

RECESSION HEADLINE NEWS,
CONSUMER SENTIMENT, THE STATE
OF THE ECONOMY AND PRESIDENTIAL
POPULARITY: A TIME SERIES
ANALYSIS 1989-1993

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ABSTRACT

During the 1992 American presidential election, the media were accused of portraying the economy in a negative light, with both economic and political consequences for the country. Such criticism was based on assumptions concerning relationships among four variables: economic news coverage, public perception of the state of the economy (consumer sentiment), the actual state of the economy, and presidential popularity. This paper seeks to examine the relationships among all four variables in a way that accounts for inherent time series characteristics of the data including: potential non-stationarities (or tendencies for the series to drift over time) and co-movements among the series. Hypotheses concerning the nature and direction of influence among the four variables are proposed and time series analyses are conducted to test each hypothesis. We use recession-related headlines from the *New York Times* to represent economic news. Each series is analyzed to isolate its principal characteristics, and tests for co-movement (formally, cointegration) between the series are conducted. Vector autoregression is used to model the joint determination of the series, and tests for Granger causality are conducted. The results show some causal evidence for a media effect: recession headlines were a significant prior influence on the determination of consumer sentiment in this study. There is some limited evidence of an adversarial press effect, wherein the president's growing popularity rather than real world economic conditions appears to have led an increase in the number of recession headlines.

During the 1992 American presidential election, the media were accused by some of portraying the economy in an unfairly negative light, with both political and economic consequences for the country. Economic news reports were criticized for being 'relentlessly negative' (Glassman 1993). Some argued that the negative economic coverage played a role in the delay of the anticipated economic upturn (see Shrager 1992), a phenomenon labeled 'media malady' (Kurtz 1990; Stevenson *et al.* 1991). And President Bush's failure to secure a

second term of office was attributed in part to adverse economic news (see Graber 1993). Such observations of economic news coverage and its subsequent impact upon the economic and political landscapes are based on any of three assumptions: first, the media's portrayal of the economy is negatively biased; second, economic news coverage is capable of driving public perception of the state of the economy; and third, adverse economic news may ultimately influence the economic and political environment. Yet studies are inconclusive concerning the direction and degree of influence among the four key variables underlying these assumptions: economic news coverage, the state of the economy, public perception of the state of the economy (commonly measured as consumer sentiment), and presidential popularity.

REVIEW OF PAST STUDIES

In the main, research efforts have been directed at determining the nature of bivariate relationships between these four variables, and many of the results have been contradictory (e.g. Fan 1993, Stevenson *et al.* 1991). Some related studies have explored connections between news and public concern, controlling for real world conditions (MacKuen 1981, Behr and Iyengar 1985, Stevenson *et al.* 1991). MacKuen, Erikson, and Stimson (1992) examined the relationships among consumer sentiment, economic conditions and presidential popularity, using consumer perceptions of economic news (rather than actual economic news reported in the press). To our knowledge, no studies to date have attempted to examine the interrelationship of all four variables and potential interactions such as that of economic news and presidential popularity, while controlling for the effect of the other variables. We also seek to take account in our statistical analysis of the inherent time series properties of the data, such as their tendency to drift stochastically over time (which is manifest in the presence of unit roots), cointegrating links among them (Engle and Granger 1987), as well as evidence of any causal effects.

A review of past studies exploring the relationships between these variables reveals that there is a fully crossed matrix of hypothesized effects that is of interest. These effects are laid out in Table 1.

ECONOMIC NEWS AND STATE OF THE ECONOMY

With respect to the relationship between economic news and real world economic conditions, some researchers have focused their attention on the effect of unfavorable economic news reports on the economy, the so-called 'media malady' (Kurtz 1990; see Stevenson *et al.* 1991). Others have been concerned with the inverse direction, i.e. the correspondence between the state of the economy

TABLE I Matrix of effects

	<i>Headlines</i>	<i>Consumer Sentiment</i>	<i>Effect</i>	
			<i>Economy</i>	<i>Presidential Popularity</i>
<i>Headlines</i>	unit root (bias reporting)	powerful-effects media influence	media malady	priming
<i>Consumer Sentiment</i>	consumer-driven reporting	unit root	Katonian hypothesis	economic approval
<i>Cause</i>				
<i>Economy</i>	event-driven reporting	non-mediated experience	unit root	structural factor
<i>Presidential Popularity</i>	adversarial press	bully pulpit	bandwagon effect	unit root

and the tone and amount of subsequent economic news coverage (so-called event-driven reporting). For instance, the Institute for Applied Economics (1984) reported that, from July to December 1983, 95 percent of the economic statistics were positive whereas 85 percent of the indepth stories were primarily negative, amounting to some empirical evidence against event-driven reporting in this instance.

