

# Presidential Signaling in a Market Economy

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*Presidential leadership of the economy is vital to presidential success. Although research supports some presidential influence over the economy, consensus holds that presidents do not affect it consistently. Nevertheless, scholars have not examined the impact of the president's public statements on the economy. From signaling and anticipative reactions theories, I develop expectations for when presidential signals should affect the marketplace. I use impact assessment methodology to test this argument across three dependent variables: the daily price of oil, the daily yield on the thirty-year Treasury bill, and monthly measures of the money supply. Signals tend to influence the market in the short term given the president's unitary authority and his credibility to affect the economy.*

The state of the economy is of vast importance to American politics. Election outcomes, policy adoption, and implementation are inextricably tied to it. Economic prosperity is also crucial to a president's political success. The public expects the president to provide the good life, as presidents are called upon to assure consumers in times of economic strife and encourage continued growth when the economy is strong. More often than not, the president will not be reelected when the country is mired in recession.

Despite high public expectations about presidential leadership and economic prosperity, political scientists do not resoundingly endorse presidential influence over monetary policy, fiscal policy, or the business cycle. Beck (1987) and Grier (1989) provide conflicting accounts of the propensity for presidential influence over a purported monetary cycle (see Williams 1990), while Morris (2001) maintains that presidents have some leverage over the Federal Reserve Board when Congress is part of the analysis. The existence of partisan economic cycles in macroeconomic policy and the probability of an electoral cycle in fiscal policy suggest some influence over the economy (see Alesina and Roubini with Cohen 1997; Hibbs 1977; Keech 1995). Yet the president's influence over

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fiscal policy is limited because he must deal with Congress (Bond and Fleisher 1990) and most budgetary money is already allocated to entitlements and deficit-related spending cuts. Although the political business cycle thesis (Nordhaus 1975; Tufte 1978) holds that presidents use their authority to improve the economy prior to Election Day, the empirical evidence confirms that presidents have little consistent and direct impact on the economy (Golden and Poterba 1980; but see Laney and Willett 1983; Mayer 1991, 1995). Business cycles, multinational corporations, and a lack of unitary control over economic policy making mean that presidents cannot typically affect economic indicators crucial to their own political fortunes.

At the same time, presidents have a strong electoral incentive to govern over a prosperous economy (Campbell 2000), speeches typically increase the president's public standing (Ragsdale 1984, 1987), and economic talk is central to economic growth in a market economy (McCloskey and Klamer 1995). Because the presidency and economy literature has heretofore neglected one of the president's potentially most effective tools of leadership—his public speeches—on the state of the economy, we should not discount the potential for presidential influence over the economy. After all, “the invisible hand may very well be rhetorically shaped” by presidents (Kiewe and Houck 1991, 232). By some accounts, over half of the gross domestic product of the United States is attributable to “talk” alone (McCloskey and Klamer 1995, 193).

This article contributes several points to the presidency and economy literature. It first adds a new wrinkle to presidential influence over the economy, the impact that presidential speeches have on the marketplace. Presidential signaling theory holds that the market anticipates the president's future actions based on his publicly stated signals on the economy. Presidents should influence market outcomes when two conditions are met: (1) presidents have unilateral authority to act; and (2) they have credibility on economic issues. In addition, signals should only elicit a short-term response from the marketplace. I examine three distinct economic events—one during George H. W. Bush's presidency, and two during the Clinton years—to assess whether a president's signals affect the economy. If the president's signals, not these economic events, had a significant impact on market indicators, then we can infer that presidential signals affect the economy.

