

Limit Moves and Price Resolution: A Reply

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In a recent article in this *Journal*, Kuserk (December 1990) commented on the findings in the article by Ma, Rao, and Sears (August 1989) that Treasury bond futures prices tend to reverse after limit moves, and that this pattern is consistent with the overreaction hypothesis. Kuserk's main criticisms of their findings and conclusions can be summarized as follows: (1) since actual futures price movements are restricted by the price limit rules, the empirical design of their study is biased to show nothing but reversals after the first limit move; and (2) the empirical methodology in that study cannot distinguish whether the price reversals after the limit moves are a result of investor overreaction or of the arrival of new information. This reply seeks to address Kuserk's criticisms. As noted by Kuserk, his criticisms pertain only to cases involving intraday limits, i.e., limit hits that are followed by subsequent trading within the limit range on that day.

Based on the arrival of a new information hypothesis, any resultant price movements should remain at the limit level, thus resulting in either trading at that level or a total trading halt. On the other hand, if price movements are the result of investor overreaction, postlimit price movements should revert back to the limit price range. For empirical testing of these two hypotheses, it appears that there should never be any price changes, except for reversals or movements along the limit lines after the first limit move. Therefore, the test of the null (information) hypothesis that postlimit move price levels should not be different from the limit levels is a one-sided test—i.e., whether price levels are significantly lower (higher) than the up (down) price limits [see Tables II and III in Ma, et al. (August 1989)]. Since there is not always a trading record at every time point after the first limit move ($t = 0$), only reported price observations are included the sample. As a consequence, com-

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parisons of price levels after the first limit are conducted on an unequal-variance basis. However, it is conceivable, as argued by Kuserk, that as long as there is at least one or a few price reversals, the pattern reported in Ma et al. will be observed. Therefore, merely demonstrating a reversing price level within the limit range cannot answer the question.

To further investigate whether the price reversals shown in the Ma et al. study are not attributed to a few cases of price reversals, the original sample is expanded and the same issue is examined using the microstructure of price movements after the first limit moves. Using the same procedure described in the Ma et al. study, all the intraday limit moves are identified for each year between 1980–1988. As shown in Table I, there are 358 intraday limit moves which occur on 111 days during the 1980–1988 period. In Table II, it is shown that most of the limit move days (87 out of 111) are single-limit move days. That is, the majority of the days have only one limit move. More interestingly, in Table III, the average number of price movements before and after the first limit move is very similar. That is, around 50% of the price changes occur before as well as after the first limit moves. More importantly, only a

Table I
SAMPLE DESCRIPTION OF PRICE LIMIT MOVES

Years	No. of Limit Days ^a	Days of Up Limits	Days of Down Limits	No. of Limit Moves ^b	No. of Up Limits	No. of Down Limits
1980–88	111	63	48	358	203	155

^aThe number of different calendar days experiencing limit moves.

^bThe number of total limit moves across all contracts.

Table II
SAMPLE DESCRIPTION OF SUCCESSIVE DAILY LIMIT MOVES

	No. of Limits	No. of Single Limits ^a	No. of Successive Limits ^b	Occurring in Pairs ^c	Occurring in Triplets
Up limit	63	49	14	13	1
Down limit	48	38	10	7	3
Total	111	87	24	20	4

^aThe number of days experiencing one-day limit moves.

^bThe number of days experiencing multiday limit moves.

^cThe number of days experiencing two-day limit moves.

Table III
INTRADAY PRICE MOVES DURING THE LIMIT DAY

	No. of Moves ^a	Moves Before Limit ^b	Moves After Limit	Limit Moves After 1st Limit ^c	Trad. Halts After 1st Limit ^d
Up limit	495	252 (51%)	243 (49%)	12 (2%)	49 (9.9%)
Down limit	508	296 (58%)	212 (42%)	11 (2%)	42 (8.3%)
Entire sample	503	270 (54%)	233 (46%)	11 (2%)	91 (9.1%)

^aThe average number of price moves in a typical limit move day.

^bThe average number of price moves prior to the first limit move.

^cThe average number of price limit moves after the first limit move.

^dThe number of daily limit moves resulting in trading halts after the first limit move.

small number of price observations (2%) revert back to the limit line, and only about 25% of the total cases of limit moves end up with intraday trading halts after the first limit moves. Thus, during the period immediately following a limit move, it is apparent that: (1) there are about the same number of price movements as before the limit move; and (2) these price changes are predominantly movements below the limit move.

As for the second comment, it is always possible that price reversals after limit moves can be the result of new information arrival instead of traders' overreaction. However, to exhibit constantly reverting prices after limit moves, it would seem that the nature of the new information needs to be consistently opposite to the "old information" which caused the first limit move, i.e., good news would typically follow bad news and vice versa. However, this possibility seems unlikely since there is no evidence that the news is released in such a fashion. Consequently, the true reason for price behavior around limit moves may never be known and the debate will continue. For that reason, one can only conclude that "The results are consistent with the overreaction hypothesis..." (p. 334).

Bibliography

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