Online Appendix

Does Public Opinion Constrain Presidential Unilateralism?

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1 Online Appendix

1.1 Models & Diagnostics

A VAR system contains a set of variables, each of which is expressed as a linear function of lags of itself and of the other variables, plus an error term:

$$y_t = \alpha + \phi_1 y_{t-1} + ... + \phi_p y_{t-p} + \theta X_t + \epsilon_t \quad (1)$$

In the VAR expression above, y_t is an $(n \times 1)$ vector of the potentially endogenous variables, presidential approval and executive orders. ϕ is an $(n \times n)$ matrix of coefficients relating lagged values of the two endogenous variables to their current values, and θ is an $(n \times m)$ matrix of coefficients relating the exogenous variables to the endogenous ones. α denotes an $(n \times 1)$ vector of intercept terms, and ϵ_t represents an $(n \times 1)$ vector of disturbance terms.

Prior to the estimation of the VAR we note that both the count of significant executive orders and the summed executive order significance score series, as well as approval are all stationary according to unit root tests, such as the Dickey-Fuller ($-22.576, p = 0.000$; $-20.196, p = 0.000$; $-3.050, p = 0.031$, respectively) and Phillips-Perron ($-23.443, p = 0.000$; $-20.609, p = 0.000$; $-4.174, p = 0.001$, respectively). We determine the appropriate lag length with a series of selection statistics. Likelihood ratio, final prediction error (FPE), Akaike's information criterion (AIC), Schwarz's Bayesian information criterion (SBIC), and the Hannan and Quinn information criterion (HQIC) all select two lags.[1] Post-estimation, we find that the VAR specifications satisfy the stability condition with all eigenvalues inside the unit circle. Analysis of the residuals using Jarque-Bera, skewness, and kurtosis tests suggest normally distributed disturbances in both cases.

Because the VAR coefficients on individual covariates in isolation are not directly informative, we rely on postestimation tests of Granger-causality in the paper, and present the VAR results here for reference. The Granger-causality tests in Table 1 are based on the VAR results below in Tables A1 and A2, the former using the Howell (2005) count of executive orders in the *NY Times* in each month, and the latter using the summed Chiou and Rothenberg (2014) significance

[1] Because the models predict executive order activity at time t as a function of approval at both $t-1$ and $t-2$, the first quarter of a new administration poses complications. As shown further below in the Appendix, replicating the analyses that follow by excluding the first quarters of all new presidential administrations produces similar results and the same conclusions.

scores for all executive orders issued in each month. They both include two lags (months) for the endogenous variables, as well as presidential fixed effects, the index of consumer sentiment, and war and divided government dummies as exogenous variables. The coefficients are estimated by least squares, equation by equation, while the standard errors are estimated from the sample covariance matrix of the residuals.

The concept of Granger-causality is based on prediction such that a variable can be said to "Granger-cause" another variable if the former's past values help predict those of the latter, beyond what its past values do alone (see Granger, 1969; Freeman, 1983). The null hypothesis that the endogenous variable does not Granger-cause the exogenous one is tested by checking whether the VAR coefficients on the lagged values of the endogenous variable are jointly zero via Wald tests. Failure to reject the null means that the variable does not Granger-cause the other. As should be clear from the approach, Granger-causality is a specific and therefore limited conception of causality based on prediction, such that cause cannot come after the effect (Granger, 1980). The approach assumes linearity and covariance stationarity, and depends on observed variables.

Table A1: Vector Autoregression for Orders in *NYT*

	b/se
Approval Equation	
Approval Lagged	1.415***
	(0.032)
Approval 2nd Lag	-0.481***
	(0.031)
Num NYT Lagged	0.033
	(0.062)
Num NYT 2nd Lag	0.083
	(0.062)
JFK	0.095
	(0.496)
LBJ	-1.196**
	(0.513)
Nixon	-1.117**
	(0.463)
Ford	-0.265
	(0.504)
Carter	-0.794*
	(0.459)
Reagan	-0.511
	(0.337)
GHWB	-0.132
	(0.407)
Clinton	-0.729**
	(0.344)
GWB	-1.174**
	(0.461)
Obama	-0.986**
	(0.494)
Trump	-2.461***
	(0.690)
Divided Govt	0.060
	(0.257)
Consumer Sent	0.030***
	(0.010)
War Time	0.367
	(0.359)
Laws	0.006
	(0.084)
Constant	1.295
	(0.866)
Orders Equation	
Approval Lagged	0.043**
	(0.018)
Approval 2nd Lag	-0.032*
	(0.018)
Num NYT Lagged	0.059*
	(0.036)
Num NYT 2nd Lag	0.011
	(0.036)
JFK	1.526***
	(0.285)
LBJ	0.036
	(0.295)
Nixon	-0.108
	(0.267)
Ford	-0.520*
	(0.290)
Carter	-0.183
	(0.264)
Reagan	-0.282
	(0.194)
GHWB	-0.729***
	(0.234)
Clinton	-0.269
	(0.198)
GWB	-0.678**
	(0.265)
Obama	-0.777***
	(0.284)
Trump	0.887**
	(0.397)
Divided Govt	0.080
	(0.148)
Consumer Sent	-0.016***
	(0.006)
War Time	0.273
	(0.206)
Laws	-0.021
	(0.048)
Constant	1.915***
	(0.498)
N	790
LL	-3026.917
AIC	6133.835
BIC	6320.716

