CONTEMPORARY ECONOMIC POLICY

TRUMP, TWITTER, AND TREASURIES

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After appointing Federal Reserve Chairman Powell, President Trump put pressure on the Fed to cut interest rates. We show that, on average, a statement from Trump on the Fed led to lower long-term interest rates, consistent with expectations of lower expected future short rates. However, the impact of Trump's statements declined over time. (*JEL* E52, E43, E32)

I. INTRODUCTION

On November 2, 2017, President Donald Trump nominated Jerome Powell as the new chair of the Board of Governors of the Federal Reserve (Fed). Soon thereafter, the president started to criticize the Fed for communicating future interest rate increases. In a rant of tweets, interviews, and public statements, President Trump put pressure on the Fed to cut interest rates and questioned his decision to nominate chair Powell. These attacks raise concerns about the independence of the Fed from political pressure (Volcker et al. 2019).

On July 19, 2018, Trump issued his first attack on the Fed: "I don't like all of this work that we're putting into the economy and then I see rates going up."[1] On October 10, 2018, during a rally, President Trump said: "… they're so tight. I think the Fed has gone crazy." Later that day, he claimed the Fed is "going loco." Moreover, on December 24, 2018, Trump tweeted: "The only problem our economy has is the Fed" and on June 26, 2019, Trump publicly said the United States would be "better off" with Mario Draghi, the president of the European Central Bank, as the Fed chair. After raising rates five times, the Fed eventually cut rates on July 31, 2019, referring to "global developments" as the main motivation.

In this note, we test whether these and many other lines of attack had an effect on long-term interest rates and, hence, on expected future short-term rates. Ultimately, this amounts to a test of the perception of market participants of the Fed's independence from political interference.

Of course, this is not the first incident of political pressure on the Fed. Havrilesky (1993) and Weise (2012) provide an extensive analysis of other episodes. An interesting account of President Nixon's pressure on Arthur Burns is offered by Abrams (2006). Binder (2018) presents an empirical cross-country study of the effects of political pressure on central banks, while Demiralp, King, and Scotti (2019) show that political pressure influences interest rate expectations in the United States and the euro area.

After the first version of this paper was finalized, three other papers appeared, which are closely related. Bianchi, Kung, and Kind (2019) use tick-data on Federal funds futures and study the impact of Trump's tweets on market expectations in a very narrow event window. The exact time stamp of each tweet allows the authors to establish a causal effect of tweets on interest rate expectations. Tweets on the Fed reduce Federal funds rate expectations, which is consistent with the findings in this paper.

Camous and Matveev (2019) also study the daily revision of market expectations as measured by the change in Federal funds futures. The authors compare the distribution of revisions on days with and without a tweet from the president. They find that the average daily revision of expectations on days without a tweet is positive,

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1. The complete list of public tweets or statements on the Fed is contained in Condon (2019), from which the examples cited here are taken.

ABBREVIATION
GDP: Gross Domestic Product

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that is, market participants expect a policy tightening. On days with a presidential tweet, however, the average market revision is negative.

The market impact of President Trump's comments is exploited by professional market participants. In a note for J.P. Morgan, Salem, Younger, and St. John (2019) construct an index to measure the market volatility generated by Trump's tweets. To construct the index, the authors use a supervised learning model that selects those tweets that move markets. The index has an impact on interest rate volatility.

We find that yields fall as a consequence of Trump's statements. The fall in overall yields is driven by the component that reflects expected future short-term interest rates, not the term premium. Hence, the results are consistent with lower expected future short-term interest rates. We also find, however, that the importance of the president's statements declined over time. Hence, after adapting to the new environment, markets do not seem to believe that the Fed succumbs to the pressure.

II. EMPIRICAL EVIDENCE

We construct a dummy variable, D_t^{Trump}, which equals one on every day news about Trump putting pressure on the Fed emerge and zero otherwise.[2] The news could be a tweet, a remark at a rally or an interview. We take these dates from the time line of events provided by Condon (2019). In total, the news index has 41 entries of one, which are listed in the Data S1, Supporting Information.

