Exchange Rates, Interest Rates and Current Account News: Some Evidence from Australia

by

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ABSTRACT

This paper investigates the Australian current account announcement effects on exchange rates and interest rates for the period July 1985 to December 1992. The results indicate that the Australian dollar depreciates and interest rate rise as a result of an announcement of larger than expected current account deficit, which is consistent with the portfolio balance effect. In addition, significant structural breaks are found and the analysis shows that after December 1989 the current news affect neither exchange rates nor interest rates. (JEL F30).

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<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>II. Summary of Relevant Studies</td>
<td>2</td>
</tr>
<tr>
<td>III. Methodology and Data</td>
<td>4</td>
</tr>
<tr>
<td>III.A. Econometric Model</td>
<td>4</td>
</tr>
<tr>
<td>III.B. Data Description</td>
<td>5</td>
</tr>
<tr>
<td>IV. Empirical Analysis</td>
<td>6</td>
</tr>
<tr>
<td>IV.A. Empirical Results for Exchange Rates and Interest Rates</td>
<td>6</td>
</tr>
<tr>
<td>IV.B. Stability Analysis</td>
<td>7</td>
</tr>
<tr>
<td>IV.C. Modelling Positive and Negative News</td>
<td>10</td>
</tr>
<tr>
<td>V. Summary and Conclusion</td>
<td>12</td>
</tr>
<tr>
<td>References</td>
<td>13</td>
</tr>
<tr>
<td>Addendum</td>
<td>26</td>
</tr>
</tbody>
</table>
I. Introduction

Once a month the Australian Bureau of Statistics (ABS) releases the current account balance figures for the one month prior, along with other components of the balance of payments, in the balance of payment publication. The monthly publication is embargoed until 11:30 am on the day of the announcement, and as soon as it is released and figures become publicly known financial markets respond to the announcement, the degree of which depends on the extent of the news element in the announcement. Markets react to the announcement because it contains new information about the performance of the economy.

Since 1985, when the growing current account deficit figures attracted public concern in Australia, the news element contained in the current account announcements has become the focus of attention in the financial markets. The usual market efficiency argument applied to event studies requires that if financial markets are informationally efficient, only the unanticipated (or the news element) part of the announcement should significantly affect financial prices. In other words, if the current account announcements affect financial prices, it is because the markets’ expectations are not fulfilled. In addition, the speed of adjustment of prices to new information must be fast enough to discourage arbitrage.

There are two channels through which current account imbalances influence exchange rates and interest rates: the wealth effect and the portfolio balance effect. According to the wealth effect, a current account deficit would imply a net transfer of real resources away from domestic residents, leading to a decrease in wealth. The reduction in wealth for the economy as a whole will have a dampening effect on domestic money demand, and hence a fall in interest rates and a depreciation of the domestic currency. The portfolio balance effect suggests that in the case of a current account deficit, there will be international redistributions in financial assets in favour of foreign residents. If we assume that foreign residents prefer to hold assets denominated in their own currency (imperfect asset substitutability), the asset redistributions will depreciate domestic currency exchange rates resulting in an increase in a risk premium on domestic currency denominated assets which in turn results in higher domestic interest rates.
Thus, assuming market efficiency, a larger (smaller) than expected announced current account deficit figure implies a less (more) than adequate market adjustments in anticipation of the announcement and hence necessitating corrective adjustments in exchange rates and interest rates.

Furthermore, markets' expectations regarding government's policy reaction may play a role. If the government's policy aim is thought to reduce current account deficit, an unexpectedly large current account deficit announcement would trigger a foreign exchange market intervention aimed at reducing the value of the domestic currency to help reduce the current account deficit. As a result, domestic money supply will be increased and consequently interest rates will fall. The expected depreciation of exchange rates and the fall in interest rates will be promptly discounted in the current rates.

The purpose of this paper is to investigate the effects of the current account announcements on the value of the Australian Dollar against five major foreign currencies: the US Dollar, the Deutsche Mark, the Japanese Yen, the UK Pound, and the Swiss Franc, and on short and long-term interest rates over the period July 1985 to December 1992.

