A note on trading mechanism and securities' value:
The analysis of rejects from continuous trade

Beni Lauterbach

Abstract

We examine 97 stocks that moved from continuous trade back to single daily auctions. The response to exit from continuous trade is almost a mirror image of the entry response documented in Amihud, Mendelson and Lauterbach (1997). Upon exiting continuous trade, stock liquidity, price accuracy, and value drop. An exception is, however, identified. Ten stocks that were omitted from continuous trade within three months of their addition have negative excess returns upon entry into continuous trade and positive excess returns upon exit. These immediate rejects had relatively low volumes before entering continuous trade, which suggests that for thinly traded stocks simple unassisted continuous trade may not be optimal.

Keywords: Continuous trade optimality; market microstructure change; thin trading; stock liquidity.

JEL Classification: G14

* Currently visiting the Anderson School of Management at UCLA. Fax: 310-2065455; E-mail: blauterb@anderson.ucla.edu
1. Introduction

Amihud, Mendelson and Lauterbach (1997), AML hereafter, study the effects of trading mechanism on securities’ value. They show that stocks transferred from a single daily auction to continuous trade experienced, on average: 1) a permanent price increase of about 5%, 2) a considerable trading volume increase, 3) a significant decline in price volatility (see also Lauterbach and Ungar, 1997), and 4) faster adjustment of prices to information. Furthermore, the stock price increase upon joining continuous trade was positively correlated with the liquidity improvement. The AML study employs Tel-Aviv Stock Exchange (TASE) data. However, Muscarella and Piwowar (1999) find similar results in a sample of stocks that were transferred by the Paris Bourse between call auctions and continuous trade.

The present study complements the AML research by examining a sample of stocks that were removed by the TASE from continuous trade (the V-system) back to a single daily auction (the C-system).\(^1\) The TASE had limited capacity and decided that only 100 stocks could be traded on the V-system. Thus, stocks that demonstrated high trading activity on the C-system occasionally replaced stocks that had low trading activity on the V-system. The TASE board updated the list of V-system stocks usually once every three months, and on average 3-4 stocks were omitted from the V-system in each update.

The sample of stocks omitted from continuous trade (the V-system) is interesting because of two reasons. First, it could confirm (or reject) the previous findings about additions to continuous trade. Upon omission from continuous trade, we expect a mirror image of the

---

\(^1\) Stocks traded on the C-system had a single daily call auction. Stocks traded on the V-system opened with a call auction after which there were several rounds of bilateral continuous trade.
addition response; i.e., stock liquidity and value should drop. Second, exclusions from continuous trade also invoke the hypothesis that continuous trade may not fit all stocks. Perhaps not all stocks are served well by continuous trade, and perhaps some stocks could benefit from concentrating trade on a single daily auction. This is the more intriguing economic issue that we pursue.

The paper is organized as follows. Section 2 describes the data and replicates the AML results. Section 3 documents the response of omitted stocks on their entry and exit of continuous trade. Section 4 focuses on stocks that exited continuous trade within a short period of their addition, in an attempt to investigate whether these quick rejects did not fit into continuous trade. Section 5 concludes.

2. Data and empirical background

2.1. Data

The sample includes all additions and omissions from the V-system in the 1988-1997 period. As in AML, the source of addition and omission dates is “This Month in the TASE,” an official publication of the TASE, and stock return and volume data come from the Israeli financial data services firm Tochna Lainyan. In general, we collect data from one year before to one year after each addition or omission.

In the sample period there were 107 omissions from the V-system. However, for ten omissions it is impossible to collect complete data on their addition response because these ten stocks entered the V-system immediately after their initial public offer. Since addition response
is instrumental in our analysis, the main focus is on the 97 omissions for which we also have adequate addition information.

2.2. The addition response – replicating AML’s results

The first column of Table 1 reviews the 163 additions sample. Entry into continuous trade had a positive effect on stock liquidity. First, the average relative volume of the stock (stock volume divided by market volume, both in monetary terms) almost doubled. Second, the mean nonsystematic variability of the stock return, estimated by the residual variance in the market model of the stock return, declined by a quarter. Last, the liquidity ratio (average volume divided by average absolute return – see AML), estimating how much volume is needed to change stock price by 1%, more than doubled.

The liquidity improvement had a positive and significant valuation effect. Stocks joining continuous trade experienced a mean abnormal value increase of 4.2% - see the bottom of the first column in Table 1. Overall, the findings are similar and confirm AML’s evidence. Transfer into continuous trade increases securities liquidity and value.

