Appendices to Chapter 4

Appendix 4A: Variables used in the Analysis

Dependent Variable

1. Presidential News: 1897-1998. Front Page News Stories on the President as a percentage of all front page news stories, New York Times. Data source: Proquest. See text.

Independent Variables

1. Foreign Travel: 1897-1998. Number of Days per year the president spent traveling outside of the United States. Source: State Department list of presidential travel abroad: www.state.gov/r/pa/ho/trvl/pres/.

2. Index of Presidential Public Activity. 1929-1998. A weighted additive index of the annual number of presidential Political Appearances, U. S. (non-D. C.) plus presidential Appearances, plus presidential D. C. Appearances, and Minor presidential speeches. Source: Ragsdale, 1998. See "Constructing the Presidential Public Activity Index" below for details on how the index is constructed.

3. Major Presidential Speeches. 1929-1998. Annual number of major presidential speeches. Source: Ragsdale, 1998.

4. Press Conferences. 1929-1998. Annual number of presidential press conferences. Source: Ragsdale, 1998.

5. Radio. 1897-1998. Annual change in the percentage of households with radio, starting in 1928, "0" otherwise. Sources: Historical Statistics of the United States and various volumes of the Statistical Abstract of the United States.

6. Television. 1897-1998. Annual change in the percentage of households with broadcast television. Sources: Historical Statistics of the United States and various volumes of the Statistical Abstract of the United States.

7. Cable Television 1897-1998. Annual change in the percentage of households with cable television, starting in 1982, "0" otherwise. Sources: Historical Statistics of the United States and various volumes of the Statistical Abstract of the United States.

8. GNP growth rate: 1897-1998. Annual percent change in the gross national product. Source: Balke and Gordon; 1989 and Lynch, 1999.

9. Government Size: 1897-1998. Change in government expenditures as a percentage of gross national product. Source for expenditure data, Historical Statistics of the United States and OMB's web page: http://www.whitehouse.gov/omb/budget/fy2004/, in particular, Table 1.1—Summary of Receipts, Outlays, and Surpluses or Deficits (-): 1789–2008. For GNP data see Balke and Gordon; 1989 and Lynch, 1999.

10. Inflation: 1897-1998. Average annual inflation rate. Source: Balke and Gordon; 1989 and Lynch, 1999

11. First Year: 1897-1998. Dummy variable for first year that a president is in office, no matter how he came to office, scored 1= first year, 0 = otherwise.

12. War: 1897-1998. Dummy variable for U. S. involvement in major wars (Spanish-American, 1898; World War One, 1917-1918; World War Two, 1942-1945; Korea, 1950-1953; Vietnam,1965-1973; Gulf, 1991), scored 1= war, 0 = no war.

13. Trend: 1897-1998 and 1929-1998. Annual counters with 1897=1 to 1998 = 102 and 1929 = 1 to 1998 = 70.

14. Spike: dummy variable coded 1 = 1961, 1982-1985, 0 otherwise. See text for details.

Table Appendix 4A.1 Summary Statistics of Variables used in the Analysis in Chapter 4

	1897-1998					1929-1998				
Variable	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Pres. News Pct.	102	22.41	13.12	2.29	69.63	70	28.19	11.33	14.23	69.63
Spike	102	.05	.22	0	1	70	.07	.26	0	1
War	102	.21	.41	0	1	70	.26	.44	0	1
GNP- pct. Change	102	.04	.05	-.13	.19	70	.03	.05	-.13	.19
Inflation	102	3.02	4.86	-12.97	19.70	70	3.21	3.93	-11.64	12.10
Fed. Spending-% ch.	102	.17	3.83	-16.74	17.86	70	.23	3.70	-16.74	17.86
First Year	102	.18	.38	0	1	70	.17	.38	0	1
TV pct.	102	41.54	45.81	0	98	70	60.53	43.66	0	98
TV- pct. Change	102	.96	2.60	0	11	70	1.4	3.04	0	11
Radio-pct	102	61.93	42.26	0	98	70	88.96	15.05	38	98
Radio--pct. Change	102	.96	1.95	-1.08	9	70	.93	1.69	-1.08	7
Radio-pct, start 1928	102	61.37	42.97	0	98	70	88.96	15.05	38	98
Radio-pct, change, start date 1928	102	.73	1.68	-1.08	9	70	.93	1.69	-1.08	7
CATV-pct	102	10.90	20.49	0	67	70	15.88	23.12	0	67
CATV-pct change	102	.66	1.20	0	4.69	70	.96	1.35	0	4.69
CATV-pct start 1982	102	8.99	20.72	0	67	70	13.09	23.96	0	67
CATV-pct change, start date 1982	102	.41	1.10	0	4.69	70	.6	1.29	0	4.69

Appendix 4.B

Constructing the Presidential Public Activity Index

Minor speeches, political appearances, D. C. appearances, and appearances outside of Washington, are highly correlated with each other. Entering all into a regression equation may produce multicolinearity. As they are highly related, I created an index of public presidential activities. A factor analysis of the four items demonstrates that they produce one factor. I create an Index of Public Activities by adding them together, weighted by their factor loadings. The formula for the index is .50*Political Appearances + .90*U. S. Appearances + .83*D. C. Appearances + .79*Minor Speeches.

All of the presidential activity data except for major speeches are highly correlated with time. Press conferences show a strong negative relationship (r = -.80, p = .000), but the others positively correlated with time, with correlations ranging from .48 to .85, all significant at the .005 level or better. Major speeches, however, reveal no relationship with time (r = .16, p = .20). Because the presidential activity variables tend to correlate with time, as the presidential news variables also tend to do, I convert all of the presidential activity variables, except for major speeches into first differences. Doing so will insure that any relationship between presidential activity and presidential news is not due to their joint relationship with time, that is, that any relationship is true and not spurious. Dickey-Fuller tests indicate that none of the activity variables demonstrate unit roots in the forms to be used. For 1869-1998, foreign travel (change) shows a test statistic of -19.04, with a .01 critical level of -3.50. For the 1929-1998 period, the Dickey-Fuller tests are: foreign travel (change) = -16.07; major speeches = -6.89; public activity index.

Appendix 4C

Specification of the Media Variables

Table Appendix 4C. Comparative Impact of Various Measurement Forms of the Media Variables.

	1897-1998		1929-1998	
Variable	B	p	b	p
TV pct.	-.07	.49	.00	.97
TV- pct. Change	.49	.10	.23	.30
Radio-pct	.09	.15	-.01	.97
Radio--pct. Change	-.35	.60	-.82	.36
Radio-pct, start 1928	.09	.15	-.01	.97
Radio-pct, ch, start 1928	-.08	.92	-.82	.36
CATV-pct	-.23	.00	-.07	.28
CATV-pct change	-.48	.28	.16	.86
CATV-pct start 1982	-.23	.00	-.14	.05
CATV-pct ch., start 1982	-3.56	.00	-2.57	.00

*Controls for Spike, War, GNP-change, Inflation, Federal Spending-change, First Year, Year Counter, AR (1,2), and TV, Radio, and/or Cable TV variables. One-tailed t tests used when the signs are correct (+ for Radio and Television, - for Cable TV). Two tailed t tests reported when the signs are incorrect.

Appendix 4D

Alternative Specifications of the Cable Television Variable

and the Presidential News Variable

Appendix Table 4D. Impact of Alternative Specifications of Cable Television on Presidential News, in Levels and Differences, for 1896-1998 and 1929-1998

Specification Of Cable Television Variable		1896-1998				1929-1998			
		Levels		Differences		Levels		Differences	
		b	p	B	p	B	p	b	p
% Households									
CATV %		-.06	.12	-.01	.95	-.19	.34	-.22	.20
Differences		-.09	.91	-1.60	.04	.19	.84	-.98	.40
Lag-1		-.21	.10	.00	.98	-.19	.34	-.21	.24
Lag-2		-.21	.11	.01	.87	-.19	.34	-.18	.33
Squared		-.00	.07	.00	.85	-.00	.23	-.00	.30
Lag 1+ Squared*	lag-1*	-.02	.95	-.21	.43	.26	.61	-.19	.68
	sq.*	-.00	.57	.003	.44	-.01	.34	-.00	.97
1982 Start Date									
CATV %		-22.8	.03	-3.3	.63	-.23	-.23	-.21	.03
Differences		-3.31	.00	-2.7	.00	-3.08	-3.08	-2.94	.01

Each coefficient represents a different equation with controls for the following variables: Spike, War, GNP-change, Inflation, Federal Spending-change, First Year, Year Counter, TV, and Radio using an AR(2) estimation. * These coefficients are from the same equation.

Appendix 4E

The Time Series Properties of Variables Used in the Analysis

Two problems may affect a time series that can undermine it use in regression analyses, like that in Chapter Four. These two problems are nonstationarity and autocorrelation. Nonstationarity means that a shock to the data series at a previous time point becomes permanently embedded into the series. Like nonstationarity, autocorrelation recognizes that a shock to a previous data point may affect current and future data points in the series, but only temporarily. The presence of either problem violates the assumptions of independence of observation and uncorrelated errors in the disturbance term of a regression. Furthermore, the presence of either may lead to spurious conclusions, that an independent variable affects the dependent variable, when both the independent and dependent variables share a common time process. In other words, they are only related because they travel the same time paths, not because the independent variable causally affects the dependent variable. Fortunately, there are ways to detect and correct for nonstationarity and autocorrelation.

This section discusses the time series properties of the dependent variables in Chapter 4, the percentage of presidential news from 1897-1998 and 1929-1998. Hamilton (1994) provides and encyclopedic and technical survey of time series analysis. Enders (2004) and McCleary and Hay (1980) offer less technical, more introductory discussions of time series analysis.

To be more formal, represent a time series of data as:

$$Y_t = \mathbf{p}Y_{t-1} + e \qquad \text{(Equation 1)}$$

where Y is a time series, the subscripts t and t -1denote specific time points, e the error, and p a function that ranges from -1 to 1. When $\mathbf{p} = 0$, Y_{t-1} will not affect Y_t, and the two observations will be independent of each other. When $\mathbf{p} \neq 0$, the values of Y_{t-1} will affect Y_t, the two will not be independent observations, the errors (e) will also be correlated. Correlated errors lead to inefficient estimation, with the variance of the estimates larger than they would be without correlated errors.

Referring to Equation 1 above, nonstationarity exists when $\mathbf{p} \geq 1$. This is often revealed as a series that seems to drift away from its mean value. Think of two time periods, with a shock setting off the second time period. If the shock produces a nonstationary series, the values of the series in the second time period will differ from those during the first time period.

