Are Treasury Securities Free of Default?

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Abstract

The chain of events that led to the disagreement between the White House and Congress over the increase of the federal debt limit from mid-October 1995 to March 1996 caused a default potential for Treasury securities. We examine the effect of this event chain on the yield spread between commercial paper and Treasury bills and find that both the three- and six-month yield spreads were reduced during the event period. The results suggest that the market charged a default risk premium to the Treasury securities. There is no evidence that these events had a sustained effect on T-bill rates since the yield spread during the post-event period resumed its pre-event level.

I. Introduction

The finance literature has been using U.S. T-bills as a proxy for default risk-free assets for a long time because the federal government can raise taxes to pay for its debt. As Kamara ((1994), p. 416) mentions, Treasury securities serve as a standard for returns on virtually all financial assets and contracts. However, the budget standoff between the legislature and the executive branches in 1995–1996 raises a legitimate question: can T-bills be used as proxies for risk-free assets?[1] In November 1995, the U.S. Treasury department came close to defaulting on payments of Treasury securities when the White House announced in a press release on November 9 that "(Treasury security) default is becoming increasingly likely." This announcement, which was reported in the *Wall Street Journal (WSJ)* and virtually all major newspapers on the following day, was a landmark event in the history of the Treasury. The announcement of the likely default of U.S. Treasury debt was the result of a chain of events in which the President and Congress failed to reach an agreement on the federal debt ceiling. These events included the refusal by the Speaker of the House, Newt Gingrich, to increase the federal debt

[1]For instance, as a result of the budget standoff and the potential default of T-bills, Emery and Finnerty ((1997), p. 193) raise the issue of whether a literally default risk-free asset exists in the financial market.

ceiling, the passing of a balanced budget bill by the GOP-controlled Congress that was vetoed by President Clinton, and the announcement by the Treasury Secretary Rubin that the Treasury would be taking "extraordinary steps" to avoid default. This announcement of potential default of Treasury debt triggered a warning by Standard & Poor's that the standoff was adversely affecting the credibility of the U.S. Treasury in the world market. Standard & Poor's warning was later followed by an announcement by Secretary Rubin that the Treasury would run out of options to avoid default by March 1996 and an announcement by Moody's Investors Service to place $387 billion of Treasury debt on the *CreditWatch* for a possible credit rating downgrade. The stalemate finally ended when Congress passed an extension on the federal debt limit, followed immediately by Moody's removal of the Treasury securities from *CreditWatch* and confirmation of the Aaa rating of U.S. Treasury debt. The sequence of events, as reported in the *WSJ*, is presented in the Appendix.

In this paper, we attempt to answer the following question: did the market perceive Treasury debt to be default risky and therefore charge a default premium during and after the occurrence of the above events? We examine the yield spreads between commercial paper and Treasury bills with the same maturities and find that the spreads during the event period are significantly lower than those in the pre-event period. The results suggest that the market did charge a default risk premium to the T-bills during that period of time. We also confirm the increase in T-bill yield during the event period after controlling for inflation rate, interest rate movements, and the general market conditions. However, there is no evidence that these events had a sustained effect on T-bill rates since the yield spread during the post-event period resumed to the pre-event period level.

Moody's raised the question of possible Treasury default when it noted that the nature of the debt ceiling debate in 1995–1996 was considerably different from the past: never before had so many legislators argued that meeting the "full faith and credit" obligations of the government was secondary to other fiscal policies.[2] Moody's also noted that the main question is whether this debt ceiling controversy will be repeated in the future and mentioned that it would continue to monitor the underlying debate over the federal government's size and role to determine if meeting the government's full faith and credit obligations could be jeopardized once again by the on-going policy disagreements. The question therefore is: could the fact that the government is restricted by debt ceilings and by Congress from raising taxes lead to reconsidering the risk-free nature of Treasury securities? The results in this paper indicate that such a question is well founded.[3]

The rest of the paper is organized as follows: The chain of events and the hypotheses that stem from these events are discussed in Section II. Section III presents the empirical evidence on a potential default of Treasury securities. We conclude the paper in Section IV.

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[2]We express deep gratitude to Moody's Investors Service for making available a copy of their original publication dated March 29, 1996, on the rating implications for Treasury securities.

[3]Previous findings indicate that the market, under some severe circumstances, charges a default risk premium on Treasury securities. For example, Zivney and Marcus (1989) show that the market charged a 60-basis-point premium to T-bills when the U.S. government was unable to repay investors due to severe word processing technical difficulties in 1979.