(Insert Table 1 about here)

3. Omissions from continuous trade

3.1. How did omitted stocks respond when they first entered continuous trade?

The second and third columns of Table 1 partition the overall sample of 163 additions into two: 1) Sixty-six added stocks that stayed in continuous trade (till the end of our sample period): 2) Ninety-seven added stocks that were omitted from continuous trade and moved back
to a single daily auction. Comparing the stocks that managed to stay in continuous trade with those that were later omitted shows that the surviving stocks had significantly higher average volumes and lower average variances even before their addition to continuous trade. Thus, it appears that the stocks later dropped were “weaker” (had lower liquidity) even before their entry into continuous trade.

The entry into continuous trade increased the average volume and decreased the average variance of the eventually dropped stocks, indicating that continuous trade can improve liquidity and price efficiency of a wide range of stocks. The average variance decrease of eventually dropped stocks is 29%, and it is insignificantly different from that of “staying” stocks. In contrast, the average volume increase of eventually dropped stocks, 64%, is significantly lower than that of staying stocks, and the liquidity ratio improvement of eventually omitted stocks is significantly lower than that of staying stocks. Thus, stocks that were later omitted benefited less from entry into continuous trade, in the sense that their liquidity advances were smaller than those of “staying” stocks.

Interestingly, the entry excess return of the eventually omitted stocks (3.17%) is also lower than that of staying stocks (5.72%). It appears that the market suspected and reacted less favorably to (at least some of) the eventually omitted stocks long before their omission, i.e., immediately upon their entry into continuous trade. The difference in entry excess returns between staying and eventually dropped stocks is, however, statistically insignificant.

3.2. Omitted stocks response on exit from continuous trade

The last column of Table 1 presents the exit response of dropped stocks. The exit response is almost a mirror image of the entry response. On average, omitting stocks from
continuous trade: 1) cuts their volume by over 60%, 2) worsens their liquidity ratio significantly, 3) increases the idiosyncratic variance,\textsuperscript{2} and 4) results in a negative Cumulative Abnormal Return (CAR) of about \(-5\%\). Evidently, on average, departure from continuous trade hurts liquidity and reduces stock values.

Cross-sectional tests link the value loss to the liquidity loss. The following regression model was fitted to the omission CAR in the 97 omissions sample:

\[
\text{Omission CAR}_i = -5.06 \text{DVAR}_i + 3.85 \text{DVOL}_i + e_i, \tag{1}
\]

\(-1.7 \) \hspace{1cm} \(2.5\)

where omission \(\text{CAR}_i\) is the cumulative excess return on the stock (in \%) from five days before the announcement to thirty days after the omission, \(\text{DVAR}_i\) is the natural logarithm of the ratio of the stock’s (market model) residual variance after the omission to residual variance before, \(\text{DVOL}_i\) is the natural logarithm of the ratio of the stock’s relative volume after the omission to relative volume before, and \(t\)-statistics (corrected for heteroscedasticity using White’s method) appear in parentheses below the coefficients.\textsuperscript{3} Clearly, stocks that dropped more in volume and/or increased more in residual variance, following their exit of continuous trade, also lost more value.

The value loss of omitted stocks completes the picture depicted by Table 1. Table 1 strongly suggests that continuous trade is optimal. Stocks entering continuous trade increase in value and experience volume increases and volatility decreases, while stocks dropping from

\textsuperscript{2} The increase in variance is modest, perhaps because immediately after the omission there was still fine quality information on these stocks.

\textsuperscript{3} When regression (1) is estimated with an intercept, the coefficients remain almost unchanged, and the intercept equals \(-0.21\) with a \(t\)-statistic of \(-0.1\).
continuous trade lose value, lose volume and increase in volatility. The next section looks for some exceptions to the continuous trade optimality rule.

4. Does one market structure fit all?

4.1. The problem of thinly traded stocks

It can be argued that for small and thinly traded stocks continuous trade is not that attractive. This is because spreading the thin volume over the day may generate volatile and inaccurate transaction prices that may deter potential traders. Perhaps it is better for thinly traded stocks to concentrate all trade in one daily auction in order to achieve a reliable market-clearing price. Mendelson (1985) shows how increasing the number of participants in the auction increases price precision, and increases the average per-trader (utility) gains from trade. He points out the positive liquidity externality of adding participants to the auction, stating that: “When traders join the market, they certainly gain some surplus as a result; but they also increase the surplus of all other traders by increasing the liquidity of the market (by providing traders on the other side of the market the opportunity to trade with them).” (Mendelson, 1985, page 271).