Autocorrelation exists when $0 < \mathbf{p} < 1$. For a temporary period of time, the series may trend away from its mean, but after the temporary effects of the shock have ceased, the series will return to its long term mean. There are two types of autocorrelation processes, AR and MA processes. AR functions will decay exponentially, where Moving Average functions have effects on values of Y only for the duration of the Moving Average lag function. For example, an MA(2) function says that current and past values of up to two lags of Y will affect the current value of Y.

Spuriousness arises when two time series variables share a time trend. For instance, assume that $Y = y + T$ and $X = x + T$. If we regress Y on X, producing our standard regression model, $Y = a + bX + e$, then any relationship between Y and X may be due to both being a function of T. Before one can proceed with time series regression analysis, the variables in the analysis must be detrended, that is, they must be rendered stationary and non-autocorrelated.

The general process of identifying the time series nature of a data series begins with assessing the presence of nonstationarity and then moves on to autoregression. After identifying the time series processes involve, one may apply correction procedures for detected problems. In general, I follow the prescribe stages for identifying nonstationarity and autocorrelation and correcting for these problems:

1. Plot the ACFs and PACFs (defined below) of the time series in question.
2. Determine if the series is stationary.
3. Estimate the AR and MA components of the series.

4. Examine the residuals of the series purged of any ARIMA (p, d, q) effects to determine if the residuals are white noise. If they are not white noise, return to earlier steps and re-estimate the ARIMA (p, d, q) model.

5. Once the residuals of each variable is white noise, proceed to testing hypotheses about the influence of independent variables on the dependent variable.

These steps provide only a general outline or guide. Identifying stationarity and autocorrelation in time series data is often more complex and less straightforward then this step-process suggests. The next section presents a detailed example of the procedures used on the dependent variable, the percentage of front page stories on the President in the New York Times from 1897-1998.

Presidential News, 1897-1998

ACF and PACF Plots

ACF and PACF stand for autocorrelated function and partial autocorrelation function plots. The ACF basically correlates a time series at successive lags. The PACF does the same, but controls for the correlation at previous lags. Below are three plots, the raw data plotted from 1897-1998, and the ACF and PACF plots.

Inspection of Figure Appendix 4e.1 suggests growth in presidential news over time, but does not point to drift. This is most evident in the latter years of the series, which bend down, back towards the mean. The ACF and PACF plots also suggest that the data are stationary, but may be subject to AR and perhaps MA data generating processes. When there are many spikes outside of the "gray" or critical regions of the ACF and PACF plots, then nonstationarity process are likely to be present. The ACF plot indicates decay from significant autocorrelation to consistently insignificant correlation that reflects AR processes, not nonstationarity (or integration) processes. However, the PACF plot does show some spikes in lags 16 and 20. The significant PACFs at the first two lags and the generally insignificant PACFs thereafter also point to an AR process and suggest and AR(2) process.

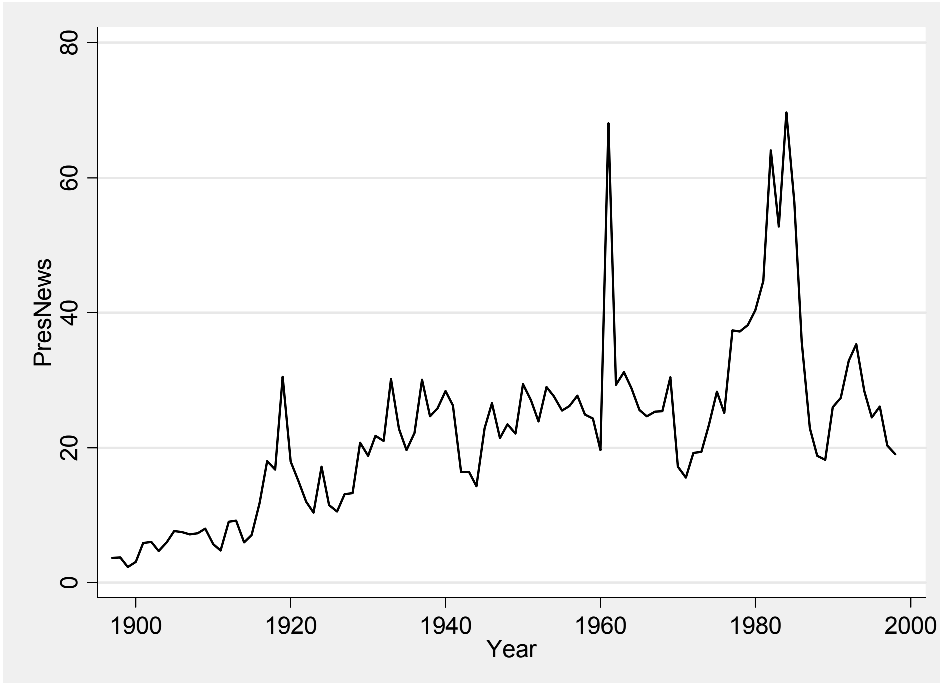

Figure Appendix 4E.1 Percentage of Front Page News on the President in the <u>New York Times</u>, 1897-1998

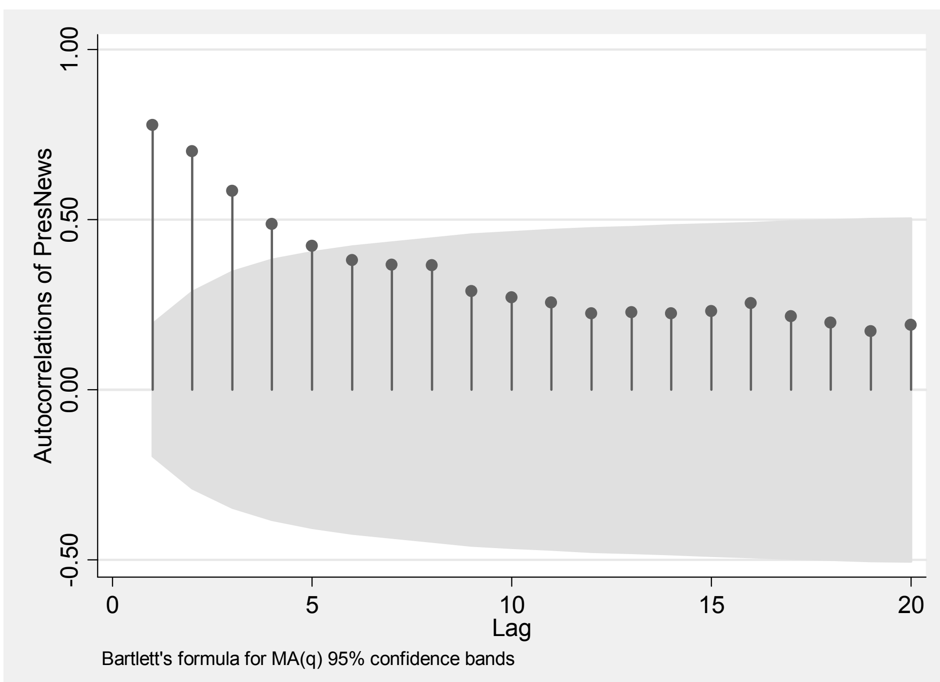

Figure Appendix 4E.2 ACF Plot, Percentage of Front Page News on the President in the <u>New York Times</u>, 1897-1998

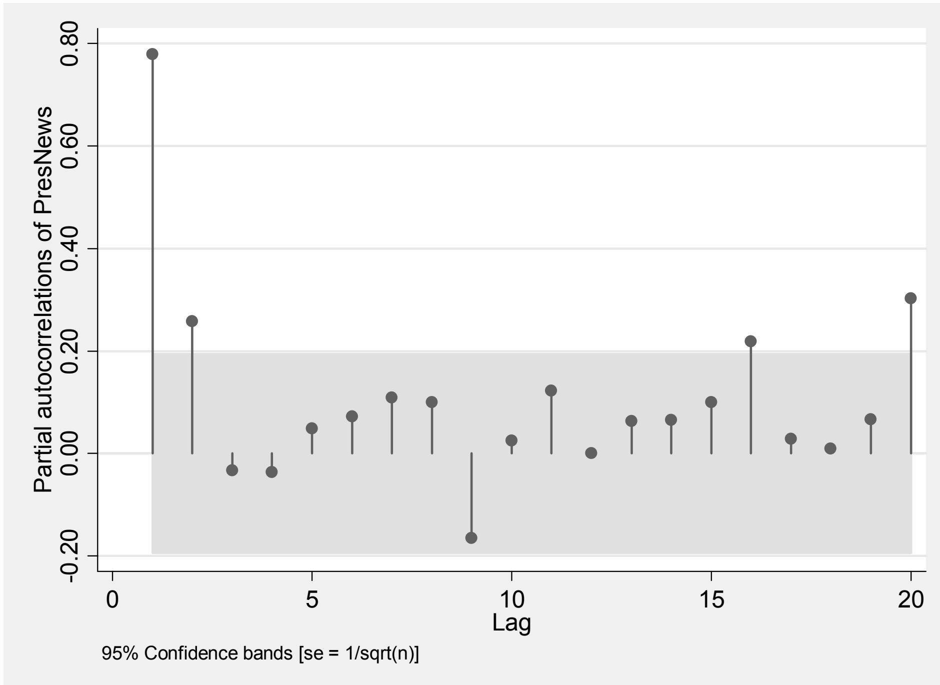

Figure Appendix 4E.3 PACF Plot, Percentage of Front Page News on the President in the New York Times, 1897-1998

Stationarity Diagnostic Tests

Eyeballing the plots above indicates that the series is stationary. More rigorous statistical tests exist that allow us to assess whether a series is stationary or not, the Dickey-Fuller, Phillips-Perron. The Dickey-Fuller test in essence estimates p from Equation 1 above, but substitutes the standard t distribution with a Dickey-Fuller distribution because of skewness in the **p** coefficient. Somewhat awkwardly, the null hypothesis for the Dickey-Fuller test is the presence of a unit root, that is, the series is intregrated (nonstationary). If the Dickey-Fuller test statistic, d, falls outside of the critical range, that is, has negative values larger then the critical value, we can reject the null hypothesis of a unit root.