II. Chain of Events

The chain of events started in October 1995 when U.S. Speaker of the House Newt Gingrich initially agreed to increase the debt limit on October 17, but backed off the very next day due to serious doubts that there was enough support among Republicans to pass the measure (referred to as Events 1 and 2 in the paper). At this stage, Treasury default was only a far-fetched possibility and not even discussed in the financial press. This suggests that the market had not foreseen the seriousness and the potential for an extended standoff between the U.S. Congress and the President at this stage. We, therefore, hypothesize that Events 1 and 2 would not have a significant impact on the Treasury yield because the market had not foreseen the seriousness of the prolonged legislative battle and therefore the possibility of Treasury default.

Event 3 occurred on November 1, 1995, when both the President and Speaker of the House publicly admitted that they had reached no agreement. Immediately, the Secretary of the Treasury announced that the Treasury would take "extraordinary steps" to avoid default. This was the first direct public indication that Treasury default was a possibility. We hypothesize that Event 3 indicates a good probability of default and, therefore, we expect an increase in the Treasury yield and a decrease in the yield spread between commercial paper and T-bills as compared to the pre-event period.

The main events in the chain are Events 4–8, which occurred between November 7 and November 15, 1995. At this time, more than any other during the long history of the Treasury, default became a likely possibility. In Event 4 on November 7, the Treasury Secretary recommended that the President veto the GOP Plan and in Event 5 on November 9 the White House conceded that "default is possible." Following these events, on November 10 Standard & Poor's warned that even a short-lived default of Treasury securities would have a profound effect (Event 6 on November 10). The other events in the week included the President's veto of the debt limit bill, the Treasury's borrowing to avoid default (Event 7 on November 13), and the shutdown of the federal government (Event 8 on November 14). Based on the seriousness of these events, we hypothesize that Events 4–8 indicate that default is a likely possibility and, therefore, a risk premium is charged to the T-bills, so we expect a decrease in the yield spread between commercial paper and T-bills.

Event 9 occurred on January 22, 1996, when Secretary Rubin announced that the Treasury would run out of options to avoid default by March. The Treasury Secretary's announcement was followed immediately by Moody's decision on January 24, 1996, to place U.S. Treasury debt on *CreditWatch* for a possible downgrade. This decision is a clear indication of the seriousness of the situation, since studies have shown that the placement of debt issues on the *CreditWatch* list has a significantly adverse impact on the issuer's securities prices (e.g., Holthausen and Leftwich (1986)). We hypothesize that Events 9 and 10 indicate that default is a possibility and, therefore, we expect a decrease in the yield spread between commercial paper and T-bills as compared to the pre-event period.

On March 28, 1996, Congress passed an extension on the federal debt limit (Event 11), followed by the removal of the Treasury securities from Moody's

CreditWatch list on March 29, 1996 (Event 12). For these final events, we hypothesize that since default was no longer a possibility, the yield spread between commercial paper and T-bills should be comparable to the spread during the pre-event period.

III.   The Empirical Evidence

A.   Comparison of Yield Spreads between Event and Pre-Event Periods

To examine the likelihood of Treasury default, we compare the yield spreads between the event period and the pre-event period. The yield spread is defined as the difference in the yield between high quality commercial paper (rated AA or higher) and T-bills with the same maturity. In other words, the three- and six-month spreads for a particular day are calculated by $(CP_3 - TB_3)$ and $(CP_6 - TB_6)$, respectively, where CP_3 and CP_6 are three- and six-month commercial paper yields, TB_3 and TB_6 are three- and six-month T-bill yields, respectively. The difference in yield between commercial paper and T-bills after controlling for maturity reflects the potential default risk for commercial paper (Hahn (1993)). If the market perceives that T-bills could possibly default due to these events, we would expect the yields on T-bills to rise and, therefore, the yield spread between commercial paper and Treasury bills to shrink. In other words, if T-bills are perceived to have default risk due to these events, then T-bills and commercial paper yields during the event days would be more similar to each other than on pre-event days and, therefore, the yield spread between commercial paper and T-bills would be smaller during the event days than pre-event days. In this study, we use daily data to examine the yield spread. The pre-event period used for the study covers 112 days from October 17, 1994, which is exactly one year before the first event, to April 1, 1995, which is exactly one year before the last event. Using the yield data on the same calendar dates one year prior to the events to compare with the yield data during the events, we may avoid the confounding of calendar effects, if any. In this study, we first calculate the mean yield spread during the pre-event period, and then we compare the yield spreads of each event group with the pre-event mean yield spread.

The data for the daily yields of the commercial paper and T-bills are taken from the Federal Reserve Bank of Chicago Web site.[4] The events in the study are collected from the *WSJ*. To examine the impact of the event chain, we first merge individual events into event groups based on their proximity in calendar dates and the similarity in their impact on Treasury securities. We then compare each event group's mean spread with the pre-event mean. For instance, Events 1 and 2 occur on October 17 and 18, 1995, respectively, and their hypothesized effect is the same on yield spread, so they are merged into the combined event group Events 1 and 2. We summarize the empirical results for the yield spreads in Table 1.

