



Federal Reserve Bank of Cleveland Working Paper Series

**The Effects of the Federal Reserve Chair's Testimony
on Interest Rates and Stock Prices**

Matthew V. Gordon and Kurt G. Lunsford

Working Paper No. 23-26

November 2023

Suggested citation: Gordon, Matthew V. and Kurt G. Lunsford. 2023. "The Effects of the Federal Reserve Chair's Testimony on Interest Rates and Stock Prices." Working Paper No. 23-26. Federal Reserve Bank of Cleveland. <https://doi.org/10.26509/frbc-wp-202326>.

Federal Reserve Bank of Cleveland Working Paper Series

ISSN: 2573-7953

Working papers of the Federal Reserve Bank of Cleveland are preliminary materials circulated to stimulate discussion and critical comment on research in progress. They may not have been subject to the formal editorial review accorded official Federal Reserve Bank of Cleveland publications.

See more working papers at: www.clevelandfed.org/research. Subscribe to email alerts to be notified when a new working paper is posted at: <https://www.clevelandfed.org/subscriptions>.

The Effects of the Federal Reserve Chair's Testimony on Interest Rates and Stock Prices*

Matthew V. Gordon[†]

Kurt G. Lunsford[‡]

November 2023

Abstract

We study how congressional testimony about monetary policy by the Chair of the Board of Governors of the Federal Reserve System affects interest rates and stock prices. First, we study testimony associated with the Federal Reserve's Monetary Policy Reports (MPRs) to Congress. Testimony for a particular MPR is usually given on two days, one day for each chamber of Congress. We separately study the first day and second day of MPR testimony. We also study testimonies not associated with MPRs but that are still related to monetary policy. We find that first-day MPR testimonies cause the largest movements in interest rates and generate negative co-movement between interest rates and stock prices. Testimonies not associated with MPRs have similar but weaker effects. Second-day MPR testimonies cause the smallest movements in interest rates and generate no co-movement between interest rates and stock prices.

Keywords: Eurodollar future, Event study, Forward guidance, S&P 500, Treasury note

JEL Codes: E43, E52, E58, G12, G14

*We are grateful to Michael Fleming and Isabel Krogh for providing us with high-frequency Treasury note yields and to Eric Swanson for providing us with information on Eurodollar futures markets. Stephanie Tulley provided essential data support, and Todd Clark gave helpful comments and advice. The views expressed herein are solely those of the authors and do not necessarily reflect the views of the Federal Reserve Bank of Cleveland or the Federal Reserve System. All errors are our own.

[†]Federal Reserve Bank of Cleveland, P.O. Box 6387, Cleveland, OH 44101; matthew.gordon@clev.frb.org

[‡]Federal Reserve Bank of Cleveland, P.O. Box 6387, Cleveland, OH 44101; kurt.lunsford@clev.frb.org

1 Introduction

Congressional testimony by the Chair of the Board of Governors of the Federal Reserve System (the Fed Chair) is an important communication venue for the Federal Reserve. [Kohn and Sack \(2003\)](#) find that testimony by Alan Greenspan significantly affected interest rates. [Swanson \(2023\)](#) and [Swanson and Jayawickrema \(2023\)](#) highlight that testimony and speeches across different Fed Chairs have affected interest rates and stock prices.

In this paper, we study how different types of Fed Chair testimony about monetary policy affect financial markets. We study the testimony associated with the Federal Reserve’s Monetary Policy Reports (MPRs) to Congress. For a particular MPR, Fed Chair testimony is usually given on two days, one day for each chamber of Congress. We also study the effects of testimony that is not associated with an MPR but that, in our judgement, is still related to monetary policy. In short, we separately study three types of testimony: first-day MPR testimony, second-day MPR testimony, and non-MPR testimony.

We find that these different types of testimony have different effects on financial markets. First-day MPR testimonies generally cause larger movements in interest rates than the other two types of testimonies. First-day MPR testimonies also generate negative co-movement between interest rates and stock prices, which is consistent with the negative co-movement between interest rates and stock prices found around Federal Open Market Committee announcements ([Swanson, 2021](#); [Swanson and Jayawickrema, 2023](#)).