Mendelson (1985) further shows that the effect of increasing the number of traders in the auction is concave, that is the marginal effect of adding a participant to the auction decreases. Thus, beyond some minimal number of traders the benefits of concentrating trade in an auction are practically exhausted, and a second stage of trade, continuous trade, can be employed to increase further traders’ opportunities and welfare.
The analysis above suggests that in some cases adding a continuous trade stage may be suboptimal. In particular, for thinly traded stocks, it may be beneficial to concentrate all trade in an auction because for these stocks the benefits of an auction have not been exhausted.

4.2. Empirical tests

We attempt to identify cases where continuous trade is suboptimal by examining stocks that were omitted from continuous trade shortly after their addition. In all cases the stated omission reason was low tradability in continuous trade. Table 2 focuses on 26 stocks that went in and out of continuous trade within six months. Comparing these "quick rejects" to the subsample of stocks omitted after a longer period (typically two-three years), several phenomena appear noteworthy. First, on average, the 26 quick rejects lost volume after their entry, while later omitted stocks gained volume. This difference between quick rejects and later omitted stocks is statistically significant at the 1% level.

(Insert Table 2 about here)

Second, both quick rejects and later omitted stocks reduced their idiosyncratic variance considerably after joining continuous trade. Interestingly, continuous trade improves closing price accuracy even when it does not increase volume. The several rounds of trade in continuous trade probably afford price correction and a more precise closing price.

Last, on average, quick rejects did not increase in value upon entry and did not decrease in value upon exit of continuous trade. The other "later omitted" stocks increased significantly in value upon entry and decreased significantly upon exit. The difference between quick rejects and

\footnote{Other stocks dropped from continuous trade after more than a year.}
later omissions is statistically insignificant. Nevertheless, the impression is that some stocks do not experience any value added from continuous trade.

A further break of the quick rejects subsample into 10 stocks omitted within three months of their addition and 16 stocks omitted after four to six months isolates an interesting group of stocks — see table 3. The 10 “immediate reject” stocks have an unusual price reaction to entry and exit of continuous trade. Their mean (median) entry CAR is $-11.27\%$ ($-14.39\%$), and their mean (median) exit CAR is $8.71\%$ ($5.15\%$). Both the entry and exit responses of the immediate rejects are opposite in sign and statistically significantly different (at the 5\% level) from the corresponding responses of other quick rejects and later omitted stocks. The ten immediate rejects lost value upon entry into continuous trade, and gained value upon exit from continuous trade and return to a single daily auction.

(Insert Table 3 about here)

Robustness tests confirm the evidence that the immediate rejects responded negatively to their addition to continuous trade and positively to their return to single daily auctions. For example, when “net of market” excess returns are calculated, the mean entry CAR is $-6.36\%$, and the mean exit CAR is $5.53\%$. Further, when a dummy for the ten immediate rejects is added to the omission CAR cross-sectional regression in our overall sample of 97 omissions:

---

5 The combined value loss of the ten immediate rejects upon entry into continuous trade, estimated based on their excess returns, was about 65 million dollars. This is small relative to the over 1.3 billion dollars gain to stocks entering continuous trade (see AML, page 367). Furthermore, most of these losses were recouped upon omission from continuous trade. Thus, “wrong” additions to continuous trade appear to have relatively small value effects if they are later corrected.
Omission $\text{CAR}_i = -6.28 \text{ DVAR}_i + 4.16 \text{ DVOL}_i + 13.1 \text{ DUM}_\text{TEN}_i + e_i$,  \hspace{1cm} (2)

\begin{align*}
\text{(2.1)} & \quad \text{(2.7)} & \quad \text{(3.3)}
\end{align*}

where $\text{DUM}_\text{TEN}_i$ equals 1 for the ten immediate rejects and 0 otherwise, and t-statistics (corrected for heteroscedasticity using White’s method) appear in parentheses below the coefficients. Evidently, the ten immediate rejects have a significantly different response upon omission from continuous trade.

There are two possible explanations for the unique response of the ten immediate rejects. First, it may be a statistical aberration due to the small sample size. This “weird result” explanation cannot be ruled out despite of the robustness tests and non-parametric statistics. Alternatively, there exists the economic explanation of thin trading. For thinly traded stocks it may be optimal to concentrate all trade in one or a few auctions.