ECONOMIC NEWS AND CONSUMER SENTIMENT

The connection between economic news and consumer sentiment has received considerable attention. Those who argue that negative economic news undermines consumer confidence are espousing a powerful-effects model (see Severin and Tankard 1992), wherein the mass media are believed capable of achieving considerable influence over their audiences' attitudes and actions. In testing both directions, Fan (1993) reported a clear direction of influence from the media to consumer confidence. MacKuen, Erikson, and Stimson (1992) found that people's recollections of economic news contributed to business expectations. Others have found the relationship to be in the other direction, with public perception influencing subsequent media content (Stevenson *et al.* 1991), which supports the notion that news reporting is ultimately consumer-driven, i.e. media personnel are merely providing news of interest to their audiences.

STATE OF THE ECONOMY AND CONSUMER SENTIMENT

Researchers have also conjectured relationships in either direction between the state of the economy and consumer sentiment. Adherents to the school of psychological economics established by George Katona believe that consumer behavior is a dominant influence on the economy (Katona 1964, Curtin 1982). Indeed, Katona argued that changes in consumer sentiment can serve as a leading indicator of future economic activity. Many studies have shown support for Katona's hypothesis (Strumpel *et al.* 1972).

Now looking at the other direction, the direct effect of real world economic conditions upon subsequent consumer confidence would constitute an unmediated experience. Authors such as Linden (1982) argue that people are indeed sensitive to personal day-to-day economic experiences, and do not follow the economic news with any degree of sophistication in forming their perceptions of the state of the economy. Some contrary evidence is offered by MacKuen, Erikson, and Stimson (1992) whereby consumer expectations appeared to be based on perceptions of economic news. Whether the effect of real world conditions upon consumer sentiment is direct or mediated by economic news remains unclear.

No studies to date have considered the simultaneous relationship between economic news data, the state of the economy, public opinion of the state of the economy (consumer sentiment), and presidential popularity. A specific question that is worthy of empirical attention in our study arises from the suggestion (Graber 1993) that negative economic news was the cause of Bush's failure to secure a second term of office; that is: was negative economic news coverage rather than the actual state of the economy a stronger predictor of presidential approval during the period under study?

STATE OF THE ECONOMY AND PRESIDENTIAL APPROVAL

With respect to the relationship between the state of the economy and presidential approval, many argue that a president's support depends most importantly upon the economic health of the nation (e.g. Kinder and Sears 1985, MacKuen 1983). The economy is often viewed as a structural factor by political scientists and economists in explaining the degree of support for a party or candidate. However, there is also evidence that presidential popularity may influence the state of the economy in the form of a bandwagon effect such as with post-election excitement (see Spiers 1993).

CONSUMER SENTIMENT AND PRESIDENTIAL APPROVAL

The effect of consumer confidence upon presidential popularity is reflected in the evaluation of the president's performance, particularly in economic affairs,

which we label an ‘economic approval’ effect. MacKuen, Erikson, and Stimson (1992) found evidence to support this effect; however, they reported that it was consumer expectations about the economic future that determined presidential approval rather than consumer perceptions of current economic conditions.

The difference between the effect of economic conditions on presidential popularity (a structural factor) and the effect of *public perception* of economic conditions on popularity (economic approval rating) becomes important when the public’s view of the health of the economy is not supported by the economic statistics. According to Seymour Martin Lipset, ‘the problem for Bush and for Fair’s [spelling corrected] model was that many people thought conditions were worse than they were. Even if it were true that the recession was not as bad as some previous ones, Americans thought it was the worst they had experienced since World War 2’ (from Patterson 1993, p. 113).

As for the inverse direction (presidential popularity influencing consumer confidence), Page, Shapiro and Dempsey (1987) found that presidents, when popular, appear to have a small but positive effect upon public opinion. Thus, a popular president stands at a ‘bully pulpit’ (p. 115). Of course, Juster reminds us (see Thevanayagam 1993) that a president’s problems may also serve to dampen the public’s enthusiasm.

PRESIDENTIAL APPROVAL AND ECONOMIC NEWS

Concerning the relationship between presidential popularity and the news, Stevenson, Gonzenbach and David (1991) noted that the negative coverage of the economy in their study appeared to grow in direct relation to Bush’s approval ratings over his handling of the Persian Gulf War crisis. They suggest that the press may have turned adversarial eyes towards the economy at a time when Bush was strongly supported on foreign policy. We label this the ‘adversarial press hypothesis’.

Looking at the possible influence of economic news on presidential popularity, it has been noted that changes in presidential approval ratings are highly correlated with the favorability of news stories (Graber 1993, p. 293). Even the mere dominance of economic news stories, regardless of favorability, over other issues in the media may be sufficient to influence presidential popularity. Iyengar and his associates call this process ‘priming’ (see Iyengar and Kinder 1984) whereby the attention paid to some issues rather than others by the media is thought to alter the criteria by which people evaluate politicians.