Next, second-day MPR testimonies cause the smallest movements in interest rates and generate no co-movement between interest rates and stock prices. These findings suggest that first-day MPR testimonies communicate most of the information in the MPRs and that second-day testimonies provide little additional information to financial markets. While questions by members of Congress can differ across the two days of testimony, the second-day questions and the corresponding answers do not appear to generate much movement in financial markets.

Finally, non-MPR testimonies are similar to first-day MPR testimonies but with smaller effects: they cause modest movements in interest rates and negative but less precisely estimated co-movement between interest rates and stock prices.

Our contribution is to document the differences between the types of Fed Chair testimony. [Swanson \(2023\)](#) and [Swanson and Jayawickrema \(2023\)](#) motivated our research by jointly studying Fed Chair testimony and speeches. However, they do not investigate any differences between types of testimony and speeches. [Kohn and Sack \(2003\)](#) separate Fed Chair testimony from speeches, but

do not separate the different types of testimony. Further, [Kohn and Sack \(2003\)](#) drop second-day MPR testimony from their sample without testing if that testimony or the associated questions and answers had effects on financial markets. [Alexopoulos et al. \(2023\)](#) study how non-verbal communication and emotions conveyed during Fed Chair testimonies affect stock prices and volatility. However, they only study MPR testimonies and use a shorter time period than we do.

As an additional contribution, we provide replication files with documentation for the dates and times of Fed Chair testimonies that we study. These files also include the associated interest rate changes and stock price percent changes for each testimony.

2 Background on Fed Chair Testimony

Fed Chairs have given testimony on a wide variety of topics, including monetary policy, financial markets and their regulation, banking supervision and regulation, the Federal Reserve’s interaction with private companies, and fiscal policy and the US budget. In this paper, we are interested in communication about monetary policy and do not study every testimony given by Fed Chairs. Instead, we focus on three types of testimony. The first two types of testimony are associated with the Federal Reserve’s semiannual MPR to Congress. The Chair usually testifies on two days for a given MPR, one day for each chamber of Congress. We separate the first day of testimony for a MPR from the second day of testimony. The third type of testimony is not associated with the MPR but, in our judgment, still contains information about monetary policy.

We now provide some additional background on the testimonies that we study. The Board of Governors of the Federal Reserve is required by law to provide a written report to the US Congress twice per year, referred to as the Monetary Policy Report. This report discusses “the conduct of monetary policy and economic developments and prospects for the future, taking into account past and prospective developments in employment, unemployment, production, investment, real income, productivity, exchange rates, international trade and payments, and prices.” Concurrent with each report, the Fed Chair is required by law to appear before one chamber of Congress regarding “the efforts, activities, objectives and plans of the Board and the Federal Open Market Committee” and “economic developments and prospects for the future” described in the report.¹ In practice, the Fed

¹Section 2B of the Federal Reserve Act specifies appearances before and reports to Congress: <https://www.federalreserve.gov/aboutthefed/section2b.htm>. Recent MPRs are available at https://www.federalreserve.gov/monetarypolicy/publications/mpr_default.htm. These reports and testimonies are sometimes called Humphrey-Hawkins reports or Humphrey-Hawkins testimonies in reference to the Full Employment and Balanced Growth Act of 1978, which was originally sponsored by Representative Augustus Hawkins and Senator

Chair usually testifies before both chambers of Congress for each MPR. Within a given year, the Fed Chair alternates the chamber of Congress to which he or she testifies first. These testimonies are often on subsequent days but are sometimes a week or two apart. We separately study first-day and second-day MPR testimony. The Fed Chair usually gives identical prepared remarks on both days, suggesting that the second day of MPR testimony may have no new information for financial markets. However, members of Congress can ask questions and these questions and the associated answers may differ across the days. [Kohn and Sack \(2003\)](#) drop the second day of testimony from their study, while [Alexopoulos et al. \(2023\)](#) provide evidence that emotions may still affect stocks during second-day MPR testimonies. If and how the two days of testimony differ appear to be open questions, and we study those questions here.