A review of table 3 reveals that relative to other quick rejects, immediate rejects had significantly lower volumes before their entry into continuous trade. This supports the thin trading explanation. Immediate rejects were thinly traded even before their entry into continuous trade. It is possible that they did not fit into continuous trade. Interestingly, the changes in volume, volatility and liquidity ratio of immediate rejects upon their entry and exit are insignificantly different from those of other quick rejects. Thus, the unique value response of the ten immediate rejects does not appear to emanate from some unusual volume, volatility or liquidity ratio changes.

As a final test, a logistic regression for predicting immediate rejects is run in the overall sample of 97 omissions. The fitted model is:
\[ \ln(P/1-P) = 0.82 - 0.053 \text{CAR}_{\text{add}} - 1050 \text{ReI VOL}_{\text{before}} - 930 \text{VAR}_{\text{before}} - 3.46 \cdot 10^{-6} \text{LR}_{\text{before}} \]

(0.5) (0.10) (0.07) (0.22) (0.61)

where \( P \) is the probability of becoming an immediate reject from continuous trade; \( \text{CAR}_{\text{add}} \) is the cumulative excess return on the stock in the period from 5 days before the entry announcement till the actual entry day; \( \text{ReI VOL}_{\text{before}} \) is the average daily trading volume of the stock divided by the average daily trading volume on the market (both in monetary units), in the period before the entry into continuous trade; \( \text{VAR}_{\text{before}} \) is the residual variance in the regression of the daily stock return on market return and one-day-lagged market return in the period before the entry; \( \text{LR}_{\text{before}} \) (Liquidity Ratio) is the average daily volume on the stock divided by the average daily absolute return in the period before entry; and, \( p \)-values appear in parentheses below the coefficients.

The fitted logistic regression indicates that the probability of becoming an immediate reject does not depend on the pre-entry volatility or liquidity ratio. Rather, it depends on the relative volume before the entry and on the market’s response to the entry announcement. The lower are the pre-entry volume and announcement excess return, the more likely becomes immediate rejection. The significant relation (at the 10% level) between thin trading and immediate rejection from continuous trade reinforces the impression that for thinly traded stocks one or a few daily auctions may suffice.

4.3. Discussion

The evidence in this study suggests that one market structure does not fit all. This conclusion is not surprising. In the 1990s several European exchanges attempted and failed in trading small-cap and thin-volume stocks using their existing continuous trade systems. The common finding was that transfer of thin-trading stocks into continuous trade suppresses stock
volume and turnover. (See also the recent Eastern Europe evidence in Kairys, Kruza and Kumpins, 1999.)

Easley, Kiefer, O’Hara and Paperman (1996) discuss what they describe (on page 1429) as the almost universal failure of screen trading for inactive stocks. They claim that small firm stocks have a relatively high probability of informed trading, which drives away uninformed liquidity traders. According to Easley, Kiefer, O’Hara and Paperman (1996), whenever an uninformed trader places an order in the continuous trade order book, she writes a free option to informed traders, and may end up trading at an unfavorable price. Thus, uninformed traders shy away from small-firm stocks when those trade continuously.

Partial remedies for the asymmetric information problems include call auctions and market maker assisted trade. Madhavan (1992) shows that in the presence of severe asymmetric information continuous markets fail, but call auction markets continue to function. This is because in auctions there is an averaging of all traders’ prices rather than bilateral trading. Glosten (1989) and Benveniste, Marcus and Wilhelm (1992) show how appointing a specialist for the stock can mitigate the asymmetric information problem. Specialists develop long-standing relations with brokers, and can sanction and discipline those who exploit private information.

In practice, many exchanges use call auctions and/or market makers to alleviate the trading problems of infrequently traded stocks. The Paris Bourse trades small-cap stocks twice a day using call auctions. In London, a small regulated exchange, Tradepoint, offers periodic auctions of less active stocks. In Germany, some small-firm stocks have a single daily auction.
Assistance to thin trading stocks in the form of market makers and specialists is also common. For example, in Italy, the specialista supports small stocks continuous trade, and in Paris some Novous-Marche stocks, recently transferred to continuous trade, have designated market makers. Many other European exchanges use the services of market makers. Kehr, Krahnen and Thiessen (1998) provide an explicit account on the nontrivial contribution of market makers to the liquidity and efficiency of Frankfurt Stock Exchange stocks.