UNIT ROOT EFFECTS

Finally, it was noted in an early agenda-setting study that the past values of a variable are often its own best predictor. In the Charlotte study of media agenda

setting, Shaw and McCombs (1977) performed a cross-lagged correlation on media content and public opinion at two time periods. While they found evidence of newspaper influence upon subsequent opinion, the largest correlation of all was between the public agenda at time period 1 and time period 2. At .94, this correlation is close to unity, suggesting that the public was more affected by its previously held opinions than by the media. From a time series perspective, this high serial correlation indicates persistence in the data or, in formal terms, the presence of a unit root in the mechanism that generates the time series. Accordingly, in the matrix of effects given in Table 1, hypotheses representing 'unit root effects' are given along the diagonal elements of the matrix. This allows in each case for the possibility that the immediate preceding value of the data may be the dominant element in determining its future.

As is apparent from the above discussion, there are many possible explanations for the observed relationships between economic news coverage, consumer sentiment, the state of the economy and presidential popularity, and many potential interrelationships of interest between these variables. This study sets out to identify the nature and direction of the empirical influences among these variables over the period 1989–93 and to evaluate support in the data for the competing hypotheses summarized in the matrix of effects.

THE DATA

The four variables of interest in this study (economic news, consumer sentiment, the state of the economy, and presidential popularity) can best be regarded as being jointly determined as a vector of stochastic processes. The series are modeled singly in order to isolate their main individual characteristics, and jointly to determine their co-movements and causal dependencies over time. The methods we employ allow for non-stationarities in the data and potential (cointegrating) links between them. The software package COINT 2.0 (see Ouliaris and Phillips 1994) of time series procedures for cointegrating regressions was used for the data analysis.

As a measure of economic news, Recession Headlines were chosen because during a substantial part of the time frame under investigation (February 1989 to July 1993) the recession, prospects of a recession, and recovery from recession were focal points in economic news reports (see also Stevenson *et al.* 1991 for a similar choice of news data). Further, psycholinguistic theories point to the importance of headlines in influencing the retention of subsequent material and the reader's attitudes towards the subject matter (Bock 1978). Recession Headlines data were collected by counting the number of U.S. economy-related headlines containing the word 'recession' that appeared each month in the *New*

York Times. The data were retrieved from the *New York Times* Library of the NEXIS database and constituted a time series of 68 monthly observations covering the period from January 1988 to August 1993. The *New York Times* was chosen because of its position as an elite newspaper and its role as a model for other newspapers (Stevenson *et al.* 1991, Winter and Eyal 1981, Crouse 1972, Neuman 1990, Kinder and Sears 1985) as well as its influence upon television network news coverage (Brown 1971). Compilation of the series revealed the presence of emotive headlines that might well be expected to influence readers' attitudes towards the subject matter, and subsequently affect consumer sentiment: for example, 'Blame Bush for the Recession' (Nov. 3, 1991); 'Drop in Births Reported, and Recession is Blamed' (Nov. 3, 1991); 'Recession and Re-election Don't Mix' (Oct. 9, 1991); 'Helping Children Cope with Recession' (June 30, 1991); 'Who's Afraid of the Big, Bad Recession?' (Dec. 23, 1990); 'What Recession? It's a Depression' (Nov. 29, 1990).

A comparison of the Recession Headline series obtained with that of recession stories collected by Stevenson, Gonzenbach and David (1991) for the July 1988 to February 1991 time frame reveals similar patterns in both series. Each demonstrate a similar take-off point in the number of recession stories/headlines after July of 1990 and peaks in the December 1990–January 1991 period.

The Consumer Sentiment series was drawn from the monthly Index of Consumer Sentiment, conducted by the Survey Research Center at the University of Michigan and based on the answers to five questions (Appendix 1). Our series comprised 68 observations for the time period January 1988 to August 1993.

The aggregate present and prospective state of the economy was represented by the composite measure of the Leading Economic Indicators, issued by the United States Department of Commerce (Appendix 2). The series included 67 observations, from January 1988 to July 1993. The leading indicator series is prospective because it is a composite series of indicators (such as stock prices) that are thought to turn before the aggregate economy. Clearly, there are many other quantitative measures of aggregate economic activity (such as unemployment statistics, interest rates, inflation, aggregate output, the budget deficit, etc.) that could be used to represent the state of the economy. Some of these measures might well be more appropriate in a study that focused on one specific feature or another of the economy, like the labor market or financial sector. We used the leading indicator series because it is an aggregate measure that reflects economic activity as a whole and is prospective or forward looking in the sense that it anticipates general movements in the economy, at least from the point of view of the latest available statistical information. In this latter respect it is a series that might be expected to have a relevant relationship with economic news and consumer sentiment towards the economy.

