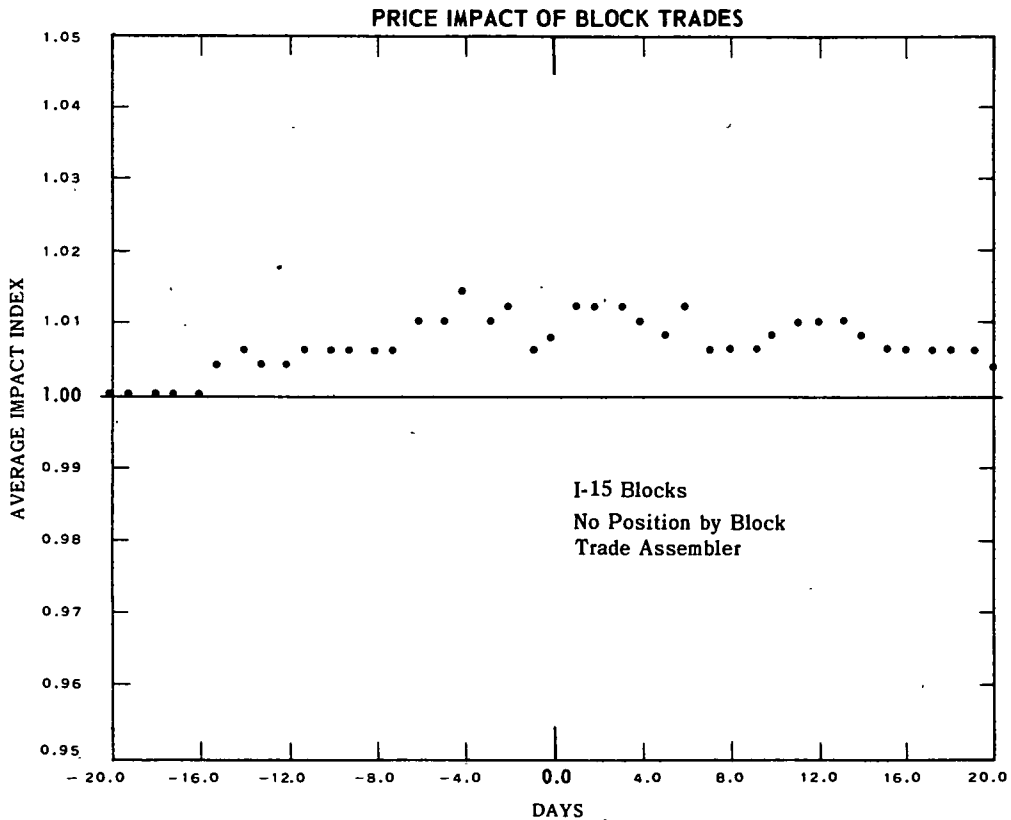

PRICE IMPACT OF BLOCK TRADES
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
I-15 Blocks
No Position by Block
Trade Assembler
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-46

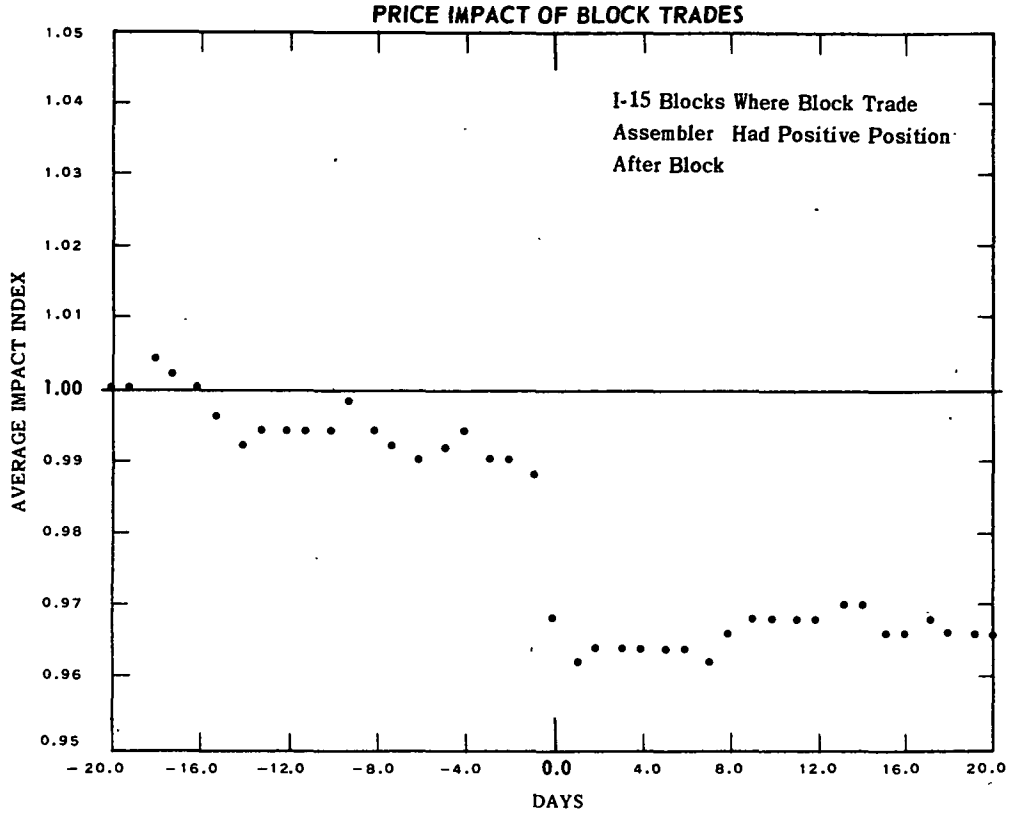

PRICE IMPACT OF BLOCK TRADES
I-15 Blocks Where Block Trade Assembler Had Positive Position After Block
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-47

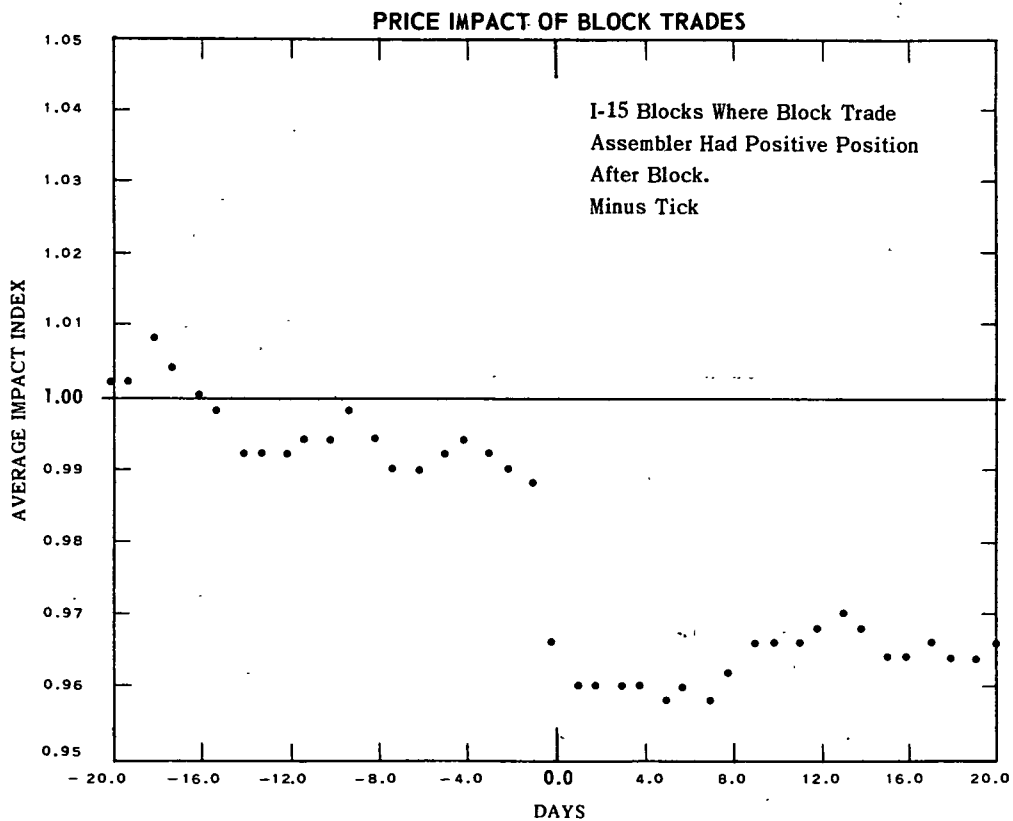

PRICE IMPACT OF BLOCK TRADES
I-15 Blocks Where Block Trade Assembler Had Positive Position After Block.
Minus Tick
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
- 20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-48

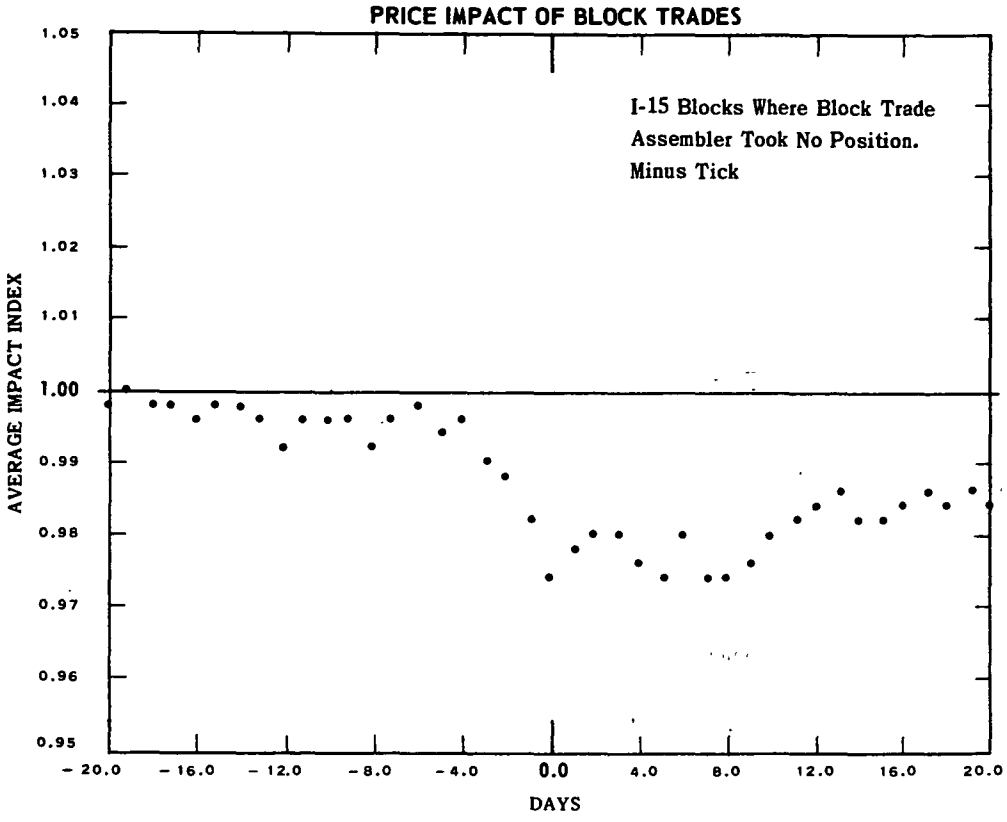

PRICE IMPACT OF BLOCK TRADES
I-15 Blocks Where Block Trade Assembler Took No Position. Minus Tick
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
- 20.0
- 16.0
- 12.0
- 8.0
- 4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-49

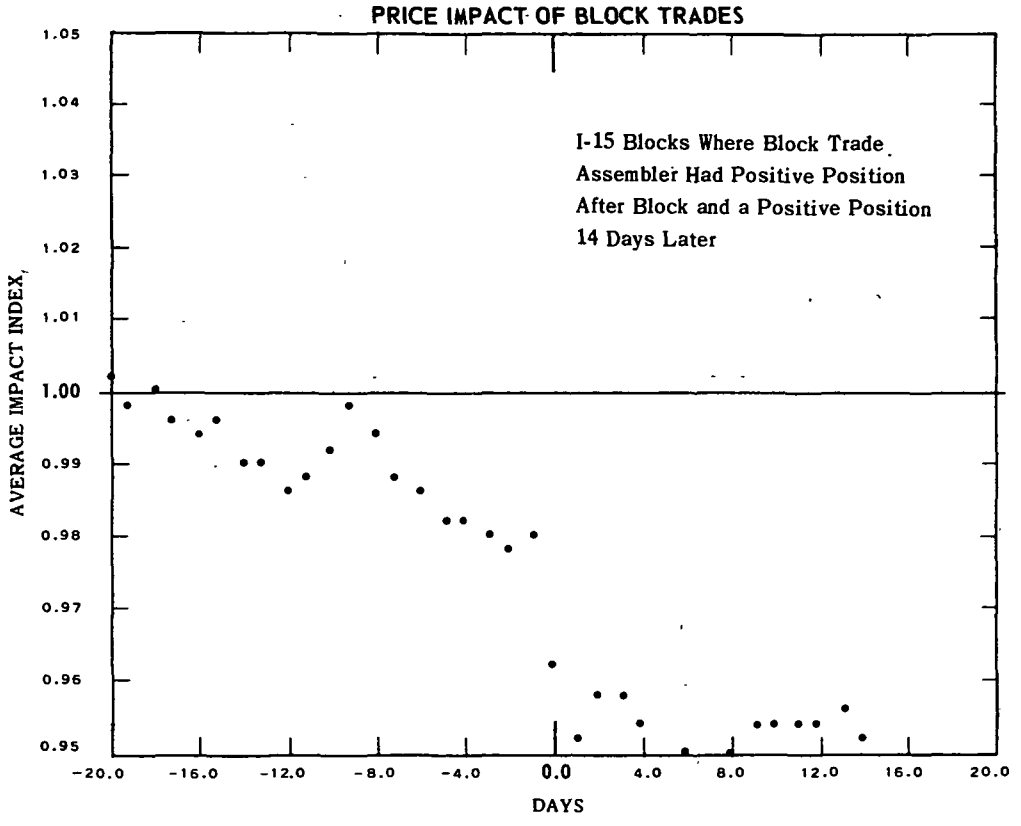

PRICE IMPACT OF BLOCK TRADES
I-15 Blocks Where Block Trade Assembler Had Positive Position After Block and a Positive Position 14 Days Later
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-50

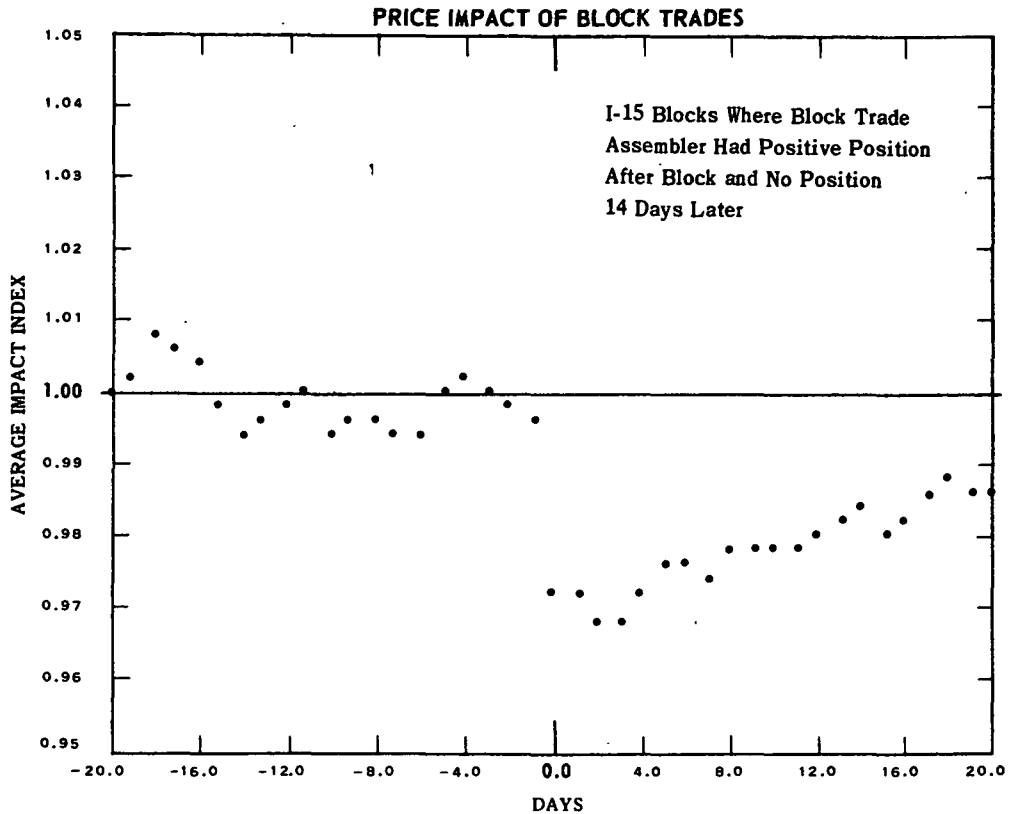

PRICE IMPACT OF BLOCK TRADES
I-15 Blocks Where Block Trade
Assembler Had Positive Position
After Block and No Position
14 Days Later
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-51

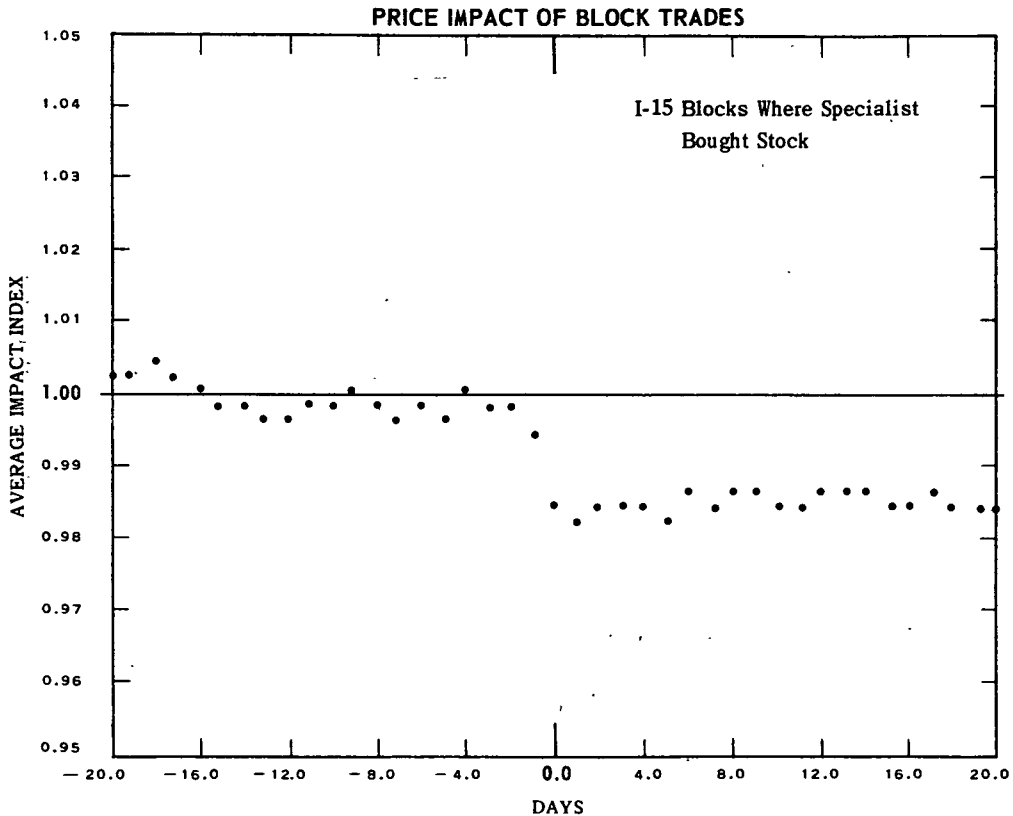

PRICE IMPACT OF BLOCK TRADES
I-15 Blocks Where Specialist Bought Stock
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
-20.0
-16.0
-12.0
-8.0
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

FIGURE XI-52

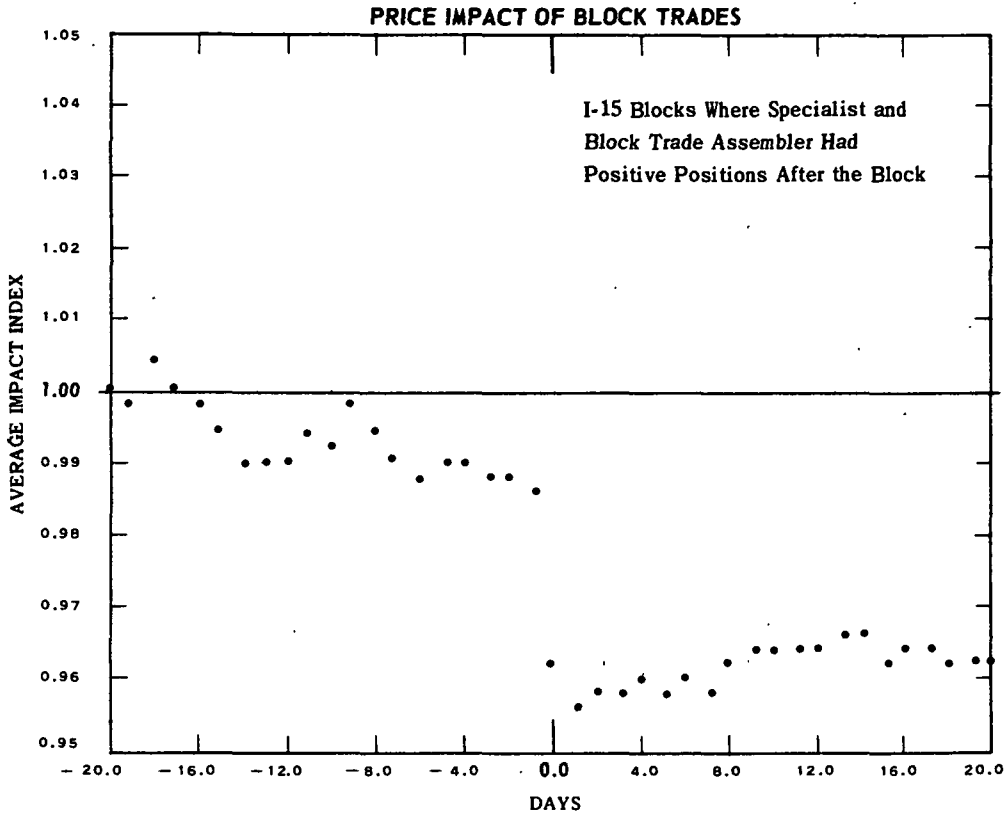

PRICE IMPACT OF BLOCK TRADES
I-15 Blocks Where Specialist and
Block Trade Assembler Had
Positive Positions After the Block
AVERAGE IMPACT INDEX
1.05
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0.95
− 20.0
− 16.0
− 12.0
− 8.0
− 4.0
0.0
4.0
8.0
12.0
16.0
20.0
DAYS

TABLE XI-97

NYSE BLOCK TRADES OVER 10,000 SHARES USED IN ANALYZING PRICE IMPACTS OF BLOCK TRADES
BY YEAR AND DIRECTION OF PRICE CHANGE FROM PRIOR TRADE (TICK)

	TICK	LESS THAN $1,000,000 BLK VAL	%MKT*/	BETA	$1,000,000-$2,000,000 BLK VAL	%MKT*/	BETA	$2,000,000-$5,000,000 BLK VAL	%MKT*/	BETA	OVER $5,000,000 BLK VAL	%MKT*/	BETA
68													
TICKS TOTAL	(+)	308913315			181936325			144204812			89371600		
COUNT		592			135			49			7		
AVG.		521813	26.36	1.3369	1347676	33.31	1.2741	2942955	43.29	1.2843	12767371	73.11	1.3319
TICKS TOTAL	(-)	310172439			321496147			455232224			723644099		
COUNT		541			228			149			71		
AVG.		573331	35.01	1.3879	1410070	48.47	1.3870	3055249	59.43	1.4751	10194987	69.13	1.3898
TICKS TOTAL	(0)	318521854			251227111			233756324			106346275		
COUNT		586			184			80			16		
AVG.		543552	29.44	1.3524	1365364	39.74	1.3163	2921954	56.80	1.3083	6646642	62.52	1.2862
YEAR TOTAL		937607608			754659583			833193360			919561974		
COUNT		1719			547			278			94		
AVG.		545437	30.13	1.3582	1379633	41.79	1.3353	2997098	55.83	1.3935	9782574	68.30	1.3679
69													
TICKS TOTAL	(+)	398446650			153012861			132236537			118796250		
COUNT		762			112			50			13		
AVG.		522895	30.49	1.3262	1366186	37.65	1.1454	2644730	49.32	1.2175	9138173	71.54	1.1373
TICKS TOTAL	(-)	683817793			518448156			843428711			963138050		
COUNT		1289			375			272			104		
AVG.		530502	40.05	1.3801	1382528	51.47	1.3538	3100840	65.89	1.3554	9260942	68.61	1.2809
TICKS TOTAL	(0)	510444451			336160747			261280473			178845137		
COUNT		1040			241			91			22		
AVG.		490811	33.55	1.3344	1394857	50.25	1.2763	2871213	61.23	1.3093	8129324	75.53	1.0490
YEAR TOTAL		1592708894			1007621764			1236945721			1260779437		
COUNT		3091			728			413			139		
AVG.		515273	35.51	1.3514	1384095	48.94	1.2961	2995025	62.86	1.3285	9070355	69.98	1.2308

*/ Market, weighted by the number of blocks, of the percentage of the NYSE volume on the pertinent stock-day represented by the block trade.

TABLE XI-98

*****SUMMARY OUTPUT FOR 2066 OVER $1 MILLION/ A=0, B=1 / ALL TICKS / *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0002	0.5319	0.0205	0.9999	0.0233
-19	-0.0003	0.5203	0.0209	0.9998	0.0311
-18	-0.0002	0.5242	0.0217	0.9998	0.0381
-17	-0.0003	0.5223	0.0204	0.9998	0.0424
-16	-0.0005	0.5378	0.0193	0.9994	0.0465
-15	0.0002	0.5286	0.0203	0.9998	0.0507
-14	0.0001	0.5131	0.0189	1.0000	0.0534
-13	0.0001	0.5097	0.0200	1.0003	0.0571
-12	-0.0003	0.5257	0.0196	1.0002	0.0599
-11	0.0001	0.5029	0.0195	1.0005	0.0627
-10	-0.0003	0.5174	0.0193	1.0006	0.0674
-9	-0.0000	0.5334	0.0199	1.0007	0.0701
-8	0.0000	0.5184	0.0196	1.0010	0.0736
-7	0.0004	0.5140	0.0204	1.0016	0.0766
-6	0.0006	0.5281	0.0248	1.0025	0.0823
-5	0.0013	0.5058	0.0219	1.0041	0.0860
-4	0.0007	0.4985	0.0209	1.0050	0.0889
-3	-0.0007	0.5499	0.0209	1.0045	0.0918
-2	-0.0008	0.5407	0.0218	1.0040	0.0953
-1	-0.0002	0.5252	0.0235	1.0042	0.0998
0	-0.0034	0.5939	0.0268	1.0016	0.1072
1	0.0006	0.4927	0.0222	1.0024	0.1095
2	-0.0007	0.5179	0.0217	1.0019	0.1108
3	0.0002	0.5145	0.0205	1.0022	0.1117
4	0.0004	0.5058	0.0209	1.0026	0.1126
5	0.0003	0.5097	0.0205	1.0030	0.1133
6	0.0004	0.5092	0.0195	1.0037	0.1161
7	0.0001	0.5116	0.0197	1.0040	0.1177
8	-0.0003	0.5276	0.0204	1.0037	0.1179
9	-0.0002	0.5189	0.0198	1.0035	0.1175
10	0.0002	0.5140	0.0199	1.0037	0.1178
11	-0.0001	0.5232	0.0197	1.0038	0.1198
12	0.0001	0.5102	0.0244	1.0041	0.1218
13	-0.0001	0.5261	0.0189	1.0042	0.1237
14	0.0004	0.4952	0.0204	1.0049	0.1266
15	-0.0001	0.5242	0.0207	1.0050	0.1288
16	-0.0006	0.5310	0.0197	1.0047	0.1306
17	-0.0004	0.5048	0.0185	1.0044	0.1312
18	-0.0003	0.5218	0.0194	1.0042	0.1325
19	-0.0004	0.5218	0.0195	1.0040	0.1336
20	-0.0003	0.5116	0.0188	1.0037	0.1342

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	-0.0001	0.0007	1.0025	0.0029
-20	-2	-0.0000	0.0005	1.0012	0.0023
1	20	-0.0000	0.0004	1.0037	0.0018

TABLE XI-99

*****SUMMARY OUTPUT FOR 1121 OVER $1 MILLION / A=0, B=1 / - TICKS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0006	0.5424	0.0201	0.9995	0.0227
-19	-0.0005	0.5067	0.0204	0.9992	0.0303
-18	-0.0003	0.5219	0.0212	0.9992	0.0367
-17	-0.0003	0.5103	0.0205	0.9991	0.0427
-16	-0.0008	0.5361	0.0192	0.9986	0.0471
-15	0.0001	0.5397	0.0205	0.9989	0.0517
-14	-0.0012	0.5397	0.0181	0.9978	0.0538
-13	-0.0009	0.5201	0.0198	0.9971	0.0574
-12	-0.0009	0.5397	0.0195	0.9964	0.0596
-11	-0.0001	0.4960	0.0196	0.9964	0.0624
-10	-0.0005	0.5219	0.0194	0.9963	0.0674
-9	-0.0003	0.5406	0.0203	0.9962	0.0706
-8	0.0003	0.5112	0.0196	0.9967	0.0740
-7	-0.0004	0.5210	0.0199	0.9965	0.0764
-6	0.0003	0.5236	0.0279	0.9973	0.0837
-5	0.0002	0.5165	0.0192	0.9976	0.0858
-4	0.0002	0.5245	0.0200	0.9980	0.0877
-3	-0.0021	0.5807	0.0194	0.9961	0.0897
-2	-0.0029	0.5879	0.0205	0.9935	0.0929
-1	-0.0033	0.5789	0.0218	0.9905	0.0949
0	-0.0115	0.7386	0.0248	0.9798	0.1002
1	-0.0001	0.5022	0.0214	0.9797	0.1014
2	-0.0007	0.5174	0.0227	0.9792	0.1024
3	0.0010	0.4960	0.0211	0.9803	0.1043
4	0.0004	0.5040	0.0209	0.9808	0.1055
5	0.0004	0.5067	0.0205	0.9813	0.1060
6	0.0003	0.5049	0.0200	0.9819	0.1088
7	-0.0001	0.5112	0.0206	0.9819	0.1095
8	0.0004	0.5174	0.0204	0.9824	0.1095
9	0.0000	0.4915	0.0200	0.9830	0.1096
10	0.0002	0.5183	0.0204	0.9833	0.1103
11	-0.0007	0.5343	0.0198	0.9827	0.1117
12	0.0007	0.5076	0.0276	0.9836	0.1146
13	0.0002	0.5254	0.0189	0.9839	0.1161
14	0.0005	0.4942	0.0197	0.9847	0.1192
15	-0.0001	0.5370	0.0210	0.9848	0.1216
16	-0.0009	0.5352	0.0190	0.9843	0.1244
17	-0.0002	0.4996	0.0182	0.9842	0.1255
18	-0.0002	0.5290	0.0195	0.9842	0.1270
19	-0.0002	0.5094	0.0196	0.9842	0.1279
20	0.0002	0.5022	0.0189	0.9844	0.1278

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	-0.0006	0.0019	0.9896	0.0080
-20	-2	-0.0006	0.0008	0.9974	0.0021
1	20	0.0001	0.0005	0.9827	0.0022

TABLE XI-100

*****SUMMARY OUTPUT FOR 600 OVER $1 MILLION / A=0, B=1 / 0 TICKS / *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	0.0000	0.5100	0.0192	1.0001	0.0211
-19	0.0002	0.5317	0.0205	1.0006	0.0298
-18	0.0002	0.5117	0.0219	1.0010	0.0368
-17	-0.0010	0.5517	0.0189	1.0000	0.0382
-16	-0.0020	0.5733	0.0178	0.9981	0.0412
-15	-0.0010	0.5417	0.0194	0.9973	0.0455
-14	0.0021	0.4667	0.0207	0.9996	0.0495
-13	0.0021	0.4683	0.0197	1.0018	0.0535
-12	-0.0000	0.5067	0.0195	1.0019	0.0558
-11	0.0001	0.5233	0.0199	1.0023	0.0596
-10	-0.0005	0.5250	0.0194	1.0021	0.0645
-9	0.0002	0.5400	0.0182	1.0024	0.0654
-8	-0.0005	0.5183	0.0188	1.0021	0.0691
-7	0.0015	0.5033	0.0216	1.0040	0.0746
-6	0.0008	0.5317	0.0203	1.0051	0.0790
-5	0.0015	0.5050	0.0212	1.0069	0.0824
-4	0.0016	0.4667	0.0215	1.0090	0.0881
-3	-0.0004	0.5217	0.0209	1.0088	0.0909
-2	0.0006	0.4883	0.0198	1.0096	0.0926
-1	0.0012	0.4950	0.0228	1.0111	0.0962
0	0.0023	0.4883	0.0245	1.0137	0.0992
1	0.0011	0.4833	0.0210	1.0150	0.1004
2	-0.0009	0.5083	0.0209	1.0141	0.1012
3	-0.0012	0.5383	0.0202	1.0129	0.1004
4	-0.0000	0.5100	0.0206	1.0130	0.1023
5	0.0006	0.4883	0.0188	1.0138	0.1039
6	0.0003	0.5183	0.0186	1.0142	0.1051
7	0.0001	0.5233	0.0180	1.0145	0.1066
8	-0.0018	0.5533	0.0200	1.0128	0.1072
9	-0.0015	0.5483	0.0193	1.0113	0.1075
10	0.0011	0.4917	0.0187	1.0123	0.1069
11	0.0005	0.5050	0.0188	1.0131	0.1092
12	-0.0001	0.5083	0.0199	1.0132	0.1111
13	-0.0012	0.5433	0.0185	1.0122	0.1127
14	0.0010	0.4867	0.0205	1.0135	0.1163
15	-0.0011	0.5350	0.0199	1.0125	0.1173
16	0.0000	0.5200	0.0207	1.0128	0.1191
17	-0.0009	0.5283	0.0189	1.0118	0.1189
18	-0.0006	0.5233	0.0196	1.0114	0.1208
19	-0.0001	0.5333	0.0197	1.0113	0.1215
20	-0.0009	0.5217	0.0187	1.0104	0.1219

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	0.0001	0.0011	1.0081	0.0062
-20	-2	0.0003	0.0011	1.0028	0.0041
1	20	-0.0003	0.0009	1.0128	0.0016