It appears that in the beginning of the deadlock between the White House and Congress, the market did not consider the political standoff serious enough to lead to the potential default of Treasury securities. As the standoff dragged on

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[4]The Federal Reserve Bank of Chicago Web site is http://www.chicagofed.org.

TABLE 1

Tests for the Differences in Yield Spread between Each Event Group and the Mean of the Pre-Event Period for the Three- and Six-Month T-Bills

Event Group[a]	Expected Effect on Yield Spread	Event Group's Mean Three-Month Spread and t-Value	Event Group's Mean Six-Month Spread and t-Value
Events 1 and 2 (10/17/95 to 10/19/95)	No Negative Impact	0.56 (5.31**)	0.38 (1.77)
Event 3 (11/1/95 and 11/2/95)	Decrease	0.46 (−0.06)	0.43 (0.09)
Events 4–8 (11/7/95 to 11/15/95)	Significant Decrease	0.35 (−10.72**)	0.32 (−4.80**)
Events 9 and 10 (1/22/96 to 1/25/96)	Significant Decrease	0.38 (10.05**)	0.27 (- 8.31**)
Events 11 and 12 (3/28/96 to 4/1/96)	Increase	0.35 (−5.43**)	0.32 (- 5.39**)

Columns list each event group and the dates it covers, expected effect on spread for that event group, and the mean event group spread. Numbers in parentheses are t-statistics for testing the difference between event group spread and the mean spread during the pre-event comparison period.

[a]Calendar dates for each event group. A detailed summary of the events is given in the Appendix.

*,**indicate t-statistic significance at the 0.05 and 0.01 levels, respectively.

The mean three-month yield spread for the pre-event comparison period (i.e., benchmark) was 0.50 and the standard deviation was 0.11. For the six-month yield spread, the benchmark pre-event mean was 0.37 and the standard deviation was 0.07.

and eventually became an extended budget crisis, the market began to respond to the crisis by charging a default risk premium to the T-bills.

The results in Table 1 show that the mean spread for Events 1 and 2 does not seem to increase the T-bill yield. In fact, the mean yield spread for the event group Events 1 and 2 is higher than the pre-event mean yield spread for both the three- and six-month instruments. The event group mean yield spreads of 0.56 (for three-month) and 0.38 (for six-month) are higher than the comparison period spreads of 0.50 (for three-month) and 0.37 (for six-month) and the differences are significant at 0.01 and 0.10, respectively. The results seem to support the hypothesis that these events do not have a negative impact on the yield spread, as they do not directly indicate any default potential for Treasury securities.

The impact of the announcement of Event 3 on the yield spreads appears insignificant. However, when compared with the preceding and succeeding event groups, it is very evident that Event 3 is the trendsetter for a change in the market's perceptions with regard to T-bill yields.

The three- and six-month yield spreads around the announcement days for Events 4–8 and Events 9 and 10 are significantly less than the pre-event mean spread. As Table 1 shows, the t-values testing for the statistical significance of the difference in yield between the days around the announcements of Events 4–8 and Events 9 and 10 and the pre-event mean are significantly negative at the 0.01 level for both the three- and six-month instruments. The results suggest that the announcements of these events have increased the yield on the T-bills and, therefore, reduced the spread.

The results in Table 1 also show that the difference in the three- and six-month yield spreads between the period surrounding Events 11 and 12 and the

pre-event period is still significantly negative at the 0.01 level. Event 11 refers to the passing of the debt limit bill by Congress and Event 12 is Moody's announcement that it would remove the Treasury securities from *CreditWatch* and reconfirm the Aaa rating of Treasury debt. The significant differences in yield spread between the period surrounding Events 11 and 12 and the pre-event period for both the three- and six-month securities suggest that the market has not resumed its confidence in the credibility of Treasury securities after a long period of potential default.

In conclusion, the results in Table 1 suggest that the market did not take the political standoff seriously in the initial stages, but changed its perception around November 1 (Event 3) and began to charge a default risk premium on Treasury securities thereafter. This trend did not change even after Congress increased the Treasury debt limit and Moody's removed Treasury securities from its *CreditWatch*.

To test the robustness of the above results, we further use a non-parametric sign test to examine the impact of the event chain on the yield spread. We calculate the difference between the spread of each event group and the mean spread during the pre-event period. In the absence of potential T-bill default, we expect an equal number of positive and negative signs for the differences in yield spread. On the other hand, if T-bill default risk does exist, we expect the number of negatives to exceed the number of positives for the differences in yield spread. We carry out the test for the five event groups, as well as for the entire 115 trading-day event period from October 17, 1995, to April 1, 1996. We present the results of the three- and six-month securities in panels A and B of Table 2.