The rest of the paper is organised as follows. Section II summarises the literature. Section III includes the methodological issues and the data description. The empirical results are presented in section IV, and some conclusions are offered in section V.

II. Summary of Relevant Studies

The earliest empirical results on the current account announcement effects can be found in Goodhart and Smith (1985). They report the effects of the UK visible trade balance announcements on UK pound exchange rates and short and long-term interest rates for the period January 1977 to December 1983. Although none of the estimated coefficients for the trade news term is significant, it seems to suggest that the pound appreciates and interest rates increase in response to worse than expected announcements.

Hardouvelis (1988) examined the monthly US trade balance announcement news on exchange rates and interest rates and found that, in general, an unanticipated increase in the trade deficit decreases interest rates and depreciates the US dollar. However, as in the UK case, none of the estimated news coefficients is significant, except for the changes in the three month Treasury-Bill rate in the second sub-sample estimations (October 1979 to October 1982). Dwyer and Hafer (1989) used data from February 1980 to December 1987 and studied the effects of various economic announcements on interest rates. They, in contrast to the result obtained by Hardouvelis, found that an unexpected rise in the trade deficit is associated with rising interest rates. However, once again, none of the news coefficients is significant. Deravi, Gregorowicz and Hegji (1988) used the announcement data for the period February 1980 to July 1987 and concluded that prior to 1985, there is little evidence of significant response in the foreign exchange market to the trade balance announcements. However, in the post 1985 sample period there is strong evidence of market response. The dollar depreciated in both the spot and forward markets when a larger than expected deficit was announced. Irwin (1989) used observations from January 1980 to June 1988 and found that only the full sample and the post 1985 sub-sample periods show significant market responses. The dollar depreciated when a larger than expected deficit figure was announced. His results are consistent with those obtained by Deravi et al. Hogan, Melvin and Robert (1991) examined the announcement effects for the period February 1980 to March 1989 and found that the trade balance announcements negatively affect exchange rates and interest rates. Their findings are consistent with their hypothesis that the Fed have a target for the minimum trade deficit and is prepared to intervene if required. Aggarwal and Schirm (1992) examined the informational impact of the trade balance announcements on asset prices for the period 1980 to 1986. Their results indicate that while the announcements influence only interest rates prior to 1985, in the post 1985 period they also affect exchange rates and share prices.

In Australia, Wong (1988) found that the balance of payment announcements cause significant changes in the US$/A$ rate on announcement days for the period July 1985 to April 1987. Larger than expected current account deficit announcements depreciate the spot rate.
III. Methodology and Data

IIIA. Econometric Model

The model used to test the effect of the current account news on exchange rates and interest rates is as follows:

\[ \Delta P_t = \alpha + \beta \cdot \text{Exp}_t + \gamma \cdot \text{News}_t + \varepsilon_t \]

Where:
- \( \Delta P_t \): Changes in financial prices, namely the five Australian dollar exchange rates and short and long term interest rates, measured twice over two consecutive time horizons. Logarithmic changes are used for exchange rates.
- \( \text{Exp}_t \): Expected size of the current account deficit announcement.
- \( \text{News}_t \): Current account news as measured by the difference between announced and expected current account deficit (if positive, it means larger than expected deficit announcement).
- \( \varepsilon_t \): A stochastic disturbance term with the usual Gaussian properties.

If financial markets are informationally efficient, we would expect both \( \alpha \) and \( \beta \) to be insignificantly different from zero, \( \gamma \) to be statistically significant, and \( \varepsilon_t \) to be a white noise. In other words, only the unanticipated part of the current account announcement should significantly affect financial prices since the expected part of the announcement has already been discounted into current prices. Furthermore, the speed with which prices adjust to new information should be fast enough to discourage any arbitrage activities. This requires that the coefficient \( \gamma \) for the news term should be statistically significant only in the first time horizon, otherwise it would imply that markets adjust slowly to news. In other words, if market participants were well informed about the direction of financial prices following the release of the news, they would have an arbitrage opportunity which is inconsistent with the characteristics of an efficient market.