## Signaling Theory and the Economy

Scholars have long recognized the importance of speeches to the president's governing strategy (Kernell 1997). Yet, we do not have a theory of how presidents might influence the economy directly through their rhetoric (but see Wood, Owens, and Durham 2005).<sup>1</sup> I attempt to remedy this deficiency by borrowing from cue and antic-

1. Theories do exist on the president's speeches and their impact in Congress. Besides Kernell's (1997) “going public” theory, Canes-Wrone (2001) offers a formal model that suggests presidents will be more successful in Congress by increasing the salience of an issue. The threat of setting the public's agenda also benefits the president vis-à-vis Congress. When presidents do not want legislators to become more responsive to their constituents, however, presidents do not achieve policy success.

ipative reactions theories. I argue that presidential speeches are signals that inform the marketplace of the president's economic policy preferences. The market responds to these signals by anticipating the president's actions relative to his economic authority.

### Signals, Information, and Persuasion

Signals are bits of information—cues or any other intended or unintended communication—that individuals use to inform their decisions (see Matthews and Stimson 1975, 51). Signals or cues, so long as they are accessible and relevant to the decision maker, are useful sources of information for boundedly rational individuals who rely on mental short cuts to make consistent decisions on complex issues without having complete information (Mondak 1993, 189; Spence 1974; Zaller 1992). Because uncertainty may hamper the effectiveness of signals, the signal should originate from an actor who has a legitimate right to send and act on his or her signals (Matthews and Stimson 1975, 80; Neustadt 1990) and who is known for past reliability (see Krehbiel 1991; Matthews and Stimson 1975, 50). Legislators (Kingdon 1981; Matthews and Stimson 1975) and individuals in the marketplace (Spence 1974) routinely use signals to process vast amounts of information regarding decisions about public policy or whether to buy or sell, invest or save, hire or fire.

Of course, the information contained within a signal alone is insufficient to induce responsiveness by individuals. The market, or any other entity, will not always respond *carte blanche* to a signaler simply because he or she has conveyed some amount of information. Both the individual signaler, including his persuasive capacity, and the contextual environment affect the likelihood that a signal will be heard by, embraced, and used by an individual in the marketplace. Context influences perceptions, which also influence the effectiveness of a signal (see Mutz, Sniderman, and Brody 1996). A CEO who signals, for example, that his company will exceed profit expectations when broader economic indicators show that his sector is on pace for a long-term decline, will likely not be convincing to stockholders. The source of the message also has an impact, as one speaker who imputes the same information may elicit a different response than another speaker who says the same things (Kuklinski and Hurley 1994). These factors may relate, whereby context can influence the market's perception of the source.

Signals have the potential to affect the economy because it is influenced not only by production and manufacturing, but also by words. Words, by their nature, are open to and require interpretation. Because of this, words or "talk" that are persuasive should be more likely to affect economic activity than words that are not persuasive. To encourage responsiveness, "the successful politician must translate his/her economic philosophy into words; more specifically, words that are persuasive" (Kiewe and Houck 1991, 3); the president's signals must ultimately be persuasive to affect the marketplace.

### Applying Signaling Theory to the Presidency and the Economy

Signaling theory is premised on the idea that presidents have the authority to affect political and economic reality through their speeches. For presidents to influence the

economy through speeches, they must inform others of their economic policy preferences and be recognized as an authority on the economy. Although information alone is insufficient to elicit market responsiveness, there are several reasons why presidents will signal, and why market actors may respond to them.

Presidents use their public speeches to secure policy, reelection, and historical goals. Presidents are wise to use speeches that they make to achieve these goals to try to also affect the market given the centrality of the state of the economy to the president's power. Because the president has a vested interest in making sure that Americans prosper, it is paramount that he communicate his preferences to legislators, bureaucrats, the public, *and the market*. If the president can influence the marketplace, he may be able to affect the economy, possibly improving it and his chances for reelection.

In some ways, presidents do not have a choice whether or not they speak about the economy. They must meet public expectations, and the public counts on economic growth and expects the president to deliver it. If a president fails to address the economy, especially when it is in decline (Eshbaugh-Soha and Peake 2005), he may be judged as an inept economic manager, hurting his chances for reelection. Presidents face electoral defeat if they cannot deliver a strong economy, as was the case for Jimmy Carter in 1980 and George Bush in 1992.