Following Enders (2004), I start with an augmented Dickey-Fuller test, which included parameters for a constant and a trend term, as well as specifying a multiple lags. Successively, insignificant parameters are dropped from the analysis. Alternate specifications find no lags beyond the first and obligatory lag to be significant; thus they are dropped from the test. But both a trend and constant term were found to be significant. As reported below, the augmented

Dickey-Fuller test reports a test statistic of -4.76 compared to a critical value at .01 of -4.04. From this we can reject the null hypothesis of a unit root. The Dickey-Fuller test indicates a stationary series. Likewise, the Phillips-Perron test indicates a stationary series. Also finding significant trend and constant terms, the Phillips-Perron t statistic on these data is -4.88 compared to a critical value of -4.04.

Autoregression Diagnostic Tests

Having established that the presidential news 1897-1998 series is stationary, we turn to the autoregressive properties of the data. The ARMA model indicates a (2,0) process, that is, a second order autoregressive model. The coefficients for the two lags are .58 and .26, respectively. That both are less than 1.0 testifies of an AR process, rather than nonstationarity in the data. An ARIMA (1,1), that is, first order autoregression with a first order moving average also fit the data well, but the log likelihood statistic for the (2,0) process was superior to the (1,1) process (-354.5103 compared to -355.056). In selecting between these two specifications of the ARMA process, the AIC (Akaike Information Criterion) and BIC (Bayes Information Criterion) tests both found the (2,0) to be superior to the (1,1). The AIC and BIC criteria are F tests that allow one to make comparisons across different models.

White Noise Tests

Finally, the Portmanteau Q test assesses whether the residuals of the ARMA models are white noise. We want a series to be white noise before we begin analysis. When a series is white noise, it means that the series is free of nonstationarity and autocorrelation. The Q test finds that the (2,0) residuals are white noise for all lags from 1 to 10. In contrast, the Q test on the (1,1) residuals finds them to be white noise for lags 1 and 2, but not thereafter, which provides supporting evidence on (2,0) as the better specification of the temporal processes in the presidential news data. In particular the Q statistic for lag 1 = .21, p = .65; lag 5 = .91, p = .97 and lag 10 = 7.55, p =. 57.

Presidential News, 1929-1998

The same procedures are used on the presidential news series, 1929-1998.

ACF and PACF Plots

The time plot of presidential news, Figure 4E.4, starkly reveals that depths that presidential news coverage has fallen in the 1990s. Across the 1930s and 1940s, presidential news coverage hovers in the 20-30% range, with a great surge in presidential news in the late 1960s and 1970s. By the late 1990s, presidential news has fallen to the levels of the 1930s and 1940s. This pattern does not suggest a nonstationary series. The ACF and PACF plots on Figures 4E.5-6 also bespeak of autoregression. The ACF plots decays similarly to a classic AR process. The spikes in lags 1 and 2 on the PACF, in conjunction with the ACF, suggest an AR(2) process, as was the case above.

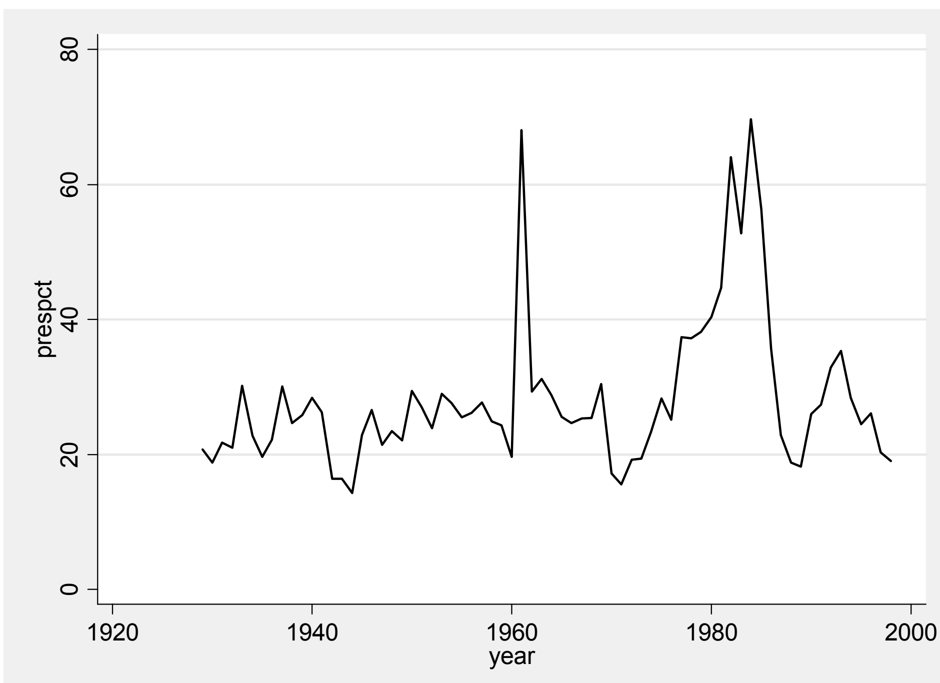

Figure 4E.4 Percentage of Front Page News on the President in the <u>New York Times</u>, 1929-1998

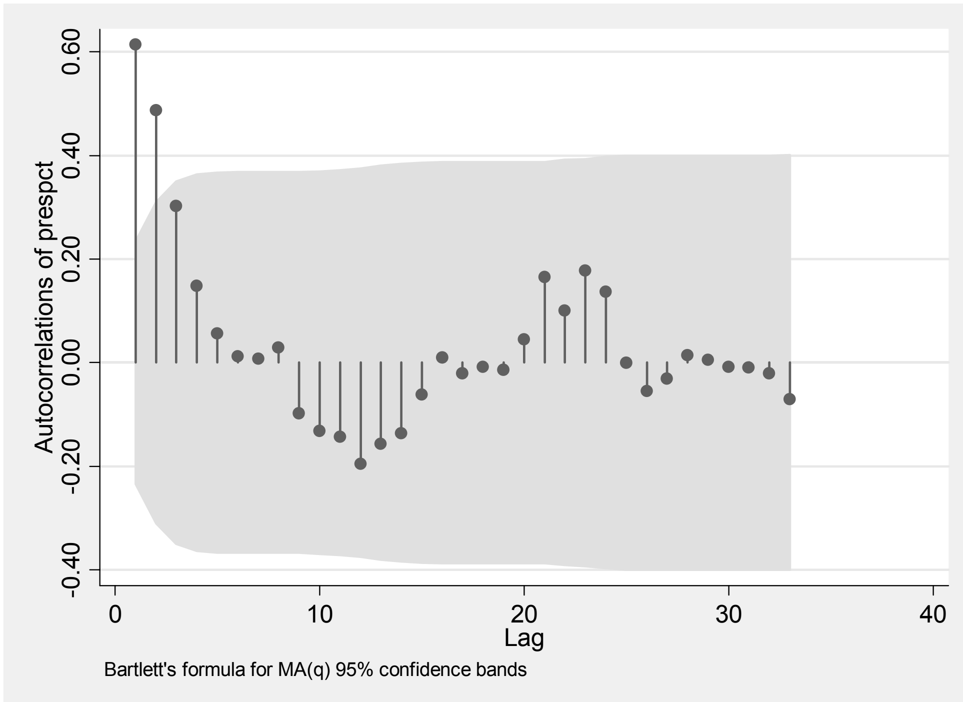

Figure Appendix 4E.5 ACF Plot, Percentage of Front Page News on the President in the <u>New York Times</u>, 1929-1998

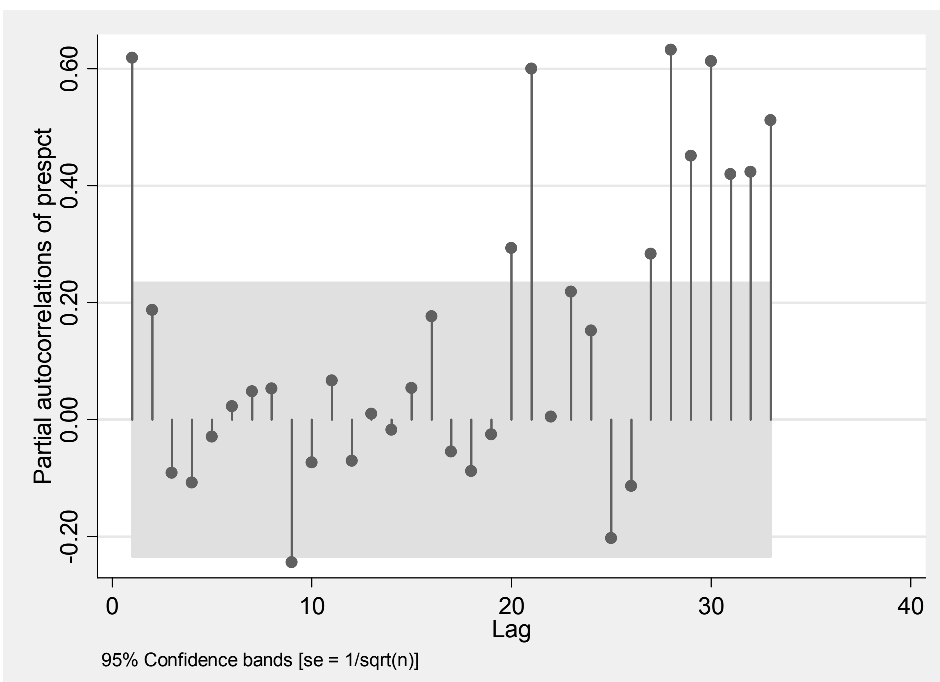

Figure Appendix 4E.6 ACF Plot, Percentage of Front Page News on the President in the <u>New York Times</u>, 1929-1998

Nonstationarity Diagnostic Tests

The Dickey-Fuller tests, as before, fail to indicate unit roots or nonstationarity. Alternative specifications for the Dickey-Fuller tests indicate no significant lag structure or trend term, but a significant constant. Such a specification produces a -4.07 Dickey-Fuller statistic against a critical value of -3.55 at the .01 level. The fact that the test statistic falls outside of the critical region allows us to reject the null hypothesis of a unit root. Similar results obtain from the Phillips-Perron test. Again, that test indicates no significant lags or trend, but a significant constant. The Phillips-Perron test statistic of -27.32 likewise falls outside of the critical region, whose critical value is -19.26. As found for the 1897-1998 period, the 1929-1998 time span is also stationary.

Autoregression Diagnostic Tests

Diagnostics for autoregression detect an AR(2) process, also as found before. The first order lag of .50 is significant at $p = .00$, $z = 5.2$, with the second order lag coefficient of .19 significant at $p = .03$, $z = 2.18$. That both coefficients are less than 1.0 supports an AR interpretation and argues against nonstationarity in the data.