TABLE XI-101

*****SUMMARY OUTPUT FOR 345 OVER $1 MILLION / A=0, B=1 / + TICKS / *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	0.0005	0.5362	0.0240	1.0007	0.0251
-19	-0.0004	0.5449	0.0230	1.0005	0.0329
-18	-0.0008	0.5536	0.0229	1.0001	0.0424
-17	0.0012	0.5101	0.0227	1.0015	0.0465
-16	0.0027	0.4812	0.0218	1.0045	0.0506
-15	0.0026	0.4696	0.0212	1.0072	0.0539
-14	0.0007	0.5072	0.0183	1.0081	0.0567
-13	0.0000	0.5478	0.0211	1.0083	0.0598
-12	0.0014	0.5130	0.0204	1.0100	0.0649
-11	0.0008	0.4899	0.0186	1.0109	0.0664
-10	0.0009	0.4899	0.0191	1.0121	0.0698
-9	0.0003	0.4986	0.0215	1.0127	0.0737
-8	0.0001	0.5420	0.0208	1.0130	0.0772
-7	0.0008	0.5101	0.0201	1.0139	0.0784
-6	0.0009	0.5362	0.0212	1.0151	0.0808
-5	0.0045	0.4725	0.0296	1.0203	0.0894
-4	0.0007	0.4696	0.0227	1.0212	0.0909
-3	0.0030	0.4986	0.0250	1.0246	0.0958
-2	0.0036	0.4783	0.0277	1.0288	0.1015
-1	0.0072	0.4029	0.0279	1.0371	0.1113
0	0.0129	0.3072	0.0274	1.0514	0.1213
1	0.0023	0.4783	0.0264	1.0545	0.1268
2	-0.0003	0.5362	0.0195	1.0545	0.1299
3	0.0002	0.5333	0.0192	1.0549	0.1312
4	0.0010	0.5043	0.0211	1.0557	0.1299
5	-0.0007	0.5565	0.0233	1.0550	0.1304
6	0.0011	0.5072	0.0196	1.0567	0.1356
7	0.0004	0.4928	0.0196	1.0575	0.1399
8	0.0001	0.5159	0.0208	1.0575	0.1401
9	-0.0008	0.5565	0.0199	1.0565	0.1388
10	-0.0012	0.5391	0.0201	1.0552	0.1397
11	0.0007	0.5188	0.0209	1.0562	0.1424
12	-0.0013	0.5217	0.0202	1.0551	0.1436
13	0.0008	0.4986	0.0194	1.0563	0.1468
14	-0.0007	0.5130	0.0225	1.0558	0.1488
15	0.0015	0.4638	0.0212	1.0578	0.1519
16	-0.0007	0.5362	0.0198	1.0571	0.1514
17	-0.0000	0.4812	0.0189	1.0571	0.1520
18	-0.0003	0.4957	0.0185	1.0569	0.1519
19	-0.0013	0.5420	0.0191	1.0558	0.1548
20	-0.0010	0.5246	0.0187	1.0552	0.1578

		CURRENT IMPACT		IMPACT INDEX	
FROM	TO	AVE	STD DEV	AVE	STD DEV
-20	20	0.0011	0.0025	1.0347	0.0231
-20	-2	0.0012	0.0014	1.0112	0.0084
1	20	-0.0000	0.0010	1.0561	0.0018

TABLE XI-102

Frequency and Percentage Distribution by Ticks of Close-to-Close Price Changes for Stock Days with NYSE Block Trades of $1 Million or More in List A Stocks

(Number of Stock Days and Percentage)

Percentage Price Change	Minus Tick	Plus Tick	Zero Tick
Over 5	19 (2%)	36 (10%)	20 (3%)
3 to 5	43 (4%)	50 (14%)	56 (9%)
1 to 3	113 (9%)	103 (28%)	135 (21%)
0 to 1	125 (10%)	60 (16%)	97 (15%)
0	65 (5%)	15 (4%)	36 (6%)
0 to -1	219 (18%)	49 (13%)	126 (20%)
-1 to -3	384 (32%)	37 (10%)	117 (18%)
-3 to -5	164 (14%	9 (2%)	34 (5%)
Under -5	67 (6%)	7 (2%)	14 (2%)
Total	1199 (100%)	366 (100%)	635 (100%)

TABLE XI-103

*****SUMMARY OUTPUT FOR 201 LIST B' STOCKS / OVER $1 MILL / A=0, B=1 / MINUS TICKS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-10	0.0005	0.5373	0.0135	1.0006	0.0140
-9	0.0007	0.5174	0.0136	1.0014	0.0179
-8	-0.0003	0.5174	0.0139	1.0012	0.0206
-7	0.0012	0.4776	0.0128	1.0024	0.0230
-6	0.0003	0.5224	0.0134	1.0028	0.0268
-5	-0.0010	0.5771	0.0128	1.0018	0.0285
-4	0.0010	0.4975	0.0154	1.0029	0.0321
-3	0.0008	0.5025	0.0128	1.0036	0.0333
-2	-0.0011	0.5473	0.0124	1.0026	0.0352
-1	-0.0012	0.5771	0.0149	1.0015	0.0397
0	-0.0092	0.7214	0.0179	0.9924	0.0411
1	-0.0007	0.4826	0.0126	0.9918	0.0426
2	0.0003	0.4975	0.0147	0.9922	0.0448
3	-0.0002	0.4726	0.0139	0.9921	0.0462
4	0.0001	0.5373	0.0138	0.9922	0.0478
5	0.0004	0.5224	0.0125	0.9926	0.0470
6	0.0016	0.4428	0.0127	0.9942	0.0481
7	-0.0007	0.5075	0.0122	0.9936	0.0488
8	-0.0012	0.5274	0.0137	0.9925	0.0504
9	0.0001	0.4478	0.0110	0.9926	0.0511
10	0.0001	0.5423	0.0124	0.9927	0.0507

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-10	10	-0.0004	0.0022	0.9971	0.0051
-10	-2	0.0002	0.0008	1.0021	0.0006
1	10	-0.0000	0.0008	0.9926	0.0012

TABLE XI-104

Table XI-98

*****SUMMARY OUTPUT FOR 70 LIST B' STOCKS / OVER $1 MILL / A=0, B=1 / PLUS TICKS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-10	0.0005	0.4714	0.0121	1.0005	0.0124
-9	0.0009	0.5429	0.0132	1.0015	0.0173
-8	0.0002	0.4714	0.0124	1.0017	0.0202
-7	0.0004	0.4429	0.0126	1.0022	0.0241
-6	0.0009	0.5286	0.0124	1.0032	0.0268
-5	-0.0018	0.6286	0.0130	1.0014	0.0299
-4	-0.0005	0.4286	0.0135	1.0010	0.0311
-3	0.0028	0.4429	0.0131	1.0039	0.0370
-2	0.0005	0.5286	0.0153	1.0046	0.0397
-1	0.0025	0.4714	0.0158	1.0073	0.0467
0	0.0067	0.3857	0.0186	1.0142	0.0504
1	-0.0013	0.5714	0.0149	1.0130	0.0519
2	-0.0000	0.5857	0.0132	1.0131	0.0548
3	0.0002	0.5571	0.0156	1.0136	0.0599
4	0.0045	0.4286	0.0159	1.0182	0.0609
5	-0.0011	0.5857	0.0121	1.0173	0.0640
6	0.0015	0.4429	0.0138	1.0190	0.0666
7	-0.0004	0.5571	0.0134	1.0186	0.0673
8	-0.0001	0.4571	0.0114	1.0186	0.0683
9	0.0020	0.4286	0.0117	1.0205	0.0671
10	0.0015	0.4714	0.0130	1.0221	0.0682

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-10	10	0.0009	0.0020	1.0103	0.0079
-10	-2	0.0004	0.0012	1.0022	0.0012
1	10	0.0007	0.0017	1.0174	0.0031

TABLE XI-105

*****SUMMARY OUTPUT FOR 289 LIST C' STOCKS / OVER $1 MILL / A=0, B=1 / MINUS TICKS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-10	-0.0012	0.5363	0.0172	0.9989	0.0179
-9	-0.0011	0.5571	0.0197	0.9979	0.0257
-8	0.0011	0.4464	0.0190	0.9992	0.0339
-7	-0.0010	0.5467	0.0179	0.9984	0.0376
-6	0.0019	0.5052	0.0421	1.0015	0.0718
-5	0.0008	0.4879	0.0177	1.0024	0.0743
-4	0.0004	0.5398	0.0183	1.0030	0.0761
-3	-0.0033	0.6055	0.0171	0.9998	0.0781
-2	-0.0026	0.5744	0.0177	0.9973	0.0781
-1	-0.0014	0.5398	0.0177	0.9961	0.0813
0	-0.0135	0.8097	0.0216	0.9832	0.0863
1	0.0015	0.4671	0.0196	0.9848	0.0885
2	-0.0019	0.5294	0.0206	0.9830	0.0897
3	0.0015	0.4948	0.0190	0.9844	0.0892
4	0.0014	0.4844	0.0201	0.9859	0.0903
5	0.0006	0.4913	0.0191	0.9865	0.0879
6	0.0007	0.5017	0.0182	0.9874	0.0916
7	-0.0008	0.4913	0.0187	0.9868	0.0922
8	0.0015	0.4637	0.0188	0.9883	0.0928
9	-0.0003	0.5017	0.0169	0.9882	0.0958
10	0.0000	0.4740	0.0172	0.9885	0.0983

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-10	10	-0.0008	0.0033	0.9924	0.0073
-10	-2	-0.0006	0.0017	0.9998	0.0021
1	10	0.0004	0.0011	0.9864	0.0020

TABLE XI-106

*****SUMMARY OUTPUT FOR 71 LIST C' STOCKS / OVER $1 MILL / A=0, B=1 / PLUS TICKS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-10	-0.0007	0.4366	0.0183	0.9994	0.0185
-9	0.0020	0.3944	0.0209	1.0018	0.0317
-8	0.0050	0.4648	0.0202	1.0068	0.0335
-7	0.0019	0.4507	0.0144	1.0088	0.0347
-6	0.0013	0.5070	0.0218	1.0103	0.0407
-5	0.0045	0.5070	0.0304	1.0152	0.0496
-4	-0.0032	0.5493	0.0247	1.0121	0.0518
-3	-0.0006	0.5634	0.0273	1.0118	0.0581
-2	0.0044	0.5493	0.0306	1.0167	0.0661
-1	0.0108	0.3803	0.0332	1.0289	0.0850
0	0.0168	0.2817	0.0340	1.0476	0.1033
1	0.0050	0.4225	0.0237	1.0539	0.1164
2	-0.0023	0.5634	0.0210	1.0521	0.1232
3	-0.0011	0.5070	0.0188	1.0503	0.1163
4	-0.0009	0.5211	0.0184	1.0491	0.1139
5	0.0021	0.5070	0.0278	1.0512	0.1126
6	0.0044	0.4507	0.0216	1.0567	0.1217
7	0.0050	0.4366	0.0214	1.0629	0.1316
8	-0.0002	0.5493	0.0182	1.0626	0.1312
9	-0.0023	0.5352	0.0172	1.0603	0.1325
10	-0.0015	0.5211	0.0161	1.0588	0.1335

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-10	10	0.0024	0.0047	1.0342	0.0235
-10	-2	0.0016	0.0028	1.0092	0.0057
1	10	0.0008	0.0030	1.0558	0.0051

TABLE XI-107

Frequency Distributions of Day-to-Day Price Changes in NYSE List A Stocks, on Stock Days with Block Trades (10,000 or More Shares), Stock Days Without Block Trades, and All Stock Days

Day-to-Day Percentage Change in Closing Price	Days With Block Trades	Days Without Block Trades	All Days
Over 5	273	2,201	2,474
3 to 5	408	4,618	5,026
1 to 3	996	18,182	19,178
0 to 1	819	17,538	18,357
0	398	12,542	12,940
0 to -1	949	19,652	20,601
-1 to -3	1,270	22,386	23,656
-3 to -5	417	4,819	5,236
Under -5	173	1,352	1,525
Total	5,703	103,290	108,993

TABLE XI-108

Percentage Distributions of Day-to-Day Price Changes in NYSE List A Stocks, on Stock Days with Block Trades (10,000 or More Shares), Stock Days Without Block Trades, and All Stock Days

Day-to-Day Percentage Change in Closing Price	Days with Block Trades	Days Without Block Trades	All Days
Over 5	5	1	2
3 to 5	7	4	5
1 to 3	17	18	18
0 to 1	14	17	17
0	7	12	12
0 to -1	17	19	19
-1 to -3	22	22	22
-3 to -5	7	5	5
Under -5	3	1	1
Total */	100	100	100

*/ Totals may not add to 100 because of rounding

TABLE XI-109

*****SUMMARY OUTPUT FOR 582 $1-2 MILLION / A=0, B=1 / - TICKS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-10	-0.0001	0.5120	0.0198	1.0000	0.0216
-9	0.0011	0.5223	0.0204	1.0013	0.0299
-8	-0.0010	0.5155	0.0187	1.0005	0.0354
-7	-0.0007	0.5309	0.0197	1.0000	0.0397
-6	-0.0007	0.5344	0.0207	0.9995	0.0454
-5	0.0009	0.5069	0.0189	1.0005	0.0483
-4	-0.0003	0.5412	0.0203	1.0003	0.0519
-3	-0.0021	0.5773	0.0186	0.9984	0.0551
-2	-0.0016	0.5687	0.0213	0.9971	0.0598
-1	-0.0031	0.5945	0.0207	0.9941	0.0604
0	-0.0082	0.7010	0.0228	0.9863	0.0651
1	0.0008	0.4863	0.0210	0.9870	0.0647
2	-0.0015	0.5137	0.0218	0.9857	0.0665
3	-0.0002	0.5069	0.0215	0.9856	0.0687
4	0.0002	0.4966	0.0212	0.9859	0.0705
5	0.0006	0.5052	0.0205	0.9866	0.0712
6	0.0013	0.4845	0.0190	0.9880	0.0735
7	0.0001	0.5155	0.0205	0.9882	0.0748
8	0.0002	0.5241	0.0210	0.9884	0.0744
9	0.0006	0.4863	0.0191	0.9892	0.0769
10	0.0006	0.5137	0.0201	0.9899	0.0796

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-10	10	-0.0006	0.0021	0.9930	0.0065
-10	-2	-0.0065	0.0010	0.9997	0.0015
1	10	0.0003	0.0008	0.9875	0.0018

TABLE XI-110

*****SUMMARY OUTPUT FOR 403 $2-5 MILLION / A=0, B=1 / - TICKS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-10	-0.0007	0.5112	0.0193	0.9994	0.0205
-9	-0.0013	0.5583	0.0189	0.9984	0.0277
-8	0.0023	0.4839	0.0200	1.0008	0.0353
-7	-0.0001	0.5186	0.0201	1.0009	0.0402
-6	0.0012	0.5310	0.0372	1.0030	0.0655
-5	-0.0017	0.5385	0.0190	1.0014	0.0680
-4	0.0003	0.5261	0.0197	1.0019	0.0701
-3	-0.0023	0.5831	0.0211	0.9997	0.0719
-2	-0.0040	0.6030	0.0201	0.9959	0.0727
-1	-0.0012	0.5459	0.0222	0.9951	0.0781
0	-0.0122	0.7345	0.0249	0.9835	0.0840
1	-0.0017	0.5385	0.0213	0.9821	0.0875
2	-0.0001	0.5310	0.0254	0.9823	0.0911
3	0.0024	0.4516	0.0208	0.9849	0.0928
4	0.0013	0.4938	0.0209	0.9863	0.0935
5	0.0007	0.4988	0.0216	0.9870	0.0924
6	-0.0018	0.5558	0.0208	0.9857	0.0985
7	-0.0007	0.5385	0.0202	0.9853	0.1007
8	0.0008	0.5136	0.0202	0.9863	0.1019
9	0.0011	0.4963	0.0209	0.9875	0.1028
10	0.0007	0.5087	0.0212	0.9881	0.1021

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-10	10	-0.0008	0.0030	0.9922	0.0079
-10	-2	-0.0007	0.0019	1.0002	0.0021
1	10	0.0003	0.0013	0.9856	0.0022

TABLE XI-111

*****SUMMARY OUTPUT FOR 170 $5 + MILLION / A=0, B=1 / - TICKS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-10	-0.0013	0.5765	0.0171	0.9989	0.0175
-9	-0.0027	0.5588	0.0215	0.9965	0.0302
-8	0.0001	0.5471	0.0219	0.9968	0.0350
-7	0.0002	0.4765	0.0191	0.9972	0.0405
-6	0.0013	0.5059	0.0197	0.9987	0.0460
-5	0.0023	0.5176	0.0205	1.0014	0.0543
-4	0.0013	0.4824	0.0197	1.0029	0.0567
-3	-0.0014	0.5765	0.0173	1.0016	0.0592
-2	-0.0040	0.5824	0.0179	0.9978	0.0629
-1	-0.0081	0.6059	0.0244	0.9899	0.0640
0	-0.0212	0.8588	0.0283	0.9697	0.0692
1	0.0011	0.4412	0.0231	0.9710	0.0736
2	-0.0003	0.5000	0.0223	0.9707	0.0724
3	0.0019	0.5471	0.0200	0.9727	0.0759
4	-0.0001	0.5412	0.0197	0.9728	0.0792
5	-0.0016	0.5294	0.0187	0.9712	0.0780
6	0.0011	0.4765	0.0203	0.9727	0.0825
7	0.0003	0.4412	0.0212	0.9730	0.0825
8	0.0001	0.4941	0.0190	0.9734	0.0855
9	0.0003	0.4941	0.0219	0.9733	0.0799
10	-0.0023	0.5647	0.0196	0.9712	0.0819

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-10	10	-0.0016	0.0051	0.9844	0.0137
-10	-2	-0.0005	0.0021	0.9991	0.0023
1	10	0.0001	0.0013	0.9722	0.0013

TABLE XI-112

Regression Analysis
Determinants of Size of Price Impact on Day 0
Regression Statistics
(t value of coefficients in parentheses)

Dependent Variable is Current Impact in % on Day 0 [U (o)]

	- TICK		+ TICK		0 TICK	
	(1)	(2)	(1)	(2)	(1)	(2)
CONSTANT	-.7671	-.5798	.9509	1.2618	.3721	.4957
VALUE OF BLOCK IN $ MILLION	-.1288 (7.26)	-.8304 (3.79)	.1311 (2.72)	.1737 (3.30)	-.1011 (1.78)	-.7493 (1.26)
MARKET VOLUME ON DAY OF BLOCK IN $ MILLION		-.2863 (3.31)		-.2631 (1.47)		-.2067 (1.68)
DUMMY VARIABLE = 1 IF BLOCK CROSSED		-.3116 (2.24)		-.6428 (2.03)		-.8485 (.40)
r^2	.0422	.0536	.0199	.0348	.0050	.0094
OBSERVATIONS	1191	1191	366	366	634	634

TABLE XI-113

*****SUMMARY OUTPUT FOR 320 OVER $1 MILLION / A=0, B=1 / - TICKS / NO BLK IN NEXT 10 DAYS OVER 10,000 SHARES *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	0.0001	0.5406	0.0224	1.0003	0.0237
-19	-0.0004	0.4937	0.0180	1.0001	0.0299
-18	-0.0009	0.5406	0.0196	0.9993	0.0363
-17	0.0003	0.4656	0.0183	0.9998	0.0416
-16	-0.0011	0.5313	0.0172	0.9989	0.0459
-15	0.0005	0.5531	0.0209	0.9996	0.0524
-14	-0.0006	0.5094	0.0192	0.9992	0.0560
-13	-0.0014	0.5156	0.0197	0.9980	0.0602
-12	-0.0005	0.5469	0.0178	0.9977	0.0610
-11	0.0011	0.4688	0.0177	0.9989	0.0640
-10	0.0001	0.4844	0.0182	0.9992	0.0681
-9	0.0007	0.5031	0.0172	1.0001	0.0709
-8	0.0006	0.4625	0.0173	1.0009	0.0746
-7	-0.0014	0.5625	0.0178	0.9997	0.0767
-6	-0.0012	0.5156	0.0179	0.9985	0.0749
-5	-0.0011	0.5531	0.0168	0.9973	0.0743
-4	0.0001	0.5156	0.0201	0.9976	0.0768
-3	-0.0010	0.5594	0.0188	0.9966	0.0769
-2	-0.0036	0.5906	0.0177	0.9933	0.0797
-1	-0.0012	0.5500	0.0186	0.9924	0.0814
0	-0.0109	0.7813	0.0205	0.9819	0.0837
1	0.0010	0.4688	0.0184	0.9831	0.0858
2	0.0021	0.4594	0.0230	0.9852	0.0862
3	0.0020	0.4625	0.0169	0.9870	0.0860
4	0.0002	0.4812	0.0173	0.9872	0.0856
5	0.0014	0.5062	0.0169	0.9888	0.0880
6	0.0008	0.4875	0.0190	0.9898	0.0917
7	-0.0014	0.5250	0.0195	0.9887	0.0942
8	0.0006	0.4937	0.0171	0.9892	0.0931
9	0.0013	0.4656	0.0182	0.9904	0.0926
10	0.0017	0.4781	0.0192	0.9921	0.0932
11	0.0001	0.5500	0.0190	0.9925	0.0958
12	0.0005	0.4875	0.0156	0.9929	0.0954
13	0.0005	0.4969	0.0167	0.9935	0.0971
14	-0.0000	0.4906	0.0172	0.9937	0.0992
15	0.0011	0.5406	0.0183	0.9949	0.1008
16	-0.0009	0.5313	0.0176	0.9945	0.1054
17	0.0012	0.4562	0.0146	0.9959	0.1069
18	-0.0002	0.5281	0.0185	0.9960	0.1086
19	0.0000	0.5094	0.0212	0.9962	0.1102
20	-0.0004	0.5094	0.0171	0.9956	0.1079

		CURRENT IMPACT		IMPACT INDEX	
FROM	TO	AVE	STD DEV	AVE	STD DEV
-20	20	-0.0002	0.0020	0.9945	0.0053
-20	-2	-0.0005	0.0011	0.9987	0.0023
1	20	0.0006	0.0009	0.9914	0.0040

TABLE XI-114

*****SUMMARY OUTPUT FOR 591 OVER $1 MILLION / A=0, B=1 / - TICKS / NO BLK IN NEXT 10 DAYS OVER $1 MILLION *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0012	0.5499	0.0206	0.9989	0.0227
-19	-0.0009	0.5076	0.0206	0.9983	0.0305
-18	-0.0008	0.5330	0.0207	0.9977	0.0381
-17	-0.0003	0.4873	0.0192	0.9977	0.0435
-16	-0.0009	0.5398	0.0190	0.9970	0.0478
-15	0.0006	0.5398	0.0211	0.9978	0.0531
-14	-0.0011	0.5178	0.0184	0.9968	0.0558
-13	-0.0012	0.5279	0.0192	0.9958	0.0590
-12	-0.0007	0.5499	0.0180	0.9951	0.0599
-11	0.0002	0.4890	0.0190	0.9955	0.0627
-10	-0.0007	0.5195	0.0193	0.9951	0.0674
-9	-0.0004	0.5431	0.0193	0.9949	0.0706
-8	0.0006	0.4755	0.0187	0.9957	0.0741
-7	-0.0012	0.5533	0.0193	0.9946	0.0755
-6	0.0007	0.5093	0.0328	0.9959	0.0861
-5	-0.0004	0.5245	0.0171	0.9955	0.0862
-4	-0.0005	0.5144	0.0195	0.9951	0.0879
-3	-0.0011	0.5753	0.0184	0.9941	0.0883
-2	-0.0042	0.6007	0.0188	0.9903	0.0904
-1	-0.0025	0.5838	0.0208	0.9881	0.0927
0	-0.0116	0.7547	0.0229	0.9772	0.0976
1	0.0004	0.4788	0.0203	0.9777	0.0989
2	0.0004	0.4822	0.0229	0.9781	0.0991
3	0.0009	0.4907	0.0195	0.9790	0.0990
4	0.0002	0.4975	0.0185	0.9792	0.0986
5	0.0014	0.5042	0.0202	0.9806	0.0986
6	0.0002	0.5025	0.0189	0.9811	0.1013
7	-0.0009	0.5127	0.0199	0.9803	0.1020
8	0.0003	0.5144	0.0191	0.9806	0.1020
9	0.0014	0.4704	0.0184	0.9820	0.1022
10	0.0014	0.4890	0.0207	0.9834	0.1029
11	0.0004	0.5228	0.0196	0.9840	0.1055
12	0.0017	0.4992	0.0317	0.9860	0.1096
13	-0.0002	0.5262	0.0180	0.9859	0.1114
14	0.0010	0.4873	0.0192	0.9872	0.1152
15	0.0003	0.5465	0.0217	0.9878	0.1180
16	-0.0009	0.5228	0.0185	0.9872	0.1207
17	0.0006	0.4822	0.0173	0.9882	0.1227
18	-0.0001	0.5364	0.0185	0.9883	0.1241
19	-0.0003	0.5178	0.0195	0.9882	0.1252
20	-0.0003	0.5008	0.0173	0.9879	0.1243

		CURRENT IMPACT		IMPACT INDEX	
FROM	TO	AVE	STD DEV	AVE	STD DEV
-20	20	-0.0005	0.0021	0.9893	0.0074
-20	-2	-0.0007	0.0010	0.9959	0.0024
1	20	0.0004	0.0008	0.9836	0.0041

TABLE XI-115

*****SUMMARY OUTPUT FOR 79 OVER $1 MILLION / A=0, B=1 / + TICKS / NO BLK IN NEXT 10 DAYS OVER 10,000 SHARES *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0021	0.5949	0.0179	0.9980	0.0181
-19	-0.0013	0.5696	0.0200	0.9970	0.0288
-18	-0.0024	0.6456	0.0193	0.9948	0.0383
-17	0.0012	0.5316	0.0193	0.9960	0.0378
-16	0.0032	0.3924	0.0188	0.9994	0.0429
-15	0.0010	0.4304	0.0147	1.0006	0.0466
-14	0.0031	0.4177	0.0161	1.0039	0.0515
-13	0.0001	0.5443	0.0153	1.0043	0.0575
-12	0.0033	0.5063	0.0170	1.0078	0.0617
-11	0.0022	0.4177	0.0171	1.0101	0.0634
-10	0.0011	0.4684	0.0151	1.0113	0.0644
-9	-0.0006	0.5190	0.0137	1.0104	0.0636
-8	-0.0010	0.5316	0.0152	1.0095	0.0647
-7	0.0009	0.4810	0.0135	1.0106	0.0677
-6	0.0014	0.5570	0.0207	1.0124	0.0722
-5	0.0021	0.4557	0.0211	1.0147	0.0756
-4	-0.0013	0.4937	0.0236	1.0134	0.0768
-3	0.0045	0.5063	0.0293	1.0188	0.0902
-2	0.0017	0.5316	0.0198	1.0209	0.0939
-1	0.0054	0.3797	0.0231	1.0272	0.1050
0	0.0107	0.3418	0.0215	1.0381	0.1051
1	0.0038	0.4557	0.0194	1.0423	0.1070
2	0.0003	0.4937	0.0165	1.0430	0.1109
3	-0.0010	0.4684	0.0168	1.0417	0.1083
4	0.0026	0.4937	0.0148	1.0449	0.1141
5	0.0004	0.5570	0.0204	1.0453	0.1129
6	-0.0015	0.5190	0.0164	1.0444	0.1182
7	0.0011	0.4430	0.0148	1.0455	0.1180
8	0.0003	0.5316	0.0180	1.0454	0.1148
9	-0.0001	0.5823	0.0135	1.0456	0.1176
10	-0.0002	0.4937	0.0169	1.0459	0.1213
11	0.0023	0.4304	0.0159	1.0483	0.1209
12	0.0011	0.4557	0.0188	1.0497	0.1249
13	-0.0009	0.5190	0.0158	1.0488	0.1235
14	-0.0025	0.5696	0.0176	1.0461	0.1221
15	0.0017	0.5063	0.0217	1.0481	0.1248
16	-0.0024	0.5443	0.0151	1.0455	0.1235
17	0.0014	0.4177	0.0174	1.0473	0.1264
18	-0.0009	0.4557	0.0206	1.0464	0.1274
19	-0.0022	0.5823	0.0141	1.0442	0.1275
20	-0.0003	0.5190	0.0167	1.0449	0.1362

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	0.0009	0.0025	1.0271	0.0200
-20	-2	0.0009	0.0020	1.0070	0.0079
1	20	0.0002	0.0017	1.0457	0.0024

TABLE XI-116

*****SUMMARY OUTPUT FOR 150 OVER $1 MILLION / A=0, B=1 / + TICKS / NO BLK IN NEXT 10 DAYS OVER $1 MILLION *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0006	0.5333	0.0194	0.9996	0.0197
-19	0.0004	0.5533	0.0218	1.0002	0.0288
-18	-0.0016	0.5533	0.0239	0.9990	0.0414
-17	0.0015	0.5133	0.0224	1.0009	0.0480
-16	0.0045	0.4267	0.0219	1.0055	0.0525
-15	0.0002	0.4867	0.0171	1.0058	0.0536
-14	0.0018	0.4867	0.0173	1.0077	0.0565
-13	-0.0013	0.5867	0.0178	1.0066	0.0593
-12	0.0029	0.4867	0.0177	1.0098	0.0651
-11	0.0019	0.4333	0.0163	1.0118	0.0663
-10	0.0015	0.4867	0.0177	1.0135	0.0691
-9	-0.0010	0.5000	0.0187	1.0125	0.0698
-8	0.0018	0.5000	0.0197	1.0143	0.0708
-7	0.0000	0.5400	0.0166	1.0145	0.0724
-6	0.0021	0.4933	0.0194	1.0167	0.0732
-5	0.0034	0.4533	0.0270	1.0204	0.0777
-4	0.0005	0.4867	0.0228	1.0210	0.0784
-3	0.0013	0.5467	0.0282	1.0229	0.0861
-2	0.0014	0.5067	0.0222	1.0248	0.0910
-1	0.0080	0.3800	0.0291	1.0337	0.1004
0	0.0125	0.3067	0.0233	1.0469	0.1049
1	0.0030	0.4733	0.0247	1.0500	0.1037
2	-0.0019	0.5600	0.0170	1.0481	0.1049
3	-0.0002	0.5000	0.0160	1.0477	0.1027
4	0.0003	0.5333	0.0162	1.0483	0.1059
5	0.0016	0.5200	0.0204	1.0501	0.1064
6	0.0008	0.5067	0.0178	1.0515	0.1137
7	-0.0007	0.4867	0.0162	1.0507	0.1128
8	-0.0007	0.5133	0.0169	1.0496	0.1093
9	-0.0010	0.5467	0.0153	1.0485	0.1084
10	-0.0018	0.5333	0.0165	1.0468	0.1091
11	0.0022	0.4600	0.0206	1.0491	0.1082
12	0.0012	0.4867	0.0204	1.0504	0.1110
13	-0.0003	0.5000	0.0176	1.0502	0.1122
14	-0.0018	0.5067	0.0164	1.0485	0.1125
15	0.0014	0.4867	0.0191	1.0503	0.1165
16	-0.0018	0.5333	0.0173	1.0486	0.1189
17	-0.0004	0.4800	0.0199	1.0483	0.1192
18	-0.0006	0.4667	0.0194	1.0478	0.1205
19	-0.0011	0.5600	0.0157	1.0465	0.1188
20	-0.0018	0.5600	0.0174	1.0452	0.1246

		CURRENT IMPACT		IMPACT INDEX	
FROM	TO	AVE	STD DEV	AVE	STD DEV
-20	20	0.0009	0.0027	1.0308	0.0198
-20	-2	0.0011	0.0016	1.0109	0.0082
1	20	-0.0002	0.0015	1.0488	0.0024

TABLE XI-117

*****SUMMARY OUTPUT FOR 858 OVER $1 MILLION / A=0, B=1 / - TICKS / LEADING / NO BLOCK > $1 MILLION IN PRIOR 3 DAYS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0007	0.5513	0.0202	0.9994	0.0226
-19	-0.0006	0.5070	0.0194	0.9989	0.0294
-18	-0.0004	0.5256	0.0215	0.9987	0.0358
-17	-0.0002	0.5093	0.0199	0.9988	0.0426
-16	-0.0008	0.5373	0.0184	0.9982	0.0472
-15	0.0005	0.5361	0.0195	0.9988	0.0507
-14	-0.0009	0.5350	0.0172	0.9980	0.0520
-13	-0.0011	0.5256	0.0191	0.9972	0.0561
-12	-0.0005	0.5291	0.0194	0.9968	0.0580
-11	-0.0003	0.4930	0.0189	0.9967	0.0607
-10	-0.0007	0.5198	0.0186	0.9963	0.0655
-9	-0.0003	0.5361	0.0199	0.9961	0.0684
-8	0.0004	0.4930	0.0181	0.9967	0.0713
-7	-0.0004	0.5186	0.0190	0.9964	0.0737
-6	0.0008	0.5186	0.0289	0.9978	0.0834
-5	-0.0002	0.5093	0.0176	0.9976	0.0848
-4	-0.0002	0.5268	0.0187	0.9976	0.0865
-3	-0.0017	0.5793	0.0182	0.9961	0.0876
-2	-0.0028	0.5932	0.0196	0.9935	0.0901
-1	-0.0024	0.5641	0.0200	0.9913	0.0919
0	-0.0116	0.7459	0.0231	0.9805	0.0972
1	-0.0003	0.4988	0.0206	0.9803	0.0988
2	0.0002	0.5093	0.0209	0.9808	0.1014
3	0.0015	0.4837	0.0199	0.9825	0.1041
4	-0.0000	0.5070	0.0205	0.9826	0.1061
5	0.0006	0.5093	0.0205	0.9833	0.1064
6	-0.0002	0.5163	0.0192	0.9834	0.1095
7	-0.0003	0.5128	0.0201	0.9832	0.1095
8	0.0005	0.5035	0.0197	0.9837	0.1091
9	0.0002	0.4848	0.0192	0.9840	0.1095
10	0.0003	0.5117	0.0195	0.9843	0.1104
11	-0.0004	0.5420	0.0189	0.9840	0.1121
12	0.0014	0.5105	0.0291	0.9856	0.1148
13	0.0004	0.5186	0.0189	0.9862	0.1164
14	0.0002	0.4988	0.0192	0.9866	0.1188
15	0.0003	0.5361	0.0211	0.9872	0.1215
16	-0.0003	0.5221	0.0186	0.9872	0.1244
17	0.0002	0.4872	0.0182	0.9875	0.1257
18	-0.0001	0.5245	0.0199	0.9877	0.1273
19	0.0002	0.5058	0.0188	0.9881	0.1289
20	0.0002	0.5093	0.0189	0.9883	0.1291

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	-0.0005	0.0020	0.9907	0.0070
-20	-2	-0.0005	0.0008	0.9974	0.0023
1	20	0.0002	0.0005	0.9848	0.0028