The estimated model is straightforward. We regress the daily change in the n-period interest rate, $\Delta y_t^{(n)}$, on a constant and the D_t^{Trump} dummy. The coefficient on the dummy then reflects the effect of a Trump statement on the change in the interest rate. The assumption is that there are no other news systematically emerging on the sequence of 41 event days. The dependent variable is the fitted n-year yield taken from Adrian, Crump, and Moench (2013). This is because we will also use a decomposition of yields into the expectations component and the term premium offered by these authors. Our sample period begins on July 2, 2018 and ends on August 1, 2019.

In order to account for the possibility that market participants pay more or less attention to each Trump statement as time progresses, we let D_t^{Trump} interact with a linear time-trend, t.

Since the adjustment of yields might be triggered by releases of macroeconomic news, we include the change in the Scotti (2016) macroeconomic surprise index, ΔS_t, as an additional control variable. Thus, the estimated model is given by

$$\Delta y_t^{(n)} = \beta_0 + \beta_1 D_t^{Trump} + \beta_2 t + \beta_3 (t \times D_t^{Trump}) + \beta_4 \Delta S_t + \varepsilon_t, \tag{1}$$

such that

$$\frac{\partial \Delta y_t^{(n)}}{\partial D_t^{Trump}} = \beta_1 + \beta_3 \times t, \tag{2}$$

where the first part is the unconditional effect and the second part is the effect conditional on the timing of the political intervention.[3]

Table 1 reports our key results. We find that the coefficient on D_t^{Trump} is significantly negative across all maturities. Thus, a statement putting pressure on the Fed to lower rates reduces longer-term bond yields. The one-year yield, for example, drops by 0.03 percentage points. The standard deviation of changes in one-year yields, for comparison, is 0.02.

However, this coefficient reflects the effect of the first news event only. The estimated β_3 is significantly positive. This suggests that comments from President Trump about Chairman Powell and the Fed become less effective in driving yields over time. To the extent the change in yields reflects a revision of market expectations about future monetary policy, market participants seem to become less responsive to news from the White House about monetary policy.

Accounting for news releases, as reflected in the Scotti (2016) index, weakens the evidence for a declining impact of Trump's statements on longer maturities. The results remain qualitatively unchanged (which is why we do not report them here) if we use a quadratic time trend instead of a linear trend.

In addition, we use the decomposition of yields into the component reflecting expectations of future short rates and the term premium provided by Adrian, Crump, and Moench (2013). Table 2 reports the results for the n-period

2. If the news emerges on the weekend, we assign the value of one to the following Monday.

3. By adding another dummy variable to indicate the two meetings in which the Federal Open Market Committee raised the Federal funds rate, that is, September 16, 2018 and December 19, 2018, leaves the results unchanged.

TABLE 1
Change in n-Year Yield

	Maturity							
	$n = 1$		**$n = 2$**		**$n = 5$**		**$n = 10$**	
Constant	0.011	0.013	0.012	0.013	0.010	0.010	0.008	0.008
	(0.003***)	(0.003***)	(0.005**)	(0.004***)	(0.005*)	(0.005*)	(0.005)	(0.005)
D_t^{Trump}	−0.026	−0.021	−0.035	−0.030	−0.034	−0.026	−0.023	−0.015
	(0.008***)	(0.009**)	(0.012***)	(0.012**)	(0.015**)	(0.016)	(0.016)	(0.018)
t	−0.0001	−0.0001	−0.0001	−0.0001	−0.0001	−0.0001	−0.0001	−0.0001
	(0.0000***)	(0.0000***)	(0.0000***)	(0.0000***)	(0.0000**)	(0.0000)	(0.0000**)	(0.0000*)
$t \times D_t^{Trump}$	0.0001	0.0001	0.0002	0.002	0.0002	0.0001	0.0001	0.0001
	(0.0000***)	(0.0000**)	(0.0001***)	(0.0001**)	(0.0000**)	(0.0001)	(0.0001)	(0.0001)
ΔS_t		0.018		0.034		0.044		0.037
		(0.009**)		(0.017*)		(0.020**)		(0.016**)
R^2	0.065	0.093	0.034	0.057	0.016	0.042	0.010	0.030
#obs.	271	248	271	248	271	248	271	248

Notes: The dependent variable is the daily change in the n-year yield. Robust standard errors are in parenthesis.
***Significance at 1%. **significance at 5%. *significance at 10%.

