Can the Fed Talk the Hind Legs off the Stock Market? Online Appendix

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A.1 Construction Data

In this appendix we provide details for all variables used in this paper. We present these variables in the order of appearance in the text. The sample consists of all Federal Open Market Committee (FOMC) meetings from the beginning of 1994 until the end of 2009, 144 in total. The meeting after the terrorist attacks of 9/11 is dropped. The dates of the FOMC meetings can be found at the Federal Reserve's website: http://www.federalreserve.gov/monetarypolicy/fomc.htm.

A.1.1 Baseline Event-Study Analysis

- Surprises: The construction is explained in the text. The data on federal funds futures and Eurodollar futures were acquired from the CME group.
- Recession Indicators: These indicators are based on National Bureau of Economic Research (NBER) recession turning points; see http://www.nber.org.
- Return: Stock return is calculated as $100 * (\log(\text{price}_t) - \log(\text{price}_{t-1}))$. Daily stock prices were retrieved from the Center for Research in Security Prices (CRSP).

A.1.2 Industry Effects

- Industry Classification: This classification is based on the Standard Industrial Classification (SIC) codes as found in COMPUSTAT.

- Industrial Production Growth Rates: Quarterly data on industrial production were obtained from the Federal Reserve Board, data release G.17; see http://www.federalreserve.gov/releases/g17/.

A.1.3 Firm Effects

All COMPUSTAT data are retrieved from the CRSP/COMPUSTAT merged annual fundamentals file.

- Employees: Employees corresponds to the COMPUSTAT item EMP.
- Total Assets: Total assets corresponds to COMPUSTAT item AT.
- Cash Flow to Net Income: This is constructed as (income before extraordinary items + depreciation and amortization)/net income, expressed in COMPUSTAT items IB+DPC/NI.
- Return on Equity: This is constructed as (net income/book value on equity), expressed in COMPUSTAT items NI/(CSHO *PRCC-F).
- Trade Credit: This is constructed as (accounts payable/total liabilities), expressed in COMPUSTAT items AP/LT.
- Debt to Assets: (long-term debt total + debt in current liabilities)/assets total, liabilities, and stockholder's equity, expressed in COMPUSTAT items (DLC+DLTT)/LSE.
- Market to Book: Following COMPUSTAT (North America) User's Guide, this is constructed as PRCC-F/(CEQ/CSHO).
- Size: This is constructed as the natural logarithm of total assets (see above).
- Beta*Index Return: This is constructed as the product of beta and the return on the index, that is, CRSP item SPRTRN. Beta itself is constructed as the correlation between the monthly index return and the monthly individual stock returns for all firms in our sample over the period 1994–2009.

A.2 Discussion of the Outlier Dates

As explained in the text, we have chosen the outlier dates as follows. First we estimate

$$\text{Return}_{\text{S\&P500},t} = \alpha + \gamma \text{Rec}_t + \beta_1 \text{Target}_t + \beta_2 \text{Path}_t + \beta_3 \text{Target}_t * \text{Rec}_t + \beta_4 \text{Path}_t * \text{Rec}_t + \epsilon_{\text{S\&P500},t}.$$

Then we calculate the DFITS statistic for each observation; see Welsh and Kuh (1977). This statistic is defined as the change in the predicted value when one observation is left out of the regression. This change is subsequently scaled by the estimated standard deviation at that point.

We drop observations above the cut-off value suggested by Belsley, Kuh, and Welsh (1980). Eliminating observations on the basis of statistics and subsequently using standard inference should be done cautiously. We do not necessarily want to drop observations with large residuals, for example. Since the results with and without these outliers are in line with each other, we are confident that we do not lose too much important information. In the next subsection we investigate alternative approaches to detect outliers.

The above procedure resulted in the following outlier dates: 1998: October 15; 2001: January 3 and April 18; 2008: January 22, January 30, March 18, September 29, October 7, and December 16; 2009: January 28 and March 18. It should be noted that except for the first two outlier dates, all outlier dates fall in a recession.

It may be of interest to the reader why these dates were outliers. Table 1 provides some details on the meeting which may shed some light on this. Further analysis of these specific meetings lies outside the scope of this study.