TABLE XI-118\

*****SUMMARY OUTPUT FOR 263 OVER $1 MILLION / A=0, B=1 / - TICKS / NON-LEADING / AT LEAST 1 BLOCK > $1 MILLION IN PRIOR 3 DAYS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0000	0.5133	0.0199	1.0001	0.0204
-19	-0.0000	0.5057	0.0234	1.0004	0.0316
-18	0.0002	0.5095	0.0204	1.0008	0.0380
-17	-0.0007	0.5133	0.0225	1.0003	0.0420
-16	-0.0005	0.5323	0.0215	0.9999	0.0457
-15	-0.0010	0.5513	0.0235	0.9993	0.0539
-14	-0.0024	0.5551	0.0205	0.9972	0.0581
-13	-0.0003	0.5019	0.0218	0.9970	0.0608
-12	-0.0023	0.5741	0.0197	0.9950	0.0638
-11	0.0006	0.5057	0.0217	0.9958	0.0667
-10	0.0001	0.5285	0.0218	0.9963	0.0726
-9	-0.0001	0.5551	0.0217	0.9965	0.0768
-8	-0.0001	0.5703	0.0238	0.9968	0.0817
-7	-0.0002	0.5285	0.0225	0.9968	0.0840
-6	-0.0011	0.5399	0.0242	0.9958	0.0843
-5	0.0016	0.5399	0.0238	0.9977	0.0885
-4	0.0014	0.5171	0.0237	0.9993	0.0912
-3	-0.0035	0.5856	0.0229	0.9962	0.0957
-2	-0.0032	0.5703	0.0230	0.9936	0.1011
-1	-0.0062	0.6274	0.0267	0.9878	0.1037
0	-0.0111	0.7148	0.0296	0.9775	0.1090
1	0.0004	0.5133	0.0242	0.9779	0.1091
2	-0.0038	0.5437	0.0275	0.9739	0.1051
3	-0.0005	0.5361	0.0245	0.9733	0.1043
4	0.0019	0.4943	0.0224	0.9750	0.1028
5	-0.0001	0.4981	0.0209	0.9750	0.1043
6	0.0018	0.4677	0.0223	0.9769	0.1061
7	0.0007	0.5057	0.0221	0.9779	0.1092
8	0.0002	0.5627	0.0224	0.9782	0.1103
9	0.0019	0.5133	0.0224	0.9800	0.1094
10	0.0000	0.5399	0.0232	0.9800	0.1095
11	-0.0016	0.5095	0.0225	0.9786	0.1100
12	-0.0017	0.4981	0.0221	0.9773	0.1132
13	-0.0007	0.5475	0.0191	0.9768	0.1148
14	0.0012	0.4791	0.0211	0.9785	0.1201
15	-0.0015	0.5399	0.0208	0.9771	0.1213
16	-0.0028	0.5779	0.0205	0.9747	0.1237
17	-0.0013	0.5399	0.0182	0.9736	0.1240
18	-0.0007	0.5437	0.0183	0.9730	0.1253
19	-0.0014	0.5209	0.0220	0.9715	0.1235
20	0.0002	0.4791	0.0191	0.9716	0.1224

		CURRENT IMPACT		IMPACT INDEX	
FROM	TO	AVE	STD DEV	AVE	STD DEV
-20	20	-0.0009	0.0023	0.9864	0.0111
-20	-2	-0.0006	0.0014	0.9976	0.0026
1	20	-0.0004	0.0015	0.9760	0.0030

TABLE XI-119

Dependencies in Price Changes Before and After Block Trades as Measured by Percentage of Blocks Meeting Conditions on E1 and Conditions on E2

E1 = % price change, close of day -1 to block; E2 = % price change, block to close day 0

ALL BLOCKS (2199)

E1 \ E2	> 0	< 0	= 0	Total
≥ 0	17.6	15.1	6.2	38.9
< 0	36.9	15.1	9.1	61.1
Total	54.5	30.2	15.3	100.0

MINUS TICKS (1199)

E1 \ E2	> 0	< 0	= 0	Total
≥ 0	10.3	4.9	2.6	17.8
< 0	53.5	17.2	11.5	82.2
Total	63.8	22.1	14.1	100.0

PLUS TICKS (366)

E1 \ E2	> 0	< 0	= 0	Total
≥ 0	28.9	39.9	13.4	82.2
< 0	6.6	10.1	1.1	17.8
Total	35.5	50.0	14.5	100.0

ZERO TICKS (634)

E1 \ E2	> 0	< 0	= 0	Total
≥ 0	24.6	20.2	8.8	53.6
< 0	23.2	13.9	9.3	46.4
Total	47.8	34.1	18.1	100.0

TABLE XI-120

Frequency and Percentage Distribution by Tick of Price Changes in List A Stocks from Previous Close to NYSE Block Trade of $1 Million or More

(Number of Obervations and Percentage)

Percentage Price Change	Minus Tick	Plus Tick	Zero Tick
Over 5	6 (1%)	27 (7%)	10 (2%)
3 to 5	20 (2%)	44 (12%)	33 (5%)
1 to 3	55 (5%)	122 (33%)	92 (14%)
0 to 1	66 (6%)	87 (24%)	128 (20%)
0	67 (6%)	22 (6%)	77 (12%)
0 to -1	232 (19%)	33 (9%)	131 (21%)
-1 to -3	449 (37%)	23 (6%)	115 (18%)
-3 to -5	206 (17%)	6 (2%)	38 (6%)
Under -5	98 (8%)	2 (1%)	11 (2%)
Total	1199 (100%)	366 (100%)	635 (100%)

TABLE XI-121

Frequency and Percentage Distribution by Tick of Price Changes in List A Stocks from NYSE Block Trades of $1 Million or More to Closing Price for Day

(Number of Observations and Percentage)

Percentage Price Change	Minus Tick	Plus Tick	Zero Tick
Over 5	21 (2%)	5 (1%)	9 (1%)
3 to 5	64 (5%)	18 (5%)	20 (3%)
1 to 3	331 (28%)	44 (12%)	111 (17%)
0 to 1	349 (29%)	63 (17%)	163 (26%)
0	169 (14%)	53 (4%)	116 (18%)
0 to -1	155 (13%)	95 (26%)	132 (21%)
-1 to -3	93 (8%)	70 (19%)	70 (11%)
-3 to -5	16 (1%)	14 (4%)	13 (2%)
Under -5	1 (0%)	4 (1%)	1 (0%)
Total	1199 (100%)	366 (100%)	635 (100%)

TABLE XI-122

Within-Day Price Patterns: Regression Analysis
For Blocks over $1 Million

E1 ≡ percentage price change between close on day-1 and block price

E2 ≡ percentage price change between block price and close on day 0

(t values are in parentheses)

MINUS TICKS (1199 obs.):

$$E2 \equiv .4493 - .1416\ E1 \qquad r^2 \equiv .0420$$
$$(7.25)$$

PLUS TICKS (366 obs.):

$$E2 \equiv .0258 - .7745\ E1 \qquad r^2 \equiv .0099$$
$$(1.90)$$

ALL BLOCKS OVER $1 MILLION (2199 obs.):

$$E2 \equiv .3492 - .1397\ E1 \qquad r^2 \equiv .0482$$
$$(10.54)$$

TABLE XI-123

Relation of Within-Day Price Recovery of
Minus-Tick Blocks to Size of Block,
Regression Analysis (1199 obs.)

VB = Dollar Value of Block Trade in $ Million

E7 = Percentage price change between prior trade and block trade (value of minus tick)

$$E2 = .7092 + \underset{(.09)}{.1139}VB, \qquad r^2 = .0000$$

$$E2 = .3799 - \underset{(1.46)}{.1758}VB - \underset{(7.86)}{.3418}\,E7, \qquad r^2 = .0491$$

TABLE XI-124

*****SUMMARY OUTPUT FOR 105 I-15 BLOCKS -- NO POSITION BY BLOCK TRADE ASSEMBLER *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0006	0.6000	0.0226	0.9997	0.0232
-19	0.0001	0.4571	0.0205	1.0000	0.0297
-18	-0.0007	0.5238	0.0180	0.9994	0.0333
-17	0.0007	0.4952	0.0172	1.0003	0.0383
-16	0.0002	0.4762	0.0163	1.0004	0.0388
-15	0.0037	0.4000	0.0183	1.0042	0.0394
-14	0.0013	0.5143	0.0154	1.0057	0.0426
-13	-0.0010	0.4857	0.0175	1.0048	0.0446
-12	-0.0009	0.6000	0.0167	1.0040	0.0477
-11	0.0014	0.5429	0.0172	1.0056	0.0508
-10	0.0007	0.4857	0.0154	1.0065	0.0544
-9	-0.0005	0.5905	0.0177	1.0063	0.0608
-8	-0.0000	0.5143	0.0172	1.0065	0.0628
-7	0.0003	0.4667	0.0175	1.0068	0.0621
-6	0.0035	0.3810	0.0166	1.0104	0.0650
-5	-0.0016	0.5714	0.0193	1.0091	0.0690
-4	0.0050	0.4667	0.0202	1.0142	0.0708
-3	-0.0041	0.6476	0.0180	1.0103	0.0748
-2	0.0006	0.4857	0.0191	1.0114	0.0817
-1	-0.0060	0.5810	0.0195	1.0057	0.0847
0	0.0020	0.4762	0.0242	1.0082	0.0902
1	0.0033	0.4286	0.0189	1.0114	0.0892
2	0.0018	0.4857	0.0174	1.0130	0.0875
3	-0.0016	0.5524	0.0138	1.0116	0.0900
4	-0.0018	0.5048	0.0187	1.0103	0.0948
5	-0.0015	0.5905	0.0234	1.0089	0.0953
6	0.0026	0.4952	0.0193	1.0118	0.0989
7	-0.0047	0.5429	0.0219	1.0068	0.0964
8	-0.0004	0.5619	0.0193	1.0062	0.0939
9	0.0004	0.5238	0.0195	1.0069	0.0963
10	0.0011	0.4762	0.0163	1.0080	0.0956
11	0.0011	0.5143	0.0183	1.0093	0.0974
12	0.0012	0.3905	0.0156	1.0105	0.0980
13	-0.0012	0.5238	0.0172	1.0095	0.1003
14	-0.0014	0.5333	0.0188	1.0084	0.1038
15	-0.0028	0.5810	0.0186	1.0054	0.1017
16	0.0007	0.4762	0.0180	1.0062	0.1034
17	-0.0003	0.5048	0.0165	1.0061	0.1056
18	-0.0009	0.5714	0.0230	1.0054	0.1078
19	-0.0002	0.4857	0.0159	1.0052	0.1081
20	-0.0016	0.5429	0.0150	1.0038	0.1089

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	-0.0000	0.0022	1.0069	0.0044
-20	-2	0.0004	0.0020	1.0056	0.0045
1	20	-0.0003	0.0019	1.0082	0.0030

TABLE XI-125

*****SUMMARY OUTPUT FOR 70 I-15 BLOCKS WHERE B.T.A. HAD POSITIVE POSITION AFTER BLOCK *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	0.0009	0.4714	0.0160	1.0010	0.0163
-19	-0.0008	0.5143	0.0163	1.0003	0.0213
-18	0.0035	0.5286	0.0223	1.0040	0.0321
-17	-0.0026	0.5714	0.0234	1.0017	0.0401
-16	-0.0029	0.5714	0.0169	0.9991	0.0464
-15	-0.0026	0.5571	0.0188	0.9967	0.0515
-14	-0.0044	0.7143	0.0183	0.9926	0.0566
-13	0.0003	0.5429	0.0218	0.9931	0.0599
-12	-0.0000	0.5714	0.0207	0.9932	0.0609
-11	0.0015	0.5000	0.0165	0.9946	0.0606
-10	-0.0018	0.6143	0.0195	0.9934	0.0694
-9	0.0033	0.4714	0.0209	0.9971	0.0758
-8	-0.0027	0.5714	0.0263	0.9946	0.0782
-7	-0.0033	0.6000	0.0205	0.9915	0.0789
-6	-0.0012	0.5714	0.0216	0.9907	0.0827
-5	0.0011	0.4286	0.0191	0.9918	0.0834
-4	0.0014	0.4714	0.0173	0.9934	0.0863
-3	-0.0025	0.5000	0.0218	0.9910	0.0866
-2	-0.0015	0.5286	0.0202	0.9894	0.0859
-1	-0.0015	0.5143	0.0221	0.9884	0.0918
0	-0.0224	0.8571	0.0273	0.9677	0.1001
1	-0.0047	0.5857	0.0260	0.9629	0.0978
2	0.0001	0.5429	0.0250	0.9633	0.1000
3	0.0002	0.4571	0.0182	0.9634	0.0992
4	0.0010	0.5143	0.0176	0.9644	0.1003
5	-0.0007	0.5286	0.0153	0.9641	0.1039
6	-0.0004	0.5429	0.0215	0.9635	0.1033
7	-0.0014	0.5000	0.0180	0.9621	0.1026
8	0.0035	0.4429	0.0194	0.9656	0.1040
9	0.0015	0.5429	0.0219	0.9673	0.1072
10	0.0006	0.5714	0.0185	0.9674	0.1035
11	-0.0000	0.4714	0.0228	0.9677	0.1053
12	0.0005	0.5143	0.0178	0.9683	0.1065
13	0.0025	0.3857	0.0155	0.9707	0.1065
14	-0.0011	0.4714	0.0152	0.9694	0.1038
15	-0.0041	0.6143	0.0174	0.9657	0.1052
16	-0.0001	0.5143	0.0201	0.9659	0.1081
17	0.0019	0.4571	0.0206	0.9677	0.1077
18	-0.0017	0.6143	0.0174	0.9661	0.1080
19	-0.0002	0.5143	0.0150	0.9658	0.1070
20	0.0012	0.5429	0.0173	0.9668	0.1059

		CURRENT IMPACT		IMPACT INDEX	
FROM	TO	AVE	STD DEV	AVE	STD DEV
-20	20	-0.0010	0.0040	0.9801	0.0152
-20	-2	-0.0008	0.0023	0.9952	0.0043
1	20	-0.0001	0.0020	0.9659	0.0028

TABLE XI-126

*****SUMMARY OUTPUT FOR 60 I-15 BLOCKS WHERE B.T.A. HAD POSITIVE POSITION AFTER BLK & TICK = MINUS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	0.0018	0.4333	0.0167	1.0019	0.0170
-19	0.0005	0.4833	0.0167	1.0024	0.0217
-18	0.0049	0.4833	0.0223	1.0076	0.0327
-17	-0.0044	0.5833	0.0235	1.0035	0.0420
-16	-0.0031	0.5667	0.0176	1.0008	0.0490
-15	-0.0041	0.6000	0.0190	0.9970	0.0547
-14	-0.0049	0.7167	0.0194	0.9924	0.0605
-13	-0.0006	0.5500	0.0221	0.9920	0.0631
-12	-0.0007	0.5667	0.0201	0.9914	0.0639
-11	0.0035	0.4500	0.0165	0.9948	0.0640
-10	-0.0018	0.6333	0.0191	0.9938	0.0744
-9	0.0030	0.5000	0.0221	0.9973	0.0813
-8	-0.0034	0.5500	0.0227	0.9940	0.0821
-7	-0.0042	0.6167	0.0213	0.9899	0.0823
-6	-0.0006	0.5333	0.0231	0.9897	0.0866
-5	0.0021	0.3833	0.0201	0.9919	0.0872
-4	0.0017	0.4833	0.0168	0.9937	0.0896
-3	-0.0016	0.5000	0.0225	0.9921	0.0898
-2	-0.0017	0.5167	0.0212	0.9904	0.0900
-1	-0.0031	0.5333	0.0221	0.9879	0.0952
0	-0.0240	0.9000	0.0276	0.9656	0.1035
1	-0.0059	0.6167	0.0242	0.9595	0.0993
2	0.0009	0.5333	0.0259	0.9608	0.1031
3	-0.0006	0.4667	0.0188	0.9603	0.1030
4	-0.0001	0.5167	0.0174	0.9602	0.1031
5	-0.0016	0.5333	0.0152	0.9590	0.1060
6	0.0011	0.5000	0.0222	0.9599	0.1059
7	-0.0011	0.5000	0.0182	0.9589	0.1056
8	0.0041	0.4167	0.0201	0.9630	0.1065
9	0.0035	0.5167	0.0221	0.9665	0.1091
10	0.0006	0.5667	0.0174	0.9667	0.1065
11	-0.0005	0.4833	0.0238	0.9663	0.1071
12	0.0008	0.4833	0.0188	0.9673	0.1087
13	0.0022	0.3833	0.0156	0.9693	0.1080
14	-0.0016	0.5000	0.0159	0.9675	0.1054
15	-0.0042	0.6000	0.0187	0.9637	0.1070
16	-0.0002	0.5333	0.0212	0.9639	0.1098
17	0.0024	0.4667	0.0216	0.9661	0.1086
18	-0.0020	0.6000	0.0181	0.9643	0.1099
19	0.0003	0.4833	0.0149	0.9645	0.1089
20	0.0015	0.5333	0.0161	0.9657	0.1071

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	-0.0010	0.0045	0.9791	0.0166
-20	-2	-0.0007	0.0029	0.9956	0.0055
1	20	-0.0000	0.0024	0.9637	0.0035

TABLE XI-127

*****SUMMARY OUTPUT FOR 48 I-15 BLOCKS WHERE B.T.A. TOOK NO POSITION AND TICK = MINUS *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0020	0.6667	0.0185	0.9981	0.0188
-19	0.0022	0.3542	0.0169	1.0006	0.0292
-18	-0.0022	0.5208	0.0194	0.9985	0.0322
-17	-0.0007	0.4792	0.0150	0.9979	0.0353
-16	-0.0009	0.5208	0.0152	0.9970	0.0338
-15	0.0013	0.5208	0.0158	0.9984	0.0350
-14	0.0003	0.5833	0.0154	0.9988	0.0405
-13	-0.0038	0.5417	0.0143	0.9952	0.0427
-12	-0.0024	0.6458	0.0134	0.9928	0.0434
-11	0.0033	0.4792	0.0158	0.9961	0.0444
-10	-0.0002	0.4792	0.0164	0.9960	0.0481
-9	0.0005	0.6042	0.0182	0.9967	0.0497
-8	-0.0038	0.5625	0.0116	0.9928	0.0484
-7	0.0026	0.5208	0.0180	0.9954	0.0485
-6	0.0021	0.3958	0.0143	0.9978	0.0556
-5	-0.0039	0.5625	0.0175	0.9942	0.0605
-4	0.0023	0.5000	0.0181	0.9965	0.0608
-3	-0.0073	0.6667	0.0138	0.9894	0.0628
-2	-0.0025	0.5208	0.0181	0.9872	0.0675
-1	-0.0062	0.5625	0.0203	0.9815	0.0723
0	-0.0074	0.6250	0.0231	0.9749	0.0794
1	0.0027	0.4792	0.0170	0.9774	0.0780
2	0.0029	0.4792	0.0185	0.9801	0.0780
3	-0.0011	0.5208	0.0126	0.9793	0.0809
4	-0.0039	0.5208	0.0186	0.9759	0.0848
5	-0.0014	0.6458	0.0252	0.9748	0.0870
6	0.0041	0.4375	0.0194	0.9791	0.0903
7	-0.0052	0.5000	0.0262	0.9732	0.0810
8	0.0016	0.4792	0.0218	0.9747	0.0810
9	0.0009	0.4792	0.0145	0.9757	0.0834
10	0.0037	0.4375	0.0151	0.9796	0.0860
11	0.0015	0.5625	0.0197	0.9818	0.0942
12	0.0034	0.3333	0.0156	0.9850	0.0932
13	0.0006	0.4792	0.0140	0.9856	0.0931
14	-0.0045	0.6042	0.0155	0.9814	0.0952
15	0.0012	0.4792	0.0157	0.9824	0.0945
16	0.0024	0.4167	0.0170	0.9849	0.0954
17	0.0009	0.4792	0.0161	0.9861	0.0983
18	-0.0011	0.5833	0.0160	0.9849	0.0982
19	0.0003	0.4375	0.0135	0.9855	0.1007
20	-0.0008	0.4792	0.0172	0.9849	0.1027

		CURRENT IMPACT		IMPACT INDEX	
FROM	TO	AVE	STD DEV	AVE	STD DEV
-20	20	-0.0005	0.0031	0.9875	0.0089
-20	-2	-0.0008	0.0028	0.9958	0.0037
1	20	0.0004	0.0027	0.9806	0.0045

TABLE XI-128

*****SUMMARY OUTPUT FOR 31 I-15 BLKS WHERE B.T.A. POS. AFTER BLK IS POSITIVE & AFTER 14 DAYS IS POSITIVE *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	0.0021	0.4839	0.0177	1.0022	0.0179
-19	-0.0033	0.6129	0.0142	0.9990	0.0220
-18	0.0010	0.5806	0.0184	1.0002	0.0287
-17	-0.0042	0.5484	0.0265	0.9962	0.0365
-16	-0.0030	0.5484	0.0151	0.9933	0.0397
-15	0.0020	0.4516	0.0160	0.9955	0.0439
-14	-0.0052	0.7419	0.0144	0.9904	0.0463
-13	-0.0013	0.5161	0.0243	0.9898	0.0602
-12	-0.0030	0.5484	0.0163	0.9870	0.0619
-11	0.0019	0.4516	0.0144	0.9886	0.0578
-10	0.0035	0.4839	0.0206	0.9925	0.0661
-9	0.0045	0.4516	0.0202	0.9975	0.0741
-8	-0.0045	0.6129	0.0289	0.9938	0.0829
-7	-0.0062	0.6774	0.0170	0.9879	0.0843
-6	-0.0028	0.6129	0.0237	0.9857	0.0899
-5	-0.0037	0.5484	0.0204	0.9828	0.0957
-4	-0.0003	0.5484	0.0172	0.9826	0.0965
-3	-0.0034	0.5484	0.0271	0.9794	0.0992
-2	-0.0001	0.5484	0.0193	0.9789	0.0954
-1	0.0007	0.4194	0.0256	0.9801	0.1006
0	-0.0193	0.8387	0.0220	0.9627	0.1100
1	-0.0106	0.6452	0.0234	0.9528	0.1112
2	0.0058	0.5161	0.0205	0.9581	0.1104
3	-0.0007	0.5484	0.0166	0.9572	0.1076
4	-0.0035	0.6129	0.0147	0.9540	0.1090
5	-0.0053	0.6774	0.0137	0.9488	0.1083
6	-0.0001	0.6129	0.0271	0.9491	0.1123
7	-0.0015	0.4839	0.0178	0.9478	0.1126
8	0.0024	0.4194	0.0154	0.9505	0.1158
9	0.0023	0.4839	0.0275	0.9535	0.1240
10	0.0025	0.5806	0.0215	0.9546	0.1145
11	-0.0000	0.4839	0.0214	0.9547	0.1150
12	-0.0014	0.5806	0.0185	0.9534	0.1143
13	0.0031	0.3548	0.0128	0.9564	0.1151
14	-0.0047	0.5806	0.0112	0.9517	0.1131
15	-0.0045	0.7097	0.0133	0.9473	0.1122
16	-0.0032	0.5806	0.0166	0.9449	0.1167
17	-0.0006	0.4516	0.0200	0.9445	0.1182
18	-0.0053	0.6774	0.0180	0.9395	0.1172
19	0.0009	0.5484	0.0153	0.9403	0.1172
20	0.0024	0.4194	0.0174	0.9428	0.1187

		CURRENT IMPACT		IMPACT INDEX	
FROM	TO	AVE	STD DEV	AVE	STD DEV
-20	20	-0.0016	0.0044	0.9699	0.0211
-20	-2	-0.0014	0.0031	0.9907	0.0071
1	20	-0.0011	0.0038	0.9501	0.0059

TABLE XI-129

*****SUMMARY OUTPUT FOR 39 I-15 BLKS WHERE B.T.A. POS. AFTER BLK IS POSITIVE & AFTER 14 DAYS = 0 *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	-0.0001	0.4615	0.0147	1.0000	0.0149
-19	0.0012	0.4359	0.0178	1.0013	0.0208
-18	0.0054	0.4872	0.0251	1.0071	0.0346
-17	-0.0013	0.5897	0.0210	1.0061	0.0427
-16	-0.0028	0.5897	0.0183	1.0036	0.0511
-15	-0.0063	0.6410	0.0203	0.9977	0.0574
-14	-0.0037	0.6923	0.0211	0.9943	0.0641
-13	0.0017	0.5641	0.0199	0.9957	0.0662
-12	0.0023	0.5897	0.0236	0.9981	0.0605
-11	0.0012	0.5385	0.0181	0.9994	0.0630
-10	-0.0061	0.7179	0.0177	0.9940	0.0727
-9	0.0024	0.4872	0.0217	0.9968	0.0780
-8	-0.0013	0.5385	0.0244	0.9953	0.0753
-7	-0.0010	0.5385	0.0229	0.9944	0.0754
-6	0.0001	0.5385	0.0200	0.9946	0.0774
-5	0.0048	0.3333	0.0172	0.9990	0.0726
-4	0.0028	0.4103	0.0175	1.0021	0.0773
-3	-0.0018	0.4615	0.0168	1.0002	0.0750
-2	-0.0026	0.5128	0.0211	0.9977	0.0777
-1	-0.0032	0.5897	0.0190	0.9951	0.0848
0	-0.0248	0.8718	0.0310	0.9717	0.0927
1	-0.0000	0.5385	0.0273	0.9710	0.0863
2	-0.0044	0.5641	0.0275	0.9674	0.0921
3	0.0009	0.3846	0.0196	0.9683	0.0931
4	0.0045	0.4359	0.0191	0.9728	0.0934
5	0.0029	0.4103	0.0156	0.9762	0.1000
6	-0.0008	0.4872	0.0160	0.9750	0.0955
7	-0.0013	0.5128	0.0184	0.9735	0.0938
8	0.0043	0.4615	0.0222	0.9777	0.0935
9	0.0009	0.5897	0.0164	0.9783	0.0919
10	-0.0008	0.5641	0.0160	0.9776	0.0941
11	-0.0001	0.4615	0.0241	0.9779	0.0971
12	0.0020	0.4615	0.0173	0.9802	0.0998
13	0.0021	0.4103	0.0176	0.9821	0.0993
14	0.0018	0.3846	0.0173	0.9835	0.0949
15	-0.0037	0.5385	0.0203	0.9803	0.0983
16	0.0023	0.4615	0.0224	0.9826	0.0990
17	0.0040	0.4615	0.0211	0.9862	0.0961
18	0.0011	0.5641	0.0166	0.9872	0.0965
19	-0.0011	0.4872	0.0149	0.9860	0.0949
20	0.0002	0.6410	0.0174	0.9859	0.0916

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	-0.0004	0.0048	0.9881	0.0117
-20	-2	-0.0003	0.0032	0.9988	0.0041
1	20	0.0007	0.0024	0.9785	0.0061

TABLE XI-130

*****SUMMARY OUTPUT FOR 124 I-15 BLOCKS WHERE SPECIALIST BOUGHT STOCK *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	0.0017	0.5323	0.0210	1.0019	0.0217
-19	-0.0008	0.4758	0.0178	1.0012	0.0245
-18	0.0028	0.4839	0.0206	1.0043	0.0343
-17	-0.0025	0.5484	0.0202	1.0020	0.0417
-16	-0.0031	0.5806	0.0159	0.9991	0.0443
-15	-0.0004	0.4919	0.0171	0.9988	0.0469
-14	-0.0018	0.6290	0.0174	0.9972	0.0511
-13	-0.0015	0.5161	0.0185	0.9959	0.0537
-12	0.0001	0.5887	0.0186	0.9961	0.0550
-11	0.0022	0.5081	0.0160	0.9983	0.0553
-10	-0.0011	0.5565	0.0177	0.9977	0.0623
-9	0.0027	0.4758	0.0199	1.0008	0.0685
-8	-0.0021	0.5484	0.0197	0.9988	0.0706
-7	-0.0019	0.5726	0.0193	0.9969	0.0695
-6	0.0005	0.5000	0.0203	0.9977	0.0726
-5	-0.0014	0.5161	0.0183	0.9964	0.0736
-4	0.0031	0.4597	0.0184	0.9997	0.0759
-3	-0.0023	0.5645	0.0211	0.9976	0.0783
-2	0.0002	0.4919	0.0201	0.9979	0.0808
-1	-0.0041	0.5403	0.0219	0.9943	0.0861
0	-0.0122	0.6935	0.0287	0.9835	0.0971
1	-0.0012	0.5161	0.0211	0.9821	0.0955
2	0.0021	0.5081	0.0228	0.9843	0.0975
3	-0.0003	0.5000	0.0161	0.9843	0.0997
4	-0.0014	0.5403	0.0176	0.9834	0.1049
5	-0.0010	0.5645	0.0216	0.9828	0.1076
6	0.0031	0.4758	0.0213	0.9861	0.1109
7	-0.0027	0.5000	0.0216	0.9831	0.1070
8	0.0029	0.4758	0.0199	0.9858	0.1061
9	-0.0005	0.5806	0.0185	0.9855	0.1076
10	-0.0008	0.5806	0.0173	0.9844	0.1050
11	-0.0006	0.5161	0.0215	0.9841	0.1075
12	0.0017	0.4032	0.0166	0.9860	0.1090
13	0.0008	0.4597	0.0164	0.9868	0.1103
14	-0.0008	0.5081	0.0148	0.9860	0.1099
15	-0.0023	0.5806	0.0172	0.9839	0.1106
16	0.0008	0.5000	0.0200	0.9849	0.1121
17	0.0010	0.4758	0.0193	0.9861	0.1140
18	-0.0016	0.6048	0.0173	0.9848	0.1163
19	-0.0002	0.4839	0.0151	0.9845	0.1156
20	-0.0002	0.5242	0.0162	0.9843	0.1150

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	-0.0006	0.0026	0.9914	0.0077
-20	-2	-0.0003	0.0020	0.9989	0.0024
1	20	-0.0001	0.0016	0.9847	0.0018

TABLE XI-131

*****SUMMARY OUTPUT FOR 58 I-15 BLOCKS WHERE SPECIALIST & B.T.A. HAD POSITIVE POS AFTER BLOCK *****

DAY	AVERAGE CURRENT IMPACT	PERCENT NEGATIVE	STANDARD DEVIATION	AVERAGE IMPACT INDEX	STANDARD DEVIATION
-20	0.0005	0.4828	0.0168	1.0006	0.0170
-19	-0.0019	0.5690	0.0173	0.9988	0.0224
-18	0.0054	0.4828	0.0222	1.0044	0.0331
-17	-0.0042	0.5690	0.0237	1.0005	0.0416
-16	-0.0037	0.5862	0.0172	0.9971	0.0475
-15	-0.0024	0.5345	0.0188	0.9950	0.0531
-14	-0.0049	0.7241	0.0193	0.9905	0.0581
-13	-0.0000	0.5172	0.0224	0.9906	0.0613
-12	-0.0004	0.5862	0.0215	0.9904	0.0631
-11	0.0031	0.4828	0.0165	0.9934	0.0626
-10	-0.0022	0.6207	0.0196	0.9919	0.0725
-9	0.0053	0.4138	0.0213	0.9977	0.0801
-8	-0.0046	0.5690	0.0234	0.9933	0.0812
-7	-0.0042	0.6379	0.0215	0.9892	0.0810
-6	-0.0014	0.5862	0.0233	0.9883	0.0852
-5	0.0013	0.4310	0.0205	0.9897	0.0861
-4	0.0002	0.4828	0.0173	0.9901	0.0891
-3	-0.0015	0.5172	0.0224	0.9886	0.0894
-2	-0.0012	0.5172	0.0216	0.9873	0.0886
-1	-0.0026	0.5345	0.0230	0.9853	0.0944
0	-0.0257	0.8793	0.0282	0.9616	0.1029
1	-0.0048	0.5690	0.0244	0.9566	0.0990
2	0.0006	0.5690	0.0266	0.9576	0.1030
3	0.0005	0.4483	0.0169	0.9581	0.1030
4	0.0010	0.5345	0.0164	0.9593	0.1055
5	-0.0015	0.5345	0.0158	0.9583	0.1088
6	0.0010	0.5172	0.0213	0.9592	0.1098
7	-0.0002	0.4655	0.0179	0.9590	0.1090
8	0.0033	0.4310	0.0197	0.9624	0.1109
9	0.0019	0.5690	0.0234	0.9646	0.1142
10	0.0004	0.5862	0.0195	0.9644	0.1099
11	-0.0007	0.4828	0.0240	0.9639	0.1111
12	0.0006	0.5000	0.0186	0.9647	0.1128
13	0.0023	0.4138	0.0162	0.9669	0.1129
14	-0.0001	0.4483	0.0151	0.9664	0.1096
15	-0.0051	0.6034	0.0176	0.9616	0.1099
16	0.0015	0.5172	0.0207	0.9634	0.1125
17	0.0007	0.4828	0.0208	0.9642	0.1129
18	-0.0026	0.6207	0.0180	0.9618	0.1138
19	-0.0005	0.5000	0.0154	0.9612	0.1128
20	0.0010	0.5517	0.0170	0.9619	0.1102

FROM	TO	CURRENT IMPACT AVE	CURRENT IMPACT STD DEV	IMPACT INDEX AVE	IMPACT INDEX STD DEV
-20	20	-0.0011	0.0047	0.9771	0.0166
-20	-2	-0.0009	0.0030	0.9936	0.0051
1	20	-0.0000	0.0022	0.9618	0.0035

E. Summary and Conclusions

One of the most dramatic impacts of institutionalization on the securities markets has been the growth of block trading. Theoretically, a block trade is a securities transaction that cannot be executed in the exchange auction market in the normal course. Since this definition is not workable for purposes of statistical analysis, data were collected in terms of the size of the transaction—10,000 shares ($400,000 of a $40 stock) for the New York Stock Exchange ("NYSE") and 2,000 shares ($80,000 of a $40 stock) for the regional stock exchanges and the third market. In general, the data cover the full year 1968 and the first three quarters of 1969. The findings and conclusions primarily refer to that time period.

1. Description of Block Trading

a. *NYSE*

About 65 percent of the total volume in transactions of 10,000 or more shares involving common stocks listed on the NYSE is executed on that exchange. As an important market factor on the NYSE, block trading is a relatively recent phenomenon. From the last quarter of 1964 to the third quarter of 1970 it increased almost elevenfold in absolute magnitude, and its share of total NYSE volume septupled (from 2.1 to 14.8 percent). The number of stocks involved in NYSE block trades varies substantially from day to day.

Block trades on the NYSE usually involve numerous participants and often numerous institutional participants. There are usually fewer participants on the side that initiates the trade ("active side") than on the other side ("passive side"). The broker-dealer primarily responsible for assembling the orders of different participants ("block trade assembler") handles the active side and all or almost all of the passive side in about one-third of all such transactions, particularly the larger ones. In block trades of $1 million or more the assembly process usually takes place initially over the upstairs communications network of the block trade assembler. There is some indication that the negotiation process by which smaller block trades of some size are assembled is somewhat more related to the floor of the NYSE, particularly to the specialist. The remaining description of NYSE block trades will be limited to those of $1 million or more, unless otherwise noted. Trades of this size represent over two-thirds of the total dollar volume in all NYSE transactions of 10,000 or more shares.

The typical block trade is initiated by an institution that wishes to purchase or sell a large quantity of stock and will accept a discount from the current market price or pay a premium in order to do so. In about three-quarters of the blocks in which the initiating side can be determined, that institution is a potential seller.

The key to assembling a block trade is to find the orders on the passive side. To offset the order of the institution initiating the trade, in the median block the block trade assembler finds one institution and five to nine other parties. On the average, however, the second institution accounts for only 39 percent of the shares on the passive side. Other customers of the block trade assembler account for 3 percent.

By further upstairs communications the block trade assembler finds other broker-dealers, primarily representing institutions, with orders for something less than an additional 14 percent of the shares. On the floor of the NYSE the block trade assembler is able to find orders for another 7 percent among the specialist's book, the odd lot dealers and other broker-dealers in the crowd. The specialist himself takes 14 percent. This leaves about 23 percent uncommitted, and the block trade assembler itself positions it.