White Noise Tests

Finally, the Portmanteau Q test indicates white noise. The Q statistic at lag 1 = .02, $p = .89$; at lag 5 $Q = 1.25$, $p = .94$; and at lag 10 $Q = 5.35$, $p = .87$.

Appendix 4F

Robustness Tests

Among the most important results from the perspective of the larger aims of the research concern the effects of cable television on presidential news. I performed a number of robustness tests to determine how well the cable television findings hold up. First, a debate exists among presidency scholars over whether presidential behavior is best understood from a presidency or a president perspective. The presidency perspective argues that structural and institutional factors drive presidential behavior, while the president perspective counters that individual presidents, their tastes, preferences, skills, and the like, determine much presidential behavior. In this context, the president perspective would argue that the amount of presidential news coverage is in part a function of the relations that individual presidents have with the press, presidential skills in dealing with the president, presidential willingness to engage in activities designed to generate news coverage and the like.

To test the president hypothesis, for both the 1897-1998 and 1929-1998 periods, I entered individual presidential dummies into the reduced form equation, the common measurement strategy of most that test for individual president effects. Results find that while many of the president dummies attain statistical significance, the cable effects remain. For the 1897-1998 period, each one percentage rise in cable penetration beginning in 1982 converts into a 3.9% decline in presidential news ($p = .01$). For the 1929-1998 period the corresponding effect is -3.5% ($p = .05$).

For another set of robustness tests, I varied the measurement of the cable television variable and the presidential news variable. In particular, I used seven other forms of the cable television variable—1) the percentage of households with cable, 2) the first difference of the percentage, 3) a one-year lag of the percentage with cable, 4) a two-year lag of the percentage, 5) the percentage with cable squared, 6) a model that includes both the percentage with cable and the percentage squared, and lastly, 7) the percentage of households with cable starting with 1982.

Moreover, in addition to expressing the dependent variable, presidential news coverage in levels, as is done above, I also expressed it as first differences.

There is a danger in measuring the dependent variable in differences. As noted above and in Appendix 4E, which discusses the time series properties of presidential news, presidential news is stationary, and thus should not be differenced. Differencing a stationary variable, that is, over-differencing, may distort important information about the series and render insignificant effects of independent variables that truly are significant.

Details of these analyses, which also control for the full battery of other independent and control variables, is displayed on Appendix Table 4D. These results indicate that only the version of the cable variable used above, the percentage change starting with 1982, consistently affects presidential news as hypothesized. Only sporadic effects are detected for almost all other specifications of the cable variable. Thus, the version used above not only appears the superior measurement, but also affects the dependent variable no matter if it measured as levels of presidential news coverage or changes in presidential news coverage. Remarkably, in spite of differencing the presidential news series, this cable television maintains its impact and that impact remains remarkably stable across model specification.

Appendices to Chapter 5

Appendix 5A

Variables Used in the Analysis

Dependent Variable

Negative Presidential News: Percentage of Negative News Stories About the President in the New York Times, 1949-1992. Source: Provided to the author by Lyn Ragsdale, discussed in Ragsdale, 1997.

Independent Variables

1. War: dummy variable for Korean and Vietnam War (1951-1953, 1965-1972 = 1, otherwise 0).

2. Gulf War: dummy variable for Gulf War (1991=1, otherwise = 0).

3. Inflation Rate: Annual Consumer Price Index, 1949-1992. Source: Bureau of Labor Statistics CPI home page, http://www.bls.gov/cpi/home.htm.

4. Unemployment Rate: Annual unemployment rate, 1949-1992, Source: Bureau of Labor Statistics homepage, http://www.bls.gov/

5. Watergate: Dummy variable for Watergate (1973-1974 = 1, otherwise = 0).

6. Iran Contra: Dummy variable for Iran Contra (1987=1, 0 = otherwise)

7. New President: First year of a new president no matter how the president came to office, (first year = 1, non-first years = 0)

8. Divided Government: dummy variable for whether at least one house of Congress is controlled by the opposition party (coded = 1, united government = 0).

9. Party Polarization: Absolute difference in the party medians on the first dimension of the Pool-Rosenthal DW-Nominate scale. Downloaded from Keith Poole's homepage, http://voteview.com/dwnl.htm

10. Agenda Size: number of major items on the president's agenda, Source: Binder, 2002.

11. **Television Percent**: percentage of households with free broadcast television. Sources: Historical Statistics of the United States and various volumes of the Statistical Abstract of the United States.

12. **Cable Television Percent**: percentage of households that subscribe to cable television. Sources: Historical Statistics of the United States and various volumes of the Statistical Abstract of the United States.

Table 5A.1 Descriptive Statistics of Variables Used in the Analysis in Chapter 5

Variable	Obs	Mean	Std. Dev.	Min	Max
Negative News	44	22.32	11.75	4.86	55.16
War	44	.25	.44	0	1
Gulf War	44	.02	.15	0	1
Watergate	44	.05	.21	0	1
Iran Contra	44	.02	.15	0	1
New President	44	.18	.39	0	1
Divided Govt.	44	.59	.50	0	1
Agenda Size	44	118.27	28.31	70.00	160
Party Polarization	44	59.46	5.35	49.8	70.8
Cable TV pct	44	16.04	19.79	0	60.2
Television pct	44	82.93	25.40	0	98.00
Inflation	44	4.13	3.28	-1.20	13.50
Unemployment	44	5.76	1.61	2.90	9.70

Appendix 5B

The Time Series Properties of Negative Presidential News, 1949-119

This section reports on the time series properties of the negative presidential news series utilizing the standards and procedures reported in Appendix 4E on the presidential news coverage series.

ACF and PACF Plots

The ACF and PACF plots for the negative news series are displayed on Figures 5A.1 and 5A.2. Combined, the plots strongly resemble a classic first order autoregressive series (AR(1)), with the steady decay of the ACF and the first order spike in the PACF.

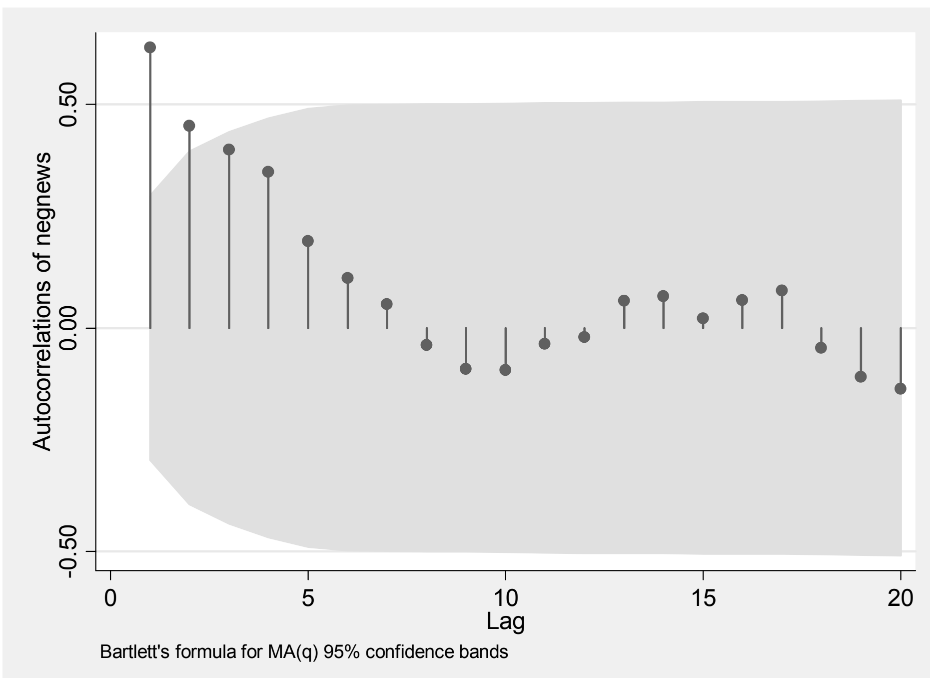

Figure 5B.1 ACF Plot, Negative Presidential News, New York Times, 1949-1992

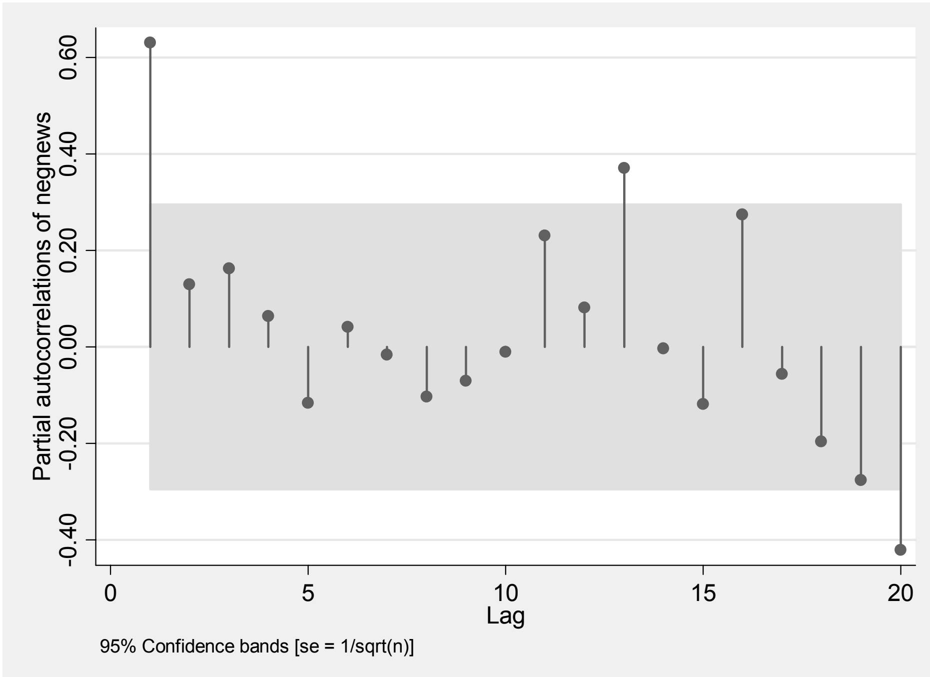

Figure 5B.2 PACF Plot, Negative Presidential News, New York Times, 1949-1992

Stationarity Tests

The stationarity tests confirm the visual inspection of the ACF and PACF plots, that the series is stationary. The augmented Dickey-Fuller tests failed to detect a significant lag component, but the trend and constant term were found to be significant. With the trend and constant terms, the resulting Dickey-Fuller test statistic is -3.89, compared to a critical value of -3.52 at the .05 level. The critical value at .01, however, is -4.24. Using the .01 critical value one would not be able to reject the null hypothesis of a unit root. The Phillips-Perron tests also indicate the same ambiguous result. Again, no significant lags are detected, but the trend and constant term are. Diagnostics produce Phillips-Perron test statistic of -23.93, compared to a critical value of -24.81 at the .01 level and -19.27 at the .05 level. Thus, the Phillips-Perron test resembles the ambiguity of the Dickey-Fuller test, but the Phillips-Perron test statistic is just shy of the .01 critical value. McCleary and Hay (1980) caution against over-differencing, the standard correction for nonstationarity, that is, differencing when doing so is not necessary or indicated. Differencing isolates the short term dynamics of a series by removing the long term, permanent shock or drift. Autoregression tests conducted below indicate unambiguously an AR1 process in these data.