The Fed Chair also gives testimony that is not associated with MPRs; however, these testimonies may still contain information about monetary policy. For example, on May 22, 2013, Ben Bernanke testified about potential changes to the pace of the Federal Reserve’s asset purchases by saying, “if we see continued improvement [in the labor market] and we have confidence that that is going to be sustained, then we could in the next few meetings, take a step down in our pace of purchases.”² On January 11, 2022, Jerome Powell said, “[I]f we see inflation persisting at high levels longer than expected, then if we have to raise interest rates more over time we will.”³ We collect these types of testimonies that are relevant for monetary policy. In contrast, we do not use testimonies about supervision and regulation; specific legislation, such as the Dodd-Frank Act; and the Federal Reserve’s interaction with specific companies, such as Bear Stearns or AIG. We also do not use testimony that is joint with other government officials, such as Ben Bernanke’s testimony with Treasury Secretary Henry Paulson on July 10, 2008, and testimony that, in our judgment, is related more to fiscal policy, such as Ben Bernanke’s June 9, 2010 testimony, titled “Economic and financial conditions and the federal budget.” Finally, we do not include the testimonies on

Hubert Humphrey. That law amended the Federal Reserve Act to require the Board of Governors of the Federal Reserve to send Congress written reports twice per year. Among other requirements, the report had to specify the “objectives and plans of the Board of Governors and the Federal Open Market Committee with respect to the ranges of growth or diminution of the monetary and credit aggregates for the calendar year during which the report is transmitted.” The American Homeownership and Economic Opportunity Act of 2000 repealed this requirement to report growth ranges for monetary and credit aggregates while adding Section 2B of the Federal Reserve Act. The Full Employment and Balanced Growth Act of 1978 and the American Homeownership and Economic Opportunity Act of 2000 are available at <https://fraser.stlouisfed.org/title/full-employment-balanced-growth-act-humphrey-hawkins-act-1034> and <https://fraser.stlouisfed.org/title/american-homeownership-economic-opportunity-act-2000-1022>, respectively.

²The transcript of the May 22, 2013 testimony is available at <https://www.govinfo.gov/content/pkg/CHRG-113jhr81472/pdf/CHRG-113jhr81472.pdf>.

³The transcript of the January 11, 2022 testimony is available at <https://www.govinfo.gov/content/pkg/CHRG-117shrg48289/pdf/CHRG-117shrg48289.pdf>.

November 13, 2002 and February 10, 2009. The large movements in stock prices that occurred at the time of these testimonies are likely confounded with other news. On November 13, 2002, there was news about weapons inspections in Iraq that broke during the testimony. On February 10, 2009, the Treasury secretary announced a plan for stabilizing financial markets in the morning and testified before Congress in the afternoon.

We collect testimony dates from the website of the Board of Governors of the Federal Reserve System, <https://www.federalreserve.gov/newsevents/testimony.htm>, and from the Federal Reserve Bank of St. Louis's FRASER database.⁴ In addition to collecting testimony dates, we collect starting and ending times for each testimony. For starting times, we typically use the "for release" times that are often on the PDF version of the testimonies in FRASER. We may also use the calendars of the Chairs' schedules, which are also from the FRASER database.⁵ We fill in missing starting times using transcripts of congressional testimony.⁶ For the ending times, we primarily use the congressional transcripts, but sometimes we add the length of video from C-SPAN's online video library to the known start times.

We collected dates, start times, and end times for 204 testimonies from 1988 through 2023. As part of this paper, we provide replication files with documentation for the dates and times that we collected. However, due to the financial data limitations discussed in the next section, we will only analyze 179 of these testimonies from July 1991 through March 2023.

3 Interest Rate and Stock Price Data

To study how Fed Chair testimony affects financial markets, we measure changes in interest rates and 100 times the change in logs in the S&P 500 index price, which we refer to as the percent change, from 15 minutes before each testimony starts to 15 minutes after each testimony ends.

⁴The FRASER database has statements and speeches, including testimony, for Alan Greenspan, Ben Bernanke, Janet Yellen, and Jerome Powell. Lists of these statements and speeches are at <https://fraser.stlouisfed.org/title/statements-speeches-alan-greenspan-452?browse=1980s>, <https://fraser.stlouisfed.org/title/statements-speeches-ben-s-bernanke-453?browse=2000s>, <https://fraser.stlouisfed.org/title/statements-speeches-janet-l-yellen-930?browse=1990s>, and <https://fraser.stlouisfed.org/title/statements-speeches-jerome-h-powell-1164?browse=2010s>.