A.3 Financial Constraints and Cyclicality (Footnote 23)

Following the suggestion of a referee, we explored whether the stronger effect for small firms, attributed to financial constraints, is not really driven by the fact that smaller firms are simply more cyclical. We present here two pieces of evidence suggesting that this is not the case. In figure 1 we plot the median number of employees in a firm of an industry for all industries for which we have estimated the cyclicality (production growth beta). Along the horizontal axis the industries are ranked from most cyclical to least cyclical. The figure shows that there appears to be no particular trend. In figure 2 we have done the same for the size of the median firm measured by

Table 1. Background Information on the Outlier Meetings

Date	Details
October 15, 1998	First intermeeting move since 1994 and statement pointing to "unsettled conditions in financial markets . . . restraining aggregate demand" increases expectations of further easings.
January 3, 2001	Large surprise intermeeting ease reportedly causes financial markets to mark down probability of a recession; Federal Reserve is perceived as being "ahead of the curve" and as needing to ease less down the road as a result.
April 18, 2001	FOMC decides to lower target federal funds rate by 50 basis points. The FOMC is worried about economic slowdown and states: "As a consequence, the Committee agreed that an adjustment in the stance of policy is warranted during this extended intermeeting period."
January 22, 2008	Unplanned FOMC meeting by conference call. "To further its long-run objectives, the Committee in the immediate future seeks conditions in reserve markets consistent with reducing the federal funds rate to an average of around 3.5 percent." This was a 75-basis-point cut.
January 30, 2008	This was a planned meeting only one week after an unplanned conference call. The FOMC decided to lower the target federal funds rate by an additional 50 basis points to 3 percent.
March 18, 2008	The combination of a slowing growth, inflationary pressures, and financial market disruptions encouraged the FOMC members to approve another 75-basis-point cut in the federal funds rate.
September 29, 2008	This was an unplanned meeting by conference call. In light of severe pressures in dollar funding markets abroad, the Committee unanimously approved both extending the liquidity-related swap arrangements with foreign central banks an additional three months, through April 30, 2009, and increasing substantially the sizes of those existing arrangements.

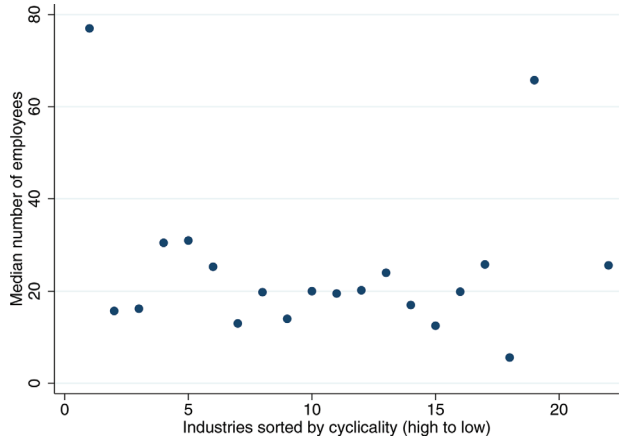
(*continued*)

Table 1. (Continued)

Date	Details
October 7, 2008	An unplanned meeting in which the FOMC decided to cut the target federal funds rate by 50 basis points.
December 16, 2008	The FOMC installs a *target range* for the federal funds rate between 0 and 25 basis points. The federal funds rate is effectively at the zero lower bound; instead of a specific target, the FOMC now uses a range.
January 28, 2009	From the FOMC statement: "The Committee continues to anticipate that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time." And further: "The Committee anticipates that a gradual recovery in economic activity will begin later this year, but the downside risks to that outlook are significant."
March 18, 2009	From the FOMC statement: "In these circumstances, the Federal Reserve will employ all available tools to promote economic recovery and to preserve price stabitlity." The chairman of the Federal Reserve announced that the Fed would increase its balance sheet further by buying mortgage-backed securities and that it would purchase long-term Treasury securities in the next six months.