The market may respond to presidential signals for several reasons. First, the president's political success is tied to the economy. The market knows this, so when the president signals his intention to deliver one, the market may respond because it may also prefer a strong economy. Second, the president's position in government confers on him the legitimacy to do what will benefit the economy. Cue theory dictates that signals are likely to be used when sent by an individual who has a legitimate right to send them. Because presidents are legitimate leaders of the economy, the market should respond to their signals.

The president's formal tools of influence enhance his legitimacy over the economy. He submits a yearly budget to Congress, whether to increase spending, decrease taxes, or reduce the budget deficit. Presidents have the authority to appoint and remove members of the Federal Reserve Board. In addition, they lead economic policy by setting administrative goals through the *Economic Report of the President*. Although often not sufficient to control the economy, presidential powers over the economy are considerable (Weatherford 1988, 116).

At base, the president's formal tools that he may use to influence economic policy confer on him the power to affect the economy. Because the market is driven by anticipative reactions<sup>2</sup> (see Lucas and Sargent 1981), of course, the market may respond to the president's signals instead of his policy *actions*. Budgets and appointments allow the president to act on his preferences, but signals inform the marketplace of the president's *stated and public intentions*, prior to action. If conditions that encourage responsiveness to presidential signals are present, when the president finally acts on his signals, the market will have already reacted to the president's economic policy preferences. The president's

2. I assume that this is fairly widely accepted. But by way of example, the market responds to reports on earnings reports or unemployment rates before they are official.

signals may therefore affect the direction of the marketplace, and reward or punish different economic sectors,<sup>3</sup> so long as they are persuasive.

Scholars have long echoed Neustadt's (1990, 30) claim that "the essence of a President's persuasive task is to convince (people of shared authority) that what the White House wants of them is what they ought to do for their sake and on their authority." By definition, a rhetorical act—a presidential signal—is a purposeful attempt at persuasion (Kiewe and Houck 1991). Thus, presidents signal their economic preferences to try to convince others of the merits of their position and move them to accept his preferences. But why might presidential signals be persuasive? Neustadt (1990, 18-23) outlines five conditions that help presidents encourage compliance from others: (1) an actor must realize that the president has spoken, (2) the president's request must be clear in meaning, (3) it must be associated with publicity, (4) the president must have the legitimate ability to carry out the request, and (5) compliance with a president's position is enhanced when there is "the sense that what he wants is his by right." Conveniently, three of these conditions of presidential influence are met by the nature of signals: presidential signals are informative (condition 1), clear (condition 2), and covered by the media (condition 3). Because signals may help presidents encourage compliance, those who need information from the president may respond to signals.<sup>4</sup> After all, language itself may motivate individuals to act (Graber 1987).

Presidential signals are most likely to be persuasive—the market is most likely to respond to the president's signals—when it has a reason to trust or believe in the president. A president who has presided over a strong economy or who is believed to be able to deliver one is a credible or trustworthy signaler. Because an anticipative reactions-signaling model requires the signal user to anticipate what the signaler will do—and whether he or she can actually do it—the signal user's perception of the authority behind the signal and the credibility of the signaler is vital to a signal's effectiveness. The signal user is just as important to the effectiveness of presidential signals as the sender of signals, the president, himself.<sup>5</sup> Indeed, it is the signal user who ultimately determines, in the words of Neustadt (1990, 23), whether what the president wants is "his by right" and whether the president will receive what he wants.

Limited research shows indeed that presidential rhetoric can have an impact on the economy. The tone of presidential rhetoric "Granger causes" changes in consumer senti-

3. A relevant anecdote involves Microsoft's support of George W. Bush during the 2000 election campaign. The Justice Department under the Clinton-Gore administration investigated Microsoft for monopoly dominance of the Internet software market. A change in administration, as Bill Gates foresaw, would mean a change in Justice Department personnel, and different preferences on technology and the marketplace. A new president meant less pressure on Microsoft to change its operating practices.