Autoregressive Tests and White Noise Tests

After experimenting with numerous AR and MA processes, results converged on an AR(1) in the negative news series, as the ACF and PACF plots indicated. The AR(1) produced a first order lag coefficient of .66 ($z = 5.90$, $p = .000$). That the lag coefficient falls quite short of 1.0 supplies further evidence that the series is autoregressive (AR), rather than the series being nonstationary. The Portmanteau test for white noise also indicate that the AR(1) produces a white noise series. The Portmanteau Q statistic at lag 1 = 0.24, p = .62; at lag 5,Q = 2.64, p = 076; at lag 10 Q = 3.63, p = .96; and at lag 20, Q = 9,25, p = .98.

Appendix 5C

Alternative Specifications of Cable Television Effects on Negative Presidential News, 1949-1992

Several issues plague the analysis regarding the impact of cable television on negative presidential news. First, the previous chapter found that the amount of presidential news did not immediately respond to the presence of cable, but only when the number of households hit a threshold level and CNN began broadcasting. This raises the issue of the proper measurement of the cable television variable in the estimations in Chapter 5 as well. Second, both cable television and negative news increase over time, raising the specter that any observed relationship between the two may be a function of their shared time path and not a causal connection from cable television (as a measure of the development of the new media) and negative presidential news. Third, cable television and party polarization are highly correlated for the years in question, raising the issue of multicollinearity.

As to the first issue, the specification of the cable variable, I experimented with several versions, including lags of the cable variable (up to four lags) and the threshold variable used in the previous chapter (that is scoring all cable value 0 until 1982, when the variable takes on the value of the percentage of households with cable television. Table Appendix 5C.1 lists the impact of these alternative cable measures controlling for the variables in the reduced form model (War, Gulf War, New President, Watergate, Iran Contra, Agenda Size, and when noted, Party Polarization).

Although the size of the cable television coefficient improves as the number of lags increases, the R^2's do not budge, and we see no appreciable impact any of these cable terms when controls for party polarization are applied. Despite the fact of the enlarged coefficients on the lag terms, it is hard to argue that a 4-year lag makes much sense with annual data such as used here. Thus the analysis in Chapter 5 focuses on the cable measure without lags.

Table Appendix 5C.1 Impact of Various Measures of Cable TV on Negative Presidential News, 1949-1992

	Without Controls for Party Polarization			With Controls for Party Polarization		
	b	p	R^2	b	P	R^2
Cable TV pct	.14	.018	.87	.01	.96	.87
Cable TV pct-lag1	.16	.001	.87	.06	.66	.88
Cable TV pct-lag2	.17	.007	.88	.11	.43	.88
Cable TV pct-lag3	.19	.005	.88	.16	.26	.88
Cable TV pct-lag4	.21	.003	.88	.19	.19	.85
Cable TV pct-start 1982	.11	.030	.87	-.01	.88	.87

Note: Each set of cells represents a different OLS regression controlling for War, Gulf War, New President, Watergate, Iran Contra, Agenda Size

The second and third issues deal with the trending over time of three variables, negative presidential news, cable television, and party polarization, and the related issue of the high correlation between cable television and party polarization. Differencing is one way to deal with data that trends over time, but only if the series are non-stationary. As Appendix 5B demonstrates, negative presidential news is stationary, thus differencing is not called for and recommended against. Still, we can difference the cable television and party polarization terms. Doing so eradicates the correlation between them (r = .12, p = .40), but using these differenced variables in place of the levels variables alters the meaning of the impact of cable television and party polarization on negative presidential news. The hypothesis of interest becomes the short term impact of change in these two variables on the level of negative presidential news.

When the differenced terms for these two variables are added into the equation in place of the levels variables, neither has a significant impact on negative presidential news (cable change b = -21, t = -.30, p = .76; polarization change b = -.16, t = -.38, p = .71): In fact, their signs are opposite of what one would predict. When a time counter is added as a control, the effects of polarization change hardly budge (b = -.13, t = -.35, p = .73), but change in cable become appears significant although in the wrong direction (b = -1.85, t = -2.41, p = .02). In a third estimation with these change terms, I add the lag of negative presidential news. Again this has little appreciable impact on change in polarization (b= -.16, t = -0.43, p = .67) and the formerly significant change in cable becomes insignificant (b= -1.37, t = -1.62, p = -.11.)

Finally, I reintroduced the cable and polarization terms in levels. Results of this "saturated" model that mimics an error correction model finds that the level of party polarization is now significant, but that cable television in levels is not. Both of the change variables (for cable and polarization) are negative but fail to reach significance at convention .05 levels. Persistently the cable and polarization change variables possess the wrong sign and in almost all instances never attain statistical significance.

Table Appendix 5C.2: Saturation Model of Negative Presidential News, 1949-1992 (OLS)

	b	t	p
War	3.35	1.52	.07
Gulf War	8.28	1.74	.05
Watergate	28.60	7.81	.00
Iran Contra	23.52	5.27	.00
New President	-6.27	-3.52	.00
Agenda Size	.14	2.78	.00
Change in Polarization	-.91	-1.86	.07*
Change in Cable TV	-1.44	-1.79	.08*
Time Counter	.12	0.48	.63
Negative News-lag 1	.12	1.37	.09
Party Polar.-levels	1.34	2.08	.03
Cable TV pct-levels	-.22	-1.19	.24*
Constant	-76.16	-2.14	.02
R^2/ Adjusted R^2	.91	.87	

Note: All p values are based on one-tailed tests except for *, which are two-tailed because they possess the incorrect signs.

Appendices for Chapter 6

Appendix 6A

Variables Used in the Analysis

Dependent Variable

Negative News: 5 = clearly negative, 4 = more negative than positive, 3 = neutral or balanced, 2 = more positive than negative, 1 = clearly positive. Source: Patterson (2000).

Independent Variables

<u>New Media Age Reporting Practices</u>

Soft News: 5 = definitely soft news, 4 = mostly soft news, 3 = mixed evenly, 2 = mostly hard news, 1 = definitely hard news. Source: Patterson (2000).

Sensationalism: A three point scale coded 1 = low sensationalism, 2 = moderate sensationalism, 3 = high sensationalism. Source: Patterson (2000).

Human Interest: 1 = no human interest content, 2 = slight human interest content, 3 = moderate human interest content, 4 = high human interest content. Source: Patterson (2000).

New You Can Use: 1 = not the primary purpose of the story, 2 = a secondary purpose of the story, 3 = the primary purpose of the story. Source: Patterson (2000).

Nonpolicy: 1 = substantially policy relevant story, 2 = somewhat policy relevant story, 3 = nonpolicy related story. Source: Patterson (2000).

Scandal: 1 = scandal story, 0 = no scandal, from Patterson's major topic code variable, code 3 (political scandal). Source: Patterson (2000).

<u>Characteristics of Presidential News</u>

Straight News: 1 = straight news, 0 otherwise, from Type of Story variable. Source: Patterson (2000).

Mixed News: 1 = mixed news, 0 otherwise, from Type of Story variable. Source: Patterson (2000).

Analysis: 1 = analysis, 0 otherwise, from Type of Story variable. Source: Patterson (2000).

Urgent Call for Action: 1 = Story says/implies that urgent action is needed, 0 otherwise, from Action/No Action Frame variable. Source: Patterson (2000).

Call for Action: 1 = Story says/implies that non-urgent action is needed, 0 otherwise, from Action/No Action Frame variable. Source: Patterson (2000).

Action Taken: 1 = Story says action has been taken, 0 otherwise, from Action/No Action Frame variable. Source: Patterson (2000).

Conflict: 3 = substantial level of conflict, 2 = some conflict, 1 = no conflict or so slight as to be inconsequential, from Conflict/No Conflict Frame variable, Source: Patterson (2000).

Context: 1 = Episodic, 2 = Thematic, from Context Frame Variable, Source: Patterson (2000).

Ambition: 1 = if ambition and power serve as the story's major frame, 0 = otherwise, based upon Major Context Frame variable. Source: Patterson (2000).

Cooperation: 1 = if cooperation serves as the story's major frame, 0 = otherwise, based upon Major Context Frame variable. Source: Patterson (2000).

Environmental Factors

(All environmental factor variables are measured for the month of the story unless otherwise noted):

Inflation: Monthly change in the Consumer Price Index, 1949-1992. Source: Bureau of Labor Statistics CPI home page, http://www.bls.gov/cpi/home.htm.

Unemployment: Monthly unemployment rate, 1949-1992, Source: Bureau of Labor Statistics homepage, http://www.bls.gov/

Consumer Confidence: Monthly Index of Consumer Confidence, Survey of Consumers, University of Michigan.

Consumer Expectations: Monthly Index of Consumer Expectations, Survey of Consumers, University of Michigan.

Gulf War: "1" for the period of major fighting, January and February, 1991, and 0 otherwise.

Lewinsky Period: 1 = January-December 1998, 0 otherwise.

Iran Contra Period: 1 = December 1986 through December 1987, 0 otherwise.

Positive Event: A count of the number of positive events that occurred in the month of the news story. Source: Gronke and Brehm, 2002. The variable ranges from 0 to 2.

Negative Event: A count of the number of negative events that occurred in the month of the news story. Source: Gronke and Brehm, 2002. The variable ranges from 0 to 2.