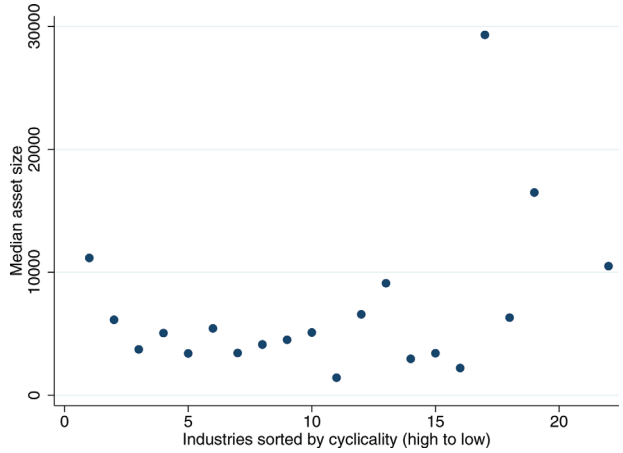
Notes: The details for the first two dates were literally taken from a discussion in Gürkaynak, Sack, and Swanson (2005). The details for the other dates come from the statements after the FOMC meetings along with readings from the financial press.

Figure 1. Size (Employees) versus Cyclicality



Notes: The figure shows a plot of the median size of a company in a given industry versus the cyclicality of that industry as estimated in the paper. This figure allows us to visually confirm that it is not the case that smaller firms are simply more cyclical. There does not seem to be a clear trend and there are some outlier industries in terms of size.

Figure 2. Size (Assets Total) versus Cyclicality



Notes: The figure shows a plot of the median size of a company in a given industry versus the cyclicality of that industry as estimated in the paper. This figure allows us to visually confirm that it is not the case that smaller firms are simply more cyclical. There does not seem to be a clear trend and there are some outlier industries in terms of size.

assets. If it were indeed the case that small firms tend to be more cyclical, then we would expect in both figures a downward trend.

A second piece of evidence is provided in table 2. Here we have reestimated the regression model (with ternary cyclicality indicator) for industry effects as reported in the paper, but we did so for different samples. Respectively, we reestimated the model in a sample of small, medium, and large firms measured according to the number of employees or the total asset size. Note that qualitatively the results remain the same as the results reported in the paper except that we have less precise estimates in the sixth column.

A.4 Non-Linearities

Here we show another specification than we have used in the paper. The regression we estimate is the following:

$$\begin{aligned}\text{Return}_{it} = \alpha &+ \gamma \text{Rec}_t + \beta_1 \text{Target}_t + \beta_2 \text{Path}_t + \beta_3 \text{Target}_t * \text{Rec}_t \\ &+ \beta_4 \text{Path}_t * \text{Rec}_t + \beta_5 \text{Target}_t * \text{High}_{it} + \beta_6 \text{Path}_t \\ &* \text{High}_{it} + \beta_7 \text{Target}_t * \text{Rec}_t * \text{High}_{it} \\ &+ \beta_8 \text{Path}_t * \text{Rec}_t * \text{High}_{it} + \beta_9 \text{Target}_t * \text{Low}_{it} \\ &+ \beta_{10} \text{Path}_t * \text{Low}_{it} + \beta_{11} \text{Target}_t * \text{Rec}_t * \text{Low}_{it} \\ &+ \beta_{12} \text{Path}_t * \text{Rec}_t * \text{Low}_{it} + \sum_{j=1}^{3} \delta_j \text{Control}_{j,it} + \epsilon_{it}. \quad (1)\end{aligned}$$

In this model *High* means that the firm belongs to the top quintile in the cross-section of the firm characteristic (see also the paper); *Low* means that the firm belongs to the bottom quintile. Note that in the paper we construct our ternary indicator such that the coefficient could be interpreted as the jump from non-constrained to constrained. Here *High* and *Low* are just dummy variables indicating that a firm belongs to the top or bottom of the cross-sectional distribution (on an event-date-by-event-date basis as in the paper). Careful inspection shows that the results of this model, presented in table 3, are in line with what we presented in the paper. Moreover, we can see which part of the distribution is meaningful. Noteworthy for the paper is the result when we use the *debt-to-assets* ratio and look at the interaction with path-recession interaction. Like Ehrmann and