4. There is the possibility that presidents may dissemble and send a noninformative signal to the marketplace. Much like Peterson (1990), who demonstrates that presidential preferences are genuine and honest, I also assume that presidents signal their honest preferences to the market. Recent scholarship that models formally bargaining (Groseclose and McCarty 2001) and leadership (Canes-Wrone, Herron, and Shotts 2001) considers situations under which presidents may act strategically or pander to the public for primarily electoral reasons.

5. Whereas the standard model of communication and persuasion (even dominating fairly recent volumes on communication, such as Mutz, Sniderman, and Brody 1996) is one of sender → message → message receiver, including the concept of credibility, trust, or the importance of the signal user's perception of the signaler produces a slightly more complex model.

ment (see Wood, Owens, and Durham 2005). This effect is possible in part because economic talk is central to economic growth in a market economy (McCloskey and Klammer 1995). Moreover, language is a stimulus for action (Graber 1987): we expect effective signals, rhetoric, or speeches to elicit a response from the listener.

### Conditions for Signaling Effectiveness

Signals may be influential because they typically meet Neustadt's conditions for ensuring compliance, economic talk is pervasive in a market economy, and language is typically a stimulus for action. Yet success ultimately hinges on whether or not the president is persuasive, whether he can act legitimately on his preferences, and whether his audience finds him credible. If the president signals to the market that he will lower interest rates to boost spending, the market knows that the president cannot act on this request and will, therefore, not react to the president's signals. If the president, on the other hand, signals that he will appoint a new director of the Federal Reserve Board who prefers low interest rates, then the market might respond to the president's signals in anticipation of the new director's policy. The president must be able to act on his signals for the market to respond to them, and the market must believe or know that the president has the power to do so.<sup>6</sup>

In some instances, presidents have the authority to respond immediately and unilaterally to economic problems. In other situations, presidents must wait for congressional adoption or bureaucratic implementation for a change in policy. Referring again to Neustadt, presidential signals may only be effective when presidents have the authority to act on clearly communicated preferences; this is when the president is most likely to be "persuasive." The president's legitimacy as leader of the economy is only symbolic unless he has the authority to affect the economy. Thus, *presidents who have the formal authority to act unitarily on their economic policy signals are more likely to elicit a market response than those presidents who cannot act unilaterally or constitutionally to fulfill their promises.* The complexities of bargaining between the president and Congress, as Groseclose and McCarty (2001) show, should exacerbate the difficulties presidents have effecting a change in the marketplace when congressional action is required on their policy proposals.

The president's authority and ability to affect policy is also contingent upon the president's credibility. Individuals in the marketplace must believe that the president will act on his signals (see Drazen 2000, ch. 6). A president who has the constitutional and unitary authority to affect economic policy but has presided over a poor economy, made poor economic policy decisions in the past, or has demonstrated an

6. Again, the market responds this way—to the president's signals, not his policy actions—because the market anticipates what will happen once the policy action is taken. Clearly, presidential policy is the actions taken, even though the signal announces the policy. If nothing takes place, the market may still have reacted (making a mistake in judgment or calculation, as often happens regarding earnings reports, etc.), but would later readjust its assessment of the economy or market after the president reveals his inability to deliver on his signals. Assessing this is beyond the scope of this article, but naturally, the president's credibility would be hurt if a signal did not lead to policy action, and hurt the effectiveness of future signals to the marketplace.

unwillingness to act on his signals, is not likely to have a substantial impact on the marketplace. Moreover, market actors can use the president's current condition (high approval, reelection year, etc.) to assess whether the president's signals are credible, that is, whether the president can act politically on his signals. Typically, cues sent by presidents with high levels of public support are more influential than those sent by unpopular presidents (Mondak et al. 2004). Thus, *the market is more likely to respond to signals from a president who has high credibility in the marketplace than a president who has little credibility.*