⁵The calendars for Ben Bernanke, Janet Yellen, and Jerome Powell are available at <https://fraser.stlouisfed.org/title/chairman-bernanke-s-schedule-5196?browse=2000s>, <https://fraser.stlouisfed.org/title/chair-janet-yellen-s-calendar-6128?browse=2010s>, and <https://fraser.stlouisfed.org/title/chair-jerome-powell-s-calendar-6129?browse=2010s>, respectively. Alan Greenspan's calendar is at <https://fraser.stlouisfed.org/title/chairman-greenspan-5197?browse=1990s>, but we did not find it to be helpful and did not use it.

⁶We found the transcripts at the HathiTrust, <https://www.hathitrust.org/>, Google Books, <https://books.google.com/>, and GovInfo, <https://www.govinfo.gov/>.

We use seven interest rates. Following [Swanson \(2023\)](#) and [Swanson and Jayawickrema \(2023\)](#), the first four are interest rates implied by Eurodollar futures prices that we get from tickdata.com. The first Eurodollar futures contract expires near the end of the quarter in which the testimony is given.⁷ The three other contracts expire near the end of each subsequent quarter. We refer to these four contracts as ED1, ED2, ED3, and ED4, and they measure interest rate expectations over the course of the next year.⁸

The next three interest rates are the yields of the on-the-run 2-year, 5-year, and 10-year Treasury notes from the GovPX database and the BrokerTec electronic trading platform.⁹ Our source for Treasury yield data is different than in [Swanson \(2023\)](#) and [Swanson and Jayawickrema \(2023\)](#), who measure Treasury yields with futures data.¹⁰

Our S&P 500 index price data are from tickdata.com. There are typically multiple S&P 500 index price ticks in the 15th minute before and after each testimony.¹¹ We use the simple average (not the trade-weighted average) index price over the minute to measure the percent changes. We

⁷Eurodollar futures contracts expire on the third Wednesday of March, June, September, and December. This timing means that some testimonies occur just before a quarter ends but just after a Eurodollar futures contract expires. For these testimonies, we use the next quarter’s contract in place of the current quarter’s contract. For example, for the testimonies on June 22 and 23, 2022, we treat the contract expiring in September to be the contract expiring in the current quarter.

⁸If there is more than one trade in the 15th minute before or 15th minute after a testimony, then we use the simple average (not the trade-weighted average) interest rate for each trade in the minute. If there is no trade in the 15th minute before a testimony, we use the minute with trades immediately preceding the 15-minute window on the testimony day. If there is more than one trade in this minute, then we use the simple average interest rate. If there is no trade before a testimony starts, then we use the first trade of the day. If there is no trade in the 15th minute after a testimony ends, we use the minute with trades immediately following the 15-minute window on the testimony day. If there is more than one trade in this minute, then we use the simple average interest rate. If there is no trade after a testimony ends, then we use the last trade of the day. Prior to 2003, tickdata.com only kept about 11 and a half months of trades for a particular Eurodollar futures contract. This means that for some testimonies, those occurring near the end of their respective quarters, we do not have high-frequency data to measure ED4 interest rates. Following [Swanson \(2023\)](#) and [Swanson and Jayawickrema \(2023\)](#), we impute the ED4 interest rate change from the absolute value of the high-frequency ED3 interest rate change multiplied by the daily change in the ED4 interest rate and divided by the absolute value of the daily change in the ED3 interest rate. Daily changes in ED3 and ED4 interest rates are from Bloomberg. We are grateful to Eric Swanson for telling us this methodology.

⁹We are grateful to Michael Fleming and Isabel Krogh at the Federal Reserve Bank of New York for computing the Treasury yields and sharing the minute-by-minute data with us. Retrieval of data from BrokerTec first requires reconstruction of the limit order book for each security and day. Yields are calculated by first calculating the midpoint of the bid/ask quotes and then calculating the yield of that midpoint. To construct minute-by-minute data, Fleming and Krogh use the last bid-ask midpoint from each minute interval. [Adrian, Fleming, and Vogt \(2023\)](#) provide additional details on GovPX and BrokerTec.