Table 2. Responses of Cyclical and Non-cyclical Industries: Sample Split by Proxies for Constraint

	Employees: Medium b/t	**Employees: Small b/t**	**Employees: Large b/t**	**Assets: Medium b/t**	**Assets: Small b/t**	**Assets: Large b/t**
Target	-3.76^{***}	-2.54^{***}	-4.17^{***}	-3.82^{***}	-2.84^{***}	-3.66^{***}
	(-8.32)	(-4.23)	(-5.98)	(-8.30)	(-5.16)	(-5.65)
Target*Rec	-11.90^{***}	-11.73^{***}	-17.29^{***}	-13.80^{***}	-10.39^{***}	-13.08^{***}
	(-8.10)	(-5.05)	(-5.20)	(-8.70)	(-4.54)	(-4.32)
Path	-1.85^{***}	-1.95^{***}	-1.74^{***}	-1.84^{***}	-1.83^{***}	-1.78^{***}
	(-7.85)	(-5.08)	(-4.02)	(-7.81)	(-5.38)	(-3.68)
Path*Rec	11.87^{***}	12.33^{***}	15.58^{***}	12.33^{***}	12.02^{***}	14.10^{***}
	(19.22)	(12.73)	(10.24)	(19.14)	(12.12)	(9.46)
Target*Cycl	-0.98	-4.27^{**}	-6.20	-1.67	-2.76	-3.13
	(-0.95)	(-2.08)	(-1.11)	(-1.55)	(-1.21)	(-0.84)
Target*Rec*Cycl	-3.32	-21.49^{***}	-8.67	-5.87	-20.74^{**}	1.30
	(-0.70)	(-3.34)	(-0.62)	(-1.21)	(-2.31)	(0.15)
Path*Cycl	-2.29^{***}	-0.13	-5.63^{***}	-2.35^{***}	-1.31	-2.56^{*}
	(-3.71)	(-0.11)	(-3.07)	(-3.53)	(-1.23)	(-1.84)
Path*Rec*Cycl	8.90^{***}	12.40^{***}	25.44^{***}	11.82^{***}	11.25^{**}	6.61
	(4.57)	(3.80)	(5.11)	(6.48)	(2.17)	(1.48)
N	18,387	6,209	6,368	18,566	6,286	6,112
R^2	0.05	0.04	0.07	0.05	0.04	0.07

Notes: This table presents the results from estimating the regression model for industry effects (see paper) for different subsamples. The sample is sliced according to two size variables (proxies for financial constraints). The table only presents the estimated coefficients and t-statistics on the variables of interest and not on the constant and the recession indicator. We omitted the FOMC meeting on September 17, 2001 because of the exceptional character of this meeting in the wake of 9/11. We also omitted eleven dates marked as outliers, as explained in the text. The reported t-statistics are based on heteroskedasticity-robust standard errors. Firm fixed effects were included in all regression specifications. Student t-statistics are in parentheses. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