As noted earlier (Stevenson *et al.* 1991), there is endogeneity in any system

that seeks to explain leading variables and consumer sentiment, because there is a component of the index of consumer sentiment (specifically, the component that measures consumer expectations) that itself appears as a component of the leading economic indicator composite. This means that consumer sentiment and leading indicators share a common element (the index of consumer expectations) and are therefore jointly dependent. Such endogeneity is common in multiple time series analysis. It arises, for example, when one studies aggregate output and its various components like consumption and investment expenditures. An advantage of the vector autoregressive (VAR) methods that we use here is that endogeneities of this type are permitted—all variables in the system are allowed to be jointly determined.

The Presidential Popularity series was based on overall monthly presidential performance ratings (i.e. 'Do you approve or disapprove of the way George Bush is handling his job as President?') obtained from national opinion polls (including Yankelovich Clancy Shulman, CBS/*New York Times*, and Gallup Organization survey houses) and archived at the University of Connecticut Roper Center. The time series covers the period February 1989 to July 1993. This series has a starting date of February 1989 as opposed to January 1988 (used for the other series) in order to give focus to the years of the Bush presidency, which is the main concern for this paper. Analysis revealed that the greatest volatility in the Recession Headlines and Presidential Popularity series occurred during the Bush tenure. Longer data series of presidential approval ratings (in conjunction with our other series) could be analyzed by methods similar to those used here, but should also allow for the possibility of structural breaks between presidential regimes. Such analyses are potentially of great interest but are outside the scope of the present paper.

The time frame (February 1989 to July 1993) for the complete four variable study covers the entire Bush presidency and the first few months of the Clinton administration, providing 54 observations in all. For the Recession Headlines, Consumer Sentiment and Leading Economic Indicator series, earlier observations from January 1988 were included for the individual analyses of these data, but were truncated in the analyses involving presidential popularity, where our focus of attention was the Bush presidency, the 1991 recession, and the slow economic recovery.

ANALYSIS AND RESULTS

FEATURES OF THE INDIVIDUAL SERIES—UNIT ROOTS AND RANDOM WANDERING

First, each series was analyzed to isolate its principal characteristics. Many time series of economic data are non-stationary in the sense that they display secular

growth characteristics (like Gross National Product or Industrial Production), or 'random wandering' behavior (like that of exchange rates and financial prices), characteristics that are also evident in the behavior of leading and coincident economic indicators. Such time series are called stochastically non-stationary in the sense that they have a systematic but random tendency to drift away from any given value over time—in other words, there is no tendency for them to fluctuate around a constant (mean) value as there is when a series is stationary.

To determine whether there is empirical support for such random wandering behavior in our series we conducted several unit root tests. Unit root tests in the econometric literature (see Hamilton 1994, for a recent textbook overview of the subject) include the Phillips (1987) $Z(a)$ and $Z(t)$ tests, and the Said and Dickey (1984) ADF tests. The closer the observed outcome in these tests is to zero, the more likely it is that the time series has a unit root, significantly so if the outcome is closer to zero than the test's critical value.¹

The results of the unit root tests shown in Table 2 reveal that the Leading Indicator series is non-stationary. There is also strong evidence from all these tests that the Consumer Sentiment series and the Presidential Approval series are non-stationary. However, the results show mixed evidence in support of a unit root for the Recession Headline series (two of the tests favor non-stationarity, two do not). This outcome seems to be due to differences in the pattern of observations between the early, middle and latter part of the series. In the early and latter periods the Recession Headlines series appears to be stationary about a fixed mean level, whereas in the intervening period (from July 1990 to the January 1991 period) the series is volatile with no apparent mean level and two dramatic peaks in news headlines. The four series are depicted together in Figure 1. The random wandering characteristic is especially evident in the Presidential Approval and Consumer Sentiment series.

LINKAGES AMONG THE SERIES—CO-MOVEMENT AND COINTEGRATION

Our central hypotheses concern potential links between the series, for example whether presidential popularity influences the number of recession headlines (the adversarial press theory). One way of examining such links is to consider whether the series themselves move together in a meaningful way over time. If the series individually are non-stationary (i.e. wander randomly or have unit

¹ Unit root test procedures have been critiqued in some recent econometric literature. In particular, difficulties of size distortion and low power have been noted by some authors (see Phillips and Perron 1988, Schwert 1987, and DeJong *et al.* 1992). These difficulties are partly alleviated by the use of the data-based procedures we use here to determine lag length (in the construction of the ADF test) and long-run variance parameter in the semi-parametric $Z(a)$ and $Z(t)$ tests—see Andrews (1991), and Lee and Phillips (1994).