¹⁰We handle exceptions to the 15-minute window similarly to how we handle Eurodollar futures. If there is no trade in the 15th minute before a testimony, we use the minute with trades immediately preceding the 15-minute window on the testimony day. If there is no trade before a testimony starts, then we use the first trade of the day. If there is no trade in the 15th minute after a testimony ends, we use the minute with trades immediately following the 15-minute window on the testimony day. If there is no trade after a testimony ends, then we use the last trade of the day.

¹¹If there are no trades in the 15th minute before or after a testimony, then we follow our methodology for Eurodollar futures.

note that 16 of our 204 testimonies begin at 9:30 am. For these testimonies, we begin measuring the S&P 500 index price at 9:30 am. All other testimonies begin at 9:45 or later. Twelve of our testimonies end at 3:45 pm or later. For these testimonies, we stop measuring the S&P 500 index price at 4:00 pm.

There are two limitations to our data sample. First, GovPX started operations in June 1991. Hence, the earliest testimony that we use for analysis is in July 1991. Second, the CME Group, which runs the marketplace where Eurodollar futures trade, converted all Eurodollar derivatives to secured overnight financing rate (SOFR) derivatives in 2023. Hence, Eurodollar futures no longer trade, causing us to end our sample in March 2023. In total, we study 125 testimonies associated with MPRs: 64 first-day testimonies and 61 second-day testimonies.¹² We also study 54 non-MPR testimonies, giving us a total of 179 testimonies.

4 The Sizes of Financial Market Movements

We begin our analysis by studying how much interest rates and stock prices move on average over the course of the three different types of testimony. Table 1 shows the average absolute value of changes in interest rates and percent changes in the S&P 500 index price for each type of testimony. Table 1 also shows the associated standard errors in parentheses.¹³

We highlight four results from Table 1. First, the largest changes in interest rates are caused by the first-day MPR testimonies. Average absolute interest rate changes for this type of testimony are generally 2 to 3 times larger than the average absolute interest rate changes caused by second-day MPR testimonies, and, aside from ED1 interest rates, about 1.5 times as large as changes caused by non-MPR testimonies. Swanson (2023) and Swanson and Jayawickrema (2023) study Fed Chair testimony jointly with Fed Chair speeches. The sizes of their joint average absolute interest rate changes are smaller than those for our first-day MPR testimonies and similar to our non-MPR testimonies.

The average absolute interest rate changes caused by the first-day MPR testimony are statistically significantly bigger than most of the average absolute interest rate changes caused by the other types of testimony. To show how we establish statistical significance, we use the example of comparing the ED1 average for first-day and second-day MPR testimonies. Let N_1 , \bar{x}_1^{ED1} , and

¹²We only found one day of testimony associated with the MPRs in July 1991, February 1994, and February 2010. All other MPRs have two days of associated testimony.

¹³We assume that observations are serially uncorrelated when computing standard errors and variances in this section.

Table 1: Average Absolute Change or Percent Change Per Testimony

	Eurodollar Futures				Treasury Yields			S&P 500
	ED1	ED2	ED3	ED4	2-year	5-year	10-year	
First-day MPR	1.99 (0.32)	4.27 (0.66)	5.76 (0.79)	6.45 (0.86)	4.75 (0.56)	5.29 (0.58)	4.68 (0.53)	47.65 (4.70)
Second-day MPR	0.81 (0.15)	1.45 (0.24)	1.78 (0.30)	2.15 (0.35)	1.73 (0.29)	2.13 (0.31)	2.14 (0.28)	44.15 (5.86)
Non-MPR	2.05 (0.37)	3.06 (0.50)	3.41 (0.53)	3.67 (0.59)	3.06 (0.41)	3.39 (0.40)	3.05 (0.40)	43.86 (5.67)

Notes: Average absolute changes in interest rates and percent changes in the S&P 500 are shown in basis points with standard errors in parentheses. The sample is July 1991 through March 2023.

$(\hat{\sigma}_1^{ED1})^2$ be the sample size, the sample average of the absolute ED1 interest rate changes, and the sample variance of the absolute ED1 interest rate changes for first-day MPR testimonies. Let N_2 , \bar{x}_2^{ED1} , and $(\hat{\sigma}_2^{ED1})^2$ be those same objects for second-day MPR testimonies. Then, we compute $(\bar{x}_1^{ED1} - \bar{x}_2^{ED1})/\sqrt{(\hat{\sigma}_1^{ED1})^2/N_1 + (\hat{\sigma}_2^{ED1})^2/N_2}$, which is our test statistic that we compare to the quantiles of a standard normal distribution. We test the differences of sample averages of other interest rates, the S&P 500, and across other testimonies in an analogous manner.