The results in Table 2, panel A show that the number of negative differences in yield spread for Events 4–8, Events 9 and 10, as well as the entire 115-day event period are significantly higher than the hypothesized number of 50% (with z-values of -2.65, -2.00, and -7.18, respectively). The results in panel A show that the yield spread is reduced significantly as compared to the pre-event mean for Events 4–8, Events 9 and 10, and the entire event period. The results of sign tests for the six-month securities in Table 2, panel B mirror the results of panel A in that the yield spreads for Events 4–8, Events 9 and 10, and the entire 115-day event period were significantly lower than the pre-event mean. The results in Table 2 are consistent with the results in Table 1.

We further examine whether the potential default of Treasury securities has only a temporary effect on the Treasury bill yield or a sustained effect beyond the event period. If the chain of events has only a temporary effect on the T-bill yield, then we would expect the post-event yield spread to be similar to the pre-event yield spread. On the other hand, if the chain of events has a sustained effect on the T-bill yield, then we would expect the post-event yield spread to be lower than pre-event mean yield spread. We examine whether there is a sustained effect by examining whether the post-event spread has been restored to the pre-event level. The post-event period covers the six months immediately after the end of the events (from April 2, 1996, to October 3, 1996); the pre-event period covers the

TABLE 2

Non-Parametric Sign Test for Differences in the Yield Spread between Each Event Group, the Entire Event Period of 115 Days (from October 17, 1995 to April 1, 1996) and the Mean Spread during the Pre-Event Period

Event Group	Hypothesis	N	No. Pos.	No. Neg.	Z-Statistic
Panel A. Three-Month Spread					
Events 1 and 2	$p^* = q^* = 0.5$	3	3 (100%)	0 (0%)	1.73
Event 3	$p^* = q^* = 0.5$	2	0 (0%)	2 (100%)	1.41
Events 4–8	$p^* = q^* = 0.5$	7	0 (0%)	7 (100%)	−2.65*
Events 9 and 10	$p^* = q^* = 0.5$	4	0 (0%)	4 (100%)	−2.00*
Events 11 and 12	$p^* = q^* = 0.5$	3	0 (0%)	3 (100%)	−1.73
For the 115 days	$p^* = q^* = 0.5$	115	19 (16.52%)	96 (83.58%)	−7.18**
Panel B. Six-Month Spread					
Events 1 and 2	$p^* = q^* = 0.5$	3	3 (100%)	0 (0%)	1.73
Event 3	$p^* = q^* = 0.5$	2	2 (100%)	0 (0%)	1.41
Events 4–8	$p^* = q^* = 0.5$	7	0 (0%)	7 (100%)	−2.65*
Events 9 and 10	$p^* = q^* = 0.5$	4	0 (0%)	4 (100%)	2.00*
Events 11 and 12	$p^* = q^* = 0.5$	3	0 (0%)	3 (100%)	−1.73
For the 115 days	$p^* = q^* = 0.5$	115	17 (16.52%)	98 (83.58%)	−7.55**

Based on the signs of the differences, we examine if the numbers of positive and negative signs are significantly different from the null hypothesis of equal number of positive and negative signs.

The mean yield spread during the pre-event period for the three-month securities was 0.50 and for the six-month securities was 0.37.

*,**indicates value significance at the 0.05 and 0.01 levels, respectively.

p^* and q^* refer to the hypothesized number (null hypothesis) of positive and negative numbers.

TABLE 3

Tests for Sustained Effect

Panel A. t-Tests for Sustained Effect

	Three-Month Spread (%)	Six-Month Spread (%)
Pre-event mean ($N = 128$)	0.43 (0.06)	0.36 (0.06)
Post-event mean ($N = 129$)	0.40 (0.06)	0.35 (0.06)
t-value	−3.24**	−1.05

Panel B. Sign Test for Sustained Effect

	Hypothesis	N	No. Pos.	No. Neg.	Z-Statistic
Three-month securities	$p^* = q^* = 0.5$	129	60 (46.5%)	69 (53.5%)	−0.79
Six-month securities	$p^* = q^* = 0.5$	129	64 (49.6%)	65 (50.4%)	−0.09

In panel A, we compare the mean yield spread for the post-event period (from 04/02/96 to 10/03/96) with the mean yield spread for the pre-event period (from 04/3/95 to 10/03/95) for both three- and six-month securities to test if the differences are significant. Numbers in parentheses are standard deviations. In panel B, we calculate the differences between the daily spread for each day during the post-event period (a period of six months from 04/02/96 to 10/03/96) and the mean spread for the pre-event period to examine if the distribution of the signs for the differences is significantly different from the hypothesized signs of equal positives and negatives.