From the discussion above it becomes apparent that there is a continuum of possible trading designs for small-cap stocks – from once a day call auction to specialist assisted continuous trade. While the problem of thin trading stocks is clear, the optimal solution remains unknown and may be stock-dependent.

5. Conclusions

The study shows that: 1) moving from a single daily call auction to continuous trade increases stock liquidity, price accuracy and value for most stocks; and 2) upon omission from continuous trade, stock liquidity, price accuracy and stock value drop. These two results confirm and complement, respectively, the findings and conclusions of Amihud, Mendelson and Lauterbach (1997) who study additions to continuous trade only.

The most interesting new evidence is that not all stocks benefit from addition to continuous trade. A small group of ten stocks that were rejected from continuous trade within three months of their entry, lost value, on average, upon addition to continuous trade, and gained value upon exit from continuous trade back to a single daily auction. The entry and exit value responses of these ten "immediate rejects" are opposite in sign and statistically significantly different from those of other stocks. It appears that changes in the trading method – from once-a-
day call auction to continuous trading – may not be optimal for all securities. The ten immediate rejects are small and relatively infrequently traded stocks. Thus, as suggested in other studies (e.g., Easley, Kiefer, O’hara and Paperman, 1996), continuous screen trading may not suit well thinly traded stocks.

The optimal trading mechanism design for small-cap and low-activity stocks is an unresolved issue. Some exchanges use a single or a few daily auctions. Other employ the services of designated market makers or specialists. Our study cannot determine which trading mechanism is optimal. (In fact, we speculate that the optimal trading mechanism is stock dependent.) Further research is clearly warranted.
References


Table 1: A Comparison of Stocks Omitted from Continuous Trade with Stocks that were not Omitted

The table presents volume, variability and other liquidity attributes for three groups of stocks: (1) all additions to continuous trade on the Tel-Aviv Stock Exchange in the years 1988-1997 (163 stocks); (2) added stocks that managed to stay in continuous trade till the end of 1997 (66 stocks); and (3) added stocks that were omitted from continuous trade and moved back to a single daily auction (97 stocks). For groups (1) and (2) the table reviews the liquidity characteristics before and after entry into continuous trade. For group (3) before and after liquidity characteristics are reported for both entry and exit of continuous trade.

RelVOL is the average daily trading volume of the stock divided by the average daily trading volume on the market (both in monetary units), in the period before (subscript before) or after (subscript after) the entry or exit of continuous trade. DVOl is defined as $\ln(\text{RelVOL}}_{\text{after}}/\text{RelVOL}}_{\text{before}}$. VAR is the residual variance in the regression of the daily stock return on market return and one-day-lagged market return. DVAR is $\ln(\text{VAR}}_{\text{after}}/\text{VAR}}_{\text{before}}$. DLR is defined as $\ln(\text{LR}}_{\text{after}}/\text{LR}}_{\text{before}}$, where LR is the average daily volume of the stock divided by the average daily absolute return. CAR is the cumulative excess return on the stock in the period from 5 days before the transfer (entry or exit) announcement to 30 days after the actual transfer. CAR is calculated using the Scholes-Williams (1977) methodology and a post-transfer (day 31 through 200) estimation period. A subscript “before” indicates that the variable is estimated over the period from day $-200$ to day $-31$ relative to the transfer announcement. A subscript “after” indicates estimation over the period from day $+31$ to day $+200$ relative to the actual transfer.

<table>
<thead>
<tr>
<th>All 163 stocks transferred into continuous trade</th>
<th>66 stocks that stayed in continuous trade</th>
<th>97 stocks that were later omitted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entry</td>
<td>Entry</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>RelVOL$_{\text{before}} \times 10000$</td>
<td>22.5</td>
<td>28.1</td>
</tr>
<tr>
<td>RelVOL$_{\text{after}} \times 10000$</td>
<td>42.5</td>
<td>59.5</td>
</tr>
<tr>
<td>DVOl</td>
<td>0.578</td>
<td>0.785</td>
</tr>
<tr>
<td>VAR$_{\text{before}} \times 10000$</td>
<td>7.98</td>
<td>5.36</td>
</tr>
<tr>
<td>VAR$_{\text{after}} \times 10000$</td>
<td>5.81</td>
<td>4.13</td>
</tr>
<tr>
<td>DVAR</td>
<td>-0.371</td>
<td>-0.318</td>
</tr>
<tr>
<td>DLR</td>
<td>0.891</td>
<td>1.091</td>
</tr>
<tr>
<td>CAR (in %)</td>
<td>4.20</td>
<td>5.72</td>
</tr>
</tbody>
</table>