TABLE 2
Change in n-Year Expectations Component

	Maturity							
	$n = 1$		**$n = 2$**		**$n = 5$**		**$n = 10$**	
Constant	0.009	0.010	0.009	0.010	0.008	0.009	0.006	0.007
	(0.003***)	(0.003***)	(0.003***)	(0.003***)	(0.003**)	(0.003***)	(0.003**)	(0.002***)
D_t^{Trump}	−0.020	−0.016	−0.027	−0.023	−0.029	−0.025	−0.024	−0.020
	(0.008**)	(0.010*)	(0.009***)	(0.009**)	(0.009***)	(0.009***)	(0.008***)	(0.008***)
t	−0.0000	−0.0001	−0.0001	−0.0001	−0.0000	−0.0001	−0.0000	−0.0000
	(0.0000***)	(0.0000***)	(0.0000***)	(0.0000***)	(0.0000***)	(0.0000***)	(0.0000***)	(0.0000***)
$t \times D_t^{Trump}$	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	(0.0000***)	(0.0000)	(0.0000***)	(0.0000**)	(0.0000***)	(0.0000***)	(0.0000***)	(0.0000)
ΔS_t		0.007		0.017		0.023		0.020
		(0.006)		(0.010*)		(0.013*)		(0.011*)
R^2	0.039	0.045	0.040	0.058	0.030	0.067	0.027	0.050
#obs.	271	248	271	248	271	248	271	248

Notes: The dependent variable is the daily change in the n-year expectations component. Robust standard errors are in parenthesis.
***Significance at 1%. **significance at 5%. *significance at 10%.

expectations component as the dependent variable, while Table 3 contains the results from a regression of the change in the term premium on the left-hand side of Equation (1). Both sets of results show that the significant response of yields to Trump statements is entirely driven by the response of the expectations component, not by the response of the term premium. The impact of Trump's statements is the largest for maturities of 2 and 5 years and smaller for the 10-year yield. Allowing for news releases to enter the equation does not change the response of the expectations component to Trump's comments.

A. *Robustness*

Consider an exogenous event such as a news release that leads to a temporary increase in interest rates. The reversion of interest rates the following day could coincide with the comment from President Trump and could falsely generate the impression of a causal effect, while the market response is entirely due to the news release from the previous day.

In order to corroborate the information content of the Trump dummy variable, we study whether yields are actually driven by events preceding Trump's tweets. We address this in two ways. First, we lag the D_t^{Trump} dummy one period. Table 4 shows that the coefficients are no longer significant. Hence, the yield response does not reflect news appearing the day before a Trump statement.

It could be argued that lagging all events by one day is too restrictive. Therefore, as a second robustness check, we randomly lag the event dummy in a placebo experiment. We generate

TABLE 3
Change in n-Year Term Premium

	Maturity							
	n = 1		**n = 2**		**n = 5**		**n = 10**	
Constant	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.002 (0.004)	0.001 (0.004)	0.001 (0.004)	0.002 (0.004)	0.000 (0.004)
D_t^{Trump}	−0.005 (0.007)	−0.005 (0.007)	−0.008 (0.009)	−0.007 (0.010)	−0.005 (0.012)	−0.001 (0.013)	0.001 (0.015)	0.006 (0.017)
t	−0.0000 (0.0000)	−0.0000 (0.007)	−0.0000 (0.0000)	−0.0000 (0.0000)	−0.0000 (0.0000)	−0.0000 (0.0000)	−0.0000 (0.0000)	−0.0000 (0.0000)
$t \times D_t^{Trump}$	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0001)	−0.0000 (0.0001)	0.0000 (0.0000)
ΔS_t		0.010 (0.006)		0.017 (0.009*)		0.021 (0.009**)		0.017 (0.008**)
R^2	0.002	0.004	0.001	0.007	0.006	0.023	0.006	0.002
#obs.	271	248	271	248	271	248	271	248

Notes: The dependent variable is the daily change in the n-year term premium. Robust standard errors are in parenthesis. ***Significance at 1%. **significance at 5%. *significance at 10%.