Party Polarization: Absolute difference in the party medians on the first dimension of the Pool-Rosenthal DW-Nominate scale for the year of the news story. Downloaded from Keith Poole's homepage, http://voteview.com/dwnl.htm

Divided Government: A dummy variable whether at least one house of Congress is controlled by the opposition party, coded divided = 1, united government = 0.

New President: A dummy variable for the first year of a new president no matter how the president came to office, coded first year = 1, non-first years = 0.

Approval-lagged: The Gallup approval score of the president in the month before the news story.

Cable Television Percent: percentage of households that subscribe to cable television. Sources: Historical Statistics of the United States and various volumes of the Statistical Abstract of the United States.

Heckman First Stage Variables

Time: monthly counter, 1-224. January, 1980 = 1, February, 1980= 2, etc.

Local News Outlet: 1 = local or regional news source (26 in all), 0 = national news source (New York Times, Washington Post, Wall Street Journal, ABC, NBC, Time, Newsweek, USA Today). Source: Patterson (2000).

Unemployment: Monthly unemployment level of the month that the story appeared. See above.

Appendix 6B

Heckman Model For Selection Bias

Patterson's data set sampled across news articles generally, not presidential news stories, but our interest is in the determinants of negativity in presidential news. Selection bias may affect the presidential news stories, as Patterson did not design his study to generate a random sample of presidential news stories. To guard against selection bias, Heckman's (1976) two stage process is used. Recent applications of Heckman's two stage selection model in political science include Hansen and Mitchell (2000). Heckman's procedure involves two stages. The first stage identifies the selection criteria, in this case, whether news stories are presidential or nonpresidential stories. Stage two then estimates negativity in presidential news. From stage one, a new regressor, the inverse Mills ratio (lambda), is obtained from the first stage probit model of whether a news story is a presidential news story (1) or not (0).

The Heckman procedure requires that at least one of the regressors from the first stage model be significant in that stage but not the second stage. To identify such variables, I restricted first stage variables as being exogenous to the characteristics of the story, with the idea that characteristics of the story derive from factors that determine whether or not to publish the story. Thus, first stage variables were restricted to characteristics of the environment and the news organization. It is possible that factors that lead to the publication of a presidential news story will also lead to the story being negative. For instance, news organizations may deem it newsworthy to report on rises in unemployment. At the same time, such a story may be critical of the president's economic policies. Hence, some stage one factors may also become stage two variables. At least one of these stage one variables must not also predict in stage two.

Depending on the equation four variables were found to significantly predict whether or not a story is presidential—a monthly time counter, whether the news organization is a local or national, the unemployment level, and the first year of a new president. Of these, only unemployment also predicts to negativity in presidential news. In no estimation does the lambda coefficient reach statistical significance and results of OLS estimations closely resemble those of the Heckman models. Thus, Table 6.1 presents results of OLS estimations, while Table Appendix 6B.1 presents results of the Heckman two-stage estimations.

Table Appendix 6B.1 Impact of Soft News Reporting Style, Hard News Reporting Characteristics, and Environmental Conditions on Negativity in Presidential News, Heckman Two Stage Results										
	Model 1A		Model 2A		Model 3A		Model 4A		Model 5A	
Variable	b	p	b	p	b	p	b	p	b	p
Straight News	-----		.37	.09	-----		-.06	.80	-----	
Mixed News	-----		.36	.10	-----		-.02	.95	-----	
Analysis	-----		.38	.09	-----		.11	.61	-----	
Urgent Call	-----		.57	.00	-----		.59	.00	.58	.00
Call	-----		.27	.04	-----		.28	.04	.29	.04
Action Taken	-----		-.24	.03	-----		-.26	.03	-.26	.02
Conflict	-----		-.64	.00	-----		.58	.00	.59	.00
Context	-----		-.09	.41	-----		-.08	.45	-----	
Ambition	-----		.07	.47	-----		.06	.52	-----	
Cooperation	-----		-1.02	.00	-----		-.96	.00	-.96	.00
Soft News	-.17	.00	-----		-----		-.21	.00	-.19	.00
Sensationalism	.43	.00	-----		-----		.19	.00	.20	.00
Human Interest	-.09	.04	-----		-----		-.02	.62	-----	
News You Can Use	-.04	.83	-----		-----		.19	.23	-----	
Non-Policy	.03	.47	-----		-----		.15	.00	.16	.00
Scandal	1.16	.00	-----		-----		.67	.00	.71	.00
Inflation	-----		-----		-.24	.34	-.32	.12	-----	
Unemployment	-----		-----		-.05	.47	-.07	.27	-----	
Consumer Confidence	-----		-----		-.00	.99	.00	.75	-----	
Consumer Expectations	-----		-----		.00	.87	.00	.60	-----	
Gulf War	-----		-----		.04	.93	.16	.65	-----	
Lewinsky Period	-----		-----		.33	.08	.06	.68	-----	
Iran contra Period	-----		-----		.42	.13	.35	.13	-----	
Positive Event Period	-----		-----		.01	.94	-.09	.38	-----	
Negative Event Period	-----		-----		-.09	.49	.12	.27	-----	
Congressional Polarization	-----		-----		-1.90	.26	-2.49	.07	-----	
Divided Government	-----		-----		-.07	.56	.07	.49	-----	
New President	-----		-----		-.02	.90	.12	.27	-----	
Approval-lag	-----		-----		.01	.20	-.01	.21	-----	
Cable TV %	-----		-----		.00	.75	.01	.11	-----	
Stage One Selection										
Time Counter	.00	.11	.00	.08	.00	.09	.00	.06	.00	.11
Local Newspaper	-.80	.00	-.79	.00	-.80	.00	-.79	.00	-.80	.00
Unemployment	.08	.00	.08	.00	.08	.00	.08	.00	.08	.00
Constant-Stage One	-1.48	.00	-1.52	.00	-1.49	.00	-1.53	.00	-1.47	.00
Constant-Stage Two	3.94	.00	4.69	.00	5.68	.00	4.14	.00	2.38	.00
Lambda	-.48	.13	-.22	.43	-.83	.03	-.38	.23	-.29	.28
Wald / p	129.11	.00	380.62	.00	29.59	.01	542.0	.00	500.64	
Source: Patterson, 2000 and data collected by author. See Appendix 6A for details.										

Appendix Table 7.1 First Stage Equations to Create Media Trust Instrument for Table 7.3

Variable	Newspaper			Television		
	b	SE	p	B	SE	p
Party ID	-.005	.014	.714	-.007	.014	.629
Age	.001	.002	.720	.001	.002	.825
Education	-.026	.017	.124	-.033	.016	.038
Black	-.086	.076	.256	-.063	.074	.388
Hispanic	.099	.101	.327	.113	.100	.260
Female	.042	.045	.358	.060	.043	.158
Employed	-.058	.046	.205	-.073	.046	.118
South	.053	.047	.255	.054	.047	.250
Pres. Thermo.	.002	.001	.034	.002	.001	.028
Gov. Trust	.143	.018	.000	.136	.017	.000
Pol. Complicated	-.087	.045	.055	-.092	.046	.045
Internal Efficacy	.136	.127	.286	.149	.129	.248
External Efficacy	.062	.029	.030	.064	.029	.027
Pres. Camp. Int.	.098	.024	.000	.113	.033	.001
Information	-.030	.024	.233	-.028	.026	.282
Close Election	.142	.063	.024	.162	.062	.009
Expect to Vote	-.160	.071	.024	-.167	.070	.018
Gore Thermo.	.004	.001	.002	.004	.001	.002
TV Days	xxxxx			-.031	.033	.354
Newspaper Days	-.034	.033	.305	xxxxx		
Traditionalism	-.011	.007	.081	-.010	.006	.108
Misanthropy	-.084	.028	.000	-.076	.028	.007
Constant	2.13	.208	.000	2.07	.23	.000
RMSE	.68			.68		
R-sq	.19			.18		
F	12.83			12.68		
P of F	.0000			.0000		
n	1132			1132		

Source: 2000 ANES

Appendices to Chapter 9

Time Series Diagnostics for the Major to Minor Speech Ratio and the Percentage of "Narrow" Policy Mentions in the State of the Union Address

Major to Minor Speech Ratio

ACF and PACF Plots

Figures 9A.1 and 9A.2 present the ACF and PACF plots of the Major to Minor speech ratio. The ACF and PACF plots suggest that the data are stationary, but may be subject to a weak AR1 process, as evident from the initial spikes in both figures that sit outside of the gray region. Notably, though, both spikes are located quite close to the gray region.