Table 2 shows the test statistics, which indicate that the difference in the first-day and second-day MPR interest rate values in Table 1 are all statistically significant at the 1 percent level. Table 2 also shows that the difference in the first-day MPR and non-MPR interest rate values in Table 1 are statistically significant at, at least, the 5 percent level for ED3, ED4, 2-year, 5-year, and 10-year Treasuries.

Our second result in Table 1 is that the second-day MPR testimonies cause the smallest changes in interest rates. Table 2 shows that the difference between the average absolute change in interest rates during second-day MPR testimonies and during the other types of testimonies are all statistically significant at conventional levels. As we note above, second-day testimonies often occur on the day after the first-day testimonies, although they sometimes occur a week or two later. Hence, it is likely the case that much of the monetary policy information associated with the MPR has already been communicated and that financial markets have already adjusted interest rates to incorporate that information. The questions and answers on the second day of testimony do not appear to generate much new information that moves interest rates. These results support the

Table 2: Test Statistics for the Differences in Sample Averages

	Eurodollar Futures				Treasury Yields			S&P 500
	ED1	ED2	ED3	ED4	2-year	5-year	10-year	
First-day less second-day MPR	3.34	4.02	4.71	4.62	4.77	4.83	4.25	0.47
First-day MPR less non-MPR	-0.12	1.47	2.47	2.66	2.43	2.70	2.47	0.52
Non-MPR less second-day MPR	3.10	2.91	2.68	2.20	2.63	2.49	1.85	-0.03

Notes: We compare these test statistics to quantiles of a standard normal distribution. Values greater than 1.64, 1.96, and 2.58 indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels.

choice of [Kohn and Sack \(2003\)](#) to drop second-day testimonies, although [Alexopoulos et al. \(2023\)](#) provide evidence that Fed Chair emotions may still affect stocks during the second-day of MPR testimony.

Our third result is that while the magnitudes across the testimony types are different, the pattern of the average absolute interest rate changes across the yield curve is similar across testimony types. The average absolute interest rate changes increase from ED1 through ED4. They are then lower for 2-year, 5-year, and 10-year Treasuries than they are for ED4. [Swanson \(2023\)](#) and [Swanson and Jayawickrema \(2023\)](#) document this same pattern for their estimates of joint testimonies and speeches.

Our fourth result in [Table 1](#) is that the differences among the average absolute percent changes in the S&P 500 during the different types of testimony are not large relative to their standard errors. [Table 2](#) shows that the differences between testimony types are not statistically significant at conventional levels. These findings are somewhat surprising given the material differences in interest rate changes. However, results in the next section show that most of the movements in the S&P 500 index during Fed Chair testimony cannot be explained by movements in interest rates.

5 The Effects of Forward Guidance

The Federal Reserve does not change its policy tools, such as the level of the federal funds rate, during Fed Chair testimony. However, the Fed Chair may communicate or provide “forward guid-

ance” about the use of its policy tools or about the Federal Reserve’s outlook for the economy. Following [Swanson and Jayawickrema \(2023\)](#), we measure forward guidance for a testimony type as the first principal component of the ED1, ED2, ED3, and ED4 interest rate changes during that type of testimony.¹⁴ We denote the principal component with F_t . We normalize units so that a one-unit change in F_t changes the ED4 interest rate by 1 percentage point in the same direction. To be clear, we separately estimate three different sequences of F_t , one for each type of testimony.

After computing these forward guidance factors, we can align 61 first-day MPR estimates of F_t with the corresponding second-day MPR estimates of F_t . When we do this, the correlation between the first-day and second-day MPR forward guidance factors is -0.02. In other words, our measure of forward guidance is uncorrelated across MPR testimony days.

Next, we estimate the effects of forward guidance by estimating

$$\Delta y_t = \alpha + \beta F_t + \epsilon_t, \tag{1}$$

in which Δy_t denotes a change in an interest rate or a percent change in the S&P 500. We estimate this regression separately for the three different types of testimony and for each interest rate and the S&P 500.