III.B. Data Description

Since July 1985 Money Market Services Australia (MMS) has been carrying out surveys on the financial markets' expectations on the Australian current account balance announcements. It surveys approximately 20 to 25 economists in various postings and financial market participants every week and the results of the survey are released to subscribers usually on Fridays. The survey participants are asked twice in successive surveys before the announcement of relevant month to disclose their expectations or predictions regarding the impending announcement of the size of the current account imbalance. The second survey is the revision of the first and reported in the last survey release before the announcement. Lower and upper bounds as well as median responses are reported, and only the seasonally unadjusted medians are used in the analysis.

If we are to use the MMS median predictions as a proxy for the markets’ expectations on current account announcements, we need to know whether or not the medians are unbiased predictors of the announced figures. The results of the unbiasedness test are given below:

\[
\text{Announced} = 0.15 + 0.92 \text{ Expected}
\]

\[
\begin{align*}
\text{s.e.} & \quad (0.12) \quad (0.096) \\
\text{t-ratio} & \quad (1.24) \quad (9.54)
\end{align*}
\]

\( R^2 = 0.51, \quad D-W = 2.33, \quad \text{SEE} = .311, \quad F(2,8) = 1.41 \)

This shows that the F statistic for the joint hypothesis of a zero constant and unit slope coefficient cannot be rejected at the 5% level of significance, implying that the medians are unbiased and can be used as a proxy for markets’ expectations on the current account announcements.

Preliminary estimates and revisions of the previous months' announced current account deficit figures can be found in the monthly ABS balance of payment publications. From mid-1986 seasonally adjusted as well as raw estimates of the deficit figures have been announced,
and for consistency, seasonally unadjusted series are used throughout. Deficits are measured in A$ billions.

The changes in exchange rates are measured as the logarithmic difference between closing and opening wholesale rate on the day of announcement (Horizon 1), and the logarithmic difference between the opening rate on the day following the announcement and the closing rate on the announcement day (Horizon 2).

The short-term interest rate is measured by the 90-day authorised bank bill rate which is observable at noon every business day, and the 10-year Commonwealth bonds index rate is used as the long-term interest rate. Both rates are observable after the 11:30 am announcement. The changes in interest rates are measured as the absolute difference between the observed rate on the day of the announcement and the rate on the day before the announcement (Horizon 1), and the absolute difference between the observed rate on the day after the announcement and the rate on the day of the announcement (Horizon 2). These are collected from various issues of the Australian Financial Review. All the data series are tested for unit roots and found to be stationary in the form used in regression equations.

IV. Empirical Analysis

IV.A. Empirical Results for Exchange Rates and Interest Rates

The OLS estimation results of equation (1) for exchange rates are reported in Table 1-A. The evidence shows that for the whole sample period the markets show informational efficiency in all cases. The coefficients for the news term are all significant at the 1% level of significance for the whole sample in the first horizon with the exception of the UK pound rate for which it is insignificant. Furthermore, they all have a negative sign meaning that exchange rates depreciate in response to worse than expected announcements. On average, exchange rates change by 0.01 percent as a result of unexpected deviation from the market expectations by A$ 1 billion A$, and \( R^2 \) is around 15%. In horizon two regressions, the signs of the news coefficients are still negative with the exception of the US$ rate. However, none of the estimated coefficients is significant at the 5% level. In sum, the foreign exchange market for the Australian dollar appears to be not only efficient in processing current account news but also fast in responding to news so that arbitrage profit windows close as quickly as they open.

The estimation results for interest rates are summarised in Table 2-A. The sample period for the long term rate is from Mar 87 due to lack of available data. For the whole sample period the intercept and the coefficient for the expectation term are insignificant for both interest rates in both time horizons. The coefficients for the news term are significantly positive at 1% and 5% level for the short and long rates, respectively. Furthermore, no significant coefficients are observed in the second horizon which is consistent with the market efficiency hypothesis for the debt market. The positive sign for both news coefficients implies that a A$ 1 billion larger than expected announcement increases the short and long rate by 0.22 and 0.11 percentage points, respectively. This is consistent with the portfolio balance effect hypothesis.