Table A2: Vector Autoregression for IRT Score

	b/se
Approval Equation	
Approval Lagged	1.384***
	(0.037)
Approval 2nd Lag	-0.474***
	(0.036)
Sig Sum Lagged	0.023
	(0.025)
Sig Sum 2nd Lag	0.019
	(0.025)
JFK	0.279
	(0.551)
LBJ	-1.856***
	(0.587)
Nixon	-1.669***
	(0.523)
Ford	-0.451
	(0.546)
Carter	-0.865*
	(0.508)
Reagan	-0.768**
	(0.365)
GHWB	-0.179
	(0.432)
Clinton	-1.159***
	(0.375)
GWB	-0.453
	(0.516)
Divided Govt	0.211
	(0.371)
Consumer Sent	0.052***
	(0.013)
War Time	0.828**
	(0.389)
Laws	0.029
	(0.095)
Constant	0.660
	(1.109)
Orders Equation	
Approval Lagged	0.272***
	(0.060)
Approval 2nd Lag	-0.259***
	(0.059)
Sig Sum Lagged	0.047
	(0.041)
Sig Sum 2nd Lag	0.010
	(0.040)
JFK	3.181***
	(0.897)
LBJ	0.404
	(0.954)
Nixon	0.688
	(0.851)
Ford	-0.893
	(0.888)
Carter	0.500
	(0.826)
Reagan	0.071
	(0.593)
GHWB	-1.074
	(0.702)
Clinton	0.736
	(0.610)
GWB	0.397
	(0.840)
Divided Govt	-1.088*
	(0.603)
Consumer Sent	-0.081***
	(0.021)
War Time	0.274
	(0.633)
Laws	-0.101
	(0.155)
Constant	11.382***
	(1.805)
N	610
LL	-3014.404
AIC	6100.808
BIC	6259.692

1.2 Additional Exogenous Variables

In the following models we expand our list of exogenous variables to include additional controls for the state of government and the economy, including the strength of the President's Party in Congress, unemployment, consumer price index, and annual percentage growth of the executive branch bureaucracy. The substantive results are unchanged from the restricted (Table 1) to unrestricted models (here, Table A3), and therefore we present the more parsimonious one in the text. In both cases, the causal arrow singularly points from approval to executive orders, further indicating the robustness of the results.

Table A3: Granger-Causality Tests with Additional Controls

	NYT Executive Orders		Executive Order Significance	
	χ^2	*df*	χ^2	*df*
Approval Equation				
Orders	2.299	2	1.425	2
Orders Equation				
Approval	8.479*	2	19.188*	2

Note: $^*p < 0.05$

1.3 Excluding the 1st Quarter for New Presidents

To check the robustness of the results in the face of new presidential terms that upset the alignment between the approval and executive order time series, we drop the first quarter of new presidential terms and rerun the same models from the body of the paper. Because the VAR models executive order issuance as a function of both lagged presidential approval and two-month-lagged presidential approval, in the opening months of a new administration the model uses the prior president's approval rating to predict the new president's executive order activity. Moreover, because some new presidents do not have an approval rating until February, even March of the first year could be influenced, at least in part, by the approval rating of the prior president. Thus, dropping first quarter ensures that we only examine the influence of the current president's approval ratings on his level of significant executive order activity. Finally, this alternate specification controls for the "honeymoon" effect and ensures that our results are not driven by a surge in executive action at the outset of a new administration. As shown in Table A4, we arrive at the same conclusions as looking at the entire time series (see Table 1): we can reject the null hypotheses that presidential approval does not Granger-cause an increase in executive order issuance and significance.

Table A4: Granger-Causality Tests Without New President First Quarters

	NYT Executive Orders		Executive Order Significance	
	χ^2	*df*	χ^2	*df*
Approval Equation				
Orders	0.049	2	0.490	2
Orders Equation				
Approval	6.013*	2	9.477*	2

Note: $^*p < 0.05$

1.4 IRT Significance Score Thresholds

In the manuscript, we summed the rescaled Chiou and Rothenberg scores to create a continuous measure of monthly executive order significance. However, this approach may raise concerns about whether the Chiou and Rothenberg scores can be treated as cardinal measures. In their work, Chiou and Rothenberg chose six different arbitrary cut-offs for significance thresholds to produce alternate counts of significant executive orders. The resulting counts vary widely in the number of executive orders identified as "significant" ranging from 2,135 orders when using the lowest threshold of significance to just 66 when using the highest threshold. Table A5 provides the results of the Granger-causality models at each of these six levels of the IRT significance score. The substantive results from the paper are unchanged. At all levels, approval Granger-causes executive order significance, regardless of the threshold used to identify an executive order as significant.