In terms of the analysis in the preceding chapter, the net institutional trading imbalance is 31 percent, as compared with the average of 55 percent for institutional trading in random NYSE stocks. Because of their important role in offsetting imbalances in block trades the participation of the specialist and the block trade assembler that inventory part of the block ("block positioner") deserves special attention.

In part, the specialist's relatively low participation rate in block trades of $1 million or more seems to reflect his orientation to the exchange floor, away from the upstairs communications networks, where—at least initially—"the action is." On the other hand, in the smaller block trades, whose assembly is more related to the floor, the specialist's participation rate on the passive side is substantially larger while the block trade assembler's appears to be substantially smaller. In block trades of both sizes individual specialist units vary greatly in their participation rates. Some of this participation, as well as some participation for the book, is not desired by the other parties to the trade and possibly not permitted by the rules of the NYSE. In any event, there is some indication that the positions acquired by the specialist in block trades are mainly laid off through the regular round lot market in subsequent dealer transactions.

In addition to his dealer participation (for which, unlike the block positioner, he receives no full commission), the specialist receives two kinds of floor brokerage as part of the block trade. The first arises from his book's participation. Most of the time the limit orders on his book receive the benefit of the block discount or premium; sometimes they do not. Stop orders sometimes also receive disadvantageous executions. The second source of floor brokerage is payments by the block trade assembler even though it is otherwise represented at the post. In some cases these "writeouts" represent a sharing of commissions when the specialist plays an important role in the assembly process as a "finder" or a participating market-maker. In other cases, however, they cannot be explained in this manner and raise regulatory questions, particularly with respect to the independence of at least some specialists' administration of the retail market.

Positioning by the block trade assembler sometimes performs part of the market-making function when, for whatever reason, the specialist does not offset fully the public imbalance in a potential block trade. There is, however, a wide variation in the participation rates of individual block trade assemblers. In addition to actual positions, block positioners frequently make bids or offers for the entire block early in the assembly process. Such capital commitments are substantially larger than the eventual positions and are sometimes bettered in price. Contrary to the rules of the NYSE, block trade assemblers also occasionally treat shares not committed to customers at the time

of the block execution but laid off shortly thereafter as though they had never positioned them.

The combination of block positioning with investment management is troublesome. A small percentage of the customers of the block trade assembler that participate in its block trades is accounts over which it has investment discretion. A potential conflict of interest exists when a block trade assembler's discretionary accounts participate in its block trades without specific consent. Particular transactions reported to the Study appear to pose serious problems in this respect.

The block trade assembler disposes of nine-tenths of the shares positioned in transactions on the NYSE, often by using the specialist as its floor broker. The remaining shares are "laid off" on regional stock exchanges, primarily to institutions or their brokers. In all, about 70 percent of the shares positioned appears to be laid off to institutions or their brokers as a result of upstairs communications, and the remaining 30 percent appears to be laid off to the specialist or to brokers representing individuals or institutions in the regular round lot market on the NYSE floor. Thus, the block positioner is highly dependent upon efficient and inexpensive access to that market. Moreover, this dependence means than almost 30 percent of the shares in a typical block trade of $1 million or over may eventually find new owners, largely individual investors, through that market.

Block trade assemblers would normally prefer to dispose of their block positions as quickly as possible. They are limited, however, by the ability of the regular round lot market to absorb those positions and their own ability either to find additional institutional interest that was missed in their initial search or to persuade institutions that were not originally interested. Consequently, the disposition of these positions can take more than a month. On the average, only about one-eighth of the shares is laid off on the day of the block, and less than one-half is laid off during the first week. Seven percent remains at the end of a month. Moreover, the block trade assembler will sometimes actually increase its position while it is in the process of disposition. Some of these transactons, which evidence the importance of retail market prices to the block positioner, raise serious questions under existing antimanipulative provisions of the securities laws.

The length of time that positions must be held by block trade assemblers creates considerable risk. To some extent this risk may be increased by an NYSE ruling that prohibits layoffs on the same day as the block trade except at a profit or with prior permission, although the ruling does not appear to be very strictly enforced.

In any event, on their overall layoff activities, block trade assemblers suffer average trading losses (not including commission equivalents) per block trade of about one-half of one percent of the amount positioned. These losses vary with the general condition of the market. They only offset about one-fifth of the brokerage commissions on the entire trade, however, leaving a profit per block trade (before other expenses) of 2 percent of the amount positioned.

Almost as dramatic as the growth of block trading has been the decreasing concentration of the volume in NYSE-listed stocks that has resulted. Although 65 percent of the volume in transactions of 10,000 or more shares is executed on the NYSE, the 35 percent that is

not is quite important. Moreover, the proportion of the block volume that is executed in other markets is more than twice the percentage for all transactions in NYSE-listed stocks and has been growing rapidly. Indeed, this growth has continued despite the abolition of customer-directed giveups and the institution of a volume discount on all stock exchanges. The reasons for this decreasing concentration of volume and its consequences deserve careful consideration.

b. *Regional exchanges*

Regional exchange transactions of 10,000 or more shares do not differ dramatically in size distribution from NYSE transactions in this category, nor is the average price per share substantially different.

The most frequently reported reason for institutional instructions to execute block trades in NYSE-listed securities on regional stock exchanges was the availability of a better price. Other reasons given include the later trading hours of the Pacific Coast Stock Exchange, avoidance of the New York State stock transfer tax, reduction of price impacts, avoidance of undesired participation by the NYSE specialist (and possibly public orders, also), differences in public reporting and rules about commission sharing.

There is little evidence that a better price is frequently provided by the regional specialists. They play a relatively insignificant role in offsetting any imbalances involved in the trades: They participate only on the Midwest and Pacific Coast Stock Exchanges and then only to the extent of 5 and 1 percent of the shares, respectively. Moreover, over 60 percent of the shares involved are crossed by NYSE member firms that assembled the block trades through their upstairs communications systems and could easily have been executed on the NYSE or any other exchange where the securities are traded. The data indicate that the reasons for regional block executions must be found elsewhere.

The distribution of the total regional block volume among the various regional stock exchanges provides that answer. In 1968, when the Boston and Detroit Stock Exchanges had the most liberal give-up rules, they accounted, respectively, for 35 and 12 percent of the total regional share volume in transactions of 10,000 or more shares. Those exchanges do not allow institutional membership. In 1969, after the abolition of customer-directed give-ups, their percentages dwindled, respectively, to 5 and 0. The Pacific Coast Stock Exchange, which was originally the leader with respect to institutional membership, saw its percentage increase from 27 in 1968 to 52 in 1969. The percentage of the Philadelphia-Baltimore-Washington Stock Exchange stayed fairly constant, rising only from 13 to 17.

The Midwest Stock Exchange does not fit the above pattern. Although it was not especially liberal about customer-directed give-ups before 1969 and does not have any significant institutional membership today, its percentage rose from 13 in 1968 to 26 in 1969. Most of its transactions of 10,000 or more shares are reported not to be crosses, however, and the increase may represent block trades that are assembled by its specialists as floor brokers for other member firms. Moreover, its share of regional block volume has more recently declined somewhat. At the same time, the percentage of the Philadelphia-Balti-

more-Washington Stock Exchange, which is now the major regional exchange for institutional membership, has increased dramatically while that of the Pacific Coast Stock Exchange has decreased substantially.

These figures on changes in market share among the regional stock exchanges, coupled with the low participation rate for regional specialists and the high proportion of crosses (mostly by NYSE members), indicate that, with the possible exception of the Midwest Stock Exchange, considerations relating to commission rates may well be the most important reasons for regional execution of block trades in NYSE-listed securities. In this respect, institutional membership, which affords the institutional money manager an opportunity to reduce the commissions paid by its accounts (and thereby possibly obtain a better price) and/or to increase its own profits appears currently to be the most dynamic factor in regional execution of blocks.

c. *Third market*

Like regional block trades, transactions of 10,000 shares or more in the third market do not differ from those on the NYSE in size distribution or in average price per share. In the period studied, however, they did differ substantially in two important respects: the complexity of their structure and the amount of the charges made for executing them.

Third market block trades were less complex in structure, although not necessarily less "difficult," than block trades of similar size executed on the NYSE. Only 20 of the 167 third market trades of 10,000 or more shares in the sample involved more than one party on either side, and only seven involved more than two parties on either side. None of the multiparty blocks involved any substantial dealer participation by the third market firm. In all third market blocks of $1 million and over, principal-at-risk transactions by third market firms accounted for about one-fourth of the shares (as compared to a combined total of about three-eighths for the NYSE specialist and block positioner).

To some extent these differences may arise from the reluctance of institutions to trade outside the range of high and low prices for the day on the NYSE. Almost all third market blocks trade no more than one stock exchange commission away from this range and also trade somewhat nearer to the previous close than NYSE blocks. (This is also true of regional block trades.) Without the same size of discount or premium with respect to last sale that is available for NYSE block trades, it may be difficult for the third market firm to assemble the block and unattractive for it to participate itself. To the extent that this occurs, third market firms are disadvantaged rather than advantaged by not having their executions reported along with those of the NYSE.

Riskless third market block trades are sometimes confirmed on an agency basis and sometimes on a riskless-principal basis. Average agency commission rates and riskless-principal spreads for third market block trades per 100 shares were less than one-third of the then stock exchange minimum commission rates in 1968. The commissions and spreads for block trades in the third market did not change appreciably after the NYSE instituted its volume discount but were still

only slightly more than one-half of the minimum stock exchange commissions. Despite reciprocal reasons for not using the third market, banks and investment advisers (including mutual funds) are the biggest customers with respect to all third market transactions of 2,000 or more shares, the banks accounting for 30 percent of the shares and the investment advisers, for 50 percent.

All of the figures previously stated for third market block trades do not include transactions by third market firms on the NYSE or on the regional stock exchanges. There is some such trading, particularly on those regional stock exchanges to which third market firms may belong. In addition, rules of various regional exchanges are not as strict as the NYSE with respect to third market executions by member firms. Consequently, there is a significant amount of third market volume between third market firms and member firms of regional stock exchanges that do not also belong to the NYSE.

The primary reason for the execution of a transaction of 10,000 or more shares in the third market appears to be the saving in transactions charges because of the substantially smaller agency commissions and riskless-principal spreads. Other secondary reasons include the complete avoidance of public reporting, sometimes more effective execution and clearance and—in the case of some banks—an opportunity to profit by imposing a "service charge" equal to a brokerage commission.

d. *Fourth market*

The fourth market, consisting of trading by institutions directly with each other and without the use of broker-dealers, is not presently significant. The reason most frequently offered by institutions for not checking other institutions is the importance of anonymity. They do not wish to expose their interest to possible competitors. Their comparable reluctance to trade directly with issuers and issuers' pension funds may arise because of existing legal uncertainty.

e. *Automation*

Three automated systems to facilitate block trading have recently begun operation. Autex, the one most extensively used during the period studied, is primarily a communications system that supplements broker-dealers' existing upstairs communication systems. Negotiation and execution must be accomplished in the usual manner. The major users of the system are third market firms. The NYSE's competing BAS, which was not used as extensively in the period studied, performs similar functions but as a practical matter necessitates the presence of two NYSE member firms in every block trade. BAS, which has recently expanded the variety of its services, also provides for the retrieval of extensive market information. Instinet, the third system, provides for negotiation and execution as well as the location of potential participants for the passive side. During the period studied, the system was not used very extensively, and a large majority of the actual trades were with third market firms. The original design of the system has apparently proved somewhat inflexible for the negotiating process, and Instinet is presently attempting to improve it. It is too early to tell whether the negotiation and execution functions can be successfully automated for block trading.

2. Price Impacts of NYSE Block Trades

Block trading, of course, directly affects the participants in the blocks. Because of its possible price impacts, it also affects other investors who are in the market at the time, as well as all persons who rely upon the reported prices of securities transactions. The following paragraphs describe the price impacts of NYSE block trades of $1 million or more. The statistics set forth are the averages of the individual impacts of all blocks surveyed in that size category. Individual block impacts may be substantially larger or substantially smaller than the average. Moreover, because the blocks have been classified by tick, and the anxious party in zero-tick blocks cannot be readily identified, the statistics overstate the average impact of block trades. In any event, all block trades (10,000 or more shares, regardless of dollar value) cause no more than 9 percent of the large (3 percent or more) day-to-day price changes on the NYSE.

Minus-tick block trades (initiated by sellers) are accompanied by a price drop relative to the market of almost 1 percent in the prior 20 trading days (mostly in the preceding three trading days), an additional price drop of about 1 percent on the day of the block trade (as measured from the previous close to the close on the day of the block) and almost a complete return to the beginning price during the next 20 trading days if no subsequent blocks occur. The size of the decline in the closing price on the day of the block varies with the size of the block. Within the day of the block trade there is an additional price decline in the neighborhood of 0.75 percent, which is recovered before the end of the day.

The decline on the day of the block trade appears to be the liquidity cost of moving a large quantity of stock more rapidly than the regular round lot market on the floor can absorb it. The decline prior to the block may result from the "shopping" of the block during the assembly process and varies extensively from block to block. Since both declines are temporary, the institution that initiates the trade pays a price for liquidity, and the institutions and individual investors who participate on the passive side of the block seem to receive a bargain. To the extent, however, that excessive or careless shopping of the block spreads the decline over a longer period of time, or the recovery is unnecessarily prolonged, other buyers may obtain bargains at the expense of sellers.

The much smaller number of plus-tick block trades (initiated by buyers) are accompanied by a price rise relative to the market of almost 4 percent in the 20 trading days before the block (slightly over 1.5 percent in the preceding three trading days), an additional rise of more than 1 percent on the day of the block and no subsequent price return within the next 20 trading days. The size of the price change again varies with the size of the block.

Since these price rises tend to be persistent, the plus-tick blocks may well merely accelerate a repricing of the stock due to fundamental factors. Institutions and individual investors on the passive side of these blocks do not obtain bargains, but neither do they appear to be disadvantaged because they sell their stock at a persistent price. To the extent that the block accelerates the repricing process, it re-

duces the number of sellers who fail to obtain the realizable value of their securities, perhaps because of lack of knowledge or understanding of a fundamental change, and the number of buyers who benefit from this situation.

Because the block trades initiated by sellers appear to involve liquidity costs, a closer examination of the effect of participation by block trade assemblers and NYSE specialists on those costs is appropriate.

Block positioning does not appear dramatically to affect the total price impact of block trades. It does, however, substantially affect the distribution of that impact between the day of the block and the prior few days. There is evidence that block positioners shop their blocks less extensively and/or more expertly, perhaps because of their steady flow of institutional inquiries. The prior market impact of positioned blocks is only slightly more than one-third of that in blocks handled by other block trade assemblers. On the other hand, the market impact of positioned block trades on the day of the block is more than three times as great as nonpositioned blocks. The cumulative impact of the positioned block is thus about one-third greater.

Block positioning appears, however, to tend to prolong the price recovery. The block positioner in effect puts a ceiling on the price of the stock while it is disposing of its position, since any demand emerging after the block trade may be immediately filled from the block positioner's inventory. In some cases it may even drive the price lower, although the causal relationship between a further price decline and the speed of the block trade assembler's layoffs is probably mutual.

Participation in block trades by the NYSE specialist is associated with smaller price changes than is positioning by block trade assemblers. The data in this chapter are not sufficient, however, to determine which is the cause and which is the effect. That question is considered in more detail in the following chapter, as part of a broader analysis of whether the manner in which both the block trade assembler and the NYSE specialist offset imbalances minimizes avoidable temporary price impacts of block trading to the extent feasible.

APPENDICES

APPENDIX A

Description of Price Impact Tables and Figures

The results of the price impact analysis for each event (block trades in this chapter) [224] are presented in two ways: A table with the results of all the calculations and a figure that plots some of the results.

The first column of the table gives the *trading* day relative to the event day; for example, –10 is 10 trading days before the event.

The second column, the average current impact, gives the average rate of return for each day, relative to the market. This number is approximately the average difference between the percentage return for the stock and the percentage return for the market.[225] The Study used the Standard and Poor's Composite Index of 500 stocks to measure the market return.

The third column contains the proportion of the events on each day for which the current impact is negative; that is, the proportion of the events for which the price of the stock declined more than the market.

The four column is the cross-sectional standard deviation of the current impact on each day.

The fifth column, the average impact index, contains the average of cumulated current impacts for each day. It may be thought of as an unweighted price

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[224] Chapter XII.F uses the same technique for the analysis of changes in specialists' inventories.

[225] Let
$U(i, t)$ = Current impact for stock i on day t
$P(i, t)$ = price of stock
$D(i, t)$ = dividend paid on day t
$I(t)$ = market index
then

$$U(i, t) = \log \frac{P(i, t) + D(i, t)}{P(i, t-1)} - A(i) - B(i) \log \frac{I(t)}{I(t-1)}$$

A and B are parameters that may be estimated and reflect the "normal" relation between the stock and the market. B, in particular, may be thought of as a measure of volatility for the stock. Estimates of the "normal" relation were made, but there was considerable question as to their reliability. In addition, the findings were unchanged if it was asssumed the $A=0$ and $B=1$. Thus all analyses in this chapter are presented with the assumption that $A=0$ and $B=1$. (The analyses in chapter XII use estimates of A and B for each stock.) The current impact is then approximately equal to the difference between the percentage price change for the stock and the percentage price change for the market. The average impact is given by

$$\frac{\sum_{i=1}^{n} U(1, t)}{n}$$, where n is the number of stocks in the sample.

index with base one for all events in the sample.[227] More specifically it represents the value of a portfolio that follows the following investment strategy: At the beginning of the period the investor takes $1 and places equal amounts in each "event".[228] At the beginning of the next day he takes the total gain or loss relative to the market and redistributes it equally among all stocks; that is, he starts each day anew. He can be thought of as borrowing funds at the rate of appreciation of the market index in a series of one day loans, and only adding to his portfolio at the beginning of each day the excess over the loan payment.

The sixth column is the cross sectional standard deviation of the impact index on each day.

The figure that accompanies each table plots the average impact index over time. Days are on the horizontal axis; the impact index, on the vertical axis.

APPENDIX B

Calculation of Intraday Price Changes

$$E1=\left(\frac{PB+DIV}{P(-1)}-1\right)100$$

DIV = dividend paid on day 0

$$E2=\left(\frac{P(0)}{PB}-1\right)100$$

$$E7=\left(\frac{PB}{PPB}-1\right)100$$

$$U=\left(\frac{P(0)}{PE}-1\right)100$$

$$PE=(P(-1)+M)$$

$$M=\left(\frac{I(0)}{I(-1)}-1\right)\text{ percentage change in S \& P 500}$$

The directly calculated numbers in the figures are averages of $E1$, $E2$, $E7$, U and M. The derived numbers are differences of these averages. This is not completely accurate, since the difference of the averages of two ratios is not necessarily equal to the average of the difference.

---

[227] Let

$S(i,T)$ = the index for stock i on Day T

$$\sum_{i=1}^{I} U(i,t)$$

$$S(i,t) = e^{\prod_{i=1}^{T}}$$

$$\approx \prod_{i=1}^{T}[1+U(i,T)]$$

$$\approx \prod_{i=1}^{T}[1+R(i,t)-A(i)-B(i)*M(t)]$$

If $A(i)$ 0, $B(i)=1$,

$$S(i,t) = [1+R(i,t)-M(t)]$$

$$R(i,t) = \frac{P(i,t)+D(i,t)-P(i,t-1),}{P(i,t-1)}$$ the return in the stock

$$M(t) = \frac{I(t)-I(t-1),}{I(t-1)}$$ the return on the market

The average impact index for each T is then

$$\frac{\sum_{i=1}^{n}}{n}$$, where n is the number of events in the sample.

[228] Stocks which had more than one block on a day are thus weighted more heavily.

CHAPTER XII

IMPACT OF INSTITUTIONAL TRADING ON THE MARKET-MAKING FUNCTION

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CHAPTER XII

Impacts of Institutional Trading on the Market-Making Function

A. INTRODUCTION

1. The Market-Making Function

The objective of this chapter is to analyze the impact of the growth of institutional trading in common stock on the market-making function.

The attractiveness of common stocks to potential investors is enhanced if they can be reasonably confident of disposing of their holdings quickly and inexpensively. An individual or firm that regularly facilitates the transactions of others by buying and selling for its own account may perform a market-making function by providing executions that are more prompt or less costly or both.

Three categories of such firms will be considered in this chapter: exchange specialists, third market-makers and block positioners. On the New York Stock Exchange ("NYSE") and on some, but not all, regional exchanges, certain exchange members are assigned the specific responsibility of making a fair and orderly market in certain specified securities; these members are the "specialists" for the securities assigned to them. In the OTC market for listed securities, the so-called "third market," certain non-member broker-dealers attempt to attract business by making a market in NYSE-listed securities. These dealers are also market-makers. In recent years, with block trading becoming increasingly important, some dealers regularly use their own capital to facilitate the completion of block trades in securities which they do not regularly hold in inventory. These firms are "block positioners." [1]

2. Market-Making and the Public Interest

The public interest in securities markets arises in part because of a desire to assure fair, honest and efficient markets for those who participate in securities transactions. This is especially important to individual investors who may lack the knowledge and experience necessary to provide such assurance for themselves at reasonable cost. By reason of their professional expertise, institutional investors are less in need of such protection than individuals. However the increasingly important presence of institutional investors may create new problems in providing protection to individuals.

[1] Data on block trading, on block positioning and on the price impacts of blocks are included in ch. XI. Further material on the economic aspects of block positioning is contained in this chapter.

The public interest in securities transactions is not limited to those who directly participate in them. The interests of third parties may be affected by a transaction even though they do not directly participate in it. The securities prices established by transactions in securities markets, or by bids and offers in these markets, are widely disseminated. They form the basis for valuing participation in pooled investment vehicles such as mutual funds and common trust funds, for valuing shares issued or acquired in mergers, for valuing convertible securities, for determining the amounts of certain taxes, for determining the compensation of investment advisers and other categories of money managers and for determining the value of shares used as collateral for loans.

This public interest in securities markets can be evaluated by a number of criteria. Among the most important are the following:

1. *Trading efficiency.*—One aspect of trading efficiency is the cost of conducting transactions, including:

(a) The commissions and other fees, if any, that the investor pays for handling his transaction (less an adjustment for services other than execution and clearance which he receives);

(b) The costs the investor incurs directly to handle his own transactions and

(c) The cost to the investor of any unfavorable price movements induced by his trading. On a small transaction, if the last sale was at 51½ and the best available bids and offers are 51⅜ and 51⅝, respectively, the investor who submits a market order will incur a cost of ⅛ of a point (measured either from the last transaction or the middle of the current bid-ask spread). As was pointed out in chapter XI,[2] institutional investors may also induce unfavorable price movements in order to achieve prompt execution of block trades. Generally the unfavorable price movements induced by an investor's transactions will depend on the size of the transaction and the desired speed of execution

2. *Market integrity.*—Market integrity is achieved to the extent that effective regulation of market participants eliminates fraud, manipulation, abuses of trust and similar problems. Regulation in this context should be defined very broadly to include not only formal administrative procedures initiated by self-regulatory agencies and by the government but also regulation by publicity and by competition. For example, prompt reporting of transactions, as on exchange ticker tapes, may help a customer supervise the activities of the brokers and dealers handling his order or the institution managing his funds; similarly, competitive market-makers, when they exist, may provide a form of regulation for market-making activities.

3. *Pricing.*—A trading mechanism should provide usable price information to those who need it. Price information is needed to provide a basis for evaluating the terms on which purchases and sales could take place and to value assets. (Asset valuation is required for tax purposes, to determine the price of shares in collective investment funds and for similar purposes.)

In an "ideal" market, securities prices would change promptly in response to new information about the value of the security. At other

[2] See ch. XI.D, above.

times the price would not change. Since the occurrence of "new information" is, by definition, unpredictable, the price changes in this ideal market would appear to be random.

In the real world, deviations from this ideal model may be inevitable, but it is desirable that the deviation be as small as possible. The type of deviation from randomness indicates the source of the deviation from the ideal: A tendency for price changes in one direction to be followed by price changes in the same direction indicates that price changes lag in response to new information. A tendency for price changes in one direction to be followed by price changes in the opposite direction reflects the presence of transaction costs.

When reported prices are significantly distorted by purely temporary trading imbalances, or when they fail to reflect new information about the value of the security promptly, the quality of the price data is reduced, and persons or governments whose decisions are based on the reported prices may be economically injured.

3. Scope of the chapter

Exchange specialists and third market dealers regularly hold inventory positions in the stocks in which they make markets. Normally they have some transactions in each of these stocks each trading day. Block positioners frequently facilitate the execution of their customers' transactions in many stocks in which they have no inventory position at the time. Normally they *do not* hold inventories or have transactions each day in each of the stocks in which they make markets. Most of the empirical analyses reported in this chapter are derived from data on the daily closing inventory positions in particular stocks of the exchange specialists and third market dealers who regularly hold inventories in these stocks. The decision to restrict attention to closing inventories was made in the light of the burdens that would have been imposed on respondents if they had been required to reconstruct their intra-day inventory positions and on the Study staff if it had to construct a machine readable file of intra-day prices.[3]

One objective of the Study's empirical analyses has been to determine whether market-makers contribute to reducing the magnitude of either or both of the deviations between actual and ideal markets described in the preceding section. A second, but not less important, objective has been to determine whether the extent and nature of institutional trading in a security affects a market-maker's willingness or ability to make such contributions.

The Study initially intended to examine and analyze the activities of NYSE specialists, regional specialists, third market-makers and block positioners in equal depth. To this end, virtually identical information was collected from all specialists and third market-makers; and even more detailed, although less extensive, data from block positioners. As the digestion and preliminary analyses of this data progressed, however, it became apparent that the limited resources of the Study made it impossible to analyze all of it in equal depth. Consequently, the Study analyzed the data about the NYSE specialists

[3] This chapter does not deal with persons or firms who perform purely agency functions within the market; such functions are considered in ch. XIII.

and member firm block positioners in very great depth (and even collected some additional supplementary data about them) while it analyzed the data about the regional specialists and third market-makers in less detail. This difference in treatment should not be construed as a judgment that there are more problems in the activities of NYSE specialists and member firm block positioners than in those of the other markets. It was merely an allocation of the Study's limited resources based on the relative importance of the two groups to certain aspects of trading by institutional investors.

Section B of the chapter describes the characteristics of the data used. Section C describes the size of market-makers' inventory positions and the magnitude of day-to-day changes in the closing positions of NYSE specialists. Section D relates the change in a market-maker's inventory on a given day to the change in price on that day and on the preceding and following days. Section E describes the characteristics of day-to-day changes in stock prices and relates such changes to the activity of market-makers and institutions. Section F focuses on unusual position changes by exchange specialists to determine if there are typical patterns of price change over the weeks preceding and following the unusual position change. Section G considers the income and return on investment of NYSE specialist units. Section H considers the allocation of securities to NYSE specialist units. Section I deals with the economics of block positioning. Section J summarizes the findings and conclusions of the chapter.

B. CHARACTERISTICS OF THE DATA

1. Selection of Securities and Respondents

A special sample of NYSE listed securities was used for the studies described in this chapter of the effects of institutional trading on market making. The sample, a list of 93 securities designated List L, is not a random sample.[4] The selection procedure was designed to produce considerable variation regarding the amount of trading in the securities, the amount of institutional interest in the securities and the characteristics of the market-makers in the securities. A detailed description of the sample selection procedure is contained in appendix A to this chapter.

Since the sample of securities used is selective, not random, it is invalid to generalize from characteristics of the sample to characteristics of the population of NYSE-listed issues. For example, the daily average value per stock of the closing positions of all specialists and third market makers for List L securities during September, 1969, was $408,634. On the other hand, the value of the average position of those market makers in all NYSE-listed securities was undoubtedly less than this amount, because the sample of securities is heavily weighted with high volume stocks.

The sample was designed to provide a basis for generalizations about the *relationship* between characteristics of the trading in a security and characteristics of market-maker behavior. During September 1969, for example, the average daily position per stock of all

[4] A list of the specific securities included is contained in Supplementary Volume II.

exchange specialists and third market-makers in the most active group of stocks on List L was $509,248; the comparable figure for the least active group of stocks was $52,617. It is probable that this *relationship* between the size of these market-makers' positions and the volume of trading in a security is representative of the relationship that would be found for comparable issues that did not happen to be selected for study.

For each security included in List L, questionnaire Form I–13 was sent to the NYSE specialist unit in the stock, to the Boston, Midwest, Pacific Coast and Philadelphia-Baltimore-Washington Stock Exchange specialists and to every registered third market dealer. Responses were obtained from every firm active at the time the questionnaire was distributed.[5] The questionnaire was not, however, sent to block positioners, since this category of dealer does not regularly hold inventory positions in every stock in which it may be prepared to take a position. Studies of the activities of block positioners were based on data collected in other ways, described in Section B.3. Each market-maker receiving Form I–13 was asked to report its opening position on each trading day in each stock on List L. Most of the analyses in this chapter are based on these data. The period covered by the data was July 1, 1968, through September 30, 1969. At the beginning of this period, the Standard and Poor's Composite Index ("S&P Index") was 99.40, and at the end it was 93.12, having reached a peak of 108.37 on November 29, 1968. Thus, the period includes both rising and falling markets.

Form I–13 also asked respondents to report monthly data on certain items of income, by stock and month. The particular items requested varied by category of respondent. Some of these data are analyzed in section G.

2. Stock Month Categories

A primary objective of this chapter is to assess the effects of institutional trading on market-maker-activities. From Form I–1 information was available to the Study on the monthly purchases and sales of each stock on List L by the largest institutions. The monthly data on institutional trading collected by the Study were used to classify stock months on the basis of the amount and type of institutional trading in that stock during the month. It is possible that the influence of institutional trading on certain aspects of market-maker behavior could be detected only if periods shorter than a month could be classified by the amount and type of institutional trading.

A three-dimensional system was used to classify stock months. One dimension measures the dollar volume of NYSE trading in that stock month. A second dimension measures the ratio of the dollar value of institutional trading (purchases plus sales) in that stock month to NYSE dollar volume. Since the institutional trading data covers all markets, the amount of institutional trading could, and in some cases did, exceed twice the total NYSE volume. The third dimension referred to the extent of net institutional trading imbalances in that

[5] In a few instances the responses were incomplete due to misunderstanding. See app. A, below, for details. The Detroit and Cleveland Exchanges were also contacted; but specialist activity on these exchanges was inconsequential.

stock-month. This was measured as the ratio of institutional net purchases (purchases minus sales) to the dollar value of institutional trading (purchases plus sales). A ratio close to plus one would indicate that net purchases were a high proportion of institutional trading, a ratio close to minus one that net sales were a high proportion of institutional trading and a ratio of zero that institutional sales and purchases were equal.

Rather than using the values of these measures directly, each was converted to a percentile by comparison with the randomly selected NYSE issues in List A. Each stock-month was then grouped into one of three NYSE dollar volume categories, one of three institutional trading categories, and one of three parallel trading categories. The criteria for assigning a stock-month to one of these categories are summarized in Table XII–1.

3. Aggregate Data About Block Positioning

Virtually no data has previously been collected about block positioning. Consequently, in addition to the sample of block trades already discussed,[6] the Study collected aggregate data from all member firms that were known too have engaged in block positioning or believed to be reasonably likely to have done so. Since all such firms were already part of the sample of 365 broker-dealers that received Form I–61,[7] a table dealing with block positioning was included in that questionnaire. For the calendar year 1968 and for the first six months of 1968 and 1969, data were requested with respect to the number of times that the firm block positioned long, the total dollar volume of its block positioning long, the number of times that it block positioned short, the total dollar volume of its block positioning short and its gross trading profit or loss from block positioning.[8] In addition, each firm was requested to furnish the average daily closing dollar position in its block positioning account [9] for each of the months January 1968 through September 1969. These figures are the sum of the firm's long and short positions in that account rather than a netted figure.

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[6] See ch. XI.C.1b(1), above.
[7] See ch. XIII.A.2, below.
[8] The profit or loss figures encompass only the actual trading profits or losses and do not include brokerage commissions and other income items associated with block positioning, on the one hand, or interest and other associated cost items, on the other.
[9] Most block positioning firms maintain a separate account for this activity. Any firm that did not was requested to segregate those positions in its trading account that arose from block positioning and those that arose from other trading activities.

Table XII-1

Summary of Criteria for Classifying Stock Months

Classification Criteria	Category	Percentiles Included
NYSE Dollar Volume	High	81-100
	Medium	31-80
	Low	1-30
Institutional Trading	High	81-100
	Medium	31-80
	Low	1-30
Net Institutional Trading Imbalance*	Net Buying	71-100
	Even	21-70
	Net Selling	1-20

* Regardless of percentile, stock months with only institutional buying were classified as net buying, and stock months with only institutional selling were classified as net selling.

A supplement to Form I–61 was sent to nine of the 10 [10] largest member firm block positioners to obtain similar data on block positioning during the full year 1969 and the first six months of 1970 and to collect data on commission equivalents [11] on shares positioned, commissions earned on block trades involving positions and total commissions earned by the block trading department of the firm.

C. INVENTORY POSITIONS AND ACTIVITY OF SPECIALISTS AND THIRD MARKET MAKERS

1. Average Inventory Positions

a. *Value of gross positions in relation to dollar volume and institutional trading*

Although specialists and registered third market makers also provide brokerage services which are important, the Study has concentrated on their dealer function. Thus, it seems appropriate to begin the empirical section of this chapter by describing the average inventory positions of these market makers and by relating the magnitudes of those inventories to the markets in which they operate, the volume of trading in the stock, the proportion of that trading done by institutions and similar factors.

The data in this section of the chapter are primarily descriptive. It would be a mistake to attach too much importance to the average dollar value of a market maker's inventory position. Variations in the magnitude of these inventories are a much more significant indication of the extent to which a market maker uses its inventories to facilitate the executions of its customers. Day-to-day variations in closing inventories will be considered in detail in section D.

For each stock in List L, each market-maker reported its daily position in shares.[12] The dollar value of the gross position for a particular market-maker is the number of shares held (long or short) multiplied by the closing price on that day. The gross position for a group of market-makers is the sum of their individual gross positions, long plus short. Thus, if there were two market-makers, one of which had a long position of 100 shares and the other of which had a short position of the same amount, and if the closing price was $50 a share, the gross position for the two market-makers would be $10,000.

Table XII–2 shows the average value of the daily gross positions per stock per month for each type of market. Each row refers to a different dollar volume category of stocks. A stock day was included in this average only if the NYSE was open for trading on that day, and at least one market-maker in some market had a position in that stock on that day. If the average value of the gross positions for each market-maker had been calculated only for those days in which it was active in a particular stock, the average value per stock per day for NYSE specialist units would be essentially unchanged, but the average value per stock per day for regional exchange specialists and third market-makers would be higher.

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[10] One of the 10 is no longer an exchange member. It is active block positioning in the third market.

[11] Member firm block positioners are required to impose a charge equal to a stock exchange minimum commission on the positioned portion of a block trade as well as on the agency portion. But, because of some apparent doubt whether New York State law permits a principal to charge a brokerage commission, some block positioners label the charge a commission equivalent rather than a commission. Neither the NYSE nor any of the block positioners that were asked was able to provide any specific legal authority for this custom.