Table 3 shows the ordinary least squares estimates of β along with standard errors and R^2 values. The first 7 columns show the results for interest rates. By construction, a one-unit increase in F_t increases the ED4 interest rate by 1 percentage point. For all testimony types, a one-unit increase in F_t increases the other interest rates by less than 1 percentage point but usually between 0.5 and 1 percentage point. The R^2 values for interest rates are large, showing that forward guidance usually explains more than 80 percent of interest rate movements out to 2 years and usually more than 50 percent of interest rate movements at 5 and 10 years. Overall, forward guidance has large effects on interest rates across the yield curve regardless of testimony type.

Table 3 shows that the effects of forward guidance on the S&P 500 are less uniform across the types of testimony than the effects of forward guidance on interest rates. For first-day MPR testimonies, forward guidance that causes a 1 percentage point increase in the ED4 interest rate causes a 2 percent decrease in the S&P 500. [Swanson \(2021\)](#) and [Swanson and Jayawickrema \(2023\)](#) document a similar negative relationship between interest rates and stock prices caused by forward guidance in Federal Open Market Committee announcements.

¹⁴As in [Gürkaynak, Sack, and Swanson \(2005\)](#), we standardize each of these interest rate changes by subtracting the sample average and dividing by the sample standard deviation before computing the principal component.

Table 3: Estimated Effects of Forward Guidance

	Eurodollar Futures				Treasury Yields			S&P 500
	ED1	ED2	ED3	ED4	2-year	5-year	10-year	
First-day MPR	0.33	0.72	0.92	1.00	0.67	0.64	0.52	-2.00
	(0.03)	(0.04)	(0.03)	(0.05)	(0.04)	(0.08)	(0.08)	(0.74)
R^2	0.87	0.97	0.98	0.95	0.89	0.71	0.58	0.09
Second-day MPR	0.38	0.68	0.85	1.00	0.79	0.80	0.70	0.36
	(0.06)	(0.02)	(0.06)	(0.08)	(0.08)	(0.11)	(0.11)	(3.27)
R^2	0.77	0.95	0.96	0.93	0.86	0.71	0.58	0.00
Non-MPR	0.59	0.85	0.93	1.00	0.71	0.64	0.47	-2.29
	(0.04)	(0.04)	(0.04)	(0.07)	(0.06)	(0.06)	(0.08)	(1.55)
R^2	0.90	0.97	0.97	0.93	0.83	0.65	0.38	0.04

Notes: This table reports ordinary least squares estimates of β from Equation (1) for each respective dependent variable and each testimony type. Heteroskedasticity robust standard errors are in parentheses. R^2 values for each regression are reported below the standard error. The sample is July 1991 through March 2023.

Non-MPR testimonies have an estimate of β similar to that of first-day MPR testimonies for the S&P 500, but with a larger standard error. For non-MPR testimonies the ratio of the estimate of β to its standard error is -1.48, indicating that the estimate is not different from zero at conventional levels of statistical significance.¹⁵

The S&P 500 estimate of β for second-day MPR testimonies is essentially zero, indicating no co-movement between interest rates and stock prices for these testimonies.

Table 3 shows that the R^2 values are much smaller for the S&P 500 than for interest rates. The largest R^2 is for first-day MPR testimonies and is only 0.09. This value falls to 0.04 for non-MPR testimonies and to 0.00 for second-day MPR testimonies. Overall, the vast majority of the movement in stock prices during Fed Chair testimony is not explained by monetary policy forward guidance, and none of the movement in stock prices during second-day MPR testimonies is explained by forward guidance.