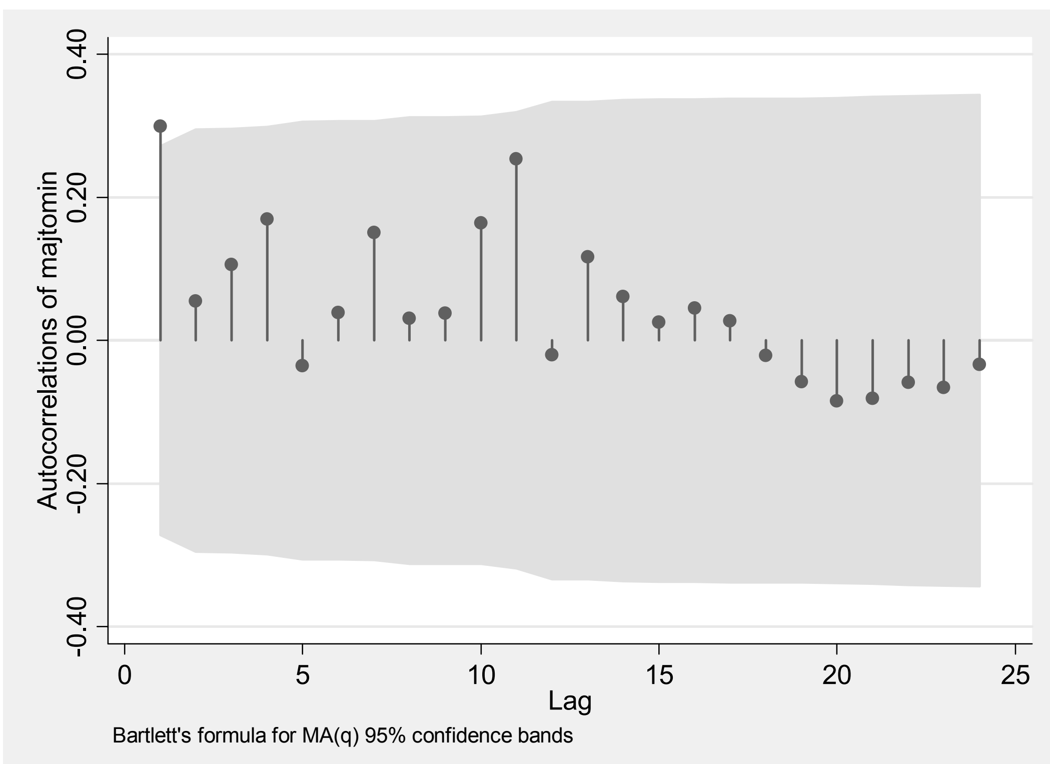

Figure Appendix 9A.1 ACF Plot of Major to Minor Speech Ratio, 1946-1997

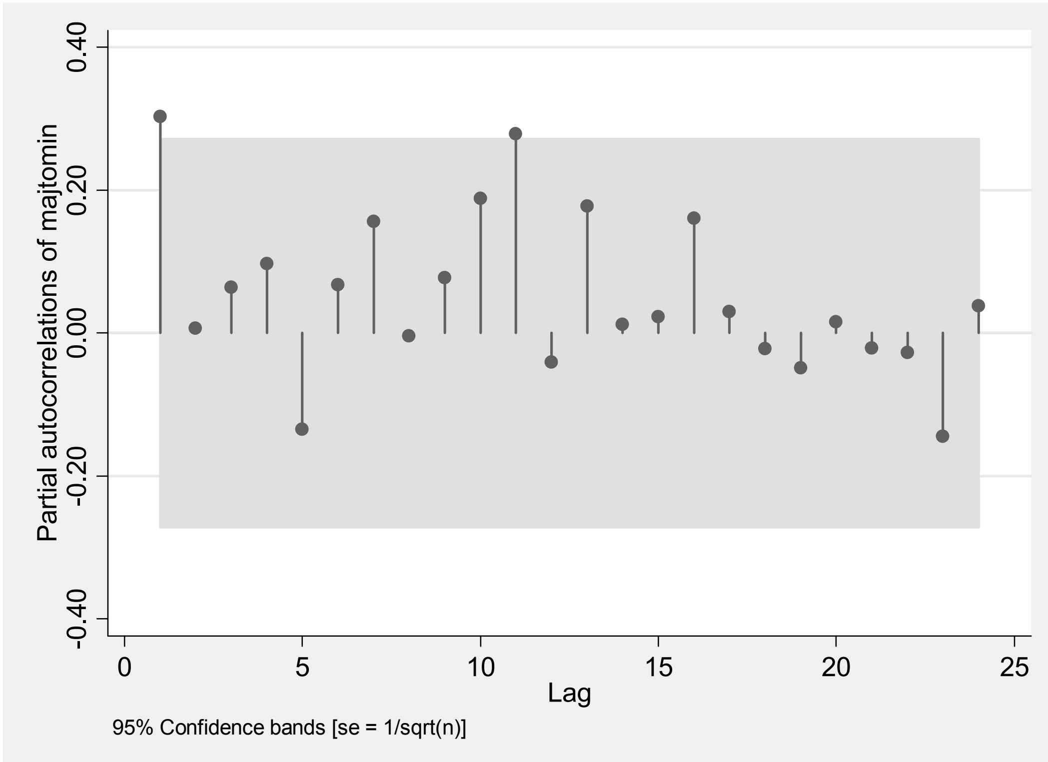

Figure Appendix 9A.2 PACF Plot of Major to Minor Speech Ratio, 1946-1997

Stationarity Diagnostic Tests

The Dickey-Fuller and Phillips-Perron tests repeat the ACF and PACF results indicating stationarity in the Major to Minor speech ratio variable. The Dickey-Fuller test indicates a significant trend, constant, and lag (1) term, producing an augmented Dickey-Fuller test statistic of -7.52 against a .01 critical value of -4.15. A similar estimation for the Phillips-Perron test produces a test statistic of -8.94 and a critical value of -4.15.

Autoregression Diagnostic Tests and White Noise Tests

The ACF and PACF plots hinted an autoregressive process. An ARIMA analysis establishes the existence of an AR (1) process, with an AR (1) coefficient of .62, a standard error of .10, a t value of 6.35, and a p value of $< .000$. The Portmanteau test for white noise finds the residuals of the ARIMA process to be white noise at lags 1 through 10. At lag 1 Q = 3.16, p = .08, at lag 5 Q = 8.86, p = .11, and at lag 10 Q = 11.37, p = .33. However, in the multivariate analysis associated with Table 9.1, when the predictor variables are added to the equation, the AR (1) term is not longer statistically significant and the residuals of the OLS models on Table 9.1 are also white noise. This suggests that the OLS specification may be appropriate than an AR (1) model. For the AR (1) model, with only the spike and the cable variables, the coefficient of the cable variable remains the same as for the OLS estimation on Table 9.1, but the significance level falls to .10 (b = -.045, SE = .034, t = -1.27, p =.10).

Percentage of "Narrow" Policy Mentions in the State of the Union Address, 1946-2003

ACF and PACF Plots

The ACF and PACF plots do not indicate nonstationarity in the percentage of "narrow" policy mentions variable. However, a first order autoregressive process may exist, as both series possess spikes in the first lag falling outside of the critical, gray region. A more complex lag MA structure may exist, with the PACF plot showing spikes at lags 8, 15, and 18.

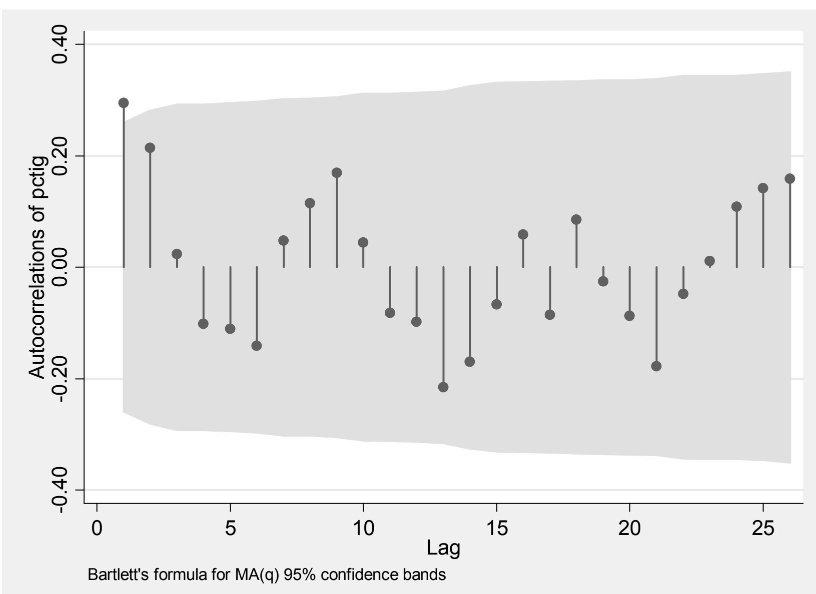

Figure Appendix 9A.3 ACF Percentage of "Narrow" Policy Mentions in the State of the Union Address, 1946-2003

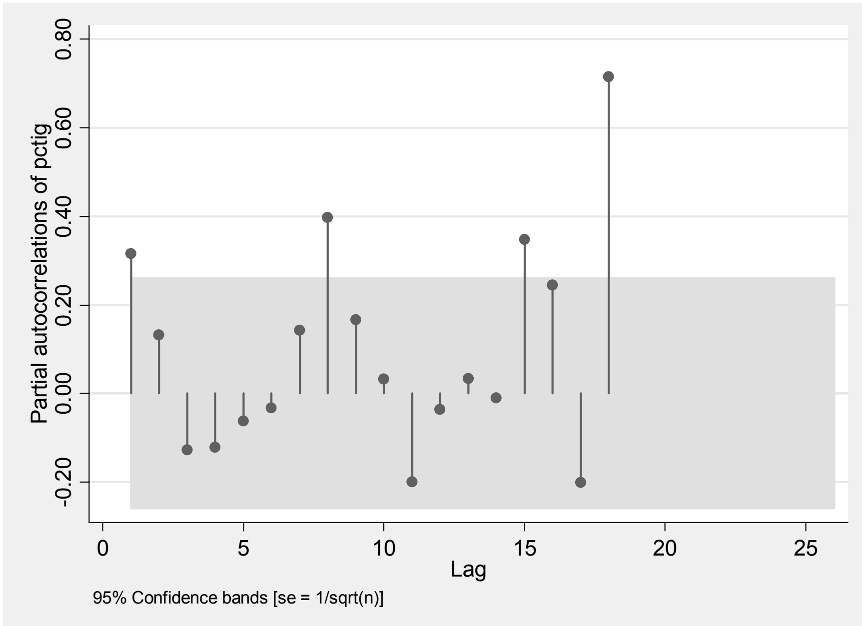

Figure Appendix 9A.4 PACF Percentage of "Narrow" Policy Mentions in the State of the Union Address, 1946-2003

Stationarity Diagnostic Tests

Confirming results of the ACF and PACF plots, Dickey-Fuller and Phillips-Perron tests indicate stationarity for the percentage of narrow mentions variable. Both diagnostic tests indicate a significant lag (1) and constant term, but no significant trend term. Modeling the Augmented Dickey-Fuller with the lag and constant term produces a test statistic of -3.12, with a critical value at .01 of -3.58, and a critical value at .05 of -2.9. The Dickey-Fuller results may appear ambiguous depending upon the critical value one prefers to use. In contrast the Phillips-Perron test is clear. A similar lag and constant model produces a test statistic of -5.265, with a critical value at .01 of -3.573.

Autoregression Diagnostic and White Noise Tests

Despite the delayed spikes in the PACF, ARIMA analysis indicates a weak AR (1) process, rather than a more complex ARIMA process. The ARIMA model produces a coefficient of .33, SE of .15, t value of 2.24, and p value of .025. Residuals of the ARIMA model are white noise, with a Portmanteau Q at lag 1 = .21, p = .64, at lag 5 Q = 2.76, p = .74, at lag 10 Q = 5.95, p = .82. However, as noted above for the Major to Minor series, when controlling for the substantive variables on Table 9.2, the AR(1) term is no longer significant and the residuals of the OLS process are white noise at all lags from 1 to 10, suggesting that the less restrictive OLS model is the more appropriate choice.