[12] The data in this section and other sections are based only on stocks held in the market maker's trading account. Any stock in the segregated investment accounts of exchange specialists is not included. Inventories were reported on a trade date basis.

Table XII-2

Average Value of Daily Gross and Net Positions per Stock For Each Type of Market By NYSE Dollar Volume Category

NYSE Dollar Volume Category	NYSE Specialists	Regional Exchange Specialists	Third Market Makers	Gross Positions All Markets	Net Positions All Markets	Net/Gross Positions
High	$412,129	$111,703	$199,726	$723,562	$547,549	.70
Medium	$182,277	$ 25,902	$ 25,317	$233,498	$212,200	.82
Low	$ 53,649	$ 10,987	$ 6,586	$ 71,222	$ 64,813	.89

Source: App. B, table XII-B-1

For all types of market-makers, there is a strong tendency for the average gross position to be larger in stocks that are in higher NYSE dollar volume categories. The degree of the sensitivity to NYSE volume varies somewhat from market to market. NYSE specialists' inventories in high dollar volume stocks are about eight times as large as in the low dollar volume stocks, while regional exchange specialists' inventories in the high volume category stocks are about 10 times as large. The third market-makers are even more sensitive to NYSE volume: Their inventories in high dollar volume stocks are approximately 30 times their inventories in the low dollar volume stocks.

In the case of regional exchange specialists and third market dealers, the sensitivity to volume reflected in this table results from the combined effects of two factors. First, these market-makers are more likely to make a market in a particular issue if the volume of trading in it is high. Second, in any given issue in which they make a market, their average inventories are likely to be larger the higher the volume in the issue. The sensitivity of NYSE specialists could not be affected by the first factor since only NYSE-listed issues were included in the sample.

Table XII–3 shows the average daily gross positions when stock months are classified both by NYSE dollar volume category and by institutional trading category.[13] Consider first the effect of institutional trading on high dollar volume stocks. For all market makers in these stocks there is a very strong direct relation between the size of the market maker's position and the proportion of institutional trading in that stock. For example, in those high volume stock months in which institutional trading was most important, NYSE specialists' positions averaged about $428,000. In high volume stock months in the medium institutional trading category, the NYSE specialists' positions averaged $341,000. For high dollar volume stocks, the shift from the intermediate to the high institutional trading category is associated with an *increase* in the positions of *all* market makers.

[13] In this and most subsequent summary tables in this chapter, the low dollar volume category stocks have been omitted because there were not enough observations in this category to provide a valid basis for generalization.

Table XII-3

Average Value of Daily Gross and Net Positions per Stock For Each Type of Market By NYSE Dollar Volume Category and by Institutional Trading Category

NYSE Dollar Volume Category	Inst'l Trading Category	NYSE Specialists	Regional Exchange Specialists	Third Market Makers	Gross Positions All Markets	Net Positions All Markets	Net/Gross Positions
High	High	$427,659	$116,598	$224,586	$768,849	$570,980	.69
High	Medium	$340,934	$ 87,206	$ 67,633	$495,776	$436,989	.75
Medium	High	$124,847	$ 32,016	$ 56,272	$213,136	$183,319	.80
Medium	Medium	$185,180	$ 24,839	$ 19,982	$230,002	$209,837	.82

Source: App. B, table XII-B-2

The effect of institutional trading on the dollar value of NYSE specialists' positions in the medium dollar volume category is reversed: An increase in the proportion of institutional trading is apparently associated with a decrease in the average size of NYSE specialists' positions.[14] For regional exchange specialists and third market dealers, the positive relationship between average value of positions and proportion of institutional trading which is observed in high dollar volume stock months also appears in the medium dollar volume categories.

b. *Comparison of net and gross inventory positions*

The average net positions per stock of all exchange specialists and third market-makers and the ratio of the net to gross positions appear in Tables XII–2 and XII–3. These data show the extent to which the positions of the different market-makers tend to be on the same side of the market. If all respondents for a particular stock were long or if all were short on a particular day, the net position would be equal to the gross position. At the other extreme, if the number of shares held in long positions by some respondents equaled the number of shares held in short positions by the others, the net position over all markets would be zero. Thus, the ratio of net to gross positions could range from zero to one on any given day.[15] The ratio shown in the Table is an unweighted average of the individual ratios for each stock day.

For an average stock day in the high NYSE dollar volume category, the value of the gross position of all respondents was approximately $723,000 per stock. The average net position per stock day during this period was approximately $547,000. The unweighted average of the

[14] Both conversations with knowledgeable individuals and other analyses of the data that are described later in the chapter strongly suggest the existence of a positive rather than negative relation between the average value of NYSE specialists' inventory and the proportion of institutional trading. If the data for the medium institutional trading category are further refined by classifying the specialist units to which stocks are assigned into three activity categories, a positive relationship between institutional trading and average value of positions is observed for two out of three categories (Table XII–6). The apparent negative relation observed in Table XII–3 may be due to sampling error.

[15] If the net position was zero and the gross position amounted to 100,000 shares, the ratio would be zero over 100,000 or zero. If all respondents were long in the above example (or if all were short), the ratio would be 100,000 over 100,000 or plus one. A minus ratio could not occur, by definition.

daily ratio of net to gross positions was 0.70. If each day's ratio was weighted by the size of the gross positions on that day, the weighted average ratio would be 0.76.[16] The fact that the weighted ratio is higher than the unweighted indicates that the ratio tends to be higher on days when these market-makers as a group hold larger inventories. On an average stock day the NYSE specialist unit held an inventory of $412,000 in a high NYSE dollar volume stock, about 57 percent of the value of the gross positions for that stock in all markets. All the remaining market-makers held a total of about $311,000, 43 percent of the total. Of the inventories in other markets, approximately $198,000, or 64 percent, was on the same side of the market as the NYSE specialist unit.

c. *Size distribution of NYSE specialists' positions*

Table XII–4 shows the percentage of days that NYSE specialists' positions fell into various size ranges. For this purpose, stock months have been classified by NYSE dollar volume category.

The tendency for NYSE specialist units to prefer long to short positions is emphasized by this data. For every size range, long positions are more common than short positions. For example, in high dollar volume category stocks, long positions of $600,000 or more occur on over 15 percent of the stock days. Short positions of the same magnitude occur on only 1.5 percent of the days.

Investors are normally willing to hold a long position in a stock only if the stock's current market price reflects a positive return commensurate with the risk involved. To the extent that market-makers have expectations similar to those of investors, market-makers should expect a positive return (in the form of dividends and price appreciation) from holding a long position and a negative return from holding a short position. In these circumstances, it is not difficult to understand why NYSE specialists normally would attempt to hold long positions and would be willing to hold large short positions only when there were very special reasons for doing so.

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[16] The unweighted average was found by taking the net to gross position ratio for each day and determining the average day's ratio. The weighted average reflects the ratio of the total net positions and the total gross positions for the entire stock sample and period.

Table XII-4

Percentage Distribution of Days by Size of NYSE Specialists' Positions And by NYSE Dollar Volume Category

Position (Thousands of Dollars)	NYSE Dollar Volume Category		
	High	Medium	Low
	(percent of days)		
Long			
800 or more	11.6	4.6	
600 to 799	3.8	1.1	
400 to 599	6.0	3.3	
200 to 399	13.1*	10.8	4.2
100 to 199	12.8	13.3*	8.5
50 to 99	9.7**	12.8	23.0*
10 to 49	11.0	19.0**	30.9**
0 to 9	2.7	6.3	13.3*
Even	2.5	4.0*	3.3
Short			
0 to 9	2.3*	4.0	6.1
10 to 49	7.3	9.5	3.6
50 to 99	5.3	5.8	7.0
100 to 199	5.3	3.9	
200 to 399	3.5	1.3	
400 to 599	1.6	0.1	
600 to 799	0.7		
800 or less	0.8		
Total Stock Days (percent)	100.0	100.0	100.0
Average Position	+326,548	+161,554	+42,374

* Upper or lower quartile

** Median

Source: App. B, table XII-B-4

2. Inventory Activity of NYSE Specialists

a. *Relation to dollar volume and institutional trading*

This section describes the average net changes from day-to-day, of NYSE specialists' closing inventory positions, hereafter termed "inventory activity". Since systematic data were collected only on closing inventories, the activity measure is based only on day-to-day changes in them.[17]

The magnitude of inventory activity for a particular day depends on the specialist's net purchases or sales (in shares) and the closing price for that day. For example, if the specialist was long 200 shares on a particular day when the price closed at $50 per share, and if on the previous day his closing position had been short 100 shares, his net purchase during the day would be 300 shares. His inventory activity would be 300 times the closing price, in this case $15,000. The inventory activity would also be $15,000 if the specialist had been long 100 shares on the previous day and was short 200 shares on the day in question. In the first example, the specialist's purchase exceeded his sales by 300 shares. In the second example his sales exceeded his purchases by 300 shares. (The value of inventory activity does not depend on the previous day's closing price.)

Table XII-5 shows average inventory activity for stock months classified by NYSE dollar volume and institutional trading cate-

[17] Purchases that were offset by sales in the same day would not be reflected in this inventory activity measure. Intra-day shifts in a market-maker's inventory position probably play an important role in its market-making function. Data on such intra-day shifts were not collected by the Study because of resource limitations.

Monthly data on the total purchases and sales of market-makers were available to the Study. Time did not permit the analysis of this data. The magnitude of a market-maker's total monthly purchase and sales, however, provides little information on the extent and timing of the shifts in his inventories within the month.

Separate closing inventories were collected for the specialist's trading, investment and arbitrage accounts. Since investment accounts are subject to the specialist's market making obligations, a comprehensive analysis of their inventory activity would include those accounts as well. NYSE Rule 104.12. Because of time limitations, the Study analyzed only the trading accounts. Changes in investment account closing inventories occurred in so few stock months, however, that the Study does not believe that their inclusion would have significantly changed the results.

gories. Within each dollar volume category there is a direct relationship between institutional trading and inventory activity. Similarly, within each institutional trading category, there is a direct relationship between NYSE dollar volume and inventory activity. An increase in the volume of trading or in the proportion of that trading done by instituitons is associated with an increase in the level of NYSE specialists' inventory activity.

b. *Classification of NYSE specialists by inventory activity*

To examine the effects of differences in inventory activity among NYSE specialist units, the latter were classified into three categories based on their average daily net inventory activity. Only stock months in the high NYSE dollar volume category were considered in classifying specialist units. No arbitrary criteria were used in selecting the categories. The 30 specialist units were simply ranked according to average daily net inventory activity and then divided into three groups of 10. The resulting cutoffs were that the top third all had average net inventory activity exceeding $155,000 per day, and the lower third all had net activity less than $90,000 per day.[18]

Table XII–6 shows the average values of daily net inventory activity and closing positions of NYSE specialist units classified by inventory activity category, with stock months classified by dollar volume and institutional trading categories.

Since this classification of specialist units into three equal groups will be used for many subsequent analyses, one important point about it should be noted at the outset. The classification is designed to show systematic differences in various characteristics of NYSE specialist behavior as related to inventory activity. It does not mean that there are necessarily three equal groups of specialists on the NYSE, or

[18] See app. B, Table XII–B–31, below.

Table XII-5

Average Value of Inventory Activity
For New York Stock Exchange Specialists
By Dollar Volume and Institutional Trading Categories

NYSE Dollar Volume Category	Institutional Trading Category	Inventory Activity
High	High	$163,432
High	Medium	83,482
Medium	High	52,633
Medium	Medium	43,280

Source: App. B, table XII-B-3

that the relationships resulting from the classification consistently apply to every specialist unit within each group. The classification is intended only as a rough tool to indicate systematic tendencies.

The tendency, described earlier, for inventory activity to be directly related to dollar volume, and within each dollar volume category to be directly related to the proportion of institutional trading, holds for each of the three specialist activity categories. Furthermore, in each of the four stock month categories, there is a strong tendency for the inventory activity category of the NYSE specialist unit to be related to the average level of its inventory position. In each stock month category, the average inventory position of NYSE specialist units in the high inventory activity category is larger than for specialist units in the medium category, and the average inventory position of the units in the medium inventory activity category is larger than for specialist units in the low activity category.[19]

The classification of NYSE specialist units was based only on their average daily net inventory activity in high dollar volume stocks. Since there are persistent and consistent differences between these specialist categories with respect to inventory activity in medium volume stocks as well and also with respect to the average levels of their inventory positions in all four categories of stocks, the conclusion seems highly likely that this method of classifying NYSE specialist units reflects a persistent difference in some characteristic of the specialist units' behavior. This conclusion is further borne out by other analyses that will be presented later in this chapter.[20]

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[19] An exception is that in the medium dollar volume, high institutional trading category low activity units have slightly higher inventories than medium activity units.

[20] See secs. D.2.e, E, F.4 and G, below.

Table XII-6

Average Values of Inventory Activity and of Closing Positions
For New York Stock Exchange Specialists
With Stock Months Classified
By Dollar Volume and Institutional Trading Categories
And NYSE Specialist Units by Activity Category

NYSE Dollar Volume Category	Institutional Trading Category	Inventory Activity Category of NYSE Specialists	Average Inventory Activity (1,000's of Dollars)	Average Value Of Closing Positions (1,000's of Dollars)
High	High	High	242	835
		Medium	132	220
		Low	85	118
High	Medium	High	96	628
		Medium	86	188
		Low	59	122
Medium	High	High	60	164
		Medium	56	126
		Low	43	134
Medium	Medium	High	49	325
		Medium	40	122
		Low	39	101

Source: App. B, table XI-B-3

D. NET INVENTORY CHANGES OF SPECIALISTS AND THIRD MARKET-MAKERS

1. Significance of Net Inventory Changes

The inventories of market-makers are always small relative to the value of the stock outstanding. It is not the average magnitude of these inventories but the size of their changes from time to time that gives them their special importance. These inventory changes reflect the combined effect of both the behavior of the market-maker, particularly with respect to its willingness to deal, and the behavior of investors, particularly with respect to the importance they attach to speed of execution. This section will consider the relation between the day-to-day inventory changes of market-makers and the price changes on that day and on the preceding and following days.

One important function of a market-maker is to help reduce temporary price fluctuations by offsetting temporary imbalances in public demand and supply. A market-maker's activity can be said to be stabilizing if it buys when prices are declining and sells when prices are rising. This relationship between day-to-day price changes and inventory changes is analyzed in this section of the chapter.

Although the stabilizing test described above is helpful, it is not without limitations. No one measure can provide a completely adequate description of how a market-maker varies his inventories in relationship to changes in price.[21] The fundamental problem is that prices do not tend to move smoothly from one level to another.

Prices may follow a rising trend for several hours in the day and then decline in the last hour to a level slightly above the previous close. A specialist could have been a persistent seller during the hours when prices were rising and a persistent buyer during the last hour. A detailed study of his behavior during the day might convincingly demonstrate that his behavior was stabilizing. Yet, if he sold less during the first several hours then he bought at the end, a comparison of the close-to-close price change with the day-to-day change in his closing inventory might incorrectly suggest apparently destabilizing behavior. It is also true, for similar reasons, that this test could classify market-maker's behavior as stabilizing on a particular day when a detailed analysis would reveal that it was predominantly destabilizing.

Possible misclassifications, of the type referred to above, mean that a comparison based only on changes in closing prices and changes in closing inventories provides only an imperfect indication of the actual effects of the market-maker's behavior on any particular day. (Nevertheless, misclassifications probably occur less frequently when the magnitudes of both the price changes and the inventory changes are large.) The purpose of the analysis presented in this chapter, however, is not to characterize particular days, but rather to characterize the typical behavior of various groups of market-makers under various market conditions. For this purpose, it is not necessary that the test used be accurate on every day. What is required is that the test be more likely to classify the behavior on a particular day correctly than incorrectly. Since detailed information on within day price changes and within day changes in market-makers' inventory positions were not

[21] For an evaluation of different measures of stabilizing behavior see *Report of Special Study of Securities Markets of the Securities and Exchange Commission* ("Special Study") H. Doc. No. 95, 88th Cong., 1st Sess. (1963), pt. 2, pp. 101–06.

collected, the Study could not directly verify that this requirement was met. On the other hand, the Study has no basis in fact or theory to doubt that days on which the market-makers' inventory changes are opposite to the direction of the change in closing prices, the market-makers' behavior is more often stabilizing than on days on which their inventory changes are in the same direction as the price change.

The use of closing prices and closing inventory positions was dictated by the immense practical problems of obtaining data on intra-day prices and inventories. Another consideration was that both closing prices and closing inventories are peculiarly important. Closing prices are widely publicized and are normally used in asset valuations. Closing inventories are particularly important to market-makers, because cash settlements of securities transactions are based on these closing positions. Inventory increases during a day that are offset later in the same day generate cash payments or receipts only as to the difference between the purchase and sales prices. But a change in closing inventories generates a subsequent flow of cash, even though the change is offset by an opposite change on the following day.

In spite of the peculiar importance of closing prices to investors and of closing inventories to market-makers, the period from the close of trading on the day to the close of trading on the next day is not the ideal period of observation for a study of market-makers' stabilization behavior. It would be desirable to have a period of observation which corresponds to the length of time during which a temporary imbalance persists. For example, if a temporary imbalance of public buy orders persists for an hour and is followed by a temporary imbalance of public sell orders also lasting an hour, then hourly observations would be desirable. Since temporary imbalances are not all of the same duration or intensity, it follows that a comprehensive analysis of the extent to which market-makers are able to offset these imbalances would require using several different periods of observation.

Some evidence in a previous work by one of the analysts for this section of the study indicate that the length of time that temporary imbalances persist is directly related to their magnitude, and inversely related to their frequency.[22] That is, short-lived imbalances occur frequently but tend to be small in magnitude. Longer -lived imbalances tend to occur less frequently but to be larger in magnitude. Evidence to be discussed later in this chapter suggests that there are important differences among market-makers in their ability to offset temporary imbalances of different durations.[23]

Some price changes are desirable. To the extent that price changes reflect a reassessment of a security's worth based on new information, the price change is desirable ad the new price level is likely to persist. There is, however, no very satisfactory way of distinguishing the temporary from the more persistent price movement without the benefit of hindsight. To illuminate the extent to which market-makers possess the foresight (or special knowledge of market conditions) necessary to make the distinction between temporary or persistent price changes, inventory changes on a given day may be compared to the price change on the succeeding day. Since day-to-day comparisons may not be sufficient, a later part of this chapter considers a longer time horizon.[24]

[22] Seymour Smidt, "A New Look at the Random Walk Hypothesis," *J. Financial and Quantitative Analysis* (Sept. 1968), table 1.
[24] See pt. F, below.

Throughout this chapter, the relationship between a market maker's net inventory change from day-to-day and the price change from day-to-day will be characterized in terms of stabilization. An inverse relationship, the market-maker's acquiring stock when the price declines and selling stock when the price rises, will be characterized as "stabilizing" or "apparently stabilizing." A direct relationship, the market-maker's buying stock when the price rises and selling stock when the price declines, will be described as "apparently destabilizing."

In most of the analyses reported in this section, the change in price from one day to the next is adjusted for changes in the S&P index. Specifically, the percentage change from day-to-day in the price of the stock is first calculated by taking the closing price on a given day, subtracting the closing price on the previous trading day and dividing the difference by the closing price on the previous day. The prices used were all adjusted for stock splits and dividends, when appropriate.) A similar procedure was used to calculate the percentage change from day-to-day in the S&P Index. The percentage change in the S&P Index was subtracted from the percentage change in the price of the stock to obtain the "Percentage Change in the Stock Price Relative to the S&P Index" referred to in many text and appendix tables.[25]

2. Net Inventory Changes Compared to Price Changes on the Same Day

a. *Aggregate behavior of all market-makers*

The most striking characteristic of the data described in this section is the strong tendency for the net inventory changes of *all* groups of market-makers to be stabilizing on the average. In particular there is a strong inverse relationship between the direction of the price change on a given day and the average net inventory change on that day. On the average, stock is sold on days when prices are rising and is bought on days when prices are declining. Moreover, the larger is the price change, the larger is the corresponding average inventory change. In addition for a given price change, the magnitude of the corresponding inventory change is larger for high volume stocks than for medium volume stocks.

The tendency for the average net inventory changes of market-makers to be stabilizing, observed in the aggregate data described in Table XII–7, is generally true of all types of market-makers and all categories of securities, although occasionally, for a particular group of market-makers and securities and for a given price change, the average inventory change is not "apparently stabilizing." Exceptions do occur more frequently, however, to the generalization that the larger in no instance in any of the dozens of tabulations examined was any the price change, the larger the average inventory change. Nonetheless, example encountered of a direct relationship between the price change on a given day and the average net inventory change on that day.

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[25] Suppose the stock prices were 51.5 on the given day and 50 on the previous day, and the S and P index levels were 100.5 and 100 respectively. The calculations described in the text are:

$$\frac{51.5-50}{50}-\frac{100.5-100}{100}=.03-.005=.025 \quad 2.5 \text{ percent.}$$

An alternative, and theoretically more desirable calculation, which gives essentially identical results for small percentage changes, is illustrated below:

$$\left(\frac{51.5}{50}\right)\div\left(\frac{100.5}{100.}\right)-1.0=\left(\frac{1.03}{1.005}\right)-1.0=1.02488-1.0=0.2488=2.488 \text{ percent.}$$

The difference of .00012, or twelve-thousandths of 1 percent, is not material for purposes of this Study.

Table XII-7

Average Value of Day's Net Inventory Change
For Exchange Specialists and Third Market Makers Combined,
By That Day's Change in the Price of the Stock
Relative to the S&P Index
And by NYSE Dollar Volume Category
(1,000's of Dollars)

Change in Stock Price Relative To S&P Index (Percent)	NYSE Dollar Volume Category	
	High	Medium
5.0 or over	-139	-58
3.0 to 4.9	-138	-42
1.0 to 2.9	- 78	-24
-0.9 to 0.9	6	- 1
-2.9 to-1.0	64	20
-4.9 to-3.0	136	38
-5.0 or less	186	63

Source: App. B, table XII-B-5.

b. *Comparison of NYSE specialists and other market-makers*

Table XII–8 separates the net inventory changes described in the previous table into two categories, NYSE specialist units and others (consisting of regional specialists and third market makers).[26] The data for high volume stock months are shown graphically in figure XII–12. The tabulations were constructed by selecting every stock day for which data was available to the Study for the NYSE specialist unit and then comparing the average net inventory change of that specialist unit with the consolidated net changes of any and all regional exchange specialists and registered third market makers. The number of such other market makers might be as low as zero for some stock days but might approach 10 for other stock days. This comparison is appropriate if one is interested in the net inventory changes provided by all market makers for the market system as a whole. It is less appropriate if one is interested in the behavior of market makers other than NYSE specialists. Another comparison, more relevant to the latter point of view, will be considered next.

It is evident from Table XII–8 that the average net inventory changes of NYSE specialists for any given price change are much larger than the combined total of all other market makers. For this reason, most of the attention in subsequent analyses in this chapter will focus on the behavior of NYSE specialists. In many instances, however, the more detailed tabulations that appear in appendix B contain separate columns for NYSE specialists, regional specialists and third market makers.

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[26] Table XII–B–5 in app. B shows the net inventory changes of regional specialists and third market makers separately.

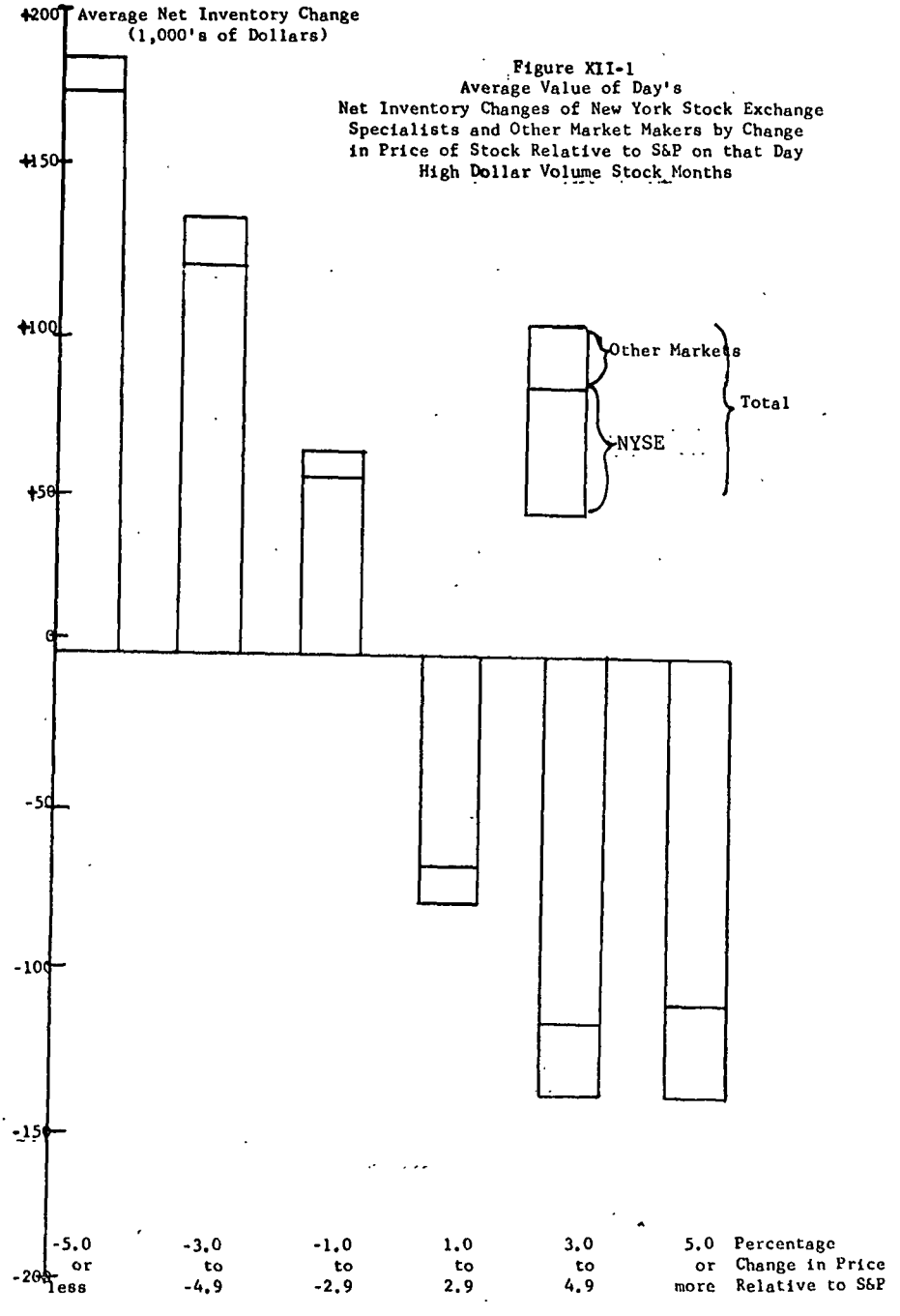
Table XII-8

Average Value of Day's Net Inventory Change
For NYSE Specialists and Other Market Makers
By That Day's Change in the Price of the Stock Relative to
The S&P Index and by Dollar Volume Category
(1,000's of Dollars)

Change in Stock Price Relative to S&P Index (Percent)	NYSE Dollar Volume Category			
	High		Medium	
	NYSE	Other	NYSE	Other
5.0 or over	-110	-29	-52	-6
3.0 to 4.9	-116	-22	-41	-2
1.0 to 2.9	- 67	-11	-22	-2
-0.9 to 0.9	4	3	- 1	0
-2.9 to -1.0	56	8	20	1
-4.9 to -3.0	122	14	35	3
-5.0 or less	176	10	62	1

Source: App. B, table XII-B-5

Figure XII-1
Average Value of Day's
Net Inventory Changes of New York Stock Exchange
Specialists and Other Market Makers by Change
in Price of Stock Relative to S&P on that Day
High Dollar Volume Stock Months



The manner in which the data in Table XII–8 were selected creates a downward bias in the magnitude of the net inventory changes of market-makers other than NYSE specialists. Although an NYSE specialist unit was active for every stock day selected in that Table, no other market-makers may have been active for some of the stock days. The "other" group of market-makers would have a net inventory change on such a day of zero. Table XII–9 corrects for this source of bias by selecting only stock days on which at least five of the six third market-makers in the sample were active.[27] Since the third market-maker is free to decide whether or not to make a market in a particular stock, this Table tends to select stocks considered attractive by them. When stocks are selected in this way, the third market-makers do exhibit larger day-to-day net inventory changes than the "other" category in Table XII–8. Nevertheless, the net inventory changes for each category of price change greater than 1 percent in absolute value are greater for the NYSE specialists than for the third market makers.

Undoubtedly many factors contribute to the differences in the magnitude of stabilizing behavior observed in this Table. The Study's analyses, for example, suggest that this magnitude is importantly affected by the volume of business to which a market-maker is exposed. For a number of reasons, including NYSE rule 394, third market-makers do not have effective access to the flow of orders on the floor of the NYSE. Another source of difference may be the obligation of an NYSE specialist to stabilize. On the other hand, some would argue that given exposure to equal volume the third market-maker would stabilize to the same extent as others. The activities of one category of market-maker may influence and may be influenced by the behavior of other market-makers in the same security. In particular, stabilizing activity by one market-maker may increase or reduce the amount of stabilizing activity by other competing market-makers. The data available to the Study did not provide a basis for estimating the magnitude or even the direction of these combined influences.

[27] In practice, once a third market-maker begins to make a market in a particular stock, it is likely to continue doing so for a long period of time, since its business is based on continuing inquiry from professional customers. Third market-makers were considered to be active in a stock if they typically held overnight inventory in that stock.

Table XII-9

Average Value of Day's Net Inventory Change
For NYSE Specialists and for Third Market Makers
By That Day's Change in the Price Relative to the S&P Index
For Stock-Days in Which Five or Six Third
Market Makers Were Active
(Dollars)

Change in Stock Price Relative To S&P Index (Percent)	NYSE Specialists	Third Market	Number of Days
5.0 or over	-102,581	-100,618	47
3.0 to 4.9	-262,010	- 46,133	137
1.0 to 2.9	-100,234	- 19,281	1067
-0.9 to 0.9	5,040	7,312	3904
-2.9 to -1.0	79,703	2,644	1215
-4.9 to -3.0	229,706	34,780	108
-5.0 or less	316,500	6,457	17
Total:			6495

Source: App. B, table XII-B-6

Third market dealers provide significant stabilization in the List L stocks in which they are active. In addition, the third market and the regional exchanges provide alternative trading locations for institutional investors, the use of at least the former of which can result in substantial commission savings.[28] Nevertheless, the magnitudes of the stabilizing inventory changes of NYSE specialists are substantially greater than the combined stabilizing changes of regional exchange specialists and third market-makers.[29]

c. *Effect of institutional activity on NYSE specialist units*

It has already been noted [30] that the magnitude of the inventory change associated with a given price change is directly related to the NYSE dollar volume category of the security. To examine the effect of institutional trading on the stabilization behavior of NYSE specialist units, the data for each dollar volume category were cross-classified by institutional trading category. The results (Table XII–10) indicate that, after controlling for dollar volume, there is a direct relationship between the proportion of institutional trading and the magnitude of the average net inventory change for any given price change. For price changes of 1 percent or more in absolute value, the higher is the proportion of institutional trading, the larger is the average net inventory change.

The stabilization behavior of NYSE specialist units might be influenced not only by the amount of institutional trading, but also by the extent to which institutions tend to be on one side of the market, the net trading imbalances of institutions. An examination of the data, however, provided no indication that NYSE specialists' stabilizing behavior is systematically influenced in any way by the amount and direction of institutional trading imbalances in a given stock month.[31]

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[28] See ch. XI.C.2.c and XI.C.4.e, above.

[29] It should be noted that utility stocks are largely excluded from List L, although many such stocks are actively traded in the third market. The analyses in this chapter do not adequately reflect the stabilization behavior of market-makers in such stocks.

[30] See sec. D.2.b, above.

[31] See app. B, Tables XII–B–8 and XII–B–9, below, for the relevant data. Unfortunately, after controlling for the level of dollar volume and institutional trading, there are often relatively few observations available to detect the possible influence of institutional imbalances. In these circumstances, the existence of an influence might not be detected unless the influence was quite strong.

Table XII-10

Average Value of Day's Net Inventory Change by NYSE Specialists by That Day's Change in the Price of the Stock Relative to S&P By NYSE Dollar Volume and Institutional Trading Categories (1,000's of Dollars)

Change in Stock Price Relative To S&P Index (Percent)	NYSE Dollar Volume Category: High / Institutional Trading Category: High	NYSE Dollar Volume Category: High / Institutional Trading Category: Medium	NYSE Dollar Volume Category: Medium / Institutional Trading Category: High	NYSE Dollar Volume Category: Medium / Institutional Trading Category: Medium
5.0 or more	-131	-53	-137**	-48
3.0 to 4.9	-127	-70	- 79	-42
1.0 to 2.9	- 76	-18	- 29	-23
-0.9 to 0.9	5	- 7	0	- 1
-2.9 to -1.0	63	23	23	22
-4.9 to -3.0	138	68	43	41
-5.0 or less	185	160	92*	59

*Average based on 11 - 25 days

** Average based on 10 or fewer days.

Source: App. B, table XII-B-7

d. *Stabilization and the S&P index*

The S&P index measures the tendency of stock prices to move together on a given day. Accordingly, relating stock prices to the S&P index is an approximate means of eliminating this commonality in movement. There should be no appreciable tendency for the prices of stocks to move in the same direction when prices are measured relative to the S&P index.

The change in the price of a stock relative to the S&P index is only one possible measure of price change. This measure is most useful in isolating price influences that are important for a particular security, but not for stocks in general. As a measure of price changes influencing stocks in general, one may use the S&P index itself. A third possibility is to use the percentage change in the price of a particular stock itself without adjusting for the change in the market.

It is possible for market-maker behavior to be stabilizing with respect to movements in the prices relative to the S&P index without necessarily being stabilizing with respect to the market index itself. In fact, the data presented in Table XII–11 show that NYSE specialists tend to behave so as to stabilize the market index as well as the prices of individual stocks measured relative to that index. The dollar volume and institutional trading categories tend to have the same influence on net inventory changes compared to changes in the S&P as they do on inventory changes compared to stock price changes measured relative to the S&P.

The third possible measure of price change is simply the percentage change in the price of the stock. In almost every case the results of this analysis correspond closely in direction and magnitude to the results obtained when prices are adjusted for market movements. The reason seems to be that on most days the market index movement is relatively small. Consequently, subtracting the percentage change in the market index on a given day from the percentage change in the price of the stock on that day usually does not alter the *price change category* of the stock day.[32]

[32] The relevant data are in app. B, Table XII–B–13.

Table XII-11

Average Value of Day's Net Inventory Change by NYSE Specialists, by That Day's Change in the S&P Index, by NYSE Dollar Volume and Institutional Trading Categories (1,000's of Dollars)

Change in S&P Index (Percent)	NYSE Dollar Volume Category: High — Institutional Trading Category: High	High — Medium	Medium — High	Medium — Medium
1.5 to 2.4	-42	-34*	-24*	-5
0.5 to 1.4	-20	- 9	- 8	-2
-0.4 to 0.4	3	3	- 1	-1
-1.4 to -0.5	15	- 1	5	3
-2.4 to -1.5	44	44*	-21**	8*

* Average based on 11-25 stock days.