**indicates value significant at 0.01 level.

six months exactly one year prior to the post-event period (from April 3, 1995, to October 3, 1995). Once again, we compare the yield spreads between two periods exactly one year apart to avoid possible confounding of calendar effect. The results of the tests are given in panel A of Table 3.

The results given in Table 3, panel A show that for the three-month instruments, the mean of the post-event spread is 0.40, statistically different at the 0.01

level from the pre-event mean of 0.43 (with a t-value of -3.24). This result implies that the event chain did cause a sustained increase in the three-month T-bill yield. For the six-month instruments, the post-event mean spread is 0.35 while the pre-event mean spread is 0.36 and they are not significantly different from each other (with a t-value of -1.05). The result implies that the event chain did not cause a sustained increase in the six-month T-bill yield.

We further examine whether the chain of events has a sustained effect on Treasury yields by using a non-parametric sign test. We calculate the differences between the daily spread for each of the post-event days and the mean spread for the pre-event period. If the event chain has only a temporary effect on the T-bill yield, then we expect an equal number of positives and negatives in the differences. On the other hand, if the chain of events has a sustained effect on the T-bill yield, then we expect to find more negatives than positives in the differences. The results in Table 3, panel B indicate that the numbers of positive and negative signs for both the three- and six-month instruments are not significantly different from the hypothesized 50%. Based on the results in Table 3, panel B there seems to be no sustained effect on either the three- or six-month T-bills.

We also chart the above results in Figure 1 and Figure 2 for three- and six-month securities. In Figure 1, panel A, we present the three-month daily yield spread for the entire event period, October 17, 1995, to April 1, 1996. The mean spread of 0.50 for the pre-event period, which covers the same calendar days of the previous year, is used for comparison. Panel A shows that for most of the event period, the daily spread remains lower than the pre-event mean spread. The results are consistent with the results in Table 1 and suggest that the market charged a risk premium to the T-bill for the potential default.[5]

In Figure 1, panel B, we present the three-month daily spread for the post-event period immediately after the event period from April 2, 1996, to October 3, 1996. The spread is charted with the mean of 0.43 for the pre-event period, which covers the same calendar days in the previous year. Panel B shows that the post-event daily spreads are evenly distributed around the line representing the mean of the pre-event spread. The results, consistent with the results in Table 3, do not show any sustained effect.

In Figure 2, panel A, we present the daily yield spread during the event period for the six-month securities and the pre-event mean spread of 0.37. Although some of the daily spreads for the event period are below the line representing the pre-event mean of 0.37, the chart shows that they are much closer to the pre-event mean than the three-month securities in Figure 1.

Panel B of Figure 2 presents the six-month daily spread for the post-event period immediately after the event period from April 2, 1996, to October 3, 1996,

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[5]For both the three- and six-month securities, there is a substantial increase in the yield spread during the last week of December 1995. We carefully examined news releases surrounding this period to check for potential reasons for this sudden increase in the yield spread. During that time, the *WSJ* reported that there was a further shutdown in the federal government and both Congress and the President disagreed strongly on the balanced budget bill. None of the events were new, and the events were part of the continuing disagreements during the main events that occurred in November 1995. In addition, these events are negative and should have lowered the spread, as opposed to raising the spread. We cannot find a satisfactory explanation for the sharp increase in the yield spread in the last week of December 1995.