### Short-Term Effects

The economy is composed of myriad actors buying and selling commodities. The decisions these individuals make influence the cost of products, corporation dividends, and investment returns. It is foolish to argue that the president is the only actor who can influence these decisions and outcomes. More accurately, the president is one of many factors that could affect economic outputs. This abundance of influences on the market means that the market is most likely to respond to presidents in the short term. Why? When the president signals his preferences to the market, it is aware of the president's preferences. As time goes on, the market is inundated with other signals and information. The further the time from the president's signal, therefore, the more likely the market will use other information. The market itself is a product of short-term forces (even though the market has some long-term indicators, such as the thirty-year Treasury yield), and is most likely to respond to (or anticipate) recent economic news. Simply enough, the stock market reacts to unemployment numbers the day they are released (or has anticipated the numbers and reacted to them prior to release), not two to three weeks later. The market should react similarly to the president's signals. Thus, *the president's signals are more likely to affect the market in the short than long term.*<sup>7</sup>

### Case Selection

I have selected three cases with which to test the impact that presidential signals have on the marketplace using the following three criteria. First, although presidents regularly propose economic growth packages, they do not always send clear, measurable signals to the marketplace. Because of this, I used cases in which the president sent a clear message of his preferences and intentions to the marketplace. Second, the economy is vital to a president's reelection chances and continued public support after being elected to office. To account for this, I analyze three cases that occurred either during or right after a presidential election campaign. Third, data availability was an issue. I could

7. Naturally, testing the long-term effects would complicate this article. If, for example, the president signals but does not follow through, this decreases the likelihood that the market will respond to the president's signals in the future. This is a common theme in information signaling models, whereby an actor who reneges on his or her promises will be less credible and trustworthy on future actions. This reduces the effectiveness of future signals because the signaler cannot be counted on to act.

analyze only those signals that could be associated with a quantitative measure of economic performance. After scanning the last few decades of presidential speeches, I have selected three cases to test my hypotheses.<sup>8</sup>

Two cases from the Clinton administration provide contrasting potential for signaling influence. The first, a clear instance of a president communicating with the marketplace, involves the release of oil from the strategic reserves during an election year. Amid heated debate between presidential candidates Al Gore and George W. Bush about skyrocketing energy prices in the northeastern United States, Bill Clinton seized an opportunity to possibly lower oil prices and help his vice president politically. On September 23, 2000, President Bill Clinton signaled in a public speech that he had ordered the energy secretary to release thirty million gallons of oil from the strategic petroleum reserves over thirty days.

The second case from the Clinton administration involved his first-year efforts to stimulate a sluggish economy and fulfill his campaign promises. During his first national address to the American public, Bill Clinton advocated an upper-class tax hike to combat the rising federal deficit and its crippling impact on the federal government's ability to solve tough and expensive policy problems. Issued on the advice of Alan Greenspan (Woodward 1994, 69), this move signaled to the bond market that the government was intent on deficit reduction. Demonstrating the administration's seriousness about deficit reduction would, according to Greenspan, encourage a decline in the yield on thirty-year Treasury bonds, invigorate the economy, and encourage long-term growth. Accordingly, Clinton sent a signal to the bond market, long-term interest rates declined, and the United States witnessed an extended period of unparalleled expansion.

Finally, I examine the first Bush administration's failed attempts to deal with a sliding economy and resurrect a fledgling reelection campaign. Mired in accusations and the perception that he was doing nothing about a stumbling U.S. economy, President Bush attempted to improve the economy during January 1992 in two ways: releasing money from the federal treasury and changing withholding tax tables (see Appendix, Table A1). With the release of a substantial amount of federal money, an increase in the money supply should have resulted.