IV.B. Stability Analysis

In order to ascertain the stability of the estimated equations throughout the sample period, rolling regressions with thirty observations starting from July 1985 have been estimated - that is, the first estimation uses observations from 1 to 30, the second uses observations from 2 to 31, and the third from 3 to 32, and so on - and the time plots of the magnitude and the resulting marginal significance or the p-value of the news term are shown in Figures 1-A through 1-C. As it is obvious from the figures, the size of the news coefficients continue to increase until early 1989 and later sub-samples produce coefficients which are very close to zero with the exception of the UK pound rate. Some estimations for the UK pound and the Swiss Franc using observations from October 1987 produce insignificant news coefficient, and sub-samples beginning from February 1989 are associated with no market response to news. There are also two insignificant sub-samples, one starting from January 1986 and another from
may 1988. However we suspect these are the results of influential outliers rather than representing the norm. These suggest that we might have structural breaks around Oct-87 for the UK pound and the Swiss Franc, and around February 1989 for all the rates. With a view to identifying precise breaks, sequential Chow tests of the stability of regression coefficients were carried out for each exchange rate and interest rate regressions, and all regressions except the UK pound rate produce significant structural breaks around October 1987 and December 1989. The former coincides with the worldwide stock market crash and the latter with the change in the stance of Australian monetary policy from contractionary to expansionary. Due to the limit imposed by the size of the sample, the second structural break is used to divide the sample into two sub-samples. The first sub-sample is from July 1985 to November 1989 with 53 observations, and the second is from December 1989 to December 1992 with 37 observations.

The OLS estimation results for exchange rates for each sub-sample are presented in Table 1-B and 1-C, respectively. The first sub-sample estimation results are mainly the same as the whole sample results. All five exchange rates significantly respond to news and $R^2$ is doubled in magnitude in all cases. On average a A$ 1 billion unexpected current account deficit announcement would move the rates by around 0.018%, and $R^2$ is around 30%. The Chow statistic is significant for all but the UK pound exchange rate justifying the partition of the sample. In horizon two, there is no significant response of exchange rates to news, and all rates show no evidence of coefficient instability implying that different fundamentals drive exchange rates on announcement and non-announcement days. In addition, with the exception of the US and DM rate which exhibit non-normality, the diagnostics indicate the absence of any kind of misspecification.

For the second sub-sample we see that no exchange rate responds significantly to the current account news in both time horizons indicating that market participants no longer regard the announcements as containing any valuable information.

The regression results for interest rates for each sub-sample are presented in Table 2-B and 2-C, respectively. The horizon one interest rates regressions for the first sub-sample show that the magnitude of the news coefficient and $R^2$ doubled compared with the whole sample estimations, and the significant chow statistics confirm the existence of the structural break. Efficiency for both interest rates is also confirmed. With the exception of the deviation from normality for the short rate, the diagnostics indicate no evidence of model inadequacy.

As in the case of exchange rates, interest rates do not respond to the news even in horizon one in the second sub-sample. The short term rate exhibits evidence of inefficiency by producing significant parameters for the constant and expected terms implying that not all market participants have access to the same information. However, efficiency cannot be rejected for the long term rate. More importantly coefficients for the news term, although insignificant, now have a negative sign suggesting that interest rates would fall as a result of a bad current account news. Debt markets seem to react differently in the second sub-sample.