Table 3. Flexible Specification

	Debt to Assets	Employees	Total Assets	Cash Flow to Net Income	Return on Equity	Trade Credit
Target	−3.91***	−3.84***	−3.74***	−3.60***	−3.14***	−3.78***
	(−10.10)	(−9.07)	(−9.32)	(−9.08)	(−8.66)	(−8.95)
Target*Rec	−11.27***	−11.73***	−14.47***	−11.16***	−11.62***	−12.08***
	(−8.44)	(−8.48)	(−9.72)	(−7.80)	(−8.41)	(−8.72)
Path	−1.66***	−1.89***	−2.00***	−1.71***	−2.11***	−1.89***
	(−8.14)	(−8.57)	(−9.15)	(−8.36)	(−10.92)	(−8.42)
Path*Rec	12.65***	13.10***	14.89***	12.76***	12.61***	12.96***
	(23.00)	(22.84)	(22.54)	(20.10)	(21.96)	(20.31)
Target*High	0.34	1.09	0.83	0.07	−0.91	0.28
	(0.53)	(1.59)	(1.30)	(0.11)	(−1.09)	(0.41)
Target*Rec*High	−1.62	0.26	3.04	−1.03	−1.66	−4.31
	(−0.56)	(0.10)	(1.19)	(−0.38)	(−0.63)	(−1.45)
Path*High	−0.87**	−0.03	0.31	−0.41	0.07	−0.45
	(−2.35)	(−0.06)	(0.81)	(−1.14)	(0.14)	(−1.02)
Path*Rec*High	3.58**	0.03	−3.11***	−0.96	−0.28	5.57***
	(2.53)	(0.03)	(−2.78)	(−0.89)	(−0.24)	(4.02)
Target*Low	0.83	−0.29	−0.55	−0.33	−1.79**	0.28
	(1.03)	(−0.40)	(−0.68)	(−0.40)	(−2.36)	(0.40)
Target*Rec*Low	−6.45**	−6.10*	4.97	−6.93**	−4.61	0.44
	(−1.98)	(−1.73)	(1.60)	(−2.21)	(−1.39)	(0.15)
Path*Low	−0.37	−0.05	0.15	−0.49	0.95*	0.35
	(−0.68)	(−0.12)	(0.31)	(−0.87)	(1.90)	(0.86)
Path*Rec*Low	4.16***	5.59***	−0.30	8.02***	8.31***	0.41
	(2.72)	(3.28)	(−0.20)	(5.28)	(5.23)	(0.31)

Notes: This table only presents the estimated coefficients and t-statistics on the variables of interest and not on the constant, the recession indicator, and the control variables. We omitted the FOMC meeting on September 17, 2001 because of the exceptional character of this meeting in the wake of 9/11. We also omitted eleven dates marked as outliers, as explained in the text. The reported t-statistics are based on heteroskedasticity-robust standard errors. Firm fixed effects were included in all regression specifications. Student t-statistics are in parentheses. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

Table 4. Overview

Sample	Recession Dummy	Outlier Statistic	Dates
Whole	No	DFITS	05/17/94, 10/15/98, 01/03/01, 04/18/01, 01/22/08, 03/18/08, 07/24/08, 09/29/08, 10/07/08, 12/16/08, 03/18/09
Late	No	DFITS	01/22/08, 03/18/08, 09/29/08, 10/07/08, 12/16/08, 03/18/09
Late	Yes	DFITS	09/18/07, 01/22/08, 03/18/08, 09/29/08, 10/07/08, 12/16/08, 03/18/09
Whole	Yes	Cook's Distance	01/22/08, 09/29/08

Fratzscher (2004), we find that the extremes—i.e., companies with high or low debt—are more responsive to monetary policy.

A.5 Further Robustness Checks

As an alternative to the NBER recession indicator, we have used real-time recession probabilities. The results are mentioned below. The data on these recession probabilities were downloaded from http://pages.uoregon.edu/jpiger/us_recession_probs.htm.

A.5.1 Alternative Choices of Outlier Dates

As explained in the previous section, we have determined the outlier dates by estimating a regression over the entire sample and then using the DFITS statistic. Alternative approaches could use a regression with recession dummies, estimate a regression over subsamples, or use another diagnostic statistic. We determine in this subsection outliers along these lines. Table 4 provides an overview.

The resulting dates show considerable overlap, which strengthens our belief that we have taken a reasonable approach to selecting outlier dates. Specifically, if we test for outliers using the whole sample and we do not allow for state dependence, then we get somewhat more outliers not in a recession. The use of Cook's distance (a similar outlier statistic; see Cook 1979) also leads to only two outlier dates at the end of our sample. Our choice for determining outlier

Table 5. Results with Alternative Procedures for Determining Outliers

	(1)	(2)	(3)
Target	−3.90***	−4.14***	−7.01***
	(−18.13)	(−18.40)	(−23.66)
Target*Rec	−13.13***	−1.06	−4.55***
	(−14.76)	(−1.32)	(−8.72)
Path	−2.06***	−1.86***	−1.91***
	(−16.18)	(−13.66)	(−12.75)
Path*Rec	16.09***	11.83***	6.16***
	(37.79)	(27.00)	(14.53)
Influence Statistic	DFITS	DFITS	Cook
Sample	Whole	Whole	Whole
Recession Dummy	Yes	No	Yes