FIGURE 1

Three-Month Instruments

Panel A. Daily yield spread during event period (10/17/95 to 4/1/96) vs. the mean yield spread during the pre-event comparison period (10/17/94 to 4/1/95)
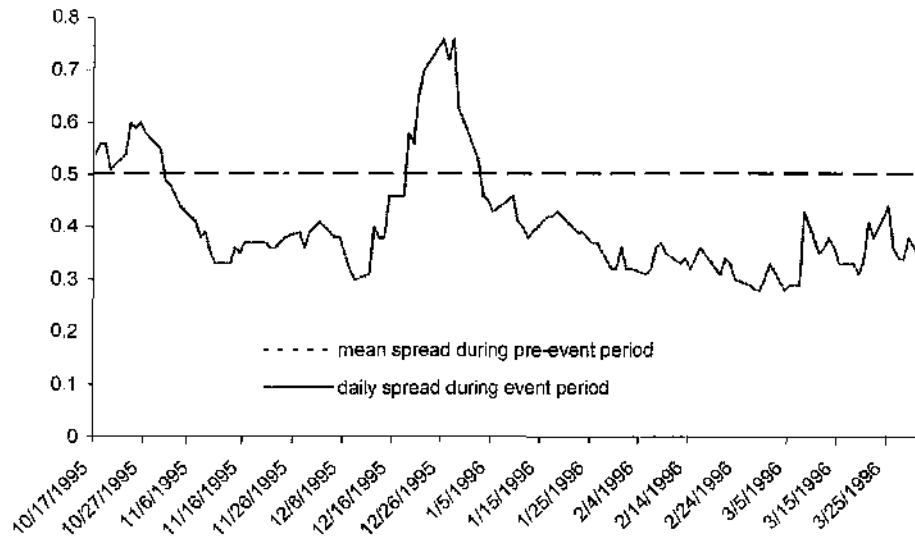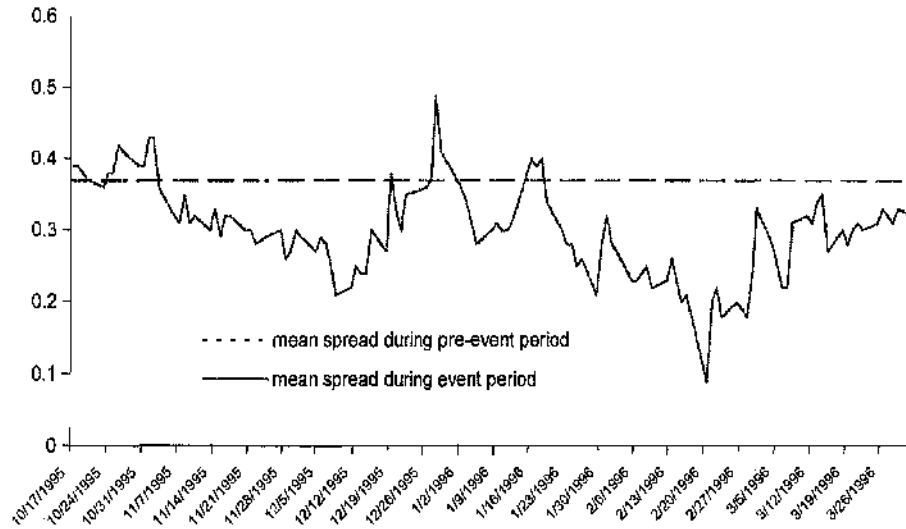

Panel B. Daily yield spread during post-event period (4/2/96 to 10/3/96) vs. the mean yield spread during pre-event comparison period (4/2/95 to 10/3/95)
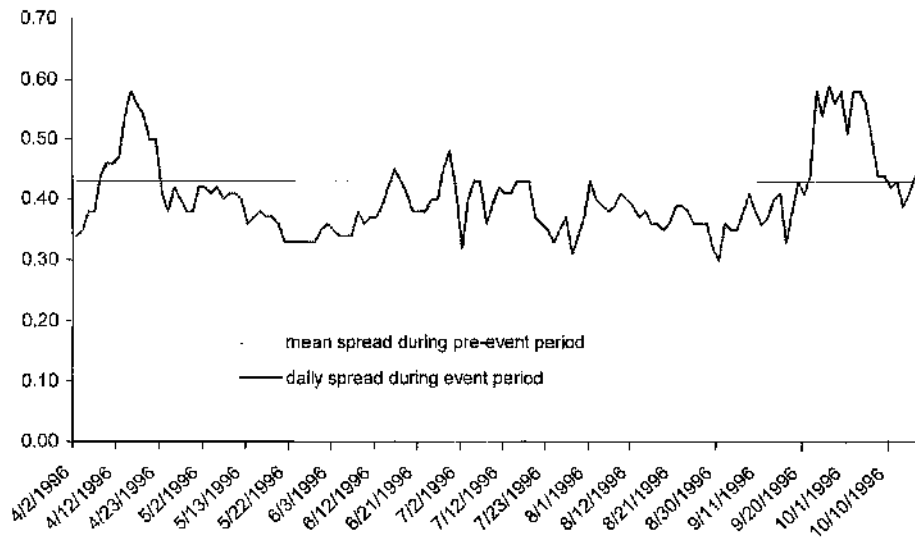

and the comparison mean spread of 0.36 covering the same calendar days in the previous year. The results confirm the results in Table 3, which do not indicate any sustained effect on T-bill yield.

FIGURE 2

Six-Month Instruments

Panel A. Daily yield spread during event period (10/17/95 to 4/1/96) vs. the mean yield spread during the pre-event comparison period (10/17/94 to 4/1/95)