*The mean entry characteristic of omitted stocks is significantly different from the mean entry characteristic of “staying” stocks, at the 1% level.
Table 2: The Difference Between Quick Rejects from Continuous Trade and Other Omissions

The sample of 97 omissions from continuous trade is divided into two: (1) 26 stocks that were omitted from continuous trade within six months of their addition ("quick rejects"); and (2) 71 stocks that were omitted after more than six months (usually two-three years). Summary liquidity characteristics for these groups are reported at the entry and exit from continuous trade. The notations and explanations are identical to those in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>26 stocks omitted within six months of their addition</th>
<th>71 stocks omitted after a longer period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entry Mean (Median)</td>
<td>Exit Mean (Median)</td>
</tr>
<tr>
<td>RelVOL(_{\text{before}}) \times 10000</td>
<td>16.6 (15.6)</td>
<td>15.6 (14.5)</td>
</tr>
<tr>
<td>RelVOL(_{\text{after}}) \times 10000</td>
<td>15.6 (14.5)</td>
<td>7.4 (5.9)</td>
</tr>
<tr>
<td>DVOL</td>
<td>-0.110 (-0.102)</td>
<td>-0.908 (-0.971)</td>
</tr>
<tr>
<td>VAR(_{\text{before}}) \times 10000</td>
<td>10.72 (8.51)</td>
<td>6.20 (5.00)</td>
</tr>
<tr>
<td>VAR(_{\text{after}}) \times 10000</td>
<td>6.20 (5.00)</td>
<td>7.49 (6.63)</td>
</tr>
<tr>
<td>DVAR</td>
<td>-0.509 (-0.511)</td>
<td>0.248 (0.361)</td>
</tr>
<tr>
<td>DLR</td>
<td>0.392 (0.380)</td>
<td>-0.540 (-0.678)</td>
</tr>
<tr>
<td>CAR (in %)</td>
<td>-0.06 (2.22)</td>
<td>-0.16 (-0.87)</td>
</tr>
</tbody>
</table>

*The difference in mean characteristic between "quick rejects" and other omissions is statistically significant at the 1% level.
Table 3: The Difference Between Immediate Rejects from Continuous Trade and Other Quick Omissions

The sample of 26 quick omissions from continuous trade is divided into two: (1) 10 stocks that were omitted from continuous trade within three months of their addition ("immediate rejects"); and (2) 16 stocks that were omitted after four to six months. Summary liquidity characteristics for these groups are reported at the entry and exit from continuous trade. The notations and explanations are identical to those in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>10 stocks omitted within three months of their addition</th>
<th>16 stocks omitted after four to six months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entry Mean (Median)</td>
<td>Exit Mean (Median)</td>
</tr>
<tr>
<td>RelVOL(_{\text{before}}\times10000)</td>
<td>13.5* (11.8)</td>
<td>14.0 (14.0)</td>
</tr>
<tr>
<td>RelVOL(_{\text{after}}\times10000)</td>
<td>14.0 (14.0)</td>
<td>8.5 (8.1)</td>
</tr>
<tr>
<td>DVOL</td>
<td>0.004 (0.008)</td>
<td>-0.528 (-0.506)</td>
</tr>
<tr>
<td>VAR(_{\text{before}}\times10000)</td>
<td>7.93* (5.45)</td>
<td>4.02* (3.35)</td>
</tr>
<tr>
<td>VAR(_{\text{after}}\times10000)</td>
<td>4.02* (3.35)</td>
<td>5.94 (4.42)</td>
</tr>
<tr>
<td>DVAR</td>
<td>-0.504 (-0.247)</td>
<td>0.348 (0.424)</td>
</tr>
<tr>
<td>DLR</td>
<td>0.602 (0.531)</td>
<td>-0.486 (-0.120)</td>
</tr>
<tr>
<td>CAR (in %)</td>
<td>-11.27* (-14.39)</td>
<td>8.71* (5.15)</td>
</tr>
</tbody>
</table>

*The difference in characteristic between "immediate rejects" and other quick omissions is statistically significant at the 5% level, using the non-parametric Kruskal-Wallis test. Non-parametric tests are used because of the small sample size.