** Average based on 10 or fewer stock days.

Source: App. B, table XII-B-12

e. *Differences among NYSE specialists*

In section C.2.b of this chapter, NYSE specialist units were classified by their activity levels in high dollar volume stocks. This section considers whether there are significant differences in stabilization behavior among the activity categories.

Table XII–12 shows the results of classifying stocks by dollar volume category and specialist units by activity category. In this table, and in some that follow, the medium and low specialist activity categories were combined when there were no significant differences between them.

The net inventory changes of both categories of specialists in both categories of stocks are stabilizing. The average net inventory change is negative when prices are rising and positive on days when prices are falling. For a given price change and dollar volume category, the stabilizing inventory change is nearly always larger for specialists in the top activity category than for other specialist units. The differences in magnitude are quite large in the case of high dollar volume category stocks. For medium dollar volume category stocks the differences between specialists in the top activity category and others are very much less.[33]

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[33] App. B, Table XII–B–32 presents comparable data for high dollar volume category stocks and for individual high inventory activity category specialist units.

Table XII-12

Average Value of Day's Net Inventory Change for NYSE Specialist Units
By That Day's Change in the Price of the Stock Relative to the S&P Index
By Specialist Activity Category
With Stock Months Classified by NYSE Dollar Volume Category
(1,000's of Dollars)

Change in Stock Price Relative To S&P Index (Percent)	High NYSE Dollar Volume Stocks		Medium NYSE Dollar Volume Stocks	
	Specialist Activity Category			
	Top Third	Lower Two-Thirds	Top Third	Lower Two-Thirds
5.0 or over	-150	-98	-59	-53
3.0 to 4.9	-212	-67	-52	-39
1.0 to 2.9	-121	-35	-32	-19
-0.9 to 0.9	8	1	- 1	- 1
-2.9 to -1.0	97	33	29	16
-4.9 to -3.0	244	78	52	29
-5.0 or less	317	138	38	78

Source: App. B, table XII-B-10

Table XII–13 presents the same data, but with stock months classified by both dollar volume and institutional trading categories. In those stock months in which there is both a high dollar volume and a high proportion of institutional trading, the average net inventory changes of specialists in the top inventory activity level are substantially greater than those of other specialists. In high dollar volume stocks in the medium institutional trading category and in both medium dollar volume categories the difference between specialist units in the highest activity category and those in other categories persist, but the differences are much less substantial.

A reasonable interpretation of this data is that the high activity category contains those NYSE specialist units that are most responsive to the trading requirements of institutions in that they have larger changes in their overnight dealer positions in those stock months in which institutions are most active. The fact that this category of specialist unit does not differ greatly from the remaining activity categories in medium dollar volume stocks indicates the dependence of these dealers on the regular flow of orders in the auction market for their layoff transactions.

Table XII-13

Average Value of Day's Net Inventory Change for NYSE Specialists
By That Day's Change in the Price of the Stock Relative to the S&P Index
By Specialist Activity Category
And by Institutional Trading and NYSE Dollar Volume Categories
(1,000's of Dollars)

	High NYSE Dollar Volume Stock Months			
	High Institutional Trading		Medium Institutional Trading	
	Specialist Activity Categories			
Change in Stock Price Relative To S&P Index (Percent)	Top Third	Lower Two-Thirds	Top Third	Lower Two-Thirds
5.0 or over	-170	-118	-56	-52
3.0 to 4.9	-241	- 67	-76	-69
1.0 to 2.9	-137	- 40	-28	-13
-0.9 to 0.9	11	1	-13	- 2
-2.9 to -1.0	112	37	38	20
-4.9 to -3.0	216	88	122	47
-5.0 or less	320	143	302	132

(Continued)

Table XII-13

Average Value of Day's Net Inventory Change for NYSE Specialists
By That Day's Change in the Price of the Stock Relative to the S&P Index
By Specialist Activity Category
And by Institutional Trading and NYSE Dollar Volume Categories
(1,000's of Dollars)

(Continued)

	Medium NYSE Dollar Volume Stock Months			
	High Institutional Trading		Medium Institutional Trading	
	Specialist Activity Categories			
Change in Stock Price Relative To S&P Index (Percent)	Top Third	Lower Two-Thirds	Top Third	Lower Two-Thirds
5.0 or over	-129*	-140*	-61	-46
3.0 to 4.9	-109	- 87	-50	-41
1.0 to 2.9	- 37	- 30	-34	-18
-0.9 to 0.9	5	- 5	- 3	0
-2.9 to -1.0	24	31	35	17
-4.9 to -3.0	51	46	60	32
-5.0 or less	41*	117*	36*	76

*Fewer than 10 observations

Source: App. B, table XII-B-11

f. *Frequency of apparently destabilizing inventory changes*

A market-maker's inventory behavior has been considered to be apparently stabilizing if the direction of the inventory change was opposite to the direction of the price change. On the average, all market-makers tend to have apparently stabilizing inventory changes. This section examines frequency of days on which the inventory changes of NYSE specialists are apparently destabilizing in the sense that the price and inventory changes are in the same direction. The basic data are summarized in Table XII–14.

There are no consistent differences between specialist units in the top inventory activity category and those in the lowest inventory activity category. Specialist units in the medium activity category, however, persistently tend to have apparently destabilizing inventory changes with greater frequency than do units in either of the other two categories. NYSE specialist units in the high and low activity categories have apparently destabilizing inventory changes on at most 25 percent of the days on which large price changes occur and on at most 32 percent of the days on which medium price changes occur.

Table XII-14

Percentage of Days on Which NYSE Specialists' Behavior Was Apparently Destabilizing, By Size of the Price Change on That Day Relative to the S&P Index, By NYSE Dollar Volume, Institutional Trading and Specialist Activity Categories

NYSE Dollar Volume Category	Institutional Trading Category	Inventory Activity Category of Specialist	Percentage Change in Price Relative to S&P	
			5.0% or more up or down	1.0-4.9% up or down
			Percentage of Days on Which Specialist's Behavior Was Apparently Destabilizing	
High	High	Top Third	20%	32%
High	High	Middle Third	32%	39%
High	High	Lowest Third	25%	31%
High	Medium	Top Third	25%	35%
High	Medium	Middle Third	31%	42%
High	Medium	Lowest Third	13%	30%

(continued)

Table XII-14

Percentage of Days on Which NYSE Specialists' Behavior
Was Apparently Destabilizing,
By Size of the Price Change on That Day Relative to the S&P Index,
By NYSE Dollar Volume, Institutional Trading and Specialist Activity Categories

(continued)

NYSE Dollar Volume Category	Institutional Trading Category	Inventory Activity Category of Specialist	Percentage Change in Price Relative to S&P	
			5.0% or more up or down	1.0-4.9% up or down
			Percentage of Days on Which Specialist's Behavior Was Apparently Destabilizing	
Medium	High	Top Third	*	22%
Medium	High	Middle Third	*	29%
Medium	High	Lowest Third	*	21%
Medium	Medium	Top Third	18%	27%
Medium	Medium	Middle Third	16%	34%
Medium	Medium	Lowest Third	10%	26%

*Fewer than 10 days in the price change category.

Inventory-change days that are apparently destabilizing may sometimes occur when the specialist is attempting to correct what he has decided (in retrospect) are bad inventory decisions, or when he is actively attempting to attain an inventory position which is desirable given his expectation about future price changes. On the other hand, as described earlier,[34] daily stabilization measures do have their limitations. This may be particularly so when market trends change direction during the course of a day. It is also true that the three inventory activity categories seem to reflect distinct styles of trading, probably representing different time horizons.[35] It is possible that the differences in trading style may somehow be related to the frequency of apparently destabilizing behavior.

This is an area for further research. The Study was not able to precisely determine the reasons for variations in the frequency of apparently destabilizing prize changes. Nor has the Study attempted to evaluate whether the frequently of apparently destabilizing price changes is too high. But the data do substantiate the conclusion that, for all categories of NYSE specialist units and of stocks, specialists' inventory changes are predominantly apparently stabilizing. Furthermore, the data are not consistent with any hypothesis that specialist units in the high inventory category have apparently destabilizing days more frequently than other specialists.

3. Average Net Inventory Changes of NYSE Specialists on Successive Days

a. *Net inventory changes on a given day in relation to price changes on that day and on the following day*

If NYSE specialist units could anticipate the price change of the following day, it clearly would be in their economic interest to have larger inventory increases or smaller inventory decreases on days preceding a price increase. Similarly, it would be in their interest to have smaller inventory increases or larger inventory decreases preceding days on which the price declines.

The data in Table XII–15 do indicate a systematic tendency for NYSE specialist units' behavior to be related to price changes on the following day. The relationship is not in the direction specialists would prefer, however, if they could anticipate the next price change.

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[34] See sec. D.1, above.

[35] It is relevant in this connection to note that in active commodity futures markets on which the volume of trading is sufficient to support a large number of professional traders some of these traders tend to specialize in offsetting very short-lived imbalances, and others, in offsetting longer-lived imbalances. See Holbrook Working, "Tests of a Theory Concerning Floor Trading on Commodity Exchanges," *Food Research Institute Studies,* Supplement to Volume VII, 1967, pp. 5–48.

Table XII-15

AVERAGE NET INVENTORY CHANGE OF NYSE SPECIALISTS, ON GIVEN DAY BY CHANGE IN PRICE OF STOCK RELATIVE TO S&P ON THE GIVEN DAY AND THE FOLLOWING DAY
(Thousands of Dollars)

Percent Change in Price of Stock Relative to S&P on the Given Day	Percent Change in Price of Stock Relative to S&P on the Following Day							
	-5.0 or less	-4.9 to -3.0	-2.9 to -1.0	-0.9 to 0.9	1.0 to 2.9	3.0 to 4.9	5.0 or over	Row Average
5.0 or over	-74	- 12	-131	- 67	- 89	-106	-172	-90
3.0 to 4.9	-75	- 37	- 73	-104	-105	- 61	- 58	-87
1.0 to 2.9	-13	- 27	- 25	- 59	- 73	- 52	- 5	-51
-0.9 to 0.9	5	6	10	1	- 2	0	- 15	2
-2.9 to -1.0	35	24	37	53	38	17	- 40	42
-4.9 to -3.0	144	98	144	91	72	68	- 31	88
-5.0 or less	67	166	101	185	131	86	154	137
Column Average	22	10	8	1	- 10	- 12	- 24	

Source: App. B, table XIII-B-14.

The inventory change on the given day is dominated mainly by the price change on that day. Regardless of the amount of price change on the following day, if the price change on the given day was positive, NYSE specialist units sold stock on the average. Similarly, when the price declined on the given day, they bought stock on the average. The evidence in this Table further corroborates the finding that NYSE specialist units usually respond in a passive manner to the direction of the price change on the given day and act in such a way as to reduce the magnitude of the change.

Although inventory changes on a given day are dominated by the price change on that day, there is also a systematic relation between the inventory change on a given day and the price change on the following day. The effect of the price change on the following day can be observed most clearly from the column averages in Table XII–15. On the average, NYSE specialist units increase their inventories on days preceding a price decline: The larger the price decline on the following day, the larger the increase on the given day. Similarly, these units, on the average, decrease their inventories in advance of a price rise: The larger the price rise, the larger the average inventory decrease. The same relationship generally hold for each classification by price change on the given day

The evidence in Table XII–15 suggests that, on the average, NYSE specialist units are either unable to anticipate the direction of the price change in their stocks on the following day or are unable because of regulatory prohibitions to act on their anicipation. This does not mean that they may not exhibit anticipatory ability in certain circumstances or over longer time horizons.

The data in table XII–15 are based on all of the stock days included in the Study's sample. Similar analyses were conducted with stock months classified by dollar volume and institutional trading categories. The basic data are contained in Table XII–B–15 of appendix B. The examination of this data provided no indication that the relation between the direction the NYSE specialist unit's inventory change on a given day and the price change on the next day is affected either by dollar volume or by the proportion of institutional trading in the stock.

b. *Net inventory changes on a given day in relation to price changes on that day and on the preceding day*

Since the price changes on prior days may have caused the NYSE specialist unit to increase or decrease its inventories in response to those price changes, its behavior may also be influenced by price changes on prior days. To gain some insight into this relationship, the data in Table XII–16 are arranged tto show the average inventory change on a given day compared to the price change on the given day and the price change on the previous day. This Table is similar to the previous Table since in almost every case the direction of the average inventory change on a given day is opposite to the direction of the price change on that day. In addition, there is a systematic direct relationship between the inventory change on a given day and the price change on the preceding day. If the price change on the given day is negative, NYSE specialist units on the average increase their inventories. The magnitude of these inventory increases is greater when the price change on the previous day was positive and less when the price change on the previous day was negative.

This evidence is consistent with the thesis that NYSE specialist units tend to have a normal inventory level in a particular stock. If their inventory level is above normal (as it is likely to be if the price had declined on the previous day), they are less anxious to accumulate additional inventory than on a normal day. The opposite situation prevails if inventories are below normal (as is likely to be the case if the price had risen on the previous day).

On the average, NYSE specialist units' inventory changes on a given day are related more strongly to the direction of the price change on the preceding day than to the direction of the price change on the following day. This is consistent with the idea that these units typically respond to price changes and trading imbalances in a passive manner rather than attempt to anticipate them.[36]

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[36] In this and the preceding sections, price changes were measured in terms of the change in the price of a particular stock relative to the S&P index. A similar analysis was conducted in which the change in the price of a particular stock was not related to the change in the S&P index on that day. The data are contained in app. B, Table XII–B–16, below. The relationships are substantially the same as when price changes are measured relative to the S&P index.

Table XII-16

AVERAGE NET INVENTORY CHANGE OF NYSE SPECIALIST, ON GIVEN DAY BY CHANGE IN PRICE OF STOCK RELATIVE TO S&P ON THE GIVEN DAY AND ON THE PRECEDING DAY
(Thousands of dollars)

Percent Change in Price of Stock Relative to S&P on the Given Day	Percent Change in Price of Stock Relative to S&P on the Preceding Day							
	-5.0 or less	-3.0 to -4.9	-1.0 to -2.9	-0.9 to 0.9	1.0 to 2.9	3.0 to 4.9	5.0 or over	Row Average
5.0 or over	-199	- 53	-105	- 76	-101	- 51	- 53	- 88
3.0 to 4.9	- 73	- 98	- 90	-101	-101	- 16	- 25	- 87
1.0 to 2.9	- 97	- 59	- 51	- 64	- 29	- 20	- 11	- 51
-0.9 to 0.9	- 32	- 14	0	1	7	37	3	2
-2.9 to -1.0	- 16	3	30	50	43	59	81	42
-4.9 to -3.0	- 47	43	59	126	96	59	80	88
-5.0 or less	49	96	145	123	133	234	240	137
Column Average	- 63	- 21	- 21	0	4	23	27	0

Source: App. B, table XII-B-14

E. CHARACTERISTICS OF PRICE CHANGES IN LIST L STOCKS

The findings in previous sections of this chapter indicate that there are significant differences among NYSE specialist units with respect to the magnitude of the average inventory changes associated with a given price change. Since all three groups of specialists primarily trade passively in response to imbalances in the market, these findings can be interpreted as indicating differences in the extent to which they participate to provide liquidity in depth. If this interpretation is correct, large day-to-day price changes should occur less frequently in stocks assigned to specialists in the high activity category than in stock assigned to other specialist units. The purpose of this section of the chapter is to test this interpretation of the findings.

Table XII–17 presents data on the percentage of stock days by the size of the price change on that day. Price changes are measured in percentage terms from daily close to daily close, relative to the S&P index. Stock months are classified by NYSE dollar volume and institutional trading categories. NYSE specialist units are classified by inventory activity category. This three-way classification makes it possible to analyze the effects of any one category after controlling for the effect of the other two.

In Table XII–17 day-to-day price changes are divided into three size categories. Small price changes are those that are less than 1 percent. A price change is considered to be large if the closing price on a given day is at least 3 percent higher or at least 3 percent lower than the previous close, after adjusting for changes in the S&P index. Medium price changes are increases or decreases of between 1 and 3 percent from the previous close.

The variations shown in Table XII–17 in the frequency of medium sized price changes are not systematically related to the dollar volume, institutional trading or specialist activity categories. But, the frequencies of both small and large price changes are systematically related to each of these categories. The analysis will concentrate on the frequencies of large price changes. Similar conclusions would be reached if the analysis focused on the frequencies of small price changes.

Table XII–18 is arranged to emphasize the apparent effect of dollar volume on the frequency of large price changes. The results seemingly contradict the common belief that more actively traded securities have less frequent large price changes. In all four comparisons, the apparent effect of the higher dollar volume category is to increase the frequency of large price changes.

The common belief that actively traded stocks have less frequent large day-to-day price changes may be correct if the trading activity of a stock is measured over a rather long period of time. On the other hand, a temporary increase in volume may be associated with an increase in the frequency of day-to-day price changes. The stocks in this sample were re-classified with respect to dollar volume and institutional trading categories each month. Thus, while some of the stocks are consistently in the high dollar volume category, other stocks that would normally be in the medium dollar volume category may be included in the high category for a few months when their trading volume was greater than normal. If large price changes are more frequent at such times, the effect is to increase the frequency of large price changes in the high dollar volume category and to reduce their frequency in the medium dollar volume category.

Table XII-17

Distribution of Stock Days
By Percentage Change in the Price of the Stock Relative to the S&P on That Day,
With Stocks Classified by Dollar Volume and Institutional Trading Categories,
And by the Inventory Activity Category of the NYSE Specialist

Dollar Volume Category	Institutional Trading Category	Inventory Activity Category of Specialist	Percentage Change in Price of the Stock Relative to the S&P on that Day			
			Less than 1.0%	1.00 to 2.9%	Greater than 3.0%	Total
High	High	Top third	55.2%	36.9%	7.9%	100.0%
High	High	Lower two-thirds	49.7%	39.3%	11.0%	100.0%
High	Medium	Top third	49.6%	40.3%	10.0%	100.0%
High	Medium	Lower two-thirds	41.6%	42.4%	16.0%	100.0%
Medium	High	Top third	54.0%	40.4%	5.7%	100.0%
Medium	High	Lower two-thirds	52.3%	38.1%	9.6%	100.0%
Medium	Medium	Top third	52.2%	38.1%	9.7%	100.0%
Medium	Medium	Lower two-thirds	46.6%	41.1%	12.3%	100.0%

Source: App. B, table XII-B-11

Table XII-18

Effect of Dollar Volume on the Percentage of Days
With Large Price Changes Relative to S&P Index

Institutional Trading Category	High	High	Medium	Medium
Specialist Activity Category	Top Third	Lower Two-Thirds	Top Third	Lower Two-Thirds
Dollar Volume Category	Percent of Days on Which Price Change Was Greater than Three Percent			
High	7.9%	11.0%	10.0%	16.0%
Medium	5.7%	9.6%	9.7%	12.3%
Difference Due to Higher Dollar Volume	2.2%	1.4%	0.3%	3.7%

The data in Table XII–19 are arranged to emphasize the effect of an increase in the proportion of institutional trading on the frequency of days with large price changes, after controlling for dollar volume and for the inventory activity category of the specialist unit. Stocks with a high proportion of institutional trading have fewer large day-to-day price changes than stocks with only a medium level of institutional trading. These data need explanation in order to avoid possible misinterpretation.

First, it should be emphasized that the measure of price change to which these data apply is the percentage change, from one day to the next, in the price of the stock relative to the S&P index. These results do not contradict the findings reported in chapter X [37] that the net trading imbalances by institutions cause measurable price level changes. The latter finding refers to *month-to-month price level changes* when institutional trading is not in balance. The present findings refer to day-to-day price changes when there is a high proportion of institutional trading but not necessarily a trading imbalance. There is no necessary connection between the magnitude of day-to-day price fluctuations and the magnitude of month-to-month price level changes. Prices can trend up or down even though the day-to-day change is small. By contrast, large day-to-day changes may occur even when there is no sustained, cumulative effect on the price level.

Second, the data in this table do not necessarily imply that an increase in the proportion of institutional trading in a particular stock will reduce day-to-day price changes. Institutions, for example, may be more likely to own and to trade stocks that have less than the average day-to-day volatility. To the extent that this is true, the effect measured in Table XII–19 results both from how institutions trade and from what they trade.

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[37] See ch. X.B.3, above.

Table XII-19

Effect of Institutional Trading on the Percentage of Days
With Large Price Changes Relative to S&P Index

Dollar Volume Category	High	High	Medium	Medium
Specialist Activity Category	Top Third	Lower Two-Thirds	Top Third	Lower Two-Thirds
Institutional Trading Category	Percent of Days on Which Price Change Was Greater Than 3 Percent			
High	7.9%	11.0%	5.7%	9.6%
Medium	10.0%	16.0%	9.7%	12.3%
Difference Between High and Medium Categories	-2.1%	-5.0%	-4.0%	-2.7%

Given the effect of the possible bias caused by the kind of stocks institutions select, one cannot, with great confidence, conclude from this data alone that institutional trading tends to cause a reduction in the frequency of large day-to-day changes. Although institutional trading may indeed have this causal effect, one would not want to draw so sweeping a conclusion from this evidence alone.

On the other hand, even allowing for the possible bias in stock selection by institutions, it would be quite surprising if effects as large and as persistent as shown would be observed if institutional trading tended to cause more frequent large day-to-day price changes. Taken by itself this evidence suggests, therefore, that institutional trading does not cause, and may even tend to decrease, the frequency of large day-to-day price fluctuations.

Table XII–20 shows the effect of the specialist activity category on the frequency of days with large price changes. In each of the four comparisons, stocks assigned to specialist units in the highest inventory activity category have fewer days on which the price change is greater than 3 percent than do stocks assigned to other specialist units.

Table XII-20

Effect of Specialist Activity Category on Percentage of Days With Large Price Changes Relative to S&P Index

Dollar Volume Category	High	High	Medium	Medium
Institutional Trading Category	High	Medium	High	Medium
Specialist Activity Category	Percent of Days on Which Price Change Was Greater Than 3 Percent			
Top Third	7.9%	10.0%	5.7%	9.7%
Lower Two-Thirds	11.0%	16.0%	9.6%	12.3%
Change Due to Higher Specialist Activity Category	3.1%	6.0%	3.9%	2.6%

To probe further into the relationship between the inventory activity of an NYSE specialist unit and the frequency of large day-to-day changes in its specialty stocks, the values of these two variables were calculated for the high dollar volume category stock months of each NYSE specialist unit. The results are displayed graphically in figure XII–2. In that figure, the vertical axis measures the percentage of days on which large price changes occurred in the high dollar volume stock-months of that unit. The horizontal axis measures the average day-to-day change per stock in the specialist unit's overnight inventory. Each dot represents one specialist unit.

In every inventory category there is a wide range of variation among individual specialist units in the frequency of large price changes. In the high inventory activity category the range is from 4.3 to 16.4 percent. In the medium inventory category the range is from 3.3 to 20.6 percent, while in the low activity it is from 8.7 to 22.1 percent. Thus, relatively high inventory activity by itself is no guarantee that the frequency of large price changes will be low.

Six of the 10 NYSE specialist units with the lowest frequency of days with large price changes were in the medium inventory category, and the other four were in the high inventory activity category. Of the 10 units with the highest frequency of large price changes, five were in the low inventory activity category, while two and three, respectively, were in the medium and high inventory activity categories.

It could be argued that some of the figures on particular specialist units are inconsistent with the averages for the three groups. But both of the variables under consideration, inventory activity and frequency of large price changes, reflect the simultaneous interaction of the specialist unit and the public trading in its specialty stocks. Neither variable by itself accurately identifies the character of a particular specialist unit or the character of the trading in a particular specialty stock. When the two variables are considered together, however, it is possible to make rough inferences about the frequency of large imbalances in the public trading in those stocks. For purposes of this section a volatile stock can be defined as one in which large imbalances of non-dealer supply and demand occur frequently. The presence of such imbalances, which reflect the inherent volatility of the stocks, may be inferred from a high rate of inventory activity by the specialist or from a high frequency of large price changes. For units whose stocks have been identified in this way as being inherently volatile, one would expect to observe an inverse relation between the inventory activity of the unit and the frequency of large price changes. If, however, high inventory activity and frequent price changes occur together, it should not necessarily be inferred that the high inventory activity is failing to reduce the price volatility. Rather, it is likely that a stock with inherent volatility is involved, and large price changes would be even more frequent absent the inventory activity.[38] Thus,

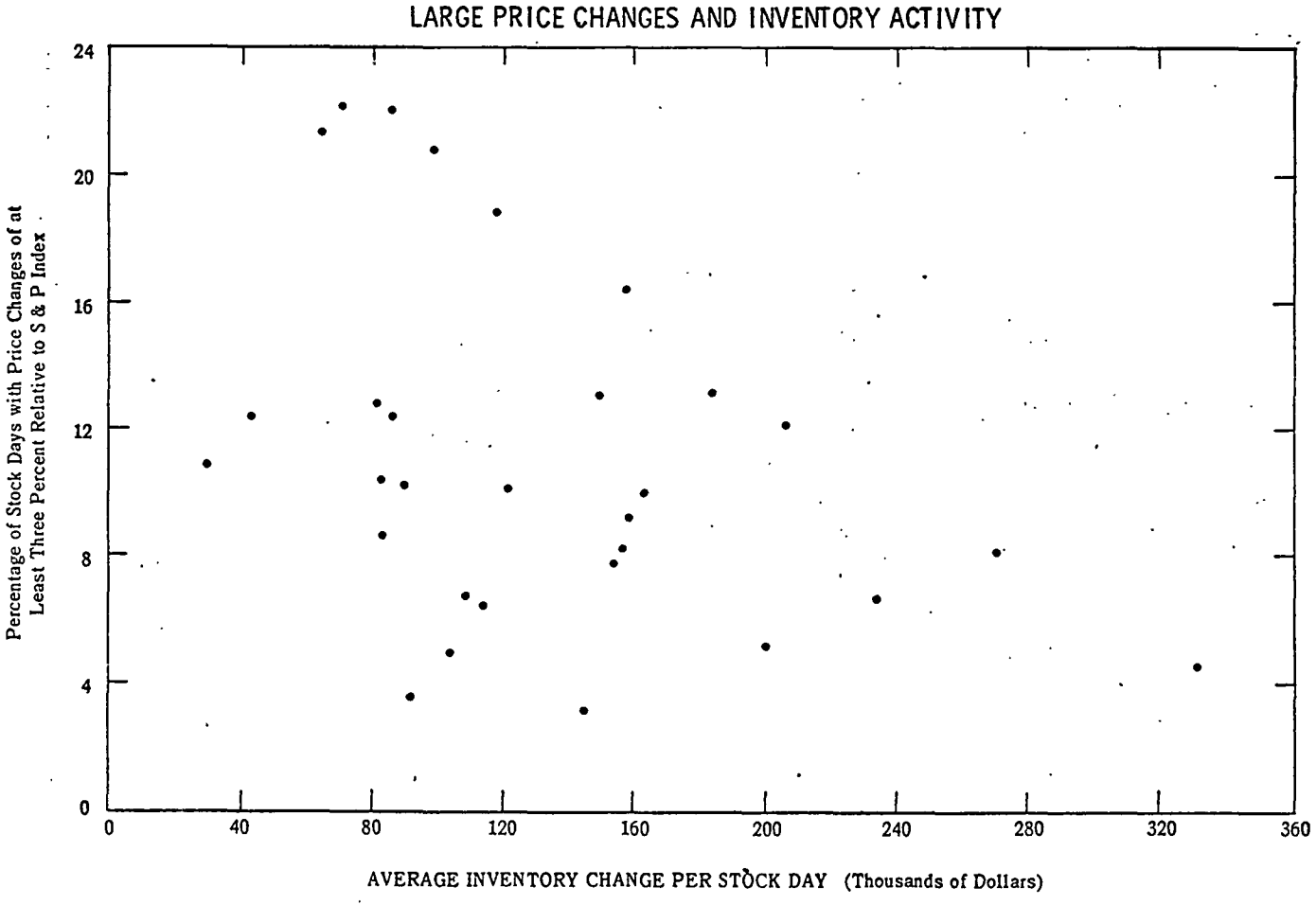
[38] It is theoretically possible that the combination of high inventory activity and more frequent large price changes could arise because of destabilizing activity by the specialist unit itself rather than because of the inherent volatility of the stock. But visual examination of the relation between inventory changes and price changes for individual specialist units indicated that the high activity specialists with large average price changes were apparently stabilizing about as frequently as the rest of the high activity specialists.

individual combinations of high inventory activity and frequent large price changes are not necessarily inconsistent with the average results for the group. Similarly, for a specialist unit with stocks that are not inherently volatile, one would expect to observe both low levels of inventory activity and low frequencies of large price change. Thus, individual combinations of low or medium inventory activity with infrequent large price changes are not necessarily inconsistent with the average results for the group, either.[39]

Taking into account the evidence presented earlier, that most day-to-day changes in the closing inventories of NYSE specialist units are stabilizing in nature, the most reasonable interpretation of the data in figure XII–2 is that NYSE specialist units differ both in terms of the volatility of the stocks assigned to them and in terms of their willingness to adjust their inventories to offset imbalances of public orders. Some units have high volatility stocks and high inventory activity rates. Large day-to-day price changes tend not to occur with great frequency in the high dollar volume stocks assigned to such units. Other units have highly volatile stocks and medium or low inventory activity rates. Because these units do not as readily adjust their inventories to offset imbalances of public orders, the high volatility stocks assigned to such units tend to exhibit a high frequency of large day-to-day price changes. Finally, some units have low volatility stocks. These units exhibit low inventory activity rates, but the stocks assigned to them have a low frequency of large price changes.

The strength of the evidence supporting this conclusion will become more apparent if one considers a possible alternative explanation for the relationship between the NYSE specialist units' inventory activity levels and the frequency of large day-to-day price changes in their specialty stocks. This alternative explanation starts by assuming there are no substantial differences among the units in the extent to which they reduce the inherent price volatility of their specialty stocks. Rather, it assumes instead that, all specialist units are willing to participate in depth with respect to stocks that are inherently less volatile in price and not willing to participate in depth with respect to specialty stocks that are inherently more volatile. Consequently, the specialist units that participated in their markets in great depth would have inherently *less* volatile stocks than other specialist units.

[39] A specialist unit that happened to be in the low activity category solely because it was assigned stocks that were not inherently volatile might well act differently with respect to inherently volatile stocks.



SOURCE: App. B, table XII-B-31

For this hypothesis to be valid, one would also have to assume that the NYSE systematically assigns stocks that are expected to be more volatile in price to specialist units with reputations for not participating in their markets in depth and stocks that are inherently less volatile to specialist units that do have reputations for such participation. Such a proposition contradicts the stated policy of the NYSE to attempt to assign "hard" dealer stocks to the "good" specialist units who can handle them and "easy" agency stocks to the other specialist units.[40] The data collected by the Study strongly indicate that the stated policy of the NYSE is in fact followed.

A stock that is not inherently volatile in price would, by definition, not be expected to have large price-aggressive day-to-day imbalances between public demand and public supply. If a specialist unit were to have large daily position changes in such a stock, it would have to generate large price-responsive public imbalances by causing large price changes itself. In fact, however, as shown in section D.2.f, specialist units in the high inventory activity category are not price aggressive—that is, their inventory changes are not apparently destabilizing—any more frequently than specialist units in the low inventory activity category. Moreover, both types of specialist units are apparently destabilizing about one day out of every three when there are small or medium price changes and about one day out of every four when there are large price changes.

The possibility that large position changes by specialist units represent basically riskless and perhaps unnecessary dealer participation is also strongly negated by the data presented later in this chapter[41] concerning the month-to-month variability in the trading account income of specialist units. The trading account income of specialist units in the high inventory activity categories is substantially more variable from month-to-month than the trading account income of specialist units in the lower inventory activity categories. This could arise only if the stocks assigned to the former specialist units are considerably more risky because of inherent price volatility than the stocks assigned to other specialist units. Specialist units in the high inventory activity categories absorb the pressure of price-aggressive public imbalances in their stocks, and as a result their trading account income becomes highly variable.

The stocks in the Study's sample that are assigned to specialist units in the high inventory activity categories are inherently more volatile in price than the stocks assigned to other specialist units. Accordingly, the differences among such specialist units in the extent to which they prevent large price changes in their stocks by offsetting price-aggressive public imbalances in supply and demand is actually understated

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[40] The following quotation is relevant at this point:

> Two former Exchange chairmen indicated in their testimony that many specialist units could not adequately service the market in difficult stocks, because of inadequate capital or for other reasons. They both used the stock of Xerox Corp. as an example of a volatile stock that had to be carefully allocated to a strong specialist unit when that issue was listed. One of them testified that "only a few specialists quite frankly can swing Xerox," while the other testified that the stock could not be given to "50 percent" of the specialists.

Special Study, pt. 2, pp. 93–94. Xerox is one of the stocks in list L. The NYSE specialist unit handling this stock has a higher average day-to-day change in its overnight inventories than any other unit in the Study sample. During the period studied, the frequency of large day-to-day price changes for Xerox was 4.2 percent.

[41] See pt. G, below.

by the data in Table XII–20. The extent of this understatement cannot be quantified precisely from the data. The large difference in month-to-month variability in trading account income among the three classes of specialist units indicates that the degree of understatement is quite substantial. A further indication of the extent to which large day-to-day price changes could have been reduced can be obtained by comparing the frequency of large price changes among individual NYSE specialist units. Large price changes occur as often as one day out of five in the stocks assigned to some units in the low inventory activity category. Yet there is no reason to think that the stocks assigned to such units are more volatile than the stocks assigned to the high activity units.

The evidence presented in this section indicates that there are important differences among NYSE specialist units in the extent to which they adjust their inventories to offset temporary imbalances of supply and demand. Large day-to-day price fluctuations occur much more frequently among the stocks assigned to some NYSE specialist units. These units appear to have volatile stocks and to adjust their inventories less readily to public imbalances.

F. UNUSUAL POSITION CHANGES

1. Methodology Used To Study Unusual Position Changes

Section D considered the relationships between price changes and market-makers' net inventory changes on a single day or on two successive days. The present section examines the relationships between market-makers' inventory activity and price changes over a longer time horizon.

Two samples of days were selected, and price behavior was observed for 19 trading days before and 21 trading days after each day selected. Sample A consists of days on which a market maker had an "unusual" position change in a particular stock. Sample R is a sample of days selected at random. The random sample was designed to serve as a control group to insure that price patterns that might be associated with unusual long or short position changes were not, in fact, associated with all such position changes. A separate sample of days was selected for each market-maker and each stock.

In selecting Sample A a regression analysis was used to estimate the average relationship between the number of shares held by the market-maker on a given day and the number of shares held on the previous day, adjusted for stock splits and dividend payments. A separate regression relationship was estimated for each stock traded by each market-maker. Using this relationship, predictions were made of the number of shares the market-maker would normally hold each day, given his actual holdings on the previous day. The predicted "normal position" of the market-maker was compared with his actual position on that day. If the difference between the predicted normal position and the actual position was sufficiently great, the day was selected for Sample A.[42]

[42] In technical terms, the inventory position on day t was used as the dependent variable, and the inventory position on day t–1, as the independent variable. A linear relationship was fitted, using the least-square criterion. Days were selected if the absolute value of the residual from this relationship exceeded 1.5 standard errors.