TABLE 2 Unit root tests on the series

	<i>Headline</i>	<i>Consumer sentiment</i>	<i>Leading indicators</i>	<i>Presidential approval</i>
Sample size	68	68	67	54
<i>Tests with fixed lag=3</i>				
1. Z(a)	-21.41	-12.73*	-5.49*	-8.92*
2. Z(t)	-3.63	-2.63*	-1.67*	-2.49*
3. ADF	-2.08*	-3.09	-2.10*	-2.49*
<i>Tests with data-based long-run variance estimates^a</i>				
1. Z(a)	-22.25	-13.07*	-5.74*	-9.55*
2. Z(t)	-3.65	-2.64*	-1.69*	-2.31*
<i>ADF test with data-determined lag^b</i>				
ADF	-2.63*	-2.71*	-1.65*	-2.49*

* unit root hypothesis is not rejected at the 5 percent level.

^aZ(a) and Z(t) tests computed with data-based estimates of the lag truncation parameter and a data-based bandwidth in the kernel estimate (see Andrews 1991).

^b ADF test with lag length in the autoregression determined by the Schwarz (1978) criterion BIC.

roots) then any joint behavior or co-movement among them that eliminates the random wandering behavior is known as cointegration between the series. The concept of cointegration was explored by Engle and Granger (1987) and statistical tests for the presence of cointegration have been developed by Phillips and Ouliaris (1990) and Johansen (1988) in the econometrics literature.

We conducted empirical tests for cointegration on our data using some of these recently developed tools. The residual-based test procedure that we employ adopts the approach of Phillips and Ouliaris and proceeds as follows. A regression equation is set up between the variables of interest, designating either variable (like Consumer Sentiment) as the dependent variable but permitting the regressor variables (Recession Headlines, Leading Indicators) to be co-dependent. The effect of cointegration is to reduce the variability of the individual time series so much that the residual in the regression loses the random wandering behavior and is stationary.

Our single equation analyses enable us to focus explicitly on the links between the series that we have identified *a priori* as being of primary interest. To

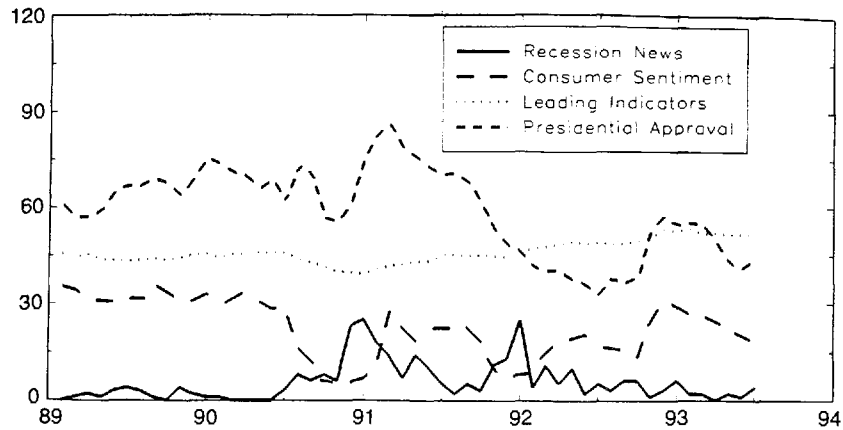


FIGURE 1 Recession Headlines, Consumer Sentiment, Leading Indicators and Presidential Approval: February 89–July 93.

estimate these linkages directly, we use a statistically appropriate regression technique (fully-modified [FM] regression, see Phillips and Hansen 1990) whose results can be analyzed in the same way as conventional least squares regressions. In reporting our regression results below, we use unstandardized *betas*, because non-stationary data do not have fixed population standard deviations to serve as the basis for standardizing the regression coefficients.

In analyzing the relationship between Consumer Sentiment and Recession Headlines, the empirical results show a strong degree of cointegration between the two series, as evidenced by the stationarity of the residual (Table 3). Further, the *beta* coefficients reveal that Recession Headlines are a significant predictor of and have a strong negative impact on Consumer Sentiment ($beta = -1.42$, $t = -4.91$, $p < .05$). Thus, increases in the number of Recession Headlines clearly depress consumer sentiment.

Analysis of Consumer Sentiment and Leading Economic Indicators reveals no co-movement in these two series. The presence of a unit root in the residual suggests that the two series are unrelated in levels. Formally speaking, the regression is spurious (see Granger and Newbold 1974, and Phillips 1986), and the *beta* coefficient (for Leading Indicators) in the regression equation therefore does not have the usual meaning of a regression coefficient.