These cases are limited in that they represent only a handful of signaling events on the part of presidents and economic policy. Nevertheless, they illustrate broad variation on presidential influence, signaling strategy, and credibility. These cases demonstrate variability by divided and unified government, short- and long-term strategies, and presidential credibility. They control for different points in the president's tenure and examine both Democratic and Republican presidents.

8. Other test cases include Ford's tax increase, then tax cut, Reagan's tax cut in 1981, and George W. Bush's signals that his administration was serious about corporate corruption and improving investor confidence in corporate accounting practices. Testing these cases is beyond the scope of this project, but should be tested in future research on this subject. Preliminary analysis of the effects of Reagan's 1981 tax cut speeches on the daily change in the Dow Jones Industrial average and on the thirteen-week Treasury bill prove ineffective.

## Data and Methods

I use three dependent variables to ascertain whether or not presidential signals have an impact on the economy: the daily price of oil, the yield on thirty-year Treasury bills, and the M1 money supply. Impact assessment models help determine whether presidential signals affected these market indicators.

### Daily Price of Oil

President Clinton ordered the release of strategic oil reserves in September 2000. To determine what impact this had on the price of oil, I examine two standard market prices for oil: Cushing and European. The European or “Brent” price is the spot price for North Sea crude oil and Cushing (named for Cushing, Oklahoma) oil is the spot price in the United States. I selected these prices to compare any geographical discrepancies in oil prices.

### Yield on Thirty-Year Treasury Bills

The market reports the yield on thirty-year Treasury bills daily. This measure is simply the yield that an investor would receive on his or her investment in thirty-year Treasury bills. The general rule of thumb is that when the yield goes up, the price goes down. The yield is also a measure of long-term interest rates, and it is my indicator of how the bond market may have responded to deficit reduction efforts on the part of the Clinton administration (Woodward 1994).

### Money Supply

M1 money growth is typically considered the “money supply.” The Fed ranks money supply by its liquidity, with M1 as the most and M3 as the lowest level of liquidity. M1 money supply includes money, such as currency or traveler’s checks, and is used to carry out financial transactions (Frendreis and Tatalovich 1994, 120). This is also the measure that has been used to assess the existence of a political monetary cycle (see Beck 1987; Grier 1989).

### Presidential Signals

The president’s signals are a one-time event. As a result, each speech that should have an impact on the market is coded as a pulse function. When presidents indicate an economic policy position, such as their intention to release strategic oil reserves or raise taxes to cut the federal deficit, they signal their preferences to the market. The pulse functions of the president’s signals are coded one on the day (or month) when the president made his announcement, and zero for all other days (or months). President Clinton signaled the release of oil on September 23, 2000. He signaled his intention to reduce the federal deficit—sending a signal to the bond market—on February 15, 1993. Finally,

President Bush's signal is a pulse for the month, not the day, in which he signaled federal funds releases to increase the money supply because only monthly data exist for the money supply.

Market forces may also have had an impact on the price of oil, the thirty-year Treasury yield, and the money supply. For models with daily data, I code market forces as a step function: a one for each day before the substantiation of the signal. Market forces for the price of oil are coded as a step function from October 24, 2000 until the end of the thirty-day period when the release would be completed, November 24, 2000.<sup>9</sup> For the thirty-year Treasury yields, market or long-term forces are modeled as a step function from February 15, 1993 until August 3, 1993, when the House of Representatives voted in favor of Clinton's fiscal 1994 budget and his deficit reduction package. Because interval measures of economic indicators are available by month, I also control for interest rates (the monthly prime rate) and personal income, two variables that Grier (1989) demonstrates are relevant to the explanation of M1 money supply. Both of these variables are "market forces" that should affect the money supply.

### Credibility

Credibility is theoretically required for presidential signals to affect the marketplace. In 1992, Bush had little credibility on the economy. He presided over an economy in recession, the public thought that he was out of touch with their economic problems, and he received little support from Congress for his economic plan. Bill Clinton was not credible at the beginning of his term because he advocated spending cuts as a Democrat (Democrats had a reputation for increasing, not decreasing, spending). After presiding over one of the most robust and continuous economic expansions of this century, Clinton had substantial credibility on the economy at the end of his second term.