Comparing our R^2 values to other research is challenging. Swanson and Jayawickrema (2023) do not report R^2 values for their regressions. Swanson (2021) reports R^2 values for FOMC announcements, but his regressions include the effects of changes in the federal funds rate and large-scale

¹⁵For their results on joint testimonies and speeches, Swanson and Jayawickrema (2023) have a t -statistic of about -2.1. This value is essentially in the middle of the t -statistic for our first-day MPR testimony (-2.72) and our non-MPR testimony (-1.48).

asset purchases in addition to forward guidance. Like us, he finds that R^2 values are smaller for the S&P 500 than for interest rates. However, for the period 1991 through 2019, he computed an R^2 of 0.31, which is well above the values that we find. For now, we do not know if changes in the federal funds rate and large-scale asset purchases are making Swanson’s (2021) R^2 value higher than ours or if some other element makes the effects of FOMC announcements different from those of Fed Chair testimony.¹⁶

6 Conclusions

We study how three different types of Fed Chair testimony affect interest rates and stock prices. Of the three types, the first day of testimony associated with a Monetary Policy Report (MPR) causes the largest movements in interest rates. It also generates negative co-movement between interest rates and stock prices. In contrast, the second day of testimony associated with an MPR causes the smallest movements in interest rates and no co-movement between interest rates and stock prices. Finally, the effects of testimony that is not associated with MPRs but is about monetary policy is similar to first-day MPR testimony, but smaller. Non-MPR testimony causes modest movements in interest rates and negative but less precisely estimated co-movement between interest rates and stock prices.

Our results may be useful for structural VAR identification. Bauer and Swanson (2023) provide evidence that Fed Chair testimony and speech data can sharpen high-frequency identification of monetary structural VARs. Our findings suggest that first-day MPR testimony could be especially useful for this purpose. Non-MPR testimony may also be useful, but second-day MPR testimony seems less likely to be useful. Because of our focus on testimony, we leave the potential usefulness of Fed Chair speeches to future research.

References

Adrian, Tobias, Michael J. Fleming, and Erik Vogt. 2023. “The Evolution of Treasury Market Liquidity: Evidence from 30 Years of Limit Order Book Data.” Federal Reserve Bank of New York Staff Report number 827. https://www.newyorkfed.org/research/staff_reports/sr827.html.

¹⁶Gürkaynak, Sack, and Swanson (2005) also study FOMC announcements. They find that most of the R^2 in an S&P 500 regression is driven by changes in the federal funds rate while their “path factor,” which parallels the construction of forward guidance in Swanson (2021), only generates a small increase in R^2 . However, the sample in Gürkaynak, Sack, and Swanson (2005) is much smaller than the sample in Swanson (2021) or in this paper.

- Alexopoulos, Michelle, Xinfen Han, Oleksiy Kryvtsov, and Xu Zhang. 2023. “More than Words: Fed Chairs’ Communication During Congressional Testimonies.” *Journal of Monetary Economics* URL <https://doi.org/10.1016/j.jmoneco.2023.09.002>. In press.
- Bauer, Michael D. and Eric T. Swanson. 2023. “A Reassessment of Monetary Policy Surprises and High-Frequency Identification.” *NBER Macroeconomics Annual* 37:87–155. URL <https://doi.org/10.1086/723574>.
- Gürkaynak, Refet S, Brian Sack, and Eric T Swanson. 2005. “Do Actions Speak Louder Than Words? The Response of Asset Prices to Monetary Policy Actions and Statements.” *International Journal of Central Banking* 1 (1):55–93. URL <https://www.ijcb.org/journal/ijcb05q2a2.htm>.
- Kohn, Donald L. and Brian P. Sack. 2003. “Central Bank Talk: Does It Matter and Why?” Board of Governors of the Federal Reserve Finance and Economics Discussion Series number 2003-55. <https://www.federalreserve.gov/econres/feds/central-bank-talk-does-it-matter-and-why.htm>.
- Swanson, Eric T. 2021. “Measuring the Effects of Federal Reserve Forward Guidance and Asset Purchases on Financial Markets.” *Journal of Monetary Economics* 118:32–53. URL <https://doi.org/10.1016/j.jmoneco.2020.09.003>.
- . 2023. “The Importance of Fed Chair Speeches as a Monetary Policy Tool.” *AEA Papers and Proceedings* 113:394–400. URL <https://doi.org/10.1257/pandp.20231073>.
- Swanson, Eric T. and Vishuddhi Jayawickrema. 2023. “Speeches by the Fed Chair Are More Important Than FOMC Announcements: An Improved High-Frequency Measure of U.S. Monetary Policy Shocks.” Working paper presented at NBER Summer Institute. Downloaded from https://conference.nber.org/conf_papers/f189220.pdf on August 25, 2023.