One possible explanation for the insignificant response of financial prices to the current account news in the second sub-sample might be that the post 1989 period is associated with a fall in the ratio of external debt interest payments to GDP and to export, meaning that Australia's debt repaying capability had improved and therefore the current account news might not have been important. Further, Pichford (1989) put forward the argument that most of Australia's debt being private, and if private economic agents optimally choose to hold / issue debt, there should be no public concern with the growing external debt. If market participants have yielded to such a view, then it might partly explain the insignificant news coefficients in the second sub-sample. An alternative explanation is that towards the end of 1980s market participants may have started to realise that the bulk of current account imbalances come from a rise in the importation of capital goods and that although this investment boom will temporarily deteriorate the current account balance and the net external debt, the situation will eventually improve because the country is investing in future prosperity. Thus, a larger than expected announcement is no longer bad news.
IV.C. Modelling Positive and Negative News

It is important to recognise the fact that the balance of payment publication also includes revisions of previous announcement. The extent of the revision depends on the time horizon, one month revision being the greatest in magnitude. Revisions of longer than one month horizon after the provisional announcement change the figures very little, if at all, from the one month revision figure. The results of the revision bias test of the one month revision are as follows:

\[
\text{Revision} = 0.019 + 0.99 \text{Announced} \\
\text{s.e.} \quad (0.03) \quad (0.02) \\
\text{r-ratio} \quad (7.75) \quad (47.72)
\]

\[R^2 = 0.96, \text{ D-W} = 2.19, \text{ SEE} = 0.069, \text{ Average Revision Change} = $0.0032 \text{ billion}\]

Announced (provisional) current account deficit figures were usually, but not always, revised upwards in subsequent revision announcements. As can be seen above, for the period from the first month of the exchange rate float to the end of the sample period, i.e. from January 1984 to December 1992, the mean difference between one-month revision and provisional figure is positive and is around A$ 3 million. In addition, the constant in the estimation, although insignificant, has a positive sign implying that there is a tendency towards under-reporting in the first instance. Therefore, if markets were efficient it may not be too unrealistic to assume that market participants were aware of this bias in the direction of future revisions, and therefore they may have expected that announced figures would be revised upwards in future announcements. Thus, especially in the case of a good announcement, effects on financial prices may be expected to be weaker than otherwise because of the markets' expectation that the current account deficit will be revised upwards in the future, possibly turning the good news into an eventual disappointment. For this purpose, the sample is partitioned into two separate groups, negative news (smaller than expected deficit figure: good news) and positive news (larger than expected deficit figure: bad news) observations.

We expect that while the positive news group would entail significant market reactions, the negative news group would not affect financial prices much, if at all.

The results of positive news estimations are summarised in Table 3-A. Since the partitioned data are no longer strictly time series the usual measures for detecting serial correlation are not used, and thus the D-W and LM statistics are not reported. As before, the constants and the expected terms are all insignificant in both horizons, and the news coefficients are only significant in horizon one for all rates with the exception of the UK pound rate which is insignificant in both horizons. On average a A$ 1 billion larger than expected announcement depreciates the Australian dollar against the four currencies by 0.02 %, and this represents twofold increase in magnitude compared to the 0.01 % response to both positive and negative news taken together. Thus we see that market participants respond significantly to positive news.

The effects of negative announcement news are summarised in Table 3-B. None of the estimations includes a significant news coefficient. This confirms the belief that knowing the direction of bias in future revisions the market participants were sceptical about good news announcements and accordingly their effects on exchange rates were insignificant even in horizon one.

The effects of the positive news on interest rates are included in Tables 4-A. For long rates, efficiency is achieved. However, for short rates, the news coefficient is not significant in horizon one but it is in horizon two which suggests a delay in markets' reaction to positive news. As with the effects on the exchange rates, the responses of interest rates to positive news are larger than both types of news taken together. A possible explanation for the perceived inefficiency of a slow adjustment in the market for short term debt is that the markets' response to news depends on what they perceive the government's reaction will be. After all, the government, or to be more precise, the Reserve Bank of Australia is the one who sets the overnight cash rate by taking appropriate cash positions, which determines short term interest rates. Therefore, effects on short term interest rates will depend very much on the
movements of the overnight cash rate. Thus, the slowness of adjustment in the short rate may be due to the slow reactions on the part of the Reserve Bank rather than representing market inefficiency.