Data limitations preclude an accurate portrayal of credibility in the daily models below.<sup>10</sup> For the purposes of this article, therefore, I assess the president's credibility based on his public support in handling the economy at the time of his signal: if he has over 55 percent approval, then the president had "credibility" on the economy. Clinton was not credible in 1993; he was credible in 2000. Although monthly economic approval data are not consistently available before and after Bush's 1992 signal, general approval

9. Although President Clinton implies in his September 23 signal that the release of oil was to begin immediately, about one month passed before any oil was released from the reserves. According to Department of Energy memos, the DOE requested bids from private companies to exchange the oil in the reserves with a future restocking of the oil to occur in 2001. Once bids were fulfilled, the DOE had companies to whom it could release the oil, increasing market supplies of oil over an additional thirty days.

10. Daily data are not conducive to modeling credibility—as approval—in any conventional way. Nevertheless, I ran the Daily Yield model with dummy variables for credibility: when the president is seen as improving the economy (as 55 percent [or above] support on the president's handling of the economy) he is "credible" (coded as one); a value below that threshold means that the president is not credible (coded as zero). The variable was neither statistically significant nor substantively influential. I am precluded from using this technique in the Price of Oil model, as doing so produces a "singular matrix" because Clinton is "credible" throughout his second term. The monthly, money supply model introduces additional problems. First, economic approval data are unavailable consistently prior to 1995. Second, substituting the president's general public support numbers are not themselves useful.

data (which are correlated with economic approval data) are available. I use this measure for the analysis presented below.

## Methods

I use quantitative time series methods to test the hypotheses. Specifically, I employ transfer function impact assessment models to assess the effect the president's signals and the substantive policy changes that result from his statements had on oil prices, the yield on thirty-year Treasury bills, and the M1 money supply. As market prices fluctuate daily, I use daily measures of our first two dependent variables, and monthly data for the money supply. The specific models follow from the subsequent general equation:

$$Y_t = f(I_t) + N_t \quad (1)$$

where  $Y_t$  = price of oil, thirty-year yield, or money supply time series

$I_t$  = intervention events at time  $t$

$N_t$  = noise model for stochastic components

Impact assessment models are parsimonious and advantageous to modeling theoretically relevant events that may affect the direction and magnitude of a time series (Box and Tiao 1975). Moreover, they are very conservative. The interventions can only be influential after controlling for the history or noise components. Given the time points for the analyses, furthermore, the null is not likely to be rejected because of random chance or a stochastic process in the time series. So long as hypotheses have been identified a priori to identification of the time series (as they have been), then we can surmise a high likelihood that the intervention produced the change in the dependent variable. That is, because these time points are very refined, spuriousness in a statistically significant relationship is unlikely in this quasi-experimental design (Campbell and Stanley 1963).

## Findings

To answer whether or not presidential signals affect the market economy, I model the impact of signals on three dependent variables: daily oil prices, the daily yield on the thirty-year Treasury bill, and M1 money supply. According to the Augmented Dickey-Fuller results displayed in Table A2 (see Appendix), and several correlograms of these variables, all models use differenced dependent variables.

### Oil Prices

To test whether the president's signal or market forces caused the subsequent decline in oil prices, I examine the daily price of oil in two time series, both from August 2, 1999 until April 27, 2001. Did oil prices drop in response to President Clinton's order or the actual release of some thirty million barrels of crude oil from the U.S. strate-

TABLE 1  
Impact of Presidential Signals and Market Forces on the Price of Oil, 8/2/99-4/27/01