Appendices to Chapter 9

Time Series Diagnostics for the Major to Minor Speech Ratio and the Percentage of "Narrow" Policy Mentions in the State of the Union Address

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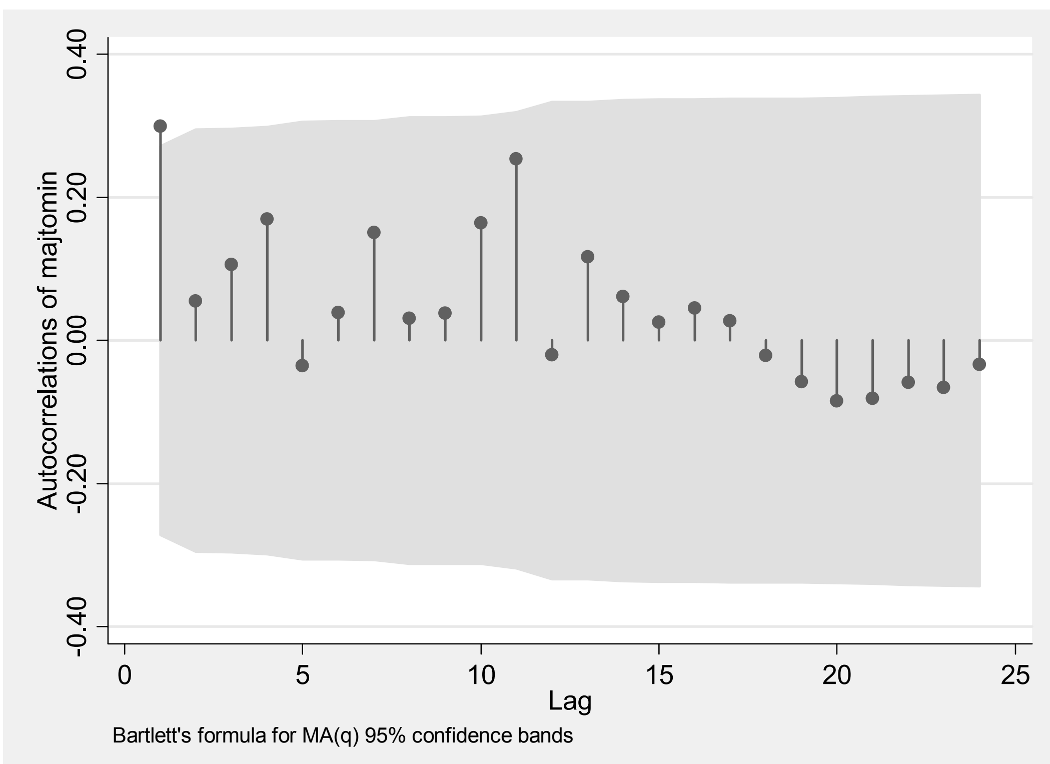
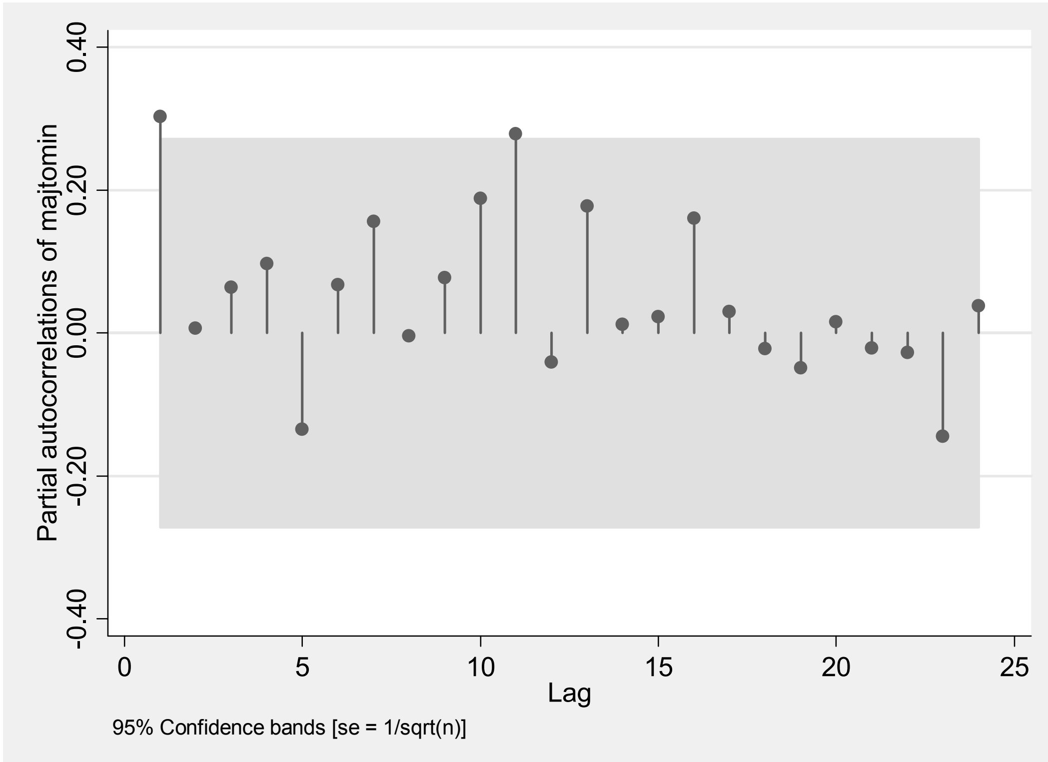


Figure Appendix 9A.1 ACF Plot of Major to Minor Speech Ratio, 1946-1997



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Percentage of "Narrow" Policy Mentions in the State of the Union Address, 1946-2003

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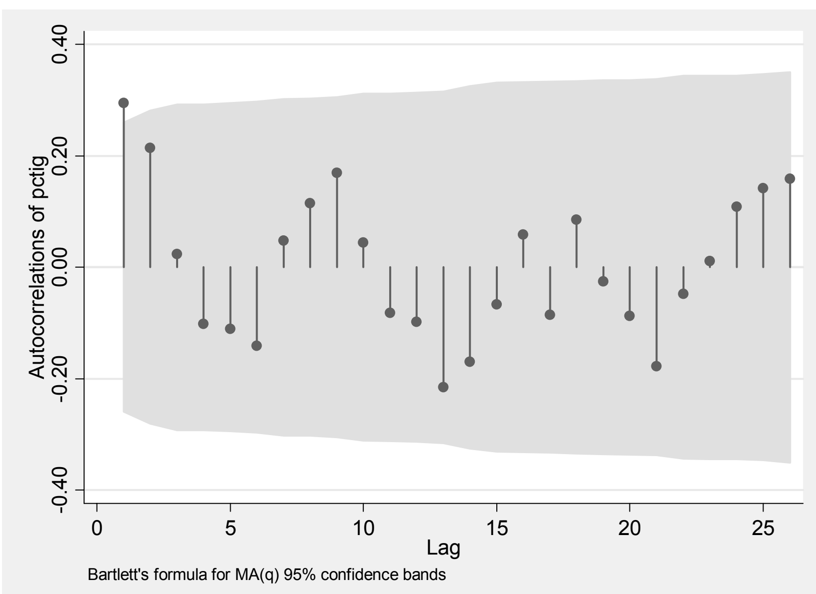

Figure Appendix 9A.3 ACF Percentage of "Narrow" Policy Mentions in the State of the Union Address, 1946-2003

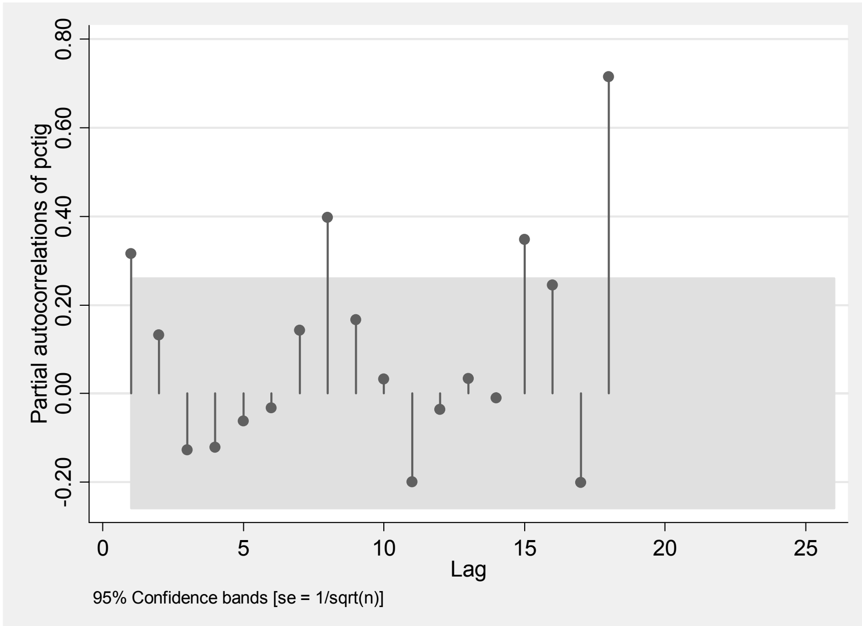

Figure Appendix 9A.4 PACF Percentage of "Narrow" Policy Mentions in the State of the Union Address, 1946-2003

Stationarity Diagnostic Tests

Confirming results of the ACF and PACF plots, Dickey-Fuller and Phillips-Perron tests indicate stationarity for the percentage of narrow mentions variable. Both diagnostic tests indicate a significant lag (1) and constant term, but no significant trend term. Modeling the Augmented Dickey-Fuller with the lag and constant term produces a test statistic of -3.12, with a critical value at .01 of -3.58, and a critical value at .05 of -2.9. The Dickey-Fuller results may appear ambiguous depending upon the critical value one prefers to use. In contrast the Phillips-Perron test is clear. A similar lag and constant model produces a test statistic of -5.265, with a critical value at .01 of -3.573.

Autoregression Diagnostic and White Noise Tests

Despite the delayed spikes in the PACF, ARIMA analysis indicates a weak AR (1) process, rather than a more complex ARIMA process. The ARIMA model produces a coefficient of .33, SE of .15, t value of 2.24, and p value of .025. Residuals of the ARIMA model are white noise, with a Portmanteau Q at lag 1 = .21, p = .64, at lag 5 Q = 2.76, p = .74, at lag 10 Q = 5.95, p = .82. However, as noted above for the Major to Minor series, when controlling for the substantive variables on Table 9.2, the AR(1) term is no longer significant and the residuals of the OLS process are white noise at all lags from 1 to 10, suggesting that the less restrictive OLS model is the more appropriate choice.