Tables 4-B contains the estimation results for the effects of negative news on interest rates. Both the short and long rates do not respond to negative news. In horizon one, however, constant and the expected term for the short rate are significant implying that for the good news announcements markets are not fully using available information, and therefore in the short rate market informational efficiency is violated.

V. Summary and Conclusion

The main purpose of this paper has been to investigate the effects of the current account announcements on a number of Australian exchange rates and interest rates. In general, it has been found that the news of current account deficit lead to a depreciation of exchange rates and a rise in interest rates. This is in accordance with the portfolio balance effect hypothesis. The evidence also suggests that such relationships are only significant in the earlier part of the sample, and since the late 1980s it looks as if market participants' beliefs regarding the importance of the current account deficit has changed and they have stopped paying attention to the current account announcements.

The results indicate that foreign exchange markets are informationally efficient for the whole sample and for the sub-sample periods in the sense that only the news coefficient is significant for the relevant time horizon, and exchange rates respond only to worse than expected announcements. On the other hand, the short term debt market failed to pass the test of market efficiency in the second sub-sample which is also evident in the negative news group estimations, indicating not all market participants have equal access to relevant information. Also, the speed test of efficiency is failed in the positive news group estimations.

Bibliography


Wong, Jason "The Role of News in the Australian Foreign Exchange Market", Discussion Paper 88.19 1988, Dept. of Economics Univ. of WA.
Footnotes

* Authors would like to thank, without implication, Warren Hogan, Jeffrey Sheen, Tony Phipps, and the participants of the seminar held at the University of Sydney for helpful comments; and Gary Shilson-Joesting of MMS Australia for providing us with the survey data.

1. Full descriptions of the time horizons involved are to be found in sub-section II.B.
2. Since the current account has always been in deficit throughout the sample period, deficit figures are used to avoid having negative time series.
3. Results of the stationarity tests and data described in this section may be obtained from the authors upon request.

### Tables

#### Table I-A

$\Delta E_R = \alpha + \beta \cdot \Delta E + \gamma \cdot \text{News} + \epsilon$
Sample Period: Jul-85 to Dec-92, 92 observations

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**Note:**

* : significance at 5% level of Significance  
** : significance at 1% level of Significance  
Numbers in square brackets are critical values at 5% and 1% level of significance for various hypotheses  
(1) Durbin-Watson Statistic, with d and d-4 as critical values  
(2) Breusch-Godfrey LM test of Serial Correlation of up to 12 lags, $p$ is $\Delta$  
(3) Breusch-Godfrey LM test of Heteroskedasticity, $\chi^2$  
(4) Ramsey's RESET Regression Residual Test, $\chi^2$
| Sample Period: July to November 1972 |

**Table 1**

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**Note:**

- (a) Data from Table 1.
- (b) Derived from Table 1.
Table 2-A

\[ \Delta IR = \alpha + \beta \cdot \text{Expected} + \gamma \cdot \text{News} + \epsilon \]
Sample Period: Jul-85 to Dec-92, 90 observations for SR
Mar-87 to Dec-92, 70 observations for LR

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Note:
*significant at 5% level of Significance
**significant at 1% level of Significance

Table 2-B

\[ \Delta IR = \alpha + \beta \cdot \text{Expected} + \gamma \cdot \text{News} + \epsilon \]
Sample Period: Jul-85 to Nov-89, 53 observations for SR
Mar-87 to Nov-89, 33 observations for LR

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<th>S.C.</th>
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Note:
*significant at 5% level of Significance
**significant at 1% level of Significance

Table 2-C

\[ \Delta IR = \alpha + \beta \cdot \text{Expected} + \gamma \cdot \text{News} + \epsilon \]
Sample Period: Dec-89 to Dec-92, 37 observations

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<th>H.E.</th>
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Note:
*significant at 5% level of Significance
**significant at 1% level of Significance