Notes: This table only presents the estimated coefficients and t-statistics on the variables of interest and not on the constant and the recession indicator. We omitted the FOMC meeting on September 17, 2001 because of the exceptional character of this meeting in the wake of 9/11. We also omitted eleven dates marked as outliers, as explained in the text. Student t-statistics are in parentheses. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

dates yields dates which are mostly picked up by other procedures too. This gives us confidence that our selection of outlier dates is reasonable. In table 5, we repeat our baseline regressions with some alternative choices of outlier dates. The results are satisfying in the sense that the signs are the same for all three estimation results. In the second specification we find that the target-recession interaction term is not significant at the 10 percent confidence level, but that does not hamper the findings in the paper.

A.5.2 Robust Errors

Another concern may arise because of our choice of specification. We chose to present regression results in which we included firm fixed effects and heteroskedasticity-robust standard errors. In table 6 we present the results of estimating our baseline regression with alternative error constructions. For ease of reference, we repeat this regression here:

Table 6. Alternative Error Construction

	Return b/t	**Return b/t**	**Return b/t**	**Return b/t**	**Return b/t**	**Return b/t**
Target	-3.90^{***}	-3.90^{***}	-3.90^{**}	-3.97^{**}	-3.90^{***}	-3.97^{**}
	(-18.13)	(-13.47)	(-2.51)	(-2.51)	(-19.44)	(-2.53)
Target*Rec	-13.13^{***}	-13.13^{***}	-13.13^{**}	-13.15^{**}	-13.13^{***}	-13.15^{**}
	(-14.76)	(-10.91)	(-2.24)	(-2.23)	(-13.95)	(-2.28)
Path	-2.06^{***}	-2.06^{***}	-2.06^{**}	-2.06^{**}	-2.06^{***}	-2.06^{**}
	(-16.18)	(-7.78)	(-2.03)	(-2.03)	(-16.50)	(-2.02)
Path*Rec	16.09^{***}	16.09^{***}	16.09^{***}	16.15^{***}	16.09^{***}	16.15^{***}
	(37.79)	(11.08)	(7.75)	(7.85)	(41.46)	(6.82)
Firm Fixed Effects	Yes	Yes	Yes	No	Yes	No
Cluster Level		Group	Date	Date		Group + Date
Standard Errors	Robust				Bootstrapped	

Notes: This table presents the results from estimating regression equation (2). The table only presents the estimated coefficients and t-statistics on the variables of interest and not on the constant and the recession indicator. We omitted the FOMC meeting on September 17, 2001 because of the exceptional character of this meeting in the wake of 9/11. We also omitted eleven dates marked as outliers, as explained in the text. The error construction is explained in the text and the bottom of the table. Student t-statistics are in parentheses. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

$$\text{Return}_{it} = \alpha + \gamma \text{Rec}_t + \beta_1 \text{Target}_t + \beta_2 \text{Target}_t * \text{Rec}_t + \beta_3 \text{Path}_t + \beta_4 \text{Path}_t * \text{Rec}_t + \epsilon_{it}. \quad (2)$$

We estimate this regression over the entire sample and with outliers dropped. This corresponds to column 4 of table 4 in the paper.

The table shows that the main findings of our paper are fairly robust. To ease comparison, we repeat the result from the paper in the first column (column 4 of table 2 in the paper). In the second column we cluster the standard errors at the level of the industry group. In the third column we cluster the standard errors at the date level. In the fourth column we do the same, but now we drop the firm fixed effects. In the fifth column we present bootstrapped errors with firm fixed effects. In the last column we present two-way clustered errors.

A.5.3 Subsamples

Here we reestimate some regressions we presented in the paper, but we change the sample. We distinguish two subsamples. The *early* subsample ends at the introduction of forward-looking statements and contains all observations from the original sample up to and including July 2003. The *late* subsample starts in August 2003. In table 7, the baseline regression is reestimated over both subsamples. For both subsamples we present the baseline regression with three different error specifications in the spirit of what we have done above. In table 8 we estimate for both samples the regression on the industry effects and one of our firm effects regressions. The results suggest that the patterns we showed in the data are valid in both subsamples but more so on the late subsample. The demand channel effects as found in the paper are not as clear for the early sample, and we find a low t-statistic for the path-recession-cyclicality interaction.