Panel B. Daily yield spread during post-event period (4/2/96 to 10/3/96) vs. the mean yield spread during pre-event comparison period (4/2/95 to 10/3/95)
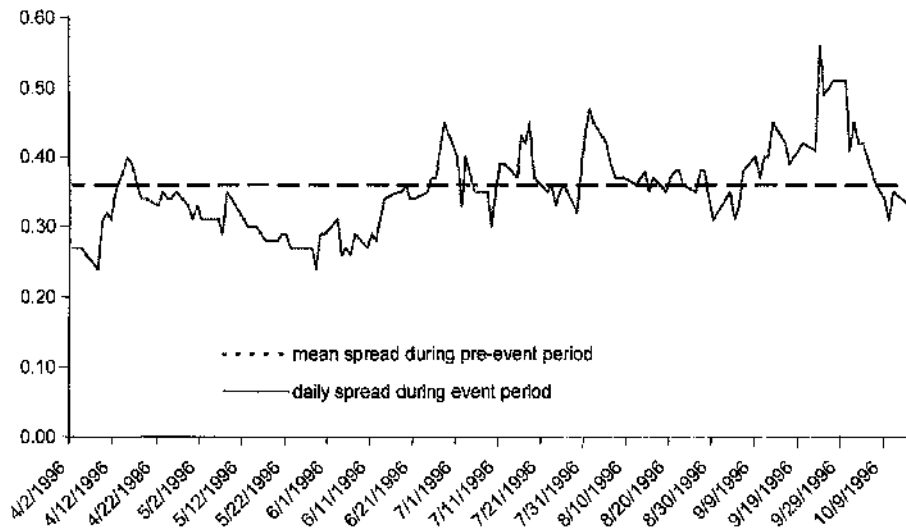
B.   Yield Spread and Default Potential Events: A Regression Analysis

In this section, we further examine the impact of the events on Treasury bill yields by estimating a regression equation after controlling for other major factors that may also affect Treasury bill yield. Bernanke (1990) reported that the yield spread between the commercial paper rate and the T-bill rate is closely related to economic activities and the level of inflation rate. In addition, Morris and Walter

(1993) reported that default risk premium, such as the difference between the negotiable CD rate and the T-bill rate, is also related to the general level of interest rate. We use the value-weighted daily return on the New York Stock Exchange and American Stock Exchange, named NYSE-AMEX, as a proxy for economic activities. We use the daily price of gold with a day's lag, denoted as GOLD, as a proxy for inflation, and we use the daily yield on the Eurodollar with a day's lag (three- and six-month rates, respectively), denoted as EURODOLLAR, to capture the variable for the general level of interest rate. The linear regression equation we estimate is

(1)   YIELD SPREAD $= \beta_0 + \beta_1$NYSE-AMEX $+ \beta_2$EURODOLLAR
$+ \beta_3$GOLD $+ \beta_4$EVENTS1–2
$+ \beta_5$EVENT3 $+ \beta_6$EVENTS4–8
$+ \beta_7$EVENTS9–10 $+ \beta_8$EVENTS11–12.

The dependent variables in the regressions are the three- and six-month spreads, respectively. The independent variables, in addition to other control variables discussed earlier, are dummy variables for Events 1 and 2, Event 3, Events 4–8, Events 9 and 10, and Events 11 and 12. The dummy variables, EVENTS1–2, EVENT3, EVENTS4–8, EVENTS9–10, and EVENTS11–12, take the value of one during the event days, and zero otherwise.

The data for the stock market return are taken from the CRSP tapes, while the data for the Eurodollar yields are obtained from the Chicago Federal Reserve (see footnote 2). The data for the daily price of gold was obtained from the *WSJ*. The regression equations are estimated for a period of 348 days from May 1, 1995, to September 16, 1996, covering the entire event period and over five months prior to the beginning and five months after the end of event period. The results of the ordinary least squares (OLS) regressions are given in Table 4. Since the residuals from the OLS regressions exhibit both autocorrelation and heteroskedasticity, we also present autocorrelation and heteroskedasticity consistent *t*-statistics using the Newey-West (1987) adjustment method in Table 4. For all the variables, the adjusted *t*-statistics indicate that the estimated coefficient exhibits a degree of significance that is the same or greater than the OLS *t*-statistics.

The results for OLS regression in Table 4 indicate that for the three-month spread, the variable, EVENTS1–2, has a significant coefficient of 0.12 with a *t*-value of 2.78. EVENT3 has an insignificant coefficient of 0.03. Consistent with the result in Section III.A, the three-month yield spread did not shrink until Events 4–8 occurred. This is confirmed by the significantly negative coefficient −0.07 for the variable EVENTS4–8, with a *t*-statistic of −2.62. The significant coefficient associated with EVENTS4–8 shows that the market began to charge a premium on Treasury bills due to these events. The coefficients for dummy variables EVENTS9–10 and EVENTS11–12 are insignificant. Among the control variables, the lagged value of the Eurodollar, EURODOLLAR, has a significant coefficient of 0.09, with a *t*-value of 4.40.