(1) (2) See notes for Table 2-A.
(3) Ramsey's RESET Mispecification Test, F statistic for SR and F statistic for LR
(4) Ramsey's RESET Mispecification Test, Wald statistic for SR and LR
### Table 3-A

ΔER = α + β ‐ Expected + γ ‐ News + ε  
Positive Surprises : 45 observations

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<th>S.E.</th>
<th>μ</th>
<th>Net(%)</th>
<th>Norm(%)</th>
<th>Base(%)</th>
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### Table 3-B

ΔER = α + β ‐ Expected + γ ‐ News + ε  
Negative Surprises : 45 observations

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### Notes:

* * Significant at 5% level of Significance
** * Significant at 1% level of Significance

Numbers in square brackets are critical values at 5% and 1% level of significance for various hypotheses

(1) Breusch-Pagan/White LM test of Heteroscedasticity, χ²
(2) Breusch-Pagan/White LM test of Heteroscedasticity, χ²
(3) Ramsey's RESET Specification Test, χ² (a)
(4) General-to-specific Wald test adjusted squared errors
Table 4-A

\( \Delta R_t = \alpha + \beta \cdot \text{Expected} + \gamma \cdot \text{News} + \epsilon \).
Positive Surprises: 45 observations for SR
35 observations for LR

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<th>Std S.E.</th>
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<tr>
<td>(t-Stat)</td>
<td>(1.4936)</td>
<td>(0.7901)</td>
<td>(2.4195)</td>
<td>(4.39)</td>
<td>(5.39)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note: See Notes for Table 4-A.
(1) Ramsey's RESET Specification Test, Forced for SR and Fixed for LR.

Table 4-B

\( \Delta R_t = \alpha + \beta \cdot \text{Expected} + \gamma \cdot \text{News} + \epsilon \).
Negative Surprises: 45 observations for SR
35 observations for LR

<table>
<thead>
<tr>
<th>Horizon 1</th>
<th>Constant</th>
<th>Expected</th>
<th>Surprice</th>
<th>Adj S.E.</th>
<th>Std S.E.</th>
<th>Het(1)</th>
<th>Het(2)</th>
<th>Het(3)</th>
<th>Het(4)</th>
<th>Het(5)</th>
<th>Het(6)</th>
<th>Het(7)</th>
<th>Het(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Delta R_t )</td>
<td>-0.2736**</td>
<td>-0.1397*</td>
<td>0.0688</td>
<td>0.1351</td>
<td>0.16</td>
<td>0.75</td>
<td>13.67**</td>
<td>0.72</td>
<td></td>
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<tr>
<td>(S.E.)</td>
<td>(0.0978)</td>
<td>(0.0730)</td>
<td>(0.1414)</td>
<td>(0.2049)</td>
<td>(4.568)</td>
<td>(2.21)</td>
<td>(2.21)</td>
<td>(5.18)</td>
<td></td>
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</tr>
<tr>
<td>(t-Stat)</td>
<td>(2.7287)</td>
<td>(2.5049)</td>
<td>(4.658)</td>
<td>(2.21)</td>
<td>(2.21)</td>
<td></td>
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</tr>
<tr>
<td>( \Delta R_{t-1} )</td>
<td>0.0018</td>
<td>0.0753</td>
<td>-0.0722</td>
<td>-0.0753</td>
<td>-0.06</td>
<td>0.39</td>
<td>0.37</td>
<td>0.45</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>(S.E.)</td>
<td>(0.0514)</td>
<td>(0.0738)</td>
<td>(0.0573)</td>
<td>(0.0573)</td>
<td>(0.0573)</td>
<td>(3.32)</td>
<td>(3.32)</td>
<td>(3.32)</td>
<td></td>
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</tr>
<tr>
<td>(t-Stat)</td>
<td>(2.0399)</td>
<td>(0.3559)</td>
<td>(0.9701)</td>
<td>(5.39)</td>
<td>(5.39)</td>
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</tbody>
</table>

Note: See Notes for Table 4-A.
(1) Ramsey's RESET Specification Test, Forced for SR and Fixed for LR.

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