A.5.4 Alternative Choices of Recession Indicator

In the paper we have relied on the NBER recession indicator to capture changes in the business cycle. We have argued that one could also rely on a recession probability instead of a recession dummy. To do this, we estimate the following regression:

$$\text{Return} = \alpha + \beta_1 \text{Target}_t * (1 - \text{Rec}_t) + \beta_2 \text{Path}_t * (1 - \text{Rec}_t) + \beta_3 \text{Target}_t * \text{Rec}_t + \beta_4 \text{Path}_t * \text{Rec}_t + \epsilon_t, \quad (3)$$

Table 7. Subsample Regressions

Target	−2.94***	−2.98**	−2.94***	−14.26***	−14.25***	−14.26***
	(−13.04)	(−2.11)	(−11.49)	(−25.49)	(−3.06)	(−29.05)
Target*Rec	−11.35***	−11.36**	−11.35***	−3.89*	−3.90	−3.89*
	(−12.15)	(−2.28)	(−11.27)	(−1.96)	(−0.37)	(−1.85)
Path	−1.46***	−1.43	−1.46***	−2.71***	−2.70	−2.71***
	(−8.80)	(−1.19)	(−8.84)	(−14.85)	(−1.46)	(−15.20)
Path*Rec	8.31***	8.28***	8.31***	18.39***	18.41***	18.39***
	(10.66)	(2.82)	(13.16)	(36.20)	(5.82)	(35.11)
Subsample	Early	Early	Early	Late	Late	Late
Errors	Robust	Group + Date	Bootstrap	Robust	Group + Date	Bootstrap
Firm Fixed Effects	Yes	No	Yes	Yes	No	Yes

Notes: The table only presents the estimated coefficients and t-statistics on the variables of interest and not on the constant, the recession indicator, and the control variables in the case of the Firm regressions (see paper). We omitted the FOMC meeting on September 17, 2001 because of the exceptional character of this meeting in the wake of 9/11. We also omitted eleven dates marked as outliers, as explained in the text. Student t-statistics are in parentheses. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

Table 8. Subsample Regressions

Target	−6.62***	−2.96***	−11.55***	−12.03***
	(−16.05)	(−8.80)	(−15.91)	(−17.26)
Target*Rec	−4.18***	−12.23***	−7.92***	−5.14**
	(−5.28)	(−8.18)	(−3.52)	(−2.23)
Path	−1.06***	−1.62***	−2.15***	−1.83***
	(−4.16)	(−6.80)	(−8.55)	(−6.79)
Path*Rec	7.88***	8.79***	15.78***	13.52***
	(7.55)	(6.77)	(26.24)	(22.76)
Target*Firm	−5.50***		0.04	
	(−4.10)		(0.02)	
Path*Firm	2.33***		−1.21	
	(2.82)		(−1.44)	
Target*Rec*Firm	−0.40		−10.61	
	(−0.15)		(−1.43)	
Path*Rec*Firm	9.95***		5.18**	
	(2.61)		(2.30)	
Target*Cycl		−1.93*		−13.04***
		(−1.84)		(−4.43)
Target*Rec*Cycl		−1.95		−6.07
		(−0.49)		(−0.65)
Path*Cycl		−2.37***		−0.88
		(−3.71)		(−0.89)
Path*Rec*Cycl		3.29		12.72***
		(1.03)		(6.17)
Subsample	Early	Early	Late	Late

Notes: The table only presents the estimated coefficients and t-statistics on the variables of interest and not on the constant and the recession indicator. We omitted the FOMC meeting on September 17, 2001 because of the exceptional character of this meeting in the wake of 9/11. We also omitted eleven dates marked as outliers, as explained in the text. The reported t-statistics are based on heteroskedasticity-robust standard errors. Firm fixed effects were included in all regression specifications. Student t-statistics are in parentheses. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

with Rec_t the recession probability at time t. In table 9 we show the results of estimating the above regression with real-time recession probabilities obtained from a dynamic-factor Markov-switching model developed in Chauvet and Piger (2008). It is clear that the results are in line with the results we presented in the paper.