Table A5: Granger-Causality Tests at Varying Significance Score Levels

	$T=-.5$		$T=0$		$T=.5$		$T=1$		$T=1.5$		$T=2$	
	χ^2	*df*	χ^2	*df*	χ^2	*df*	χ^2	*df*	χ^2	*df*	χ^2	*df*
Approval Equation												
Orders	0.345	2	0.702	2	2.176	2	0.242	2	0.885	2	3.082	2
Orders Equation												
Approval	14.912*	2	15.547*	2	16.034*	2	19.068*	2	14.819*	2	14.526*	2

Note: $^*p < 0.05$

1.5 Exogenous Model Specification

Given the paper's motivating question on the causal direction between unilateral executive action and public opinion of the executive, we believe that the VAR model in the paper is the most appropriate. As discussed in the manuscript, the VAR does not make a priori assumptions about causal direction, allowing us to test which variable is most likely to Granger-cause the other. This is important as the previous literature has suggested good reasons for both causal directions in the approval-orders relationship. However, to demonstrate the robustness of our VAR results, we show here that they persist in autoregressive regression models. In Table A6 we use a negative binomial for the count in the *NYT* and in Table A7 least squares for the significance score. Again, these models require the assumption of a single causal direction, but in doing so we arrive at similar results. The effect of the first lag of presidential approval on the count of executive orders is shown in Figure A1 and the significance score of executive orders is shown in Figure A2.

Table A6: Autoregressive Negative Binomial Regression

	b/se
Num NYT Lagged	0.039
	(0.027)
Num NYT 2nd Lag	-0.000
	(0.027)
Approval Lagged	0.038***
	(0.015)
Approval 2nd Lag	-0.027*
	(0.015)
JFK	0.847***
	(0.207)
LBJ	0.121
	(0.246)
Nixon	-0.137
	(0.224)
Ford	-0.556**
	(0.272)
Carter	-0.151
	(0.228)
Reagan	-0.297*
	(0.170)
GHWB	-0.830***
	(0.232)
Clinton	-0.262
	(0.179)
GWB	-0.704***
	(0.230)
Obama	-0.770***
	(0.248)
Trump	0.695**
	(0.315)
Divided Govt	0.127
	(0.139)
Consumer Sent	-0.018***
	(0.005)
War Time	0.242
	(0.174)
Laws	-0.016
	(0.043)
_cons	0.978**
	(0.441)
$ln(\alpha)$	-1.420***
	(0.240)
N	790
LL	-1066.742
AIC	2175.484
BIC	2273.597

Figure A1: Expected Count of Executive Orders

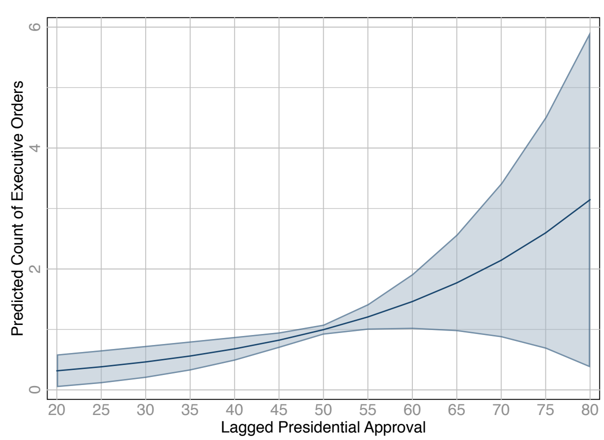
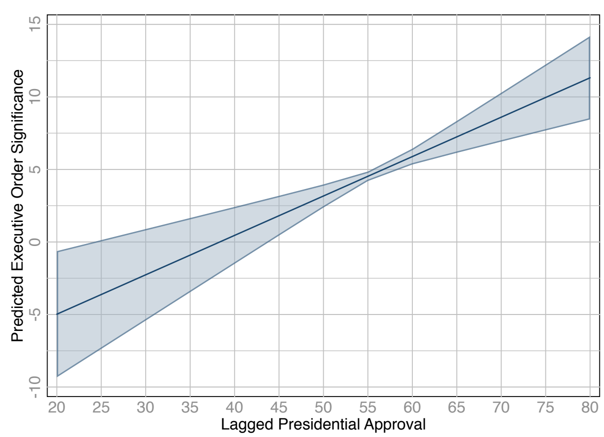