TABLE 4
Change in n-Year Yield: Lagged Event Dummy

	n = 1	**n = 2**	**n = 5**	**n = 10**
D_{t-1}^{Trump}	−0.014 (0.009)	−0.014 (0.015)	−0.002 (0.018)	0.007 (0.020)
$t \times D_{t-1}^{Trump}$	0.0001 (0.0000*)	0.0001 (0.0001)	0.0000 (0.0001)	0.0000 (0.0001)
# obs.	271	271	271	271

Notes: The event dummy is lagged one period, and the model also includes a constant and the time trend. The dependent variable is the daily change in the n-year yield. Robust standard errors are in parenthesis.
***Significance at 1%. **significance at 5%. *significance at 10%.

200 placebo time series, each 271 observations in length. Each of these series has 41 entries of +1, our pseudoevents, which are randomly lagged either 1, 2, or 3 days compared to the original D_t^{Trump} dummy, and 230 remaining entries of 0. We estimate the model for each of the 200 series and obtain a distribution of coefficient estimates.

The confidence bands around the coefficient estimates on the event dummy and on the interaction term contain the zero, see Table 5. The coefficient estimates from Table 1, in contrast, lie outside these confidence bands. Hence, we can conclude that yield changes are indeed driven by the specific sequence of Trump comments, but not by alternative event dates.

B. *Exploiting Tweets Sent before Markets Open*

To shed further light on the causal role of presidential statement for financial markets, we exploit the timing of tweets. While we cannot pin down the exact time news from Trump's interviews broke, we know the exact time stamp from his tweets.[4] We construct an alternative index that contains only those tweets sent before 9 a.m. Eastern Time, that is before most U.S. financial markets open. In this case, we can rule out that Trump responds to market developments on the same day. The modified dummy contains 12 events. The results are shown in the first column of Table 6. We find that the Trump dummy still enters the equation for the expectations component with a negative coefficient that is statistically different from zero. Interestingly, the effect is stronger than in the baseline model. The interaction term maintains its positive coefficient, suggesting that markets still discount Trump's tweets over time. Hence, our results remain robust when reverse causality is ruled out.

C. *Subsets of Events*

To complete the analysis of Trump's influence on yields, we differentiate between presidential statements on different topics. While all events included in the D_t^{Trump} index pertain to the Federal Reserve, they differ with respect to the context. We distinguish statements on the business cycle, that is, labor market news or new gross domestic product (GDP) figures, from statements on the world economy, that is, comments on China and Europe, and statements on Jerome Powell personally. The first subset includes six events, the

4. This is available from the Trump Twitter Archive at http://www.trumptwitterarchive.com/.

TABLE 5
Change in n-Year Yield: Placebo Study

	$n = 1$	$n = 2$	$n = 5$	$n = 10$
$D_t^{Placebo}$	0.0005 [−0.011 0.011]	0.0005 [−0.017 0.017]	0.0005 [−0.020 0.021]	0.0004 [−0.019 0.022]
$t \times D_t^{Placebo}$	0.0000 [−0.0001 0.0001]	0.0000 [−0.0001 0.0001]	0.0000 [−0.0001 0.0001]	0.0000 [−0.0001 0.0001]
# obs.	271	271	271	271

Notes: The dependent variable is the daily change in the n-year yield, and the model also includes a constant and the time trend. We use 200 randomly generated series as placebos for our original D_t^{Trump} index. In each series, the individual events are lagged 1, 2, or 3 days, respectively. Each entry in the table is the median of the distribution of the coefficient estimates across all perturbations. The brackets provide the 5% and 95% percentiles of the distribution of the estimated coefficients across the random perturbations.

TABLE 6
Change in 5-Year Expectations Components and Term Premia: Subsets of Events