Table 9. Recession Probabilities

	(1)	(2)	(3)
Target	−3.47***	−14.08***	−2.60
	(−15.74)	(−22.95)	(−1.77)
Path	−2.27***	−2.26***	−2.90***
	(−17.28)	(−11.66)	(−3.02)
Target*Rec	−23.04***	−22.32***	−20.12***
	(−21.91)	(−10.41)	(−2.83)
Path*Rec	16.82***	18.06***	15.10***
	(31.36)	(27.15)	(5.11)
Sample	Whole	Late	Whole
Returns on	Stocks	Stocks	S&P Index

Notes: This table presents the results from estimating regression equation (3). The table only presents the estimated coefficients and t-statistics on the variables of interest and not on the constant. We omitted the FOMC meeting on September 17, 2001 because of the exceptional character of this meeting in the wake of 9/11. We also omitted eleven dates marked as outliers, as explained in the text. The reported t-statistics are based on heteroskedasticity-robust standard errors. Firm fixed effects were included in all regression specifications. Student t-statistics are in parentheses. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

A.5.5 Scheduled vs. Unscheduled

In table 10 we present the results of splitting the sample into scheduled and unscheduled meetings. The regression specification is the same as in columns 1 and 2 of the benchmark event study in the paper. The first three columns present results for the regression specifications with individual stock returns as dependent variable, whereas the next three columns have the S&P 500 index as independent variable. Qualitatively, the same results as in the paper emerge. However, especially for the unscheduled meetings we are able to explain a substantial part of the variation. For these meetings we also find the largest estimated coefficients. This does not come as a surprise given that the unscheduled meetings are most of the time much more important and compelling for financial markets, whereas the scheduled meetings contain meetings with few surprises in the actions undertaken by the FOMC as well as the statements made by the FOMC. On these days it makes sense that the stock market is moved by other determinants.

Table 10. Scheduled vs. Unscheduled Meetings

	All Stocks	Scheduled Stocks	Unscheduled Stocks	All Index	Scheduled Index	Unscheduled Index
Target	-7.00^{***}	-3.79^{***}	-11.62^{***}	-7.04^{***}	-2.96^{*}	-13.76^{***}
	(-23.66)	(-17.22)	(-17.87)	(-2.99)	(-1.89)	(-8.96)
Target*Rec	3.74^{***}	5.40^{***}	-1.96^{***}	4.77	5.35^{**}	0.31
	(9.14)	(16.47)	(-2.64)	(1.01)	(2.50)	(0.09)
Path	-1.91^{***}	-2.07^{***}	-2.64^{***}	-2.27^{*}	-2.70^{**}	-1.42
	(-12.79)	(-15.23)	(-5.89)	(-1.89)	(-2.56)	(-0.92)
Path*Rec	10.85^{***}	1.16^{***}	22.97^{***}	10.74^{*}	3.47	19.99^{**}
	(22.35)	(2.70)	(27.93)	(1.86)	(0.71)	(3.67)
N	69,617	63,813	5,804	144	132	12
R^2	0.06	0.04	0.51	0.20	0.09	0.89

Notes: In this table we split our sample into scheduled and unscheduled meetings. To split these, we follow the overview given in the appendix of Gürkaynak, Sack, and Swanson (2005), which we update with information from the Federal Reserve website. The first three columns present results of regressions with observations at the stock level, while the next three columns have the S&P 500 index as dependent variable. The table only presents the estimated coefficients and t-statistics on the variables of interest and not on the constant, the recession indicator, and the control variables. We omitted the FOMC meeting on September 17, 2001 because of the exceptional character of this meeting in the wake of 9/11. We also omitted eleven dates marked as outliers, as explained in the text. The reported t-statistics are based heteroskedasticity-robust standard errors. Firm fixed effects were included in all regression specifications. Student t-statistics are in parentheses. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

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