In the great majority of unusual position changes, the market-maker had a long position after an unusually large purchase and a short position after an unusually large sale. In some instances, however, a market-maker had a long position after an unusually large sale or a short position after an unusually large purchase. Days of unusual position changes could be classified on the basis of the direction of the position change or of the type of position after the change. Most days with unusual position changes would be classified the same way whichever criterion was used, but for some days the criterion used would make a difference. The results presented in this section are based on classifying days on the basis of whether the market-maker was long or short after the unusual position change.[43]

For each stock day selected, the difference between the closing price on the NYSE and the previous close, adjusted for the market ("current impact"), was computed for 41 days: the day of the unusual position change, the 19 preceding trading days and the 21 following trading days.[44] This is basically the same analytical technique used in section D of chapter XI, except that adjustments were made for differences among stocks in the extent to which their day-to-day price changes tended to be correlated to changes in the market index.[45] The figures resulting from this analysis plot the cumulative price change ("average impact index") accompanying the event.[46]

It should be emphasized that the results presented are obtained by averaging over a large number of examples. On any particular day on which a specialist has a large position change, other factors of much greater importance often lead to a much different price pattern.[47]

2. Price Changes in the Random Sample of Long and Short Positions

Figure XII–3 summarizes the application of the price impact analysis to 2,321 stock days selected at random. Examining the characteristics of the price impact measures for these randomly selected days is useful as a means of developing a feeling for the random variation one could expect to find in the data.

The average price change for day minus one, a decline of 0.01 percent is not significantly different from zero. Of the 41 days shown in this figure, 23 have price declines and 17 have price rises. The greatest deviation from zero on any one day is for day minus six, whose current impact is minus 0.12 percent (app. B, Table XII–B–17).

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[43] Results based on classifying days of unusual position change on the basis of the direction of the position change were compared with the results presented in the chapter. In general there were no important differences with respect to the price change on the day of the position change or on subsequent days. There were, in some instances, differences with respect to the direction of the price trend prior to the day of the unusual position change. The analysis in the chapter concentrates on the results for the day of the unusual position changes and the following days.

[44] Market-makers reported their share positions as of the opening of business on each day. If a particular day was selected because the opening position on that day was unusual, the market activity that led to that unusual position would have taken place on the previous day. The day selected in the above example would have been labelled "day zero," and the day of the unusual position change (the previous day) would have been labelled "day minus one."

[45] The analytical technique is described in appendix A of that chapter. In a number of cases the analyses were rerun without making this adjustment and the results were not significantly different.

[46] The details of the figures and the tables containing the underlying computations are also explained in ch. XI, app. A, above.

[47] See ch. XI.D.2.a. above, for a more detailed discussion of the necessity for averaging.

The fraction of the price change that were negative for individual stock days ranges from 49.38 percent to 53.81 percent negative. On only two of the 41 trading days were less than 50.00 percent of the individual price changes negative (app. B, Table XII–B–17). This reflects the fact that small price changes are more likely to be negative than positive. If the average size of the positive and negative impacts were equal, most days would show a negative average current impact. This does not occur, however, because the average size of the positive impacts is larger than the average size of the negative impacts.[48]

As shown in figure XII–3, the average impact index remains close to zero during the entire 41-day trading period. This indicates that the process of adjusting prices for risk and for changes in the market index does not introduce any significant bias into the results.

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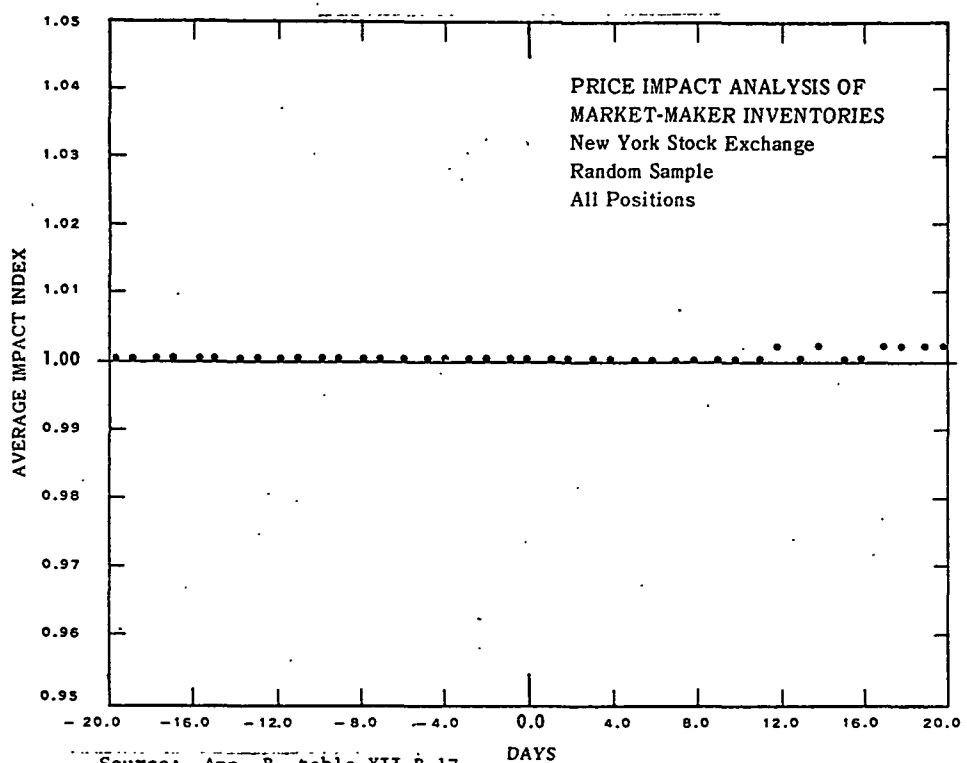
[48] The statements about the relative frequency of price changes of different sizes and directions can be verified directly from data in app. B, Table XII–B–5, below.

Figure XII-3

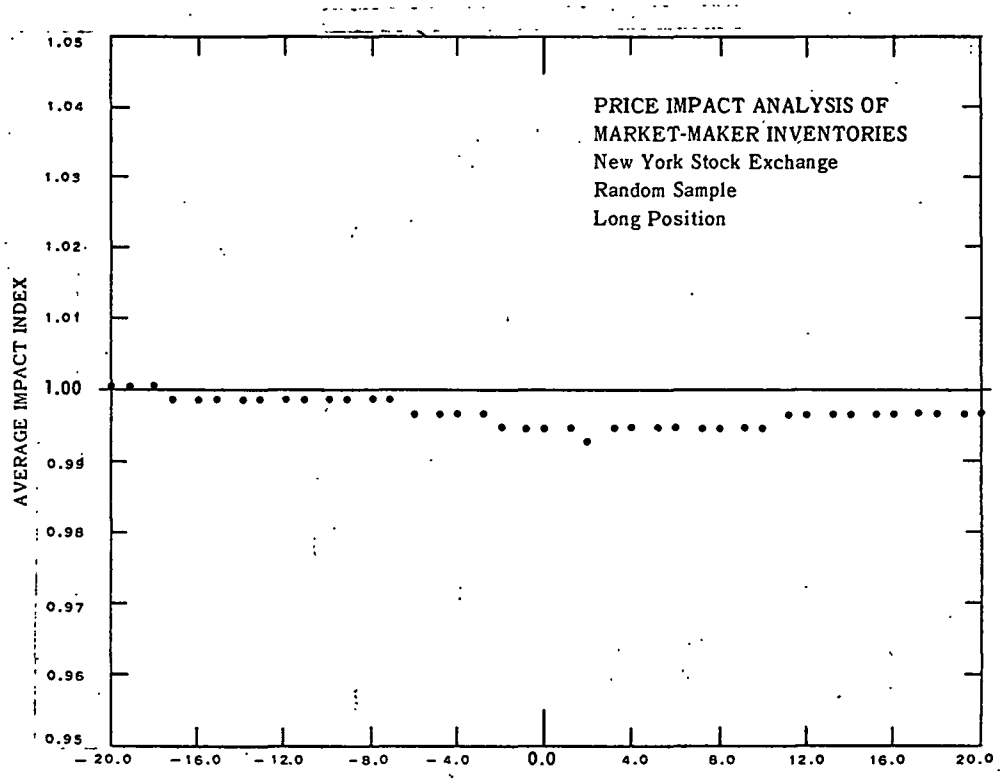


Source: App. B, table XII-B-17

Figure XII–4 shows the results of selecting only the stock days in the random sample on which NYSE specialist units' positions were long (1,726 days). The randomly selected stock days on which the NYSE specialists' closing position was long were characterized by an average price decline of 0.16 percent. The change was negative on 55.80 percent of such days (app. B, Table XII–B–18). On the average a very slight price increase succeeded the randomly selected days.

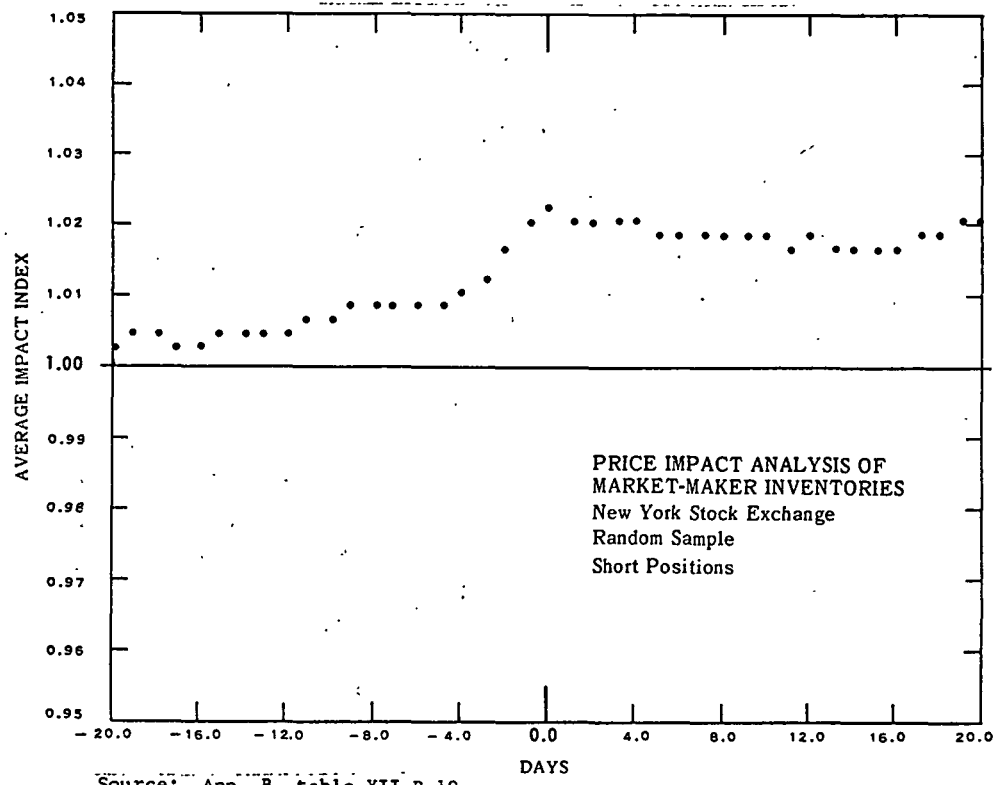
Figure XII–5 shows the average price changes for the randomly selected days on which the NYSE specialists unit's closing position was short (595 days). In the three weeks prior to the day selected, there had been an upward price trend which raised the price of the stock by about 1.5 percent relative to the market. On the day selected the average price movement was an increase 0.44 percent. The price movement was negative on only 43.90 percent of such days (app. B, Table XII–B–19). Subsequent to the day selected, there was a very slight tendency for the price to decline.

Figure XII-4



Source: App. B, table XII-B-18

Figure XII-5



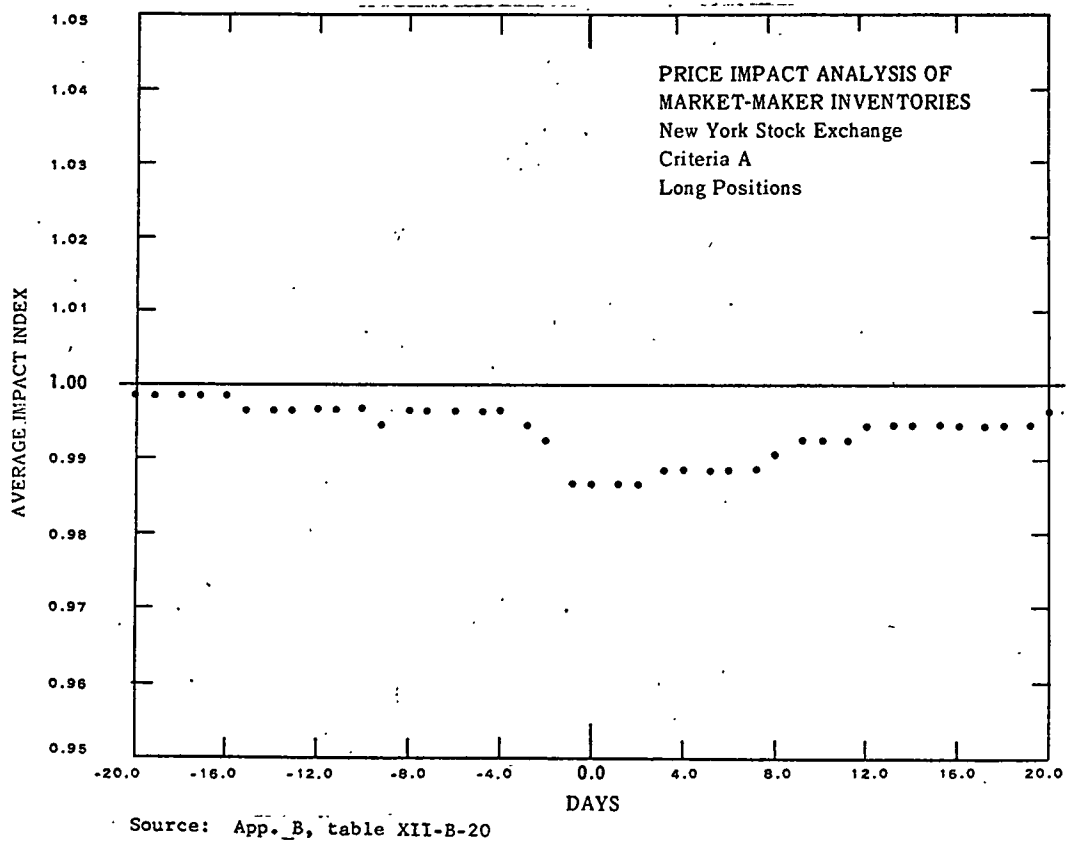
Source: App. B, table XII-B-19

3. Price Changes Associated With Unusual Position Changes by NYSE Specialists

A total of 1,674 stock days were selected as days of unusual position changes by the NYSE specialists. On 1,109 of the days selected the specialist's position was long. On 565 days it was short. Long and short positions were analyzed separately.

Figure XII–6 summarizes the results of analyzing the long positions. On day minus one, when the unusual position change occurred, the average price change was an increase of 0.7 percent. The price change was negative on approximately 63 percent of the days considered (app. B, Table XII–B–20). Somewhat large negative average price changes also occurred on the previous two days. For the entire three-day period ending on day minus one, the average price change was a decline of about 1 percent. The average price change during the next four weeks was small, but mainly positive. The cumulative effect of this slow upward drift was to eliminate the 1 percent decline that occurred during the three-day period ending on the day the large position change took place.

Figure XII-6



Source: App. B, table XII-B-20

It should be emphasized again that the analysis here is based only on closing prices. The Study does not have data showing the prices at which the specialist unit acquired its position or the pattern of price changes during the day the position was acquired.

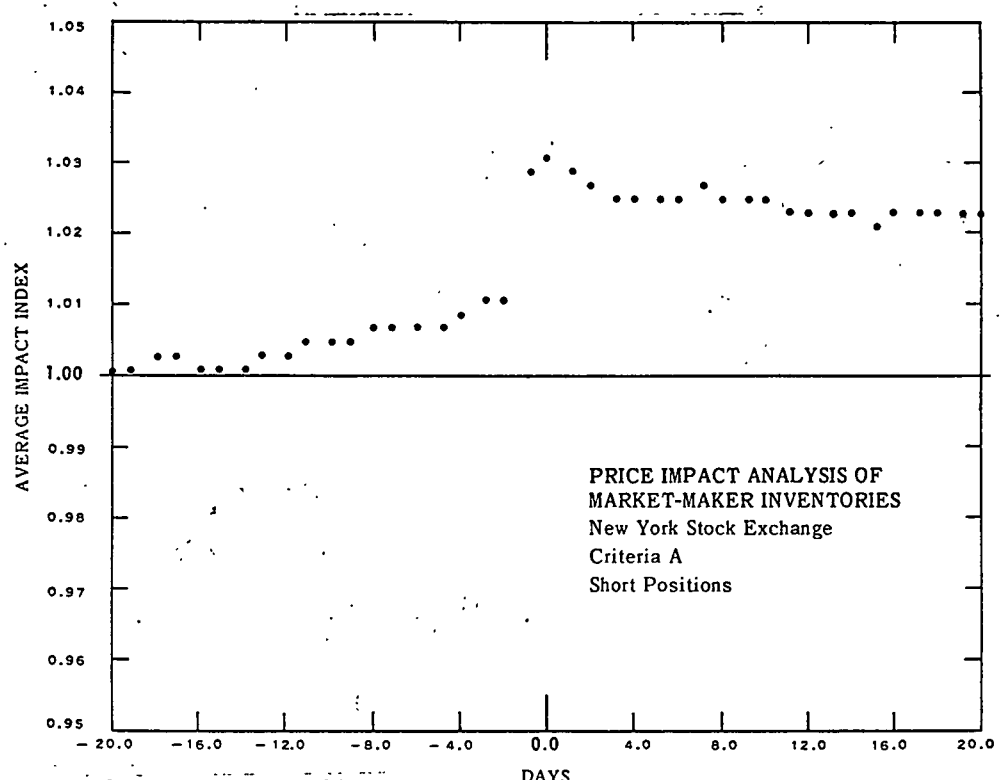
The blip pattern associated with days when the specialist has an unusual position change ending in a long position is similar to the pattern associated with terminal block trades occurring on down ticks, described in section D of chapter XI. In both instances there are sharp declines on the day of the event, and smaller negative price impacts on the previous days.

Since the price decline that culminates on day minus one is temporary, and the price eventually recovers to essentially the same level that prevailed before day minus three, it seems reasonable to interpret the price level before day minus three as the level at which normal buying and selling interests would be in balance. In the period following the unusual position change a price below this level could reasonably be expected to stimulate buy orders and to discourage sell orders, creating an imbalance of buy orders. Presumably this imbalance enables the specialist to dispose gradually of the excess long inventory which he accumulated on day minus one. This interpretation is consistent with the indications in chapter XI [49] that NYSE specialist units usually dispose of the positions accumulated from blocks by feeding the stock slowly into the auction market rather than by selling the stock in a block. The speed of the layoff process probably varies greatly for different specialists. Days of unusual position change need not be days on which block trades occur.

Figure XII–7 summarizes the analysis of the 565 days when the NYSE specialist units were short following an unusual position change. On day minus one, the average price change is a rise of 1.66 percent. The price change was negative only 25 percent of the time on this day (app. B, Table XII–B–21). A relatively sharp price decline of about 0.5 percent occurred in the first few days following the position change. The subsequent price trend was level.

[49] See ch. XI.C.2.c(2), above.

Figure XII-7



Source: App. B, table XII-B-21

The price pattern associated with these short positions seems to be composed of two elements: The first is a blip, smaller and shorter-lived than the blip observed in the case of long positions; the second is a persistent increase in the level of the stock's price, most easily explained as the market's adjustment to new information.[50] The magnitude and duration of the blip associated with unusual position changes in which the NYSE specialists' closing positions are short are consistent with the idea that these markets makers, for whatever reasons, tend to supply less liquidity in depth to meet an excess of demand than to meet an excess of supply.

4. Effect of Specialist Activity Category on Price Changes Associated With Unusual Position Changes by NYSE Specialists

Figures XII–8 through XII–13 show the price changes associated with unusual position changes when the NYSE specialist units are classified by their inventory activity category. The first three figures are for days on which the NYSE specialist units' positions were long after the unusual position change. The next three describe unusual position changes ending in short positions.

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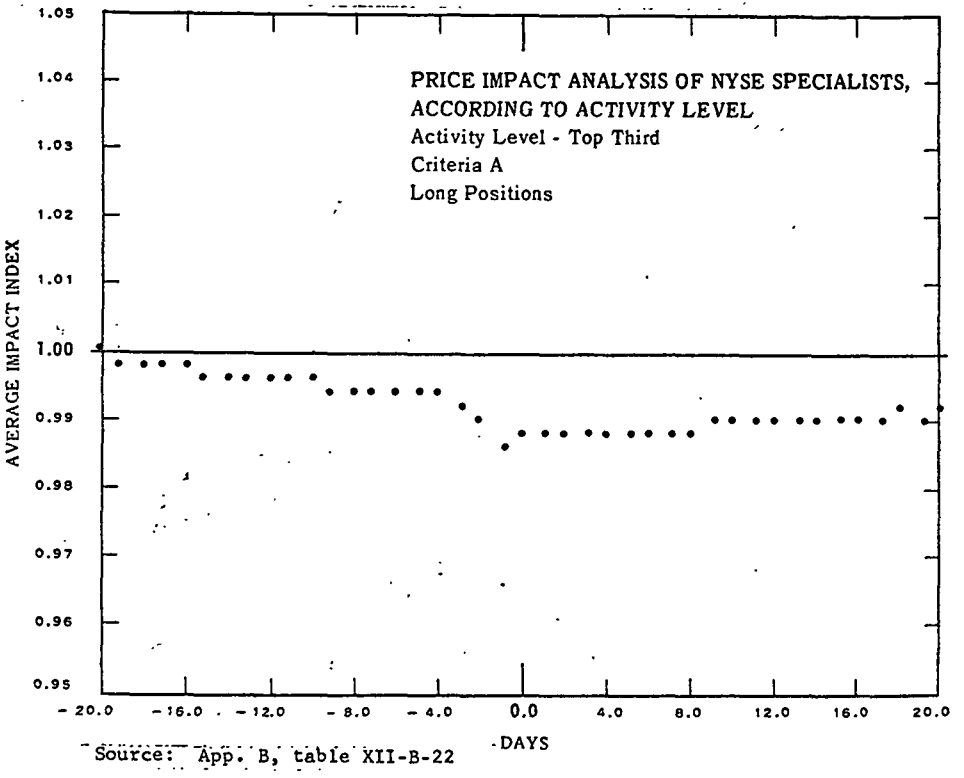
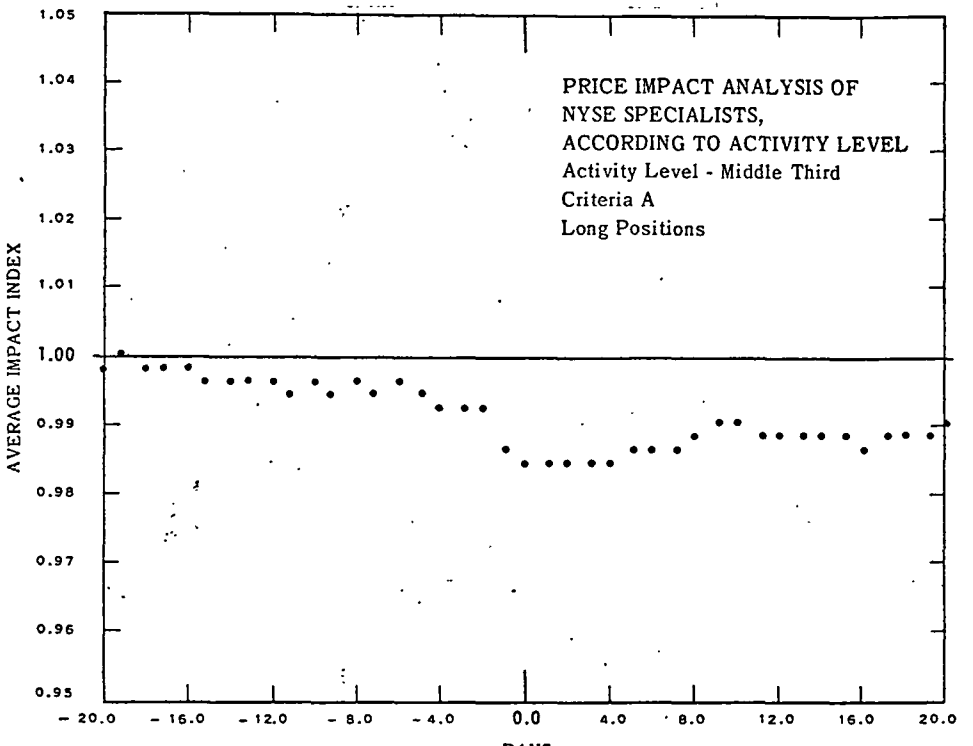
[50] A similar price impact pattern is observed in the case of plus tick blocks. See ch. XI.D, above. This is not surprising. It is likely that at least some of these unusual position changes by NYSE specialists result from their taking part of the passive side of a block trade initiated by buyers.

Figure XII-8



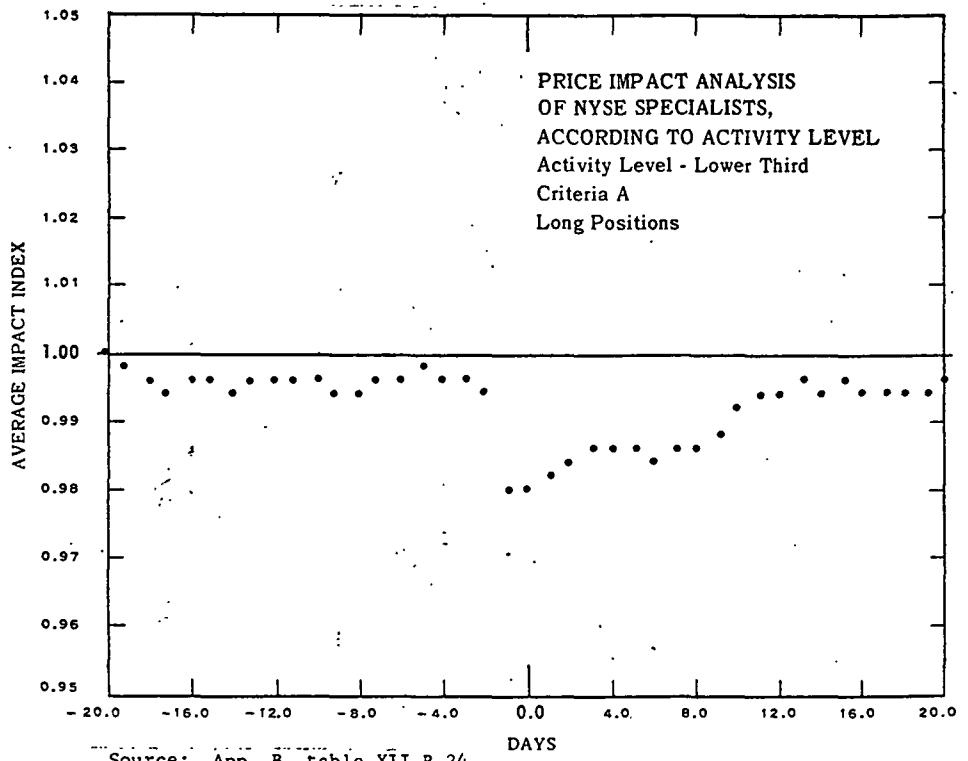
Source: App. B, table XII-B-22

Figure XII-9



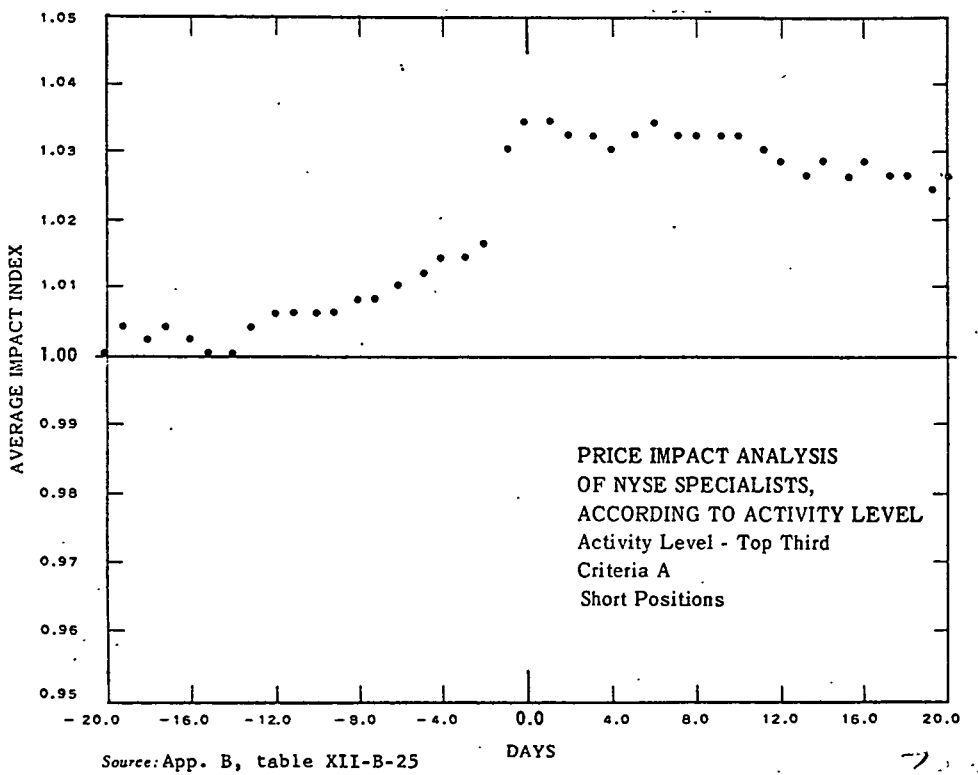
Source: App. B, table XII-B-23

Figure XII-10



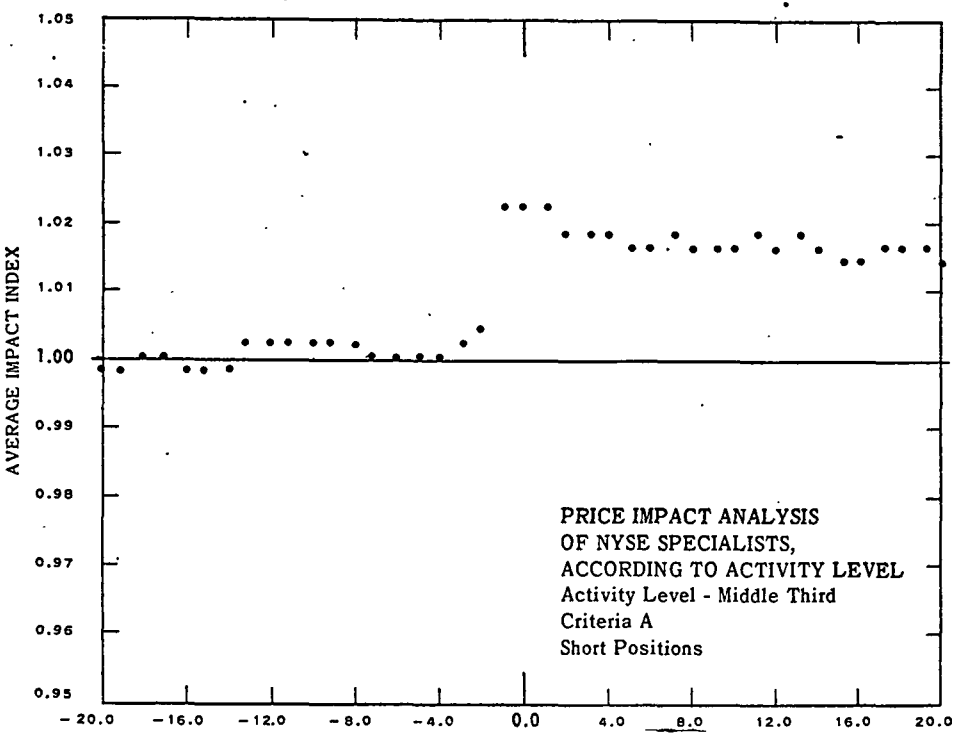
Source: App. B, table XII-B-24

Figure XII-11



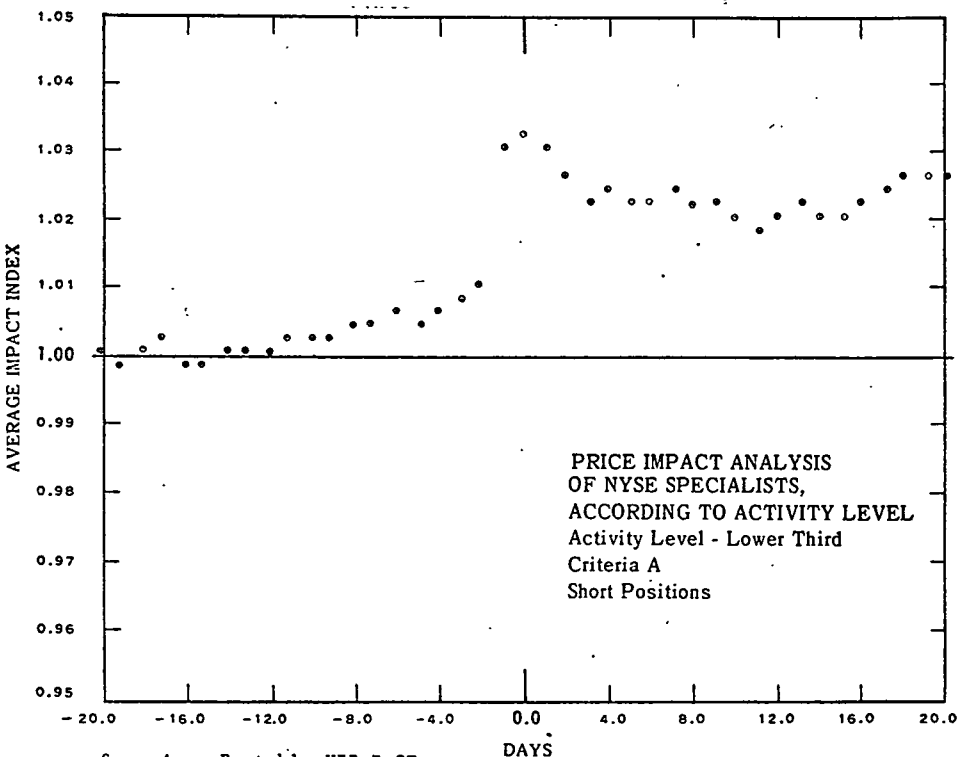
Source: App. B, table XII-B-25

Figure XII-12



Source: App. B, table XII-B-26

Figure XII-13



Source: App. B, table XII-B-27

With respect first to the unusual position changes ending in long positions, there are certain similarities among the specialist categories. *In all cases* prices declined moderately prior to the day of the large position change and more on the day of the large position change. The decline on the latter day is smallest for NYSE specialists in the high inventory activity category and largest for those in the low inventory category.