	Tweets Sent Before 9 a.m.		Tweets on Business Cycle		Tweets on World Economy		Tweets on Chair Powell	
	Exp.	TP	Exp.	TP	Exp.	TP	Exp.	TP
Constant	0.007 (0.003**)	−0.000 (0.003)	0.006 (0.003**)	0.000 (0.004)	0.007 (0.003**)	0.000 (0.000)	0.007 (0.003**)	0.001 (0.004)
D_t^{Trump}	−0.056 (0.021***)	0.048 (0.019**)	−0.138 (0.094)	−0.031 (0.029)	−0.049 (0.014***)	0.034 (0.028)	−0.034 (0.012***)	−0.031 (0.010***)
t	−0.000 (0.000***)	−0.000 (0.000)	−0.000 (0.000**)	−0.000 (0.000)	−0.000 (0.000***)	−0.000 (0.000)	−0.000 (0.000***)	−0.000 (0.000)
$t \times D_t^{Trump}$	0.0002 (0.0001**)	−0.002 (0.0001**)	0.0005 (0.0003)	0.0001 (0.0001)	0.0002 (0.000***)	−0.000 (0.000)	0.0002 (0.0000**)	0.0001 (0.0001**)
ΔS_t	0.024 (0.012*)	0.021 (0.009**)	0.024 (0.013*)	0.022 (0.009**)	0.024 (0.013*)	0.021 (0.009**)	0.025 (0.012**)	0.021 (0.009**)
R^2	0.070	0.038	0.052	0.026	0.062	0.047	0.060	0.029
#obs.	248	248	248	248	248	248	248	248

Notes: The dependent variable is the daily change in the 5-year expectations component (Exp.) and the term premium (TP). Robust standard errors are in parenthesis.
***Significance at 1%. **significance at 5%. *significance at 10%.

second subset captures four events, and the third category includes eight events.

The resulting estimates are shown in the three columns in Table 6, again separately for the expectations component and the term premium. Tweets on the world economy and on Powell personally reduce the expectations component of long-term rates. Both coefficients are significantly different from zero. Furthermore, for both subsets of tweets, we find a positive coefficient on the interaction term. Hence, these results are in line with the baseline findings. For the subset of tweets on the business cycle, however, we do not find statistically significant coefficient estimates.

III. CONCLUSIONS

We showed that statements from President Trump that put pressure on the Fed to cut interest rates do indeed reduce expectations of future short-term interest rates. However, over time, these statements lose power as markets seem to pay less attention. This suggests that after adjusting to the new tone from the White House, market participants do not doubt the independence of the Fed.

As a matter of fact, public comments are only one way to influence Fed policy. Alternatively, Fed policy could be affected through presidential appointments of Federal Reserve governors or through indirectly forcing the Fed to offset the fallout from other bad policy decisions.

REFERENCES

Abrams, B. A. “How Richard Nixon Pressured Arthur Burns: Evidence from the Nixon Tapes.” *Journal of Economic Perspectives*, 20, 2006, 177–88.
Adrian, T. R., C. Crump, and E. Moench. “Pricing the Term Structure with Linear Regressions.” *Journal of Financial Economics*, 110, 2013, 110–38.
Bianchi, F., H. Kung, and T. Kind. “Threats to Central Bank Independence High-Frequency Identification with Twitter.” NBER Working Paper No. 26308, National Bureau of Economic Research, 2019.

Binder, C. C. "Political Pressure on Central Banks." Unpublished, Haverford College, 2018.

Camous, A. and D. Matveev. "Furor over the Fed: Presidential Tweets and Central Bank Independence." Unpublished, University of Mannheim, 2019.

Condon, C. "Here's a Timeline of Trump's Key Quotes on Powell and the Fed." 2019 article on Bloomberg.com. Accessed July 30, 2019. https://www.bloomberg.com/news/articles/2019-07-30/all-the-trump-quotes-on-powell-as-fed-remains-in-the-firing-line.

Demiralp, S., S. King, and C. Scotti. "Does Anyone Listen when Politicians Talk? The Effect of Political Commentaries on Policy Rate Decisions and Expectations." *Journal of International Money and Finance*, 95, 2019, 95–111.

Havrilesky, T. M. *The Pressures on American Monetary Policy*. Boston, MA: 1993.

Salem, M., J. Younger and H. St. John (2019): "Introducing the Volfefe Index", report published by J.P. Morgan, *North American Fixed Income Strategy*, 6 September, 2019.

Scotti, C. "Surprise and Uncertainty Indexes: Real-Time Aggregation of Real-Activity Macro Surprises." *Journal of Monetary Economics*, 82, 2016, 1–19.

Volcker, P., A. Greenspan, B. Bernanke and J. Yellen (2019): "America Needs an Independent Fed", *The Wall Street Journal*, August 5, 2019.

Weise, C. L. "Political Pressures on Monetary Policy during the U.S. Great Inflation." *American Economic Journal: Macroeconomics*, 4, 2012, 33–64.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Data S1: Event Dates