The third column of Table 3 shows the results of the cointegration analysis for Leading Indicators and Recession Headlines. Both Z tests reveal some evidence of cointegration between these series, whereas the ADF tests are not

TABLE 3 Linkages between headlines, leading indicators and consumer sentiment
Residual-Based Tests for Cointegration

	<i>Headlines and Consumer Sentiment^a</i>	<i>Leading Indicators and Consumer Sentiment^a</i>	<i>Leading Indicators and Headlines^a</i>	<i>Headlines, Leading Indicators and Consumer Sentiment^a</i>
Sample size	68	67	67	67
<i>Tests with fixed lag = 3</i>				
1. Z(a)	-27.41*	-8.55	-22.69*	-38.85*
2. Z(t)	-4.02*	-2.10	-3.85*	-5.11*
3. ADF	-2.45	-2.27	-2.15	-3.34
<i>Tests with data-based long-run variance estimates^b</i>				
1. Z(a)	-22.78*	-7.85	-21.72*	-33.27*
2. Z(t)	-3.70*	-2.01	-3.76*	-4.83*
<i>ADF Test with data- determined lag^c</i>				
ADF	-2.61	-2.11	-2.64	-3.28
<i>FM regression estimates^d</i>				
beta coeff.	91.00 (constant)	155.06 (constant)	20.65 (constant)	139.72 (constant)
t-ratios (in brackets)	(42.19)	(3.04)	(0.31)	(9.01)
	-1.42* (head.) (-4.91)*	-1.56 (lead. ind.) (-1.39)	-0.11 (lead. ind.) (-0.24)	-1.62* (head.) (-8.17)* -1.05* (lead ind.) (-3.13)*

^a dependent variable.

^b cointegration hypothesis 'accepted' at the 5 per cent level.

^c Z(a) and Z(t) tests computed with data-based estimates of the lag truncation parameter and a data-based bandwidth in the kernel estimate (see Andrews 1991).

^d ADF test with lag length in the autoregression determined by the Schwarz (1978) criterion BIC.

^e Fully modified (FM) least squares regression—see Phillips and Hansen (1990).

significant. The sign of the regression estimates shows that improvements in the Leading Indicator series depress the number of recession headlines, as would be anticipated, but the relationship is not significant.

Next, Consumer Sentiment was regressed on both the Recession Headlines and Leading Indicators series (Table 3, fourth column). The results of this regression show that Recession Headlines ($\beta = -1.62$, $t = -8.17$, $p < .05$) remain a highly significant predictor of Consumer Sentiment over and above any influence of Leading Indicators. Interestingly, Leading Indicators are also marginally significant in this regression, but have the wrong sign ($\beta = -1.05$, $t = -3.13$, $p < .05$). This outcome accords with the spurious relationship found in the bivariate regression between Consumer Sentiment and Leading Indicators over this time period, as discussed above.

To sum up, Recession Headlines turns out to be the key variable in both two-variable and three-variable cointegrating relationships between Consumer Sentiment, Recession Headlines and Leading Indicators, offering preliminary support for the powerful effects model of media influence. There is no evidence of a direct relationship between Consumer Sentiment and Leading Indicators, or between Leading Indicators and Recession Headlines.

Turning now to the Presidential Approval series, results of the cointegration tests reveal little evidence of cointegration between Presidential Approval and the Leading Indicator series. While the regression equation itself indicates that the Leading Indicator series may have a strong negative influence upon presidential popularity ($\beta = -2.49$, $t = -9.24$, $p < .05$), the absence of comovement between the two series cautions us that this effect is spurious. There is also no evidence for cointegration between the Presidential Approval and Consumer Sentiment series.

Finally, analysis of the Presidential Approval and Headlines series reveals some evidence for cointegration between these two series, offering preliminary support for either the adversarial press theory or the priming effect. But results from the two-variable regression do not yet confirm a strong relationship ($\beta = .08$, $t = .70$, $p > .05$).

LINKAGES OVER TIME—CAUSALITY AND VECTOR AUTOREGRESSION

To explore linkages between the series over time and potential causal influences, we fitted several vector autoregressions (VAR) to the time series. VAR's allow for temporal dependence within and across different series as well as comovement over time of the type we would expect to occur for cointegrated series. VAR's also provide a natural framework for conducting causality tests to determine whether one series, such as consumer sentiment, is better predicted

using the recent history of other series, like recession headlines, than it is using only its own past history.

It has been widely recognized that there are difficulties of interpretation with respect to such tests. Specifically, the tests focus on predictability rather than causality *per se*, as our discussion has emphasized. However, predictability is one of our own major interests in this study, e.g. is there a media effect (powerful effects model) upon consumer sentiment? Clearly, the process by which such an effect takes place and the nature of the causal influence is complex at the general aggregate level and certainly varies substantially even at the individual level. It would be naive to suppose that these manifold influences could be captured by a mechanism as simplistic as a VAR. However, as stressed above, our purpose is not to disentangle the complexity of the causal process itself, merely to determine whether such an influence takes place or not. And this can indeed be done through the mechanism of a causality test in a VAR.