For NYSE specialist units in the high and low inventory activity categories the average impact index eventually returns to approximately the level prevailing at the close on the day of the position change. Importantly, however, for those units in the high inventory activity category, the price drifts up very *gradually* over the subsequent four weeks while for specialists in the low inventory activity category, the price rises at a relatively *rapid* rate until about day 11, after which the trend becomes nearly horizontal. But the position changes of NYSE specialist units in the low inventory activity category are not as large as those in the high category.

For both categories the most reasonable interpretation is that the dip in price on the day of the position change is a temporary fluctuation below the level at which demand and supply are in balance. As long as this price decline persists, it should help to create an imbalance of demand which the specialist unit can supply by reducing the inventory acquired in the unusual position change.

The price pattern associated with NYSE specialist units in the middle inventory activity category has certain unique characteristics. First, on the average, prices decline on the day following the large position change. This happens in no other category. The percentage of days with negative price impacts on the day after the large position change is 50, 59 and 52 percent, respectively, for the high, medium and low activity categories. Since the medium activity specialist unit has just had an unusual position change and is long, it is possible that it is reducing its inventory and thus engaging in apparently destabilizing inventory changes. As was noted earlier,[51] NYSE specialists in this medium inventory activity category have a higher percentage of days with apparently destabilizing inventory movements than do other specialist units.

It is unfortunately not possible to arrive at any satisfactory interpretation of how the activity category of the NYSE specialist influences the price impacts of unusual position changes in those cases

[51] See sec. D.2.f, above.

where the NYSE specialist's closing position is short, since such instances are few. As a result of the smaller sample sizes, random fluctuations in the level of the average impact index are larger. It is therefore more difficult to determine the extent of changes in the index caused by random factors and the extent of changes caused by differences in behavior of different categories of specialists. Although the long position sample covered at least 300 stock days for each activity category, the short position sample covered only from 154 to 222 stock days. Time did not permit the more elaborate analyses of these data which would be necessary to a satisfactory interpretation.

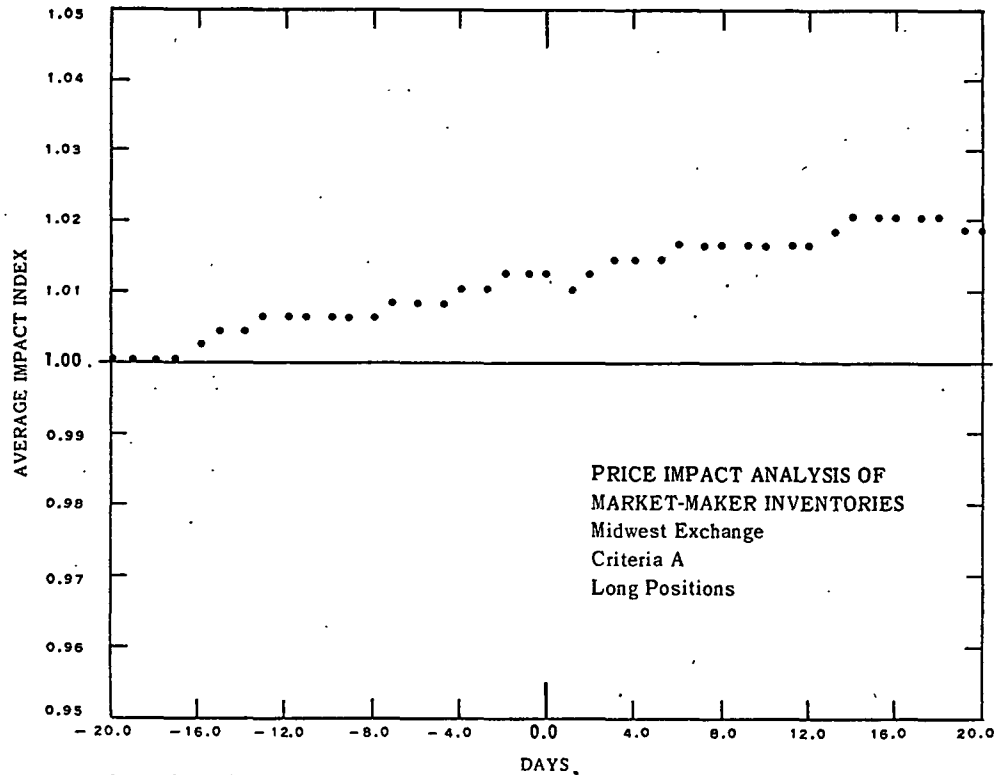
5. Price Changes Associated With Unusual Position Changes by Midwest Stock Exchange Specialists

Time did not permit a comprehensive analysis of the price impacts associated with unusual position changes by all market makers. To get some insight into possible differences between NYSE specialist units and others, however, the Midwest Stock Exchange "MSE" specialist units were analyzed for comparison. The MSE was selected because it is reputed to have one of the best regional exchange specialist systems.

Unusual position changes for MSE specialist units were selected using exactly the same procedure applied in the case of NYSE specialist units. Although the price changes were studied using the closing NYSE prices, since only these prices were available in machine-readable form, this procedure should not have caused any systematic biases. Arbitrage should minimize the possible deviation between contemporaneous quotations for the same security on different markets.

The price pattern for unusual position change days on which the MSE specialists' closing positions were long, as reported in figure XII–14, is strikingly different from the corresponding pattern for NYSE specialists. One difference is that these unusual position changes tend to occur when there is a persistent upward drift in the price of the stock beginning weeks before the unusual position change and continuing for weeks afterwards. No such upward drift is associated with the comparable unusual position changes of NYSE specialist units. A second striking difference is that there is a small V-shaped blip beginning on the day after the unusual position change rather than on the day of the change, as in the case of the NYSE specialist.

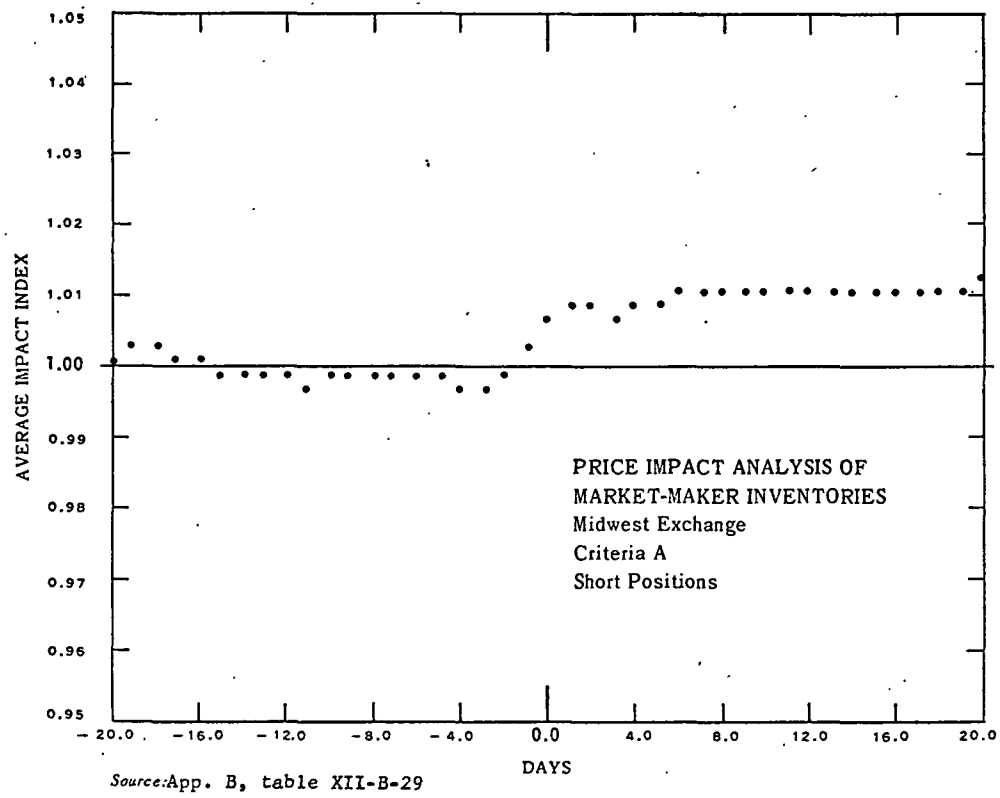
Figure XII-14



Source: App. B, table XII-B-28

Figure XII-15 presents comparable data for the 546 stock days on which MSE specialist units' unusual position changes ended in short positions. The pattern of price changes around these days is similar to the pattern for NYSE specialist units in that there was, on the average, a large, sudden and persistent price increase. But, while the NYSE specialist was short after the price rise occurred, the MSE specialist acquired its short position before the price increase. An interpretation of this somewhat surprising characteristic of the data might depend in great part on how MSE specialists dispose of their positions, a subject that the Study was unable to explore.

Figure XII-15



Source: App. B, table XII-B-29

G. INCOME AND RETURN ON INVESTMENT FOR NYSE SPECIALISTS

1. Introduction

This section examines data on the average level and the variability of the income of NYSE specialists units and relates that income to the resources used to produce it. The significant resources required are the time and skill of the specialist and his staff, the capital he employs and the franchise implicit in the assignment of a stock issue. The purpose of this examination is to evaluate whether the economic incentives for the NYSE specialist are adequate and appropriate.

2. The Income Concept Used

Form I–13, table II, requested NYSE specialists to provide monthly data on the brokerage income and trading account income for each of their specialty stocks included in List L for the period from July 1968 through September 1969. For purposes of the income analysis brokerage income was limited to "floor brokerage," the commission the specialist receives for acting as a broker's broker. Brokerage received from public customers, if any, was to be excluded.[52]

In computing trading account income, specialists were instructed to value their beginning and ending inventories at market. The trading income figure computed this way will differ from taxable income, since LIFO inventory valuations are often used for the latter.[53] Dividends received on long positions were included in trading account income. Dividends paid on short positions, along with state taxes, registration fees and the applicable clearance charges (whether or not actually paid) were subtracted in computing trading account income. Interest expense, if any, was not considered.

There are many reasonable but different ways of defining income. The choice among them should depend on how the data will be used. In choosing an income concept for which data would be collected for this analysis, one objective was to consider only those items of revenue and expense that could be directly traced to trading in a particular security. Thus, items of expense which accountants would ordinarily classify as overhead or joint costs—for example, the salary of the

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[52] Although the analysis in this chapter concentrates on the dealer function of market makers, the inclusion of brokerage income in the present context is appropriate from both the regulatory and economic points of view. With respect to the former, the inclusion of brokerage income is appropriate because of the traditional argument that, despite any potential conflicts of interest, specialists require brokerage income to subsidize their dealer activities. See Special Study, pt. 2, pp. 165–66. From the economic point of view, the franchise to specialize in a particular stock carries with it access to both dealer and brokerage income. Any allocation of joint costs, such as the cost of specialist's time, between these two activities would be arbitrary.

[53] Valuing inventories at market results in recognizing unrealized profits and losses which are not recognized in computing taxable income. The level of the S&P composite index was 99.40 on July 1, 1968, the beginning of the period studied. It rose to a peak of 108.37 on November 29, 1968, and fell to 93.12 by September 30, 1969, the end of the period studied. Thus, the recognition of unrealized trading profits and losses probably reduced trading account income to some extent.

specialist's clerk and rent for his office—were not considered.[54] A second objective was to make the income figures as comparable as possible from one specialist firm to another; thus, the treatment of clearing and interest expenses. Some specialists clear their own trades. Most pay another member firm to perform this service for them. To avoid having specialists who clear their own trades allocate back office expenses to particular securities, NYSE specialists were asked to deduct from trading income the applicable clearing charges, whether or not actually paid. Similarly, since specialist firms also differ in the amount of money they borrow to carry their inventories, they were asked not to deduct interest expenses, if any, from income.

In accounting terminology, the "gross income" in this section is more precisely described as the excess of revenues generated by a particular stock less the costs directly associated with such revenues. In considering the overall economic incentives of a specialist unit, this "gross income" must be considered in relation to the overhead costs of the firm, the compensation required by capital suppliers (whether owners or others) and the compensation required for the time the owners spend in the business.

3. The Level and Variability of Income

Table XII–21 summarizes the data on the average levels of trading account, brokerage and total income and describes the month-to-month variation of total income. There were too few low volume stock months to warrant inclusion in the table. The data described in the table exclude investment account income, which is considered separately later in this section.

For a given NYSE dollar volume category, there are no consistent variations among the specialist activity categories in the average level of brokerage income. Moreover, brokerage income earned by NYSE specialist units is less variable from month-to-month than trading income. But brokerage income is very dependent on NYSE volume. It is about twice as high for the high dollar volume stocks as for the medium volume dollar volume stocks. Also, brokerage account income tends to constitute a higher percentage of gross income for medium volume stocks than for high volume stocks.

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[54] The Special Study described these expenses of specialists units as "fairly standard, and, in relation to expenses in other areas of the securities business, fairly low." Pt. 2, p. 69. The main item of expense at that time was the salaries of the specialist's clerks. Other items were annual registration fees for the specialist and his clerks and rental of space for his post on the floor and for his office. At present it is fairly common for specialist units to have clerical help in their "back office" even when they do not do their own clearing. As indications of the magnitudes involved the following figures were supplied by the NYSE: Floor clerks might earn $18,000 to $21,000 per year. Trading location rental ranges from $1,000 to $1,800, depending on the location. Registration fees are $300 per year for the specialist himself and $120 per year for each clerk. The individual specialist, as an exchange member, pays annual dues of $1,500. Phones to his clearing firm might cost an additional $300. In the "back office" a top bookkeeper might earn $24,000 per year; a commission billing clerk, $12,000 per year. A major item is the opportunity cost of the specialist's time. A consulting firm employed by the NYSE estimated a median value for this item at $60,000 per year as of 1966–67.

Table XII-21

COMPOSITION AND CHARACTERISTICS OF THE DISTRIBUTION OF GROSS MONTHLY INCOME PER STOCK OF NYSE SPECIALIST UNITS BY DOLLAR VOLUME CATEGORY OF STOCK AND BY INVENTORY ACTIVITY CATEGORY OF SPECIALIST

Stock and Specialist Categories		Composition of Average Gross Income Per Month			Characteristics of the Distribution of Gross Monthly Income				
NYSE Dollar Volume Category	Specialist Activity Category	Average Brokerage Income	Average Trading Account Income	Average Gross Income	Minimum	First Quartile	Median Income	Third Quartile	Maximum
High	High	$12,817	6,993	19,810	-999,445	62	22,811	46,778	773,051
	Medium	10,398	10,260	20,652	-121,243	6,885	18,724	31,958	229,135
	Low	9,394	9,391	18,786	-149,689	7,028	18,207	29,092	146,851
Medium	High	4,677	2,840	7,517	-536,929	460	7,927	18,943	249,205
	Medium	5,474	2,375	7,850	-75,965	315	7,086	15,496	72,205
	Low	4,091	154	4,246	-201,773	742	6,323	12,196	57,431

The range of monthly trading account incomes is extremely large. In most of the stock month and specialist activity categories shown in this table, deleting the stock month with the highest trading profits or the largest trading losses would make a noticeable difference in the average for the category. For example, the average trading account income for high dollar volume stocks handled by high activity category NYSE specialist units was $6,993 per stock month. The largest trading loss sustained by any specialist unit in a single stock month included in this average was just over $1 million. Excluding this one stock month would increase the average trading income for this category to $10,253. Deleting the single stock month with the largest trading profits or losses from any of the averages in this table would produce changes that are nearly as dramatic. Two NYSE specialist units have substantially larger overnight positions than the other units in that category. The average gross income per high dollar volume stock for the other eight units in the high activity category is $26,069 per month.

Since gross income is the sum of brokerage income and trading account income, the extreme variability of trading account income is also carried over to gross income. As noted above, monthly averages are extremely sensitive to single months of very high or very low income. In such situations the median is often a better measure than the average. By definition, half of the values are above the median, and half are below. Within each dollar volume category there is some slight tendency for a direct relationship between the activity category of the specialist unit and the level of its median gross income. The more active units have somewhat higher median gross income per stock. But volume is a much more important influence. Substituting a high volume stock for a medium volume stock leads to an increase in the median monthly income of between 100 and 200 percent. By contrast, within the same dollar volume category, the stocks of high activity NYSE specialist units have median incomes that are about 25 percent greater than the stocks of low activity units.

Holding dollar volume constant, there is a direct relationship between inventory activity of an NYSE specialist unit and the variability of its gross income from a stock. Moreover, for a given inventory activity category, high dollar volume stocks have more variable incomes than medium dollar volume stocks. These generalizations are true without exception if variability is measured in terms of the size of the inner-quartile range. For example, considering the high volume stocks assigned to high activity NYSE specialist units, the first quartile of gross income is $62 per month; that is, in 25 percent of the stock-months these units earn less than $62 per month from a high volume stock. For the same group, the third quartile is $46,778: In 25 percent of the months these units earn more than this amount from a high volume stock. The inner-quartile range, in this case $46,778 minus $62, or $46,716, is the spread from the boundary of the lowest quarter of the distribution to the boundary of the highest quarter of the distribution. Half of the values of monthly income are covered by this range. If there were less variation in the values of total income, the range would be smaller. For example, in high dollar volume stocks assigned to medium activity NYSE specialist units the inner-quartile range is only $25,073. For similar stocks assigned to low activity category units the corresponding range is about $22,064.

To further illustrate the variability of gross income per month, the percentage distribution of monthly gross incomes for high dollar volume stock months has been calculated separately for each inventory activity category of NYSE specialist units on Table XII–22. Investment account gains and losses are not included. NYSE specialist units in the high activity category had losses in about 25 percent of their high dollar volume stock months. The corresponding percentages are 17 and 13 for the medium and low activity units. Losses of $100,000 or more in a single stock month occurred 5.4 percent of the time for the high activity units and 0.4 percent of the time for the other two categories of units. Similarly, gains of $100,000 or more per month occurred in 6.6 percent of the months for the high activity units and 2.7 and 1.3 percent for the medium and low activity categories.

Table XII-22

Percentage Distribution of High Dollar Volume Stock Months by Inventory Activity Category of NYSE Specialist Units and Amount of Unit's Gross Income or Loss in Month

Level of Total Gross Monthly Income Per Stock (Dollars)	Inventory Activity Category of NYSE Specialists Units		
	High	Medium	Low
	(Percent of Months)		
Losses			
250,001 or more	1.6	0.0	0.0
100,001 to 250,000	3.8	0.4	0.4
50,001 to 100,000	2.5	1.9	1.7
25,001 to 50,000	4.1	3.9	0.8
1 to 25,000	12.9	11.2	9.5
Sub-total	24.8	17.4	12.6
Gains			
1 to 25,000	28.2	51.6	56.7
25,001 to 50,000	24.5	27.1	23.4
50,001 to 100,000	16.0	8.9	6.1
100,001 to 250,000	5.0	2.7	1.3
250,001 or more	1.6	0.0	0.0
Sub-total	75.2	82.6	87.4
Total	100.0	100.0	100.0
Number of Stock Months	319	258	231

For some purposes, it is more interesting to look at gross income on such examination is summarized in Table XII–23.[55] There were 42 stocks in List L which were in the high dollar volume category for at least 12 of the 15 months for which the Study had data. The tabulations in Table XII–23 were based on only those high dollar volume stock months. Of the 42 stocks listed in the table, there were only seven that were profitable every month the stock was in the high volume category. Four of these seven stocks were assigned to units in the low activity category. On the other hand, there were only two stocks for which the losses were large enough, or persistent enough, so that the average income over all high volume months was negative. Both of these stocks were assigned to NYSE specialist units in the high inventory activity category. Including stocks in which the average monthly income was negative, there were only seven stocks for which the average income per stock was less than $10,000 per month. Four of them were assigned to high activity units.

[55] It should be noted that the gross income data in Table XII–23 do not include realized or unrealized capital gains or losses in specialists' investment accounts. The information on realized gains or losses from these accounts is discussed in the following paragraphs.

Table XII-23

Maximum, Minimum and Average Monthly Gross Incomes for High Dollar Volume Stock Months Only, */ By Stock and by Specialist Activity Category

Specialist Activity Category	Stock Number	Maximum Monthly Gross Income for Stock	Minimum Monthly Gross Income for Stock	Average Monthly Gross Income for Stock
High	1	59,883	-1,937	23,823
	2	138,428	-35,328	63,376
	3	57,430	-9,071	28,987
	4	60,082	7,167	35,522
	5	63,738	-61,720	20,273
	6	102,675	-201,142	9,497
	7	109,865	-100,142	11,161
	8	87,914	-119,861	-10,499
	9	111,571	-42,072	17,375
	10	74,105	-55,861	22,967
	11	45,491	3,196	25,727
	12	53,114	-24,458	12,500
	13	74,603	-16,859	24,714
	14	81,990	-65,115	20,683
	15	203,227	-302,389	8,132
	16	202,990	-125,125	38,452
	17	113,614	-35,887	45,372
	18	82,891	-16,423	23,292
	19	490,802	-993,445	-12,799

(continued)

*/ Only stocks in the high dollar volume category for at least 12 of the 15 months were included; and, for any stock included, only the high dollar volume stock months were considered for this tabulation.

Table XII-23

Maximum, Minimum and Average Monthly Gross Incomes for High Dollar Volume Stock Months Only, */ By Stock and by Specialist Activity Category

(continued)

Specialist Activity Category	Stock Number	Maximum Monthly Gross Income for Stock	Minimum Monthly Gross Income for Stock	Average Monthly Gross Income for Stock
Medium	20	56,569	-43,816	5,405
	21	35,160	- 8,802	15,791
	22	27,942	-32,425	7,263
	23	45,736	-20,835	14,319
	24	39,426	-18,828	22,817
	25	85,418	-59,542	17,600
	26	91,919	- 8,025	44,459
	27	56,532	- 4,548	22,173
	28	164,346	-76,405	16,320
	29	43,287	- 2,500	26,645
	30	229,135	-82,805	34,509
	31	191,422	-18,125	36,094
	32	46,982	- 767	15,240
Low	33	146,851	17,054	54,855
	34	69,534	6,394	35,795
	35	45,516	3,573	13,176
	36	36,544	3,193	21,507
	37	37,295	-1,376	17,182
	38	36,090	-13,558	13,496
	39	37,295	-49,805	5,443
	40	51,945	-11,053	15,585
	41	76,601	-19,492	25,623
	42	51,247	- 2,802	23,872

*/ Only stocks in the high dollar volume category for at least 12 of the 15 months were included; and, for any stock included, only the high dollar volume stock months were considered for this tabulation.

Specialists are allowed to segregate a part of their long positions into separate investment accounts under certain circumstances. Gains or losses from stock held in such separate accounts are eligible for treatment as long-term gains or losses. The Study collected data on realized and unrealized capital gains or losses from such investment accounts on the stocks in List L. Of the 1,338 stock months for which data were available, NYSE specialists units realized gains or losses in 42 (3 percent) of such months. Capital gains were realized in 25 stock months and totaled $1,742,121, while losses were realized in 17 stock months and totaled $214,649, for a net gain of $1,527,472. The average realized pre-tax long-term capital gain per stock month was $1,142. Two stock months accounted for over $1 million of the realized capital gain; in both cases the specialist units were in the top activity category. In general, there appears to be a strong relationship between the frequency of realized capital gains or losses and the activity category of the NYSE specialist unit.

Considering the small proportion of all stock months in which realized capital gains or losses occurred and the concentration of the dollar amounts of such gains and losses in a few such months, the estimates of average realized capitals gains per stock month must be considered extremely unreliable. The same factors would tend to make it very difficult for the unit to judge what level of capital gains it can expect from its specialist activity.

The main determinant of the average level of gross income that NYSE specialist units can anticipate from their specialty stocks is the dollar volume of trading in those stocks. Whether NYSE specialist units in different inventory activity categories earn different levels of gross income from stocks in comparable dollar volume categories depends on on the measure of income used. Judging from their median income, the high activity units earn somewhat higher levels of gross income. Judging from their average incomes, the high activity units earn somewhat lower levels of gross income. But differences in the averages are reduced, if not eliminated or reversed, when investment account income is considered.

It is clear that NYSE specialist units in the high activity categories experience greater risks, as measured by the variability of their gross incomes and the frequency and size of the losses they sometimes incur. Two factors account for the differences in risk. First, NYSE specialist units in the high activity categories may have assigned to them a higher proportion of the more inherently volatile stocks. Secondly, they are more effective in reducing the day-to-day price variations in their stocks. In the process of reducing day-to-day price variability, they undoubtedly increase the variability of their gross income.

4. Relations Between Income and Resources Employed

Comparisons of the income of NYSE specialist units may be misleading if they do not take into account differences in the quantity of resources employed. As indicated in section c.2.a of this chapter, for each dollar volume category of stock there is a direct relationship between the inventory activity category of the NYSE specialist unit and

the average value of its inventory position. In the high dollar volume stocks, the high inventory activity category NYSE specialist units' average inventories are nearly seven times as large as those of specialists in the low inventory activity category. For medium dollar volume stocks, the average inventories of the high activity units are just over four times as large as those of the least active specialists.

The averages referred to above were calculated by giving equal weight to each stock month in the high dollar volume category. To some extent these averages may exaggerate the differences between the high inventory and medium inventory activity units. Two units in the high inventory activity category carry much larger average daily positions per stock than the other units in the sample. If these two units are eliminated, and the average closing positions of the remaining eight high inventory category units are calculated for high NYSE dollar volume stock months, the average closing position for the group in these stock months is reduced from $812,259 per stock to $355,033 per stock. This lower amount is still larger than the average closing positions of $224,700 for the NYSE specialist units in the medium inventory activity category, but the difference is substantially less.

The two units referred to above also have somewhat lower average gross incomes per stock. While the average monthly gross income per high dollar volume stock month is $19,810 for all the high inventory activity units, the average excluding the two firms referred to is $26,069 per high dollar volume stock month.

The two units referred to are also more likely to hold stocks in their investment accounts. The value of this stock is not included in the average positions reported here or elsewhere in the Study, nor are the capital gains or losses included in the gross income totals.

Excluding these two unusual units, however, the average gross rate of return per month for the remaining high activity category NYSE specialist units is somewhat less than the return for the medium activity units and is less than half the average return of the low activity units (Table XII–24).[56] Since the risks, as measured by variability of income, are greater for NYSE specialist units in the high activity category, it is legitimate to question whether they have an economic incentive to perform as effectively as desirable in reducing day-to-day variations in the prices of their specialty stocks.[57]

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[56] If these two units were included in the high activity group, the average gross return for the group would be substantially less.

[57] The return data referred to in the text do not include the income from or the capital tied up in the specialist units' investment accounts. Conceivably an evaluation of such data could lead to a modification of the conclusion in the text. Data about an entire specialist unit for a period of years would be required adequately to evaluate the additional return earned by units with investment accounts. See sec. G.3, above.

Table XII-24

Average Gross Monthly Income
And Return on Investment
For High Activity Stock Months, By
Inventory Activity Category of NYSE Specialist Units

Inventory Activity Category of NYSE Specialist Unit	Average Gross Income per Stock Month (Dollars per Month)	Average Investment (Dollars)	Average Monthly Gross Return (Percent per Month)
High	26,039	355,033	7.34
Medium	20,652	224,700	9.19
Low	18,786	118,340	15.87

As further evidence on the relation between risk, return and the average investment of NYSE specialist units, the total gross income per stock for the entire 15 month period has been calculated for essentially all stocks on List L.[58] These data, along with the average closing position in these stocks and the average value of the dollar volume decile [59] in which they fell, are given in Table XII–25).

In evaluating the level of income received by NYSE specialist units, it would be desirable to make some allowance for overhead expenses and for the opportunity cost of the individual specialist's time. The Study was unable to make the detailed analysis of the internal operations of NYSE specialist units and of the assignment of stocks to these firms that would be required to make accurate estimates of the level of these expenses. To the extent that some of these expenses represent fixed overhead costs shared by several stocks or several individual specialists in a single unit, no economic meaningful allocation of them to individual stocks is possible. The appropriate question is whether all of the stocks assigned to the unit generate enough gross income to cover the shared overhead costs and still provide an adequate return to the individual specialist and to the capital employed.

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[58] A few stocks were omitted because data were incomplete for them on the computer file from which this table was produced.

[59] Stocks whose dollar volume in a particular month was in the top ten percent of all NYSE-listed issues that month are in the tenth decile. If the average decile was 10, the stock was in that category in every one of the 10 months.

Table XII-25

FIFTEEN MONTH TOTAL OF GROSS INCOME,
AVERAGE DAILY CLOSING POSITION OF NYSE SPECIALIST UNIT
AND AVERAGE DOLLAR VOLUME DECILE, BY STOCK
AND BY INVENTORY ACTIVITY CATEGORY OF NYSE SPECIALIST UNIT

Inventory Activity Category	Average Dollar Volume Decile	Fifteen Month Total of Gross Income	Average Daily Closing Position
High	10.0	950,642	351,418
	10.0	532,837	1,063,184
	10.0	434,810	305,194
	10.0	370,714	423,030
	10.0	357,359	269,020
	10.0	344,510	432,889
	10.0	304,106	298,194
	10.0	260,638	910,742
	10.0	167,416	568,192
	10.0	121,988	1,284,130
	10.0	-157,499	1,088,816
	10.0	-191,996	5,026,622
	9.93	142,462	600,941
	9.80	680,586	567,511
	9.64	175,816	206,840
	9.60	369,383	144,539
	9.33	576,784	791,920
	8.80	372,344	499,186
	8.60	-1,521,474	2,597,194
	8.40	157,666	110,860
	8.40	48,693	289,269
	8.20	372,760	367,723
	8.00	177,293	185,694
	7.80	145,307	1,325,692
	7.73	284,785	197,399
	7.66	28,706	143,722
	7.06	169,339	112,376
	6.73	117,696	162,770
	6.53	160,281	148,569
	6.40	76,890	117,308
	5.86	132,224	47,874
	4.66	159,868	56,612
	3.93	28,116	70,618
Medium	10.0	342,261	282,978
	10.0	214,787	284,406
	10.0	236,869	249,973
	10.0	666,897	317,356
	10.0	399,677	272,966
	10.0	517,636	401,626
	10.0	541,422	123,777
	9.84	68,123	173,571
	9.73	343,183	168,554
	9.73	228,604	61,465
	9.66	264,003	221,269
	9.66	182,601	265,407
	9.20	-32,202	260,114
	8.93	304,522	168,984
	8.93	145,595	222,832
	8.73	53,811	42,994
	8.60	6,737	191,913
	8.60	497,034	371,791
	8.53	139,271	213,497
	8.33	122,519	226,963

Table XII-25

(continued)

Inventory Activity Category	Average Dollar Volume Decile	Fifteen Month Total of Gross Income	Average Daily Closing Position
Medium	6.20	160,710	78,134
	6.06	75,326	131,513
	5.33	81,353	43,598
	5.20	34,808	72,004
Low	10.0	358,081	138,390
	10.0	257,734	113,601
	9.93	81,650	163,763
	9.86	822,831	95,043
	9.86	384,358	92,408
	9.80	197,651	78,248
	9.73	536,939	75,031
	9.53	202,441	139,604
	9.33	298,279	89,196
	9.28	149,808	103,259
	9.26	248,709	160,234
	9.06	115,462	153,296
	9.06	-91,535	238,297
	8.60	153,270	42,472
	8.60	138,817	127,994
	8.20	273,604	47,348
	8.13	174,876	140,312
	8.13	126,426	263,238
	8.08	278,206	131,988
	7.60	236,249	57,862
	7.40	99,517	30,267
	7.13	111,547	33,410
	6.93	29,276	52,946
	6.93	-261,319	214,197
	6.73	88,218	61,753
	6.73	-13,229	52,730

In commenting on the problem of providing continuity with depth, the Special Study said:

> There is no doubt that by providing depth in both good markets and bad, the specialist is more likely to accumulate an inventory and thus increase his risk. However, the business of the specialist is not an unrewarding one. A responsibility to provide continuity with depth is the reasonable concomitant to the many privileges specialists enjoy.[60]

The findings of this chapter substantiate the conclusion that providing liquidity in depth is indeed likely to increase the NYSE specialist unit's risk. They also substantiate the conclusion that the business of the NYSE specialist unit is a rewarding one. Indeed, in the one out of five stocks that fall in the high dollar volume category each month, the average annual gross incomes of NYSE specialist units range from $225,000 per stock per year to $312,000, depending on the inventory activity group of the specialist unit. In the case of the two categories of specialists that respond less to market demands for liquidity, the annual gross incomes per stock exceed the average overnight positions in the stock.

H. ALLOCATION OF SECURITIES TO NYSE SPECIALIST UNITS

The economic motivation of NYSE specialist units could be importantly influenced by the way stocks are allocated among units. In addition, by allocating a larger proportion of the available issues to units whose performance is superior, the NYSE could improve the average quality of the market-making in its list even if the behavior of individual units were not changed.

At the request of the Study, the NYSE supplied data on all stocks assigned to each of the 30 NYSE specialist units in the sample as of mid-1967 and on all additions and deletions until July 1, 1970. Since the number of issues is not a good measure of the economic potential in a stock, the Study estimated the dollar volume of trading in the stocks during the month of July 1967 and during the months of June and July 1970.

Table XII–26 shows the percentage distribution of volume in mid-1967 and mid-1970 in the stocks assigned to the three categories of NYSE specialist units. For each category of specialist unit, the percentages are very nearly identical in the two periods. This table indicates that the NYSE has not tended to use the allocation process to increase the proportion of its volume assigned to those specialist units in the highest inventory activity category.[61]

Table XII–27 divides the total volume of trading in issues assigned to the sample specialist units into that part of the volume resulting from stocks that had been allocated to the unit before July 1, 1967, and the part allocated to those units after that date. Nearly a quarter of the 1970 volume for the 30 units as a whole was in issues for which a specific specialist unit assignment decision was made in the previous three year period. Thus, the opportunity existed to make a significant change in the allocation of volume.

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[60] Special Study, pt. 2, p. 126. In 1959, NYSE specialists had total gross income (on a LIFO basis and including investment account profits and losses but excluding all unrealized trading profits and losses) of $40.8 million on capital (cost of inventory plus cash on hand) of $69.1 million for an annual gross return of 59 percent. In 1960 the respective figures were $34.7 million, $76.3 million and 45 percent. *Id.* at 68, 69, 481, 483.

[61] The volume in the stocks newly assigned to the high activity specialists was higher than that of the stocks assigned to the other groups. The high activity specialists, however, lost more stocks by merger or delisting.

Table XII-26

Percentage of Trading Volume in 1967 and 1970
In All Stocks Assigned to Sample
NYSE Specialist Units by Inventory Activity Category

	Percentage of Dollar Volume in Stocks Assigned to Units in Each Category	
Inventory Activity Category	As of July 1967 (Percent)	As of June-July 1970 (Percent)
High	44.6	44.5
Medium	34.7	35.0
Low	20.7	20.5
Total	100.0	100.0

Table XII-27

Percentage Distribution of 1970 Trading Volume by Inventory Activity Category of NYSE Specialist Unit and By Status of Stocks in 1967

	Stocks Allocated to Units in 1967 and Still Assigned to Them in 1970	Stocks Allocated to Units Since 1967	Activity Category Totals
High	35.2	9.3	44.5
Medium	23.8	11.2	35.0
Low	17.5	3.0	20.5
Total	76.5	23.5	100.0