The results of the OLS regression analysis for the six-month spread show that the variables NYSE-AMEX and EURODOLLAR have significantly positive coefficients of 1.87 and 0.14, respectively. GOLD, EVENTS1–2, and EVENT3

TABLE 4

Regression Analysis of Three- and Six-Month Yield Spreads

	Coefficient	OLS t-Statistics	Newey-West t-Statistics
Panel A. Three-Month Spread			
INTERCEPT	0.36	0.90	0.98
NYSE-AMEX	0.16	0.25	0.27
EURODOLLAR	0.09	4.40**	3.82**
GOLD	−0.00	−1.48	−1.75
EVENTS1-2	0.12	2.78**	12.66**
EVENT3	0.03	0.61	3.13**
EVENTS4-8	−0.07	−2.62**	−6.55**
EVENTS9 10	0.01	0.29	1.21
EVENTS11-12	−0.03	−0.62	−2.56**
R^2 (N = 347)	0.18		
Panel B. Six-Month Spread			
INTERCEPT	0.21	−0.62	−0.48
NYSE-AMEX	1.87	4.30**	3.59**
EURODOLLAR	0.14	8.25**	6.01**
GOLD	−0.00	−0.97	−0.77
EVENTS1-2	0.03	0.91	5.03**
EVENT3	0.06	1.67	8.98**
EVENTS4-8	−0.02	1.41	−4.45**
EVENTS9 10	0.00	0.07	0.15
EVENTS11-12	0.02	0.81	2.88**
R^2 (N = 347)	0.44		

The independent variables are: NYSE-AMEX, the value-weighted return on the New York Stock Exchange and the American Stock Exchange stocks; EURODOLLAR, the yield of the three- and six-month Eurodollar instruments with a day's lag; and GOLD, the daily price of gold with a day's lag. EVENTS1-2, EVEN13, EVENTS4-8, EVENTS9 10, and EVENTS11-12 are dummy variables that take a value of 1 for any day during the referred events, 0 otherwise. The Newey-West (1987) t-statistics adjust for autocorrelation and heteroskedasticity.

*,**indicates value significance at the 0.05 and 0.01 levels, respectively.

have insignificant coefficients. The dummy variable for the main events of the study, EVENTS4-8, has a negative coefficient of −0.02, but it is statistically insignificant and this is different from the results of the three-month instruments. The variables EVENTS9-10 and EVENTS11-12 have positive but insignificant coefficients.

Overall, it appears that EVENTS4-8, which suggest the possibility of Treasury default more strongly than any of the other events, indeed have caused an increase in the yield of the three-month T-bill. The results of the six-month instruments are along the same lines, although the coefficient is not statistically significant.

The fact that the impact of these events is more profound on the three-month T-bill than the six-month T-bill may suggest that, while the market is concerned with the budget crisis in the near future, it also believes that the standoff will not stretch out into the distant future. This finding is consistent with the maturity crisis hypothesis (e.g., Johnson (1967)), which argues that the default premium may be higher for near-term debt than for distant-term debt if investors believe that the borrower's inability in meeting debt obligations could possibly be resolved in the future if given enough time to do so. Another possible explanation is that the spread of the six-month over the three-month T-bill yield may have already

included some default risk premium because studies (e.g., Kamara (1997) and (1988)) have shown that the forward rates implied in spot T-bill rates contain a premium for the risk that short sellers may default.

IV. Conclusion

This paper provides evidence that a potential Treasury default occurred in 1995–1996 when the U.S. President and Congress disagreed on passing a balanced budget bill. Our results indicate that the market began to respond to the crisis by charging a default risk premium on T-bills. The impact on the three-month T-bills was more profound than the impact on six-month T-bills. There is no evidence that these events had a sustained effect on T-bill rates, since the yield spread during the post-event period resumed its pre-event period level. Does this mean that T-bills are not, in general, priced as if they are free of default? Or is it more accurate to argue that T-bills generally are priced as if they are risk free, except under specific conditions? Our results lend support to the premise by agreeing with the earlier studies of Kamara (1988) and Zivney and Marcus (1989), which indicate the presence of a default risk premium on Treasury securities under some circumstances.

Appendix

This is a brief summary of reports related to the potential default of U.S. Treasury securities in the *Wall Street Journal*. Dates are the dates on which announcements were made; the *WSJ* published these announcements on the following business day.

October 17, 1995 (Event 1)
U.S. House Speaker Newt Gingrich offers to support an increase in debt limit through November 14.

October 18, 1995 (Event 2)
Gingrich backs off from boosting the Treasury's debt ceiling.

November 1, 1995 (Event 3)
The Treasury says it will have to take "extraordinary steps" to avoid default. No agreement is reached between the U.S. Congress and the President on the federal debt ceiling.

November 7, 1995 (Event 4)
Treasury Secretary Rubin recommends a Presidential veto of the GOP plan on the debt ceiling. Treasury Undersecretary Hawke complains that the GOP bill will put the U.S. in imminent danger of default.

November 9, 1995 (Event 5)
The White House is set for a shutdown of the federal government. The GOP debt limit bill draws a veto threat. "Default is becoming increasingly likely," White House Spokesman Mike McCurry says.