We commence our analysis of causal effects with bivariate VAR's for Recession Headlines and Consumer Sentiment, and Leading Indicators and Consumer Sentiment respectively. The results are presented in Table 4. Wald tests were constructed to test the hypothesis of non-causality in the VAR's, allowing for lag lengths in the autoregression from 1-4 lags. As the asymptotic chi-squared critical values may not be very satisfactory at longer lengths than this (due to the small number of observations in the series), only 4 lags are reported. The table gives the results of this test at the various lag lengths for the following effects: Recession Headlines on Consumer Sentiment, Consumer Sentiment on Recession Headlines, and Leading Indicators on Consumer Sentiment. The results show empirical support at all lag lengths for the powerful-effects model of media influence: recession headlines are a significant prior influence on the determination of consumer sentiment after allowing for the past history of that series itself. There does not seem to be a strong influence in the other direction, i.e. of Consumer Sentiment on Recession Headlines, which represents the consumer-driven reporting theory—the Wald tests are only marginally significant at the 5 percent level only for lag 1.

The last column of Table 4 gives the results for the bivariate VAR of Leading Indicators and Consumer Sentiment. These show no evidence of causal influence of Leading Indicators on Consumer Sentiment, as would be predicted by the Katonian hypothesis, except in the case of the VAR at lag 2. Overall, the powerful-effects model of media influence as revealed by the impact of Recession Headlines on Consumer Sentiment appears the dominant influence.

Next trivariate VAR causality tests involving Recession Headlines, Leading Indicators, and Consumer Sentiment were conducted. We examined the effect of Recession Headlines on Consumer Sentiment controlling for Leading Indicators, the effect of Consumer Sentiment on Headlines controlling for Leading

TABLE 4 Linkages between headlines, economic indicators and consumer sentiment

Bivariate tests for causality (Wald tests)

<i>Lag</i>	<i>Chi-squared Critical Value</i>	<i>Effect of Headlines on Consumer Sentiment</i>	<i>Effect of Consumer Sentiment on Headlines</i>	<i>Effect of Leading Indicators on Consumer Sentiment</i>
1.00	3.841	4.11*	3.87*	1.02
2.00	5.991	8.74*	4.48	6.70*
3.00	7.815	9.41*	5.31	6.63
4.00	9.488	15.69*	8.82	8.80

* significant at the 5 percent level.

Indicators, and the effect of Leading Indicators on Consumer Sentiment controlling for Headlines. Since the causality tests that examine these effects are conducted in a trivariate system, in every case we are in effect controlling for the past influences of the third variable. For instance, in assessing the causal influence of Recession Headlines on Leading Indicators, we are controlling for the effects of the past history of Consumer Sentiment because lags of Consumer Sentiment appear in the regression equation for Leading Indicators in the VAR. Of all of these tests, only those of Recession Headlines on Consumer Sentiment (while controlling for Leading Indicators) are significant at the 5 percent level (for lags 2 and 4). These results offer additional evidence in support of the powerful-effects model of media influence on consumer sentiment and are entirely consistent with the outcome of the causality tests in the bivariate VAR, where no attempt was made to control for the third variable (in this case the economy itself, via the Leading Indicator variable).

We also examined the effect of Recession Headlines on Leading Indicators controlling for Consumer Sentiment, and Leading Indicators on Headlines controlling for Consumer Sentiment. Results show no evidence for causal effects in either case, thus lending no support for the media malady hypothesis, nor the event-driven reporting hypothesis.

Causal tests in either direction between Leading Indicators and Presidential Popularity show no evidence for a causal effect in either direction. Thus both the structural factor hypothesis and the bandwagon effect are rejected. Similarly, causality tests between Headlines and Presidential Popularity show no evidence for a causal effect. However, our earlier tests indicated that these two series were cointegrated. Therefore causal tests were conducted again on these series in the context of a trivariate VAR which controlled for a third variable, Leading Indicators. The results show evidence of a causal relationship: Presidential

Popularity appears to have a determining effect at every lag on the number of Recession Headlines when controlling for Leading Indicators, thus lending support to the adversarial press theory.

DISCUSSION

Our conclusion is that there is evidence of a causal influence of headline recession news upon consumer sentiment over the time frame of this study. This causal effect appears to be robust to different lag settings in the vector autoregression itself and to the presence or absence of the third variable, i.e. the present and prospective state of the economy, as represented by the Leading Indicators series. There is some evidence (at the first lag) of effects in the other direction, i.e. from consumer sentiment to headlines, so that recession headlines do appear to have been somewhat influenced by consumer-driven reporting. Overall, however, the powerful-effects media model is the dominant one. In effect, growing numbers of headlines referring to the recession appear to have had a depressing effect upon consumer sentiment.