Table A7: Autoregressive Least Squares Regression

	b/se
Sig Sum Lagged	0.047
	(0.042)
Sig Sum 2nd Lag	0.010
	(0.041)
Approval Lagged	0.272***
	(0.061)
Approval 2nd Lag	-0.259***
	(0.059)
JFK	3.181***
	(0.911)
LBJ	0.404
	(0.969)
Nixon	0.688
	(0.864)
Ford	-0.893
	(0.901)
Carter	0.500
	(0.838)
Reagan	0.071
	(0.602)
GHWB	-1.074
	(0.713)
Clinton	0.736
	(0.620)
GWB	0.397
	(0.853)
Divided Govt	-1.088*
	(0.612)
Consumer Sent	-0.081***
	(0.022)
War Time	0.274
	(0.642)
Laws	-0.101
	(0.157)
Constant	11.382***
	(1.832)
N	610
LL	-1659.371
AIC	3354.742
BIC	3434.184

Figure A2: Predicted Significance Score of Executive Orders



1.6 Orders & Actions

Presidents may use memoranda and other unilateral instruments instead of executive orders to accomplish similar goals (Lowande, 2014). To examine whether our results are robust to the inclusion of other major unilateral actions, we identified every executive action called an “executive order” by the *New York Times* from 2001 through 2016. This expanded data set includes all of the executive orders featured in the data set employed in the models in the text, as well as a number of other prominent unilateral actions that were not executive orders. This broader list includes: the creation of military tribunals to try terror suspects; the lifting of sanctions against Libya; normalization of relations with Cuba; Obama’s series of executive actions on gun control; student loan relief; DACA; and DAPA. As shown in the second column of Table A8, we continue to find significant evidence that presidential approval affects unilateral action even when using this expanded measure of unilateral action. Indeed, the relationship is even stronger than that observed when using only executive orders. Thus, we believe that our argument holds for unilateral action broadly.

Table A8: Granger-Causality Tests of Orders & Actions

	Only Executive Orders in *NYT*		All Executive Actions in *NYT*	
	χ^2	*df*	χ^2	*df*
Approval Equation				
Orders	2.267	2	3.637	2
Orders Equation				
Approval	7.664*	2	8.568*	2

Note: $^{*}p < 0.05$

1.7 Excluding Non-Ceremonial Orders

The models in the text include any executive order identified within the *New York Times* within one year of issuance. This includes a small number of executive orders that are primarily ceremonial (in our coding, we identified thirty-nine ceremonial executive orders from 1953 through 2018, fewer than one per year). Because there is some ambiguity and subjectivity in classifying orders as ceremonial, we opt to use all *NYT* orders in the main analysis. However, as a robustness check, Table A9 runs the same model as in the manuscript but with only non-ceremonial orders. The substantive results are unchanged.

Table A9: Granger-Causality Tests Without Ceremonial Orders

	NYT Non-Ceremonial Executive Orders	
	χ^2	*df*
Approval Equation		
Orders	1.970	2
Orders Equation		
Approval	8.856*	2

Note: $^{*}p < 0.05$

1.8 Recent Dynamics

Trump's stable level of low approval is unusual and should weaken the strength of the popular check for Trump (though there are a host of other reasons that Trump may be less sensitive to public opinion than his predecessors, making it hard to lock down precisely). Indeed, while we continue to find a strong and significant causal relationship between approval and significant executive order issuance in our models that include Trump (all data from 1953 through 2018), our estimated effects are even stronger when the first two years of the Trump presidency are excluded (Table A10). Thus while the current data suggests that Trump is an outlier, it is possible that this will change when we have a full term of data. This suggests an important ground for future research is the (potentially unique) relationship between public opinion and unilateral action in the Trump administration (as it progresses and more systematic data becomes available).

Table A10: Granger-Causality Tests Without Trump

	NYT Executive Orders	
	χ^2	*df*
Approval Equation		
Orders	2.235	2
Orders Equation		
Approval	11.018*	2

Note: $^{*}p < 0.05$

As we note in the discussion, rising levels of partisan polarization could blunt the force of a popular check on presidential unilateralism. To examine whether there is evidence that polarization has weakened the popular constraint in Table A11, we focus on more recent data, first from Carter through Obama (i.e., from the beginning of polarization) and then even more narrowly from Clinton through Obama (i.e., when partisan polarization has arguably intensified). Across both subsets of data, we continue to find a significant causal relationship between approval and major executive order issuance.

Table A11: Granger-Causality Tests Across Recent Presidencies

	Carter–Obama		Clinton–Obama	
	χ^2	*df*	χ^2	*df*
Approval Equation				
Orders	1.699	2	4.958	2
Orders Equation				
Approval	7.721*	2	8.303*	2

Note: $^*p < 0.05$

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