<i>European Oil Prices</i>	<i>Parameter Estimates</i>	<i>Cushing Oil Prices</i>	<i>Parameter Estimates</i>
Signal (pulse) $\Delta$ , $\omega_{01}$	-1.09* (-1.59)	Signal (pulse) $\Delta$ , $\omega_{01}$	-0.72* (-1.32)
Signal, $\delta_{01}$	0.95* (3.07)		
MA1	0.11* (2.37)		
MA 3	-0.11* (-2.37)		
MA 4	0.11* (2.35)		
MA 8	0.11* (2.25)		
Mean of dependent variable	0.02		0.02
SEE	0.71		0.77
Q(36)(critical $\chi^2 \approx 43.77$ )	38.32		36.64
N = 454			

\*  $p < .1$  (one-tailed).

Note: The dependent variable and both pulse and step functions are differenced, as indicated by  $\Delta$ .  $t$  statistics are in parentheses. No noise component for Cushing oil prices.  $\delta_{01}$  indicates a change of decay in the pulse or step functions. Because the variables are statistically insignificant, market forces are excluded from each model.

gic oil reserves? I derive a first- and zero-order transfer function, based on Box-Jenkins identification and estimation procedures (McCleary and Hay 1980). Table 1 displays the results.

The president's signal had a statistically significant impact on a decline in the price of oil. Using the daily change in the Cushing spot price as the dependent variable, the president's signal to release oil from the strategic oil reserves led to an abrupt, temporary change (due to the pulse function) in the decline of the price of oil, about seventy-two cents. The statistically insignificant market forces step function, which I drop from the model, confirms the short-term and immediate impact that the president's signal had on the price of oil.<sup>11</sup> Clinton's signal had a slightly larger, yet similar impact on European oil prices. A first-order transfer function, this suggests a gradual, constant, but temporary decline (also due to the pulse function) in the price of oil of about one dollar per day.

### Thirty-Year Treasury Bills

During his first national address to the American public, Bill Clinton signaled to the bond market that he was serious about deficit reduction. Even though long-term interest rates declined, and the United States witnessed an extended period of unparalleled expansion in the long term, the president's signal had no measurable impact on thirty-year Treasury yields. Differenced pulse functions (indicative of the president's signals on the yield time series) are both positive and statistically insignificant and have

11. Technically, the market forces variable should be excluded from the model because it is statistically insignificant. I include it, nonetheless, for illustrative purposes. Excluding the variable does not alter the magnitude of significance of the pulse function.

TABLE 2

Impact of Presidential Signals and Market Forces on the Daily Yield of Thirty-Year Treasury Bills, 1/1/92-12/29/94

	<i>Parameter Estimates</i>	<i>Standard Error</i>	<i>t-Statistic</i>
Market forces (step) $\Delta$ , $\omega_{01}$	-0.06*	0.03	-2.08
Market forces, $\delta_{01}$	0.83*	0.10	8.01
Market forces (step) $\Delta$ , $\omega_{02}$	-0.07*	0.03	-2.12
Market forces, $\delta_{02}$	0.94*	0.03	28.69
MA 6	-0.09*	0.04	-2.58
Mean of dependent variable	0.001		
SEE	0.05		
Q(36)(critical $\chi^2 \approx 43.77$ )	37.79		
N = 781			

\*  $p < .05$  (two-tailed).Note: Dependent variable and step functions are differenced, as indicated by  $\Delta$ . A differenced step function is interpreted as a pulse function.  $\delta_{01}$  indicates a change of decay in the pulse or step functions.

been dropped from the model. Table 2 displays signaling effects on the yield of the thirty-year Treasury bill.

Table 2 demonstrates that after the president's speech in February and the passage of Clinton's budget resolution in August, market forces contributed to immediate declines in the change of the yield on the thirty-year Treasury bill.<sup>12</sup> Specifically, these differenced step function interventions, occurring after the president's February and August signals, contributed to a decline in the change of the yield of 0.04 percent and 1.2 percent, respectively.<sup>13</sup> Importantly, President Clinton's signals had no impact on the daily yield of thirty-year Treasury bills