The actual state of the economy as represented by the Index of Leading Indicators does not appear to have influenced consumer sentiment, suggesting that consumers were not forming their impressions of the state of the economy through unmediated (direct) experience. And, as consumer sentiment is not related to the state of the economy (in the sense of the two series being cointegrated), the Katonian hypothesis (wherein consumer sentiment is seen as a dominant influence on the economy) is not supported.

Further, recession headlines are not related to the actual state of the economy over the period of the study. This suggests that the trend in negative recession coverage during this period was not a reflection of the true state of the economy (as measured by the leading economic indicators) and may have contributed to an excessively pessimistic consumer sentiment. But, there is no evidence that the prolonged number of recession headlines had a negative impact on the state of the economy, thus refuting the 'media malady' argument.

Tests on the relationship between the state of the economy and presidential popularity revealed an apparently spurious relationship, i.e. a sluggish economy appeared to coincide with boosted presidential ratings. These results are not consistent with the role the economy plays as a structural factor in presidential popularity, nor the bandwagon effect of a popular president on the state of the economy. Within the time period of our study, President Bush's overall ratings were substantially increased, due to public approval of his handling of the Persian Gulf crisis. It is extremely likely that this 'foreign policy' effect operated as an additional variable, offsetting the expected downward impact of an economy perceived by the public to be in a state of serious recession. A full investigation

of this effect would require the presence of a fifth variable in the VAR analysis and longer data series to accommodate the additional variable, but would be a valuable extension to this line of enquiry for future research.

As for the relationship between presidential popularity and consumer sentiment, there is no evidence, at least in this time period, to support the bully pulpit hypothesis (e.g. where a popular president heightens consumer sentiment), or the economic approval effect (where presidential popularity is influenced by consumer sentiment).

However, there was strong evidence of a causal effect of presidential popularity on recession headlines when controlling for real world economic conditions. Growing numbers of recession headlines appeared to be better predicted by Bush's increasing popularity (and diminishing numbers by his faltering popularity) rather than the actual state of the economy. This offers the first empirical support for the conjecture by Stevenson, Gonzenbach and David (1991), based on their time series data, of an adversarial press during the Bush tenure, specifically during the time of the Persian Gulf crisis.

As we have indicated earlier, it seems worthwhile to extend the statistical analysis here to longer data sets that allow for different presidential regimes and periods of economic expansion as well as recession. Longer time series make it possible to include additional variables that seem important (e.g. foreign policy effects on presidential popularity) and to perform level-break analyses between presidential regimes. We hope to pursue such extensions in later work.

As it was our purpose to extend research reported by Stevenson, Gonzenbach and David (1991), only economic news reported by the *New York Times* was used in this study. Which media outlet, print or television, is more influential has long been the subject of debate. While many earlier studies reported newspapers to have stronger effects than television (McCombs and Shaw 1972, Benton and Frazier 1976, Eyal 1979, McCombs 1977, Patterson and McClure 1976, Weaver 1977), recent scholars argue that television deserves more thorough investigation. For example, the case for studying television is argued by Iyengar and Kinder (1987, pp. 1–2) as follows: 'Our purpose here is to establish that television news is in fact an educator virtually without peer, that it shapes the American public's conception of political life in pervasive ways; that television news is news that matters'. In the light of our findings, we would strongly advocate a future examination of broadcast economic news reporting and its interrelationship with consumer sentiment, the state of the economy, and presidential approval.

Over and above shedding light on the possible economic and political consequences of negative economic news reporting, it is hoped that the empirical results given here demonstrate the potential usefulness of statistical tools that are now available to us from the field of econometrics. These techniques seem

well suited to analyzing data sets with the time series characteristics that are common to many topics of enquiry in the field of communication research.

APPENDIX 1 INDEX OF CONSUMER SENTIMENT

SURVEY RESEARCH CENTER, UNIVERSITY OF MICHIGAN

1. Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?
2. Now looking ahead—do you think that a year from now you (and your family living there) will be better off financially, or worse off, or just about the same as now?
3. Now turning to business conditions in the country as a whole—do you think that during the next 12 months we'll have good times financially, or bad times or what?
4. Looking ahead, which would you say is more likely—that in the country as a whole we'll have continuous good times during the next 5 years or so, or that we will have periods of widespread unemployment or depression, or what?
5. Generally speaking, do you think now is a good or a bad time for people to buy major household items?

Source: Curtin (1982).

APPENDIX 2 COMPONENTS OF THE U.S. DEPARTMENT OF COMMERCE'S LEADING ECONOMIC INDICATORS

1. Average weekly hours, manufacturing.
2. Average weekly initial claims for unemployment.
3. New order, consumer goods and materials.
4. Vendor performance.
5. Contracts and orders for plant and equipment.
6. Building permits.
7. Change in unfilled orders, durable goods.
8. Change in sensitive materials prices.
9. Stock prices.
10. Money supply.
11. Index of consumer expectations.

Source: *Business Conditions Digest*.

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