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Bradford Cornell's (1983) analysis of interest rate responses to the weekly money supply announcement reaffirms earlier findings of efficient asset markets. In particular, asset markets are defined to be efficient in these studies if only the unanticipated component of the money announcement has a statistically significant impact on interest rates. This result--and the absence of statistical significance for expected changes in M1--is reported by Cornell for several different assets.

The purpose of this comment is to demonstrate that the test of market efficiency used by Cornell and others is quite sensitive to choice of data and model specification. We re-examine only the results for three-month Treasury bills, the most widely used variable in studies of the money announcement. Using the same sample period as Cornell, our results indicate that expected money and lagged money surprises are significant when the dependent variable in Cornell's model is correctly specified. Our results do not necessarily suggest, however, that markets are inefficient. Rather, because the standard test of market efficiency is a joint test of market efficiency and the model's implied restrictions, our results indicate that the issue of efficient asset markets still is open to question.

I. THE DATA

Testing market efficiency with respect to money surprises hinges crucially on the measurement of interest rate changes

over a narrow interval of time around the money announcement. This is important if the effect of other market "news" is to be minimized and the "true" response of rates to a money surprise is to be isolated. Typically, studies have used the change in interest rates between the 3:30 p.m. New York bond market close and the 5:00 p.m. closing quote reported by Telerate.[1/] Cornell, however, uses the change in rates between 3:30 p.m. on the announcement day and 3:30 pm. the following trading day. For most data points in his sample, this change spans the weekend between the money announcement on Friday and the close of trading on Monday.[2/] A comparison of changes in three-month Treasury bill rates taken across the two time intervals is shown in Table 1.

As data in Table 1 indicate, the mean change for Cornell's series (DTB) is about double that for changes in the three-month Treasury bill rate measured across the shorter time interval (DTB'). Note, however, that his series is only one-third as variable as the other series of rate changes. These differences are expected for at least two reasons. First, all news revealed to the market between 5:00 p.m. on the announcement day and 3:30 p.m. the next trading day will be reflected in Cornell's interest rate changes even though they are unrelated to the money announcement. Using this interval to measure interest rate changes would be appropriate if all other news revealed to the market had no effect on rates.

Since this assumption is unlikely to be valid--especially across weekends--Cornell's model is subject to an omitted variables problem. One important aspect of this omission is the possibility that some of the announcement day's immediate response to a large money surprise may be eroded in trading the next day as additional information is used to assess the announcement's implications; this erosion, of course, would tend to reduce the variability of rate changes that is revealed in the other series.

A second reason for the observed differences between the two series is that the money announcement occurred on Friday during most of Cornell's sample. This makes his reported interest rate changes subject to the well-known "weekend effect" on yields (see Gibbons and Hess). Including this systematic component of interest rate changes in a study of responses to monetary innovations casts doubt on the meaning of Cornell's reported coefficient values and statistical tests.

II. EMPIRICAL RESULTS: ANOTHER LOOK

The results reported by Cornell are shown in line (a) of Table 1. His Proposition 1--that asset markets are efficient--is supported by the significant coefficient associated with unanticipated changes in M1 (UM) and the nonsignificant coefficient associated with expected money (EM). This market is judged to be efficient because only the surprise component of the money announcement has a significant effect on interest rates.

Re-estimating Cornell's model after replacing only the values for his dependent variable with DTB' produces the results shown in line (b) of Table 2. When the 3:30 p.m. to 5:00 p.m. change in Treasury bill rates is used, expected money now shows a significant announcement effect on the Treasury bill rate.[3/] This finding rejects Cornell's Proposition 1 and implies, by his test criteria, that the Treasury bill market is inefficient.

Additional evidence rejecting Cornell's conclusion of market efficiency is reported in line (c) of Table 2. There it is shown that changes in 3-month Treasury bill rates observed between 3:30 p.m. and 5:00 p.m. on the days of money supply announcements react to lagged values of monetary surprises.[4/] Since these values are no longer "news" to the market, however, efficient market theory suggests that lagged money surprises should be reflected fully in expectations and, therefore, in interest rates observed prior to the current money announcement. The significance of these values also rejects Cornell's Proposition 1.

III. CONCLUSIONS

Our results show that tests of the efficient market hypothesis with regard to the weekly money announcement are quite sensitive to the timing of the data. Recent results reported by Cornell suggest that asset markets are efficient in the sense that only the surprise component of the money

announcement affects interest rates. His choice of data, however, necessarily introduces both a weekend effect and an omitted variables problem into his analysis. When these effects are reduced by measuring interest rate changes over a more narrow time interval, expected money and lagged monetary surprises become significant; in both cases, this evidence rejects Cornell's Proposition 1 and indicates that the question of market efficiency over this time period still is open to question.

FOOTNOTES

1/ The 5:00 p.m. quote is an average of rates reported by bond traders who conduct transactions among themselves by telephone after the money announcement.

2/ Since February 8, 1980 the money announcement occurred on a Friday unless holidays or other factors shifted the announcement to Monday. From the October 11, 1979 - February 8, 1980, the money numbers were generally released on Thursday.

3/ This result is not unique for data samples that extend much beyond the change in announcement day from Thursday to Friday. Roley, for example, has found expected money to be significant and has offered a tentative explanation for this result. His explanation does not, however, account for the results reported in line (c) of Table 2.

4/ Lagged surprises still are significant when expected money (EM_t) is added to this regression.

TABLE 1

Summary Statistics for Treasury Bill Rate Changes:
10/11/79 to 12/18/81

Change from 3:30 p.m. day of money announcement to:	Mean	Standard Deviation
3:30 p.m. the following trading day (DTB)	2.58	10.61
5:00 p.m. the same day (DTB')	1.16	31.53

TABLE 2

Money Supply Announcements and Changes in Asset Prices Revisited
(sample period: 10/11/79 - 12/18/81)

(a) $DTB = \underset{(1.97)}{0.721} + \underset{(4.33)}{30.46}\ UM_t + \underset{(-0.35)}{5.36}\ EM_t$

$R^2 = 0.234$

(b) $DTB'_t = \underset{(-0.57)}{-0.966} + \underset{(8.12)}{24.956}\ UM_t - \underset{(-2.64)}{16.985}\ EM_t$

$R^2 = 0.37$ DW = 1.80

(c) $DTB'_t = \underset{(-1.23)}{-2.009} + \underset{(8.03)}{24.209}\ UM_t + \underset{(2.71)}{8.212}\ UM_{t-1} + \underset{(2.09)}{6.331}\ UM_{t-2}$

$R^2 = 0.41$ DW = 1.81

NOTES: DTB' = the basis point change in Treasury bill yields, measured on a discount rate basis, between 3:30 p.m. and 5:00 p.m. on money announcement days; EM_t = the expected change in M1, in percent; UM_t = the unexpected change in M1, in percent; t-statistics are shown in parentheses below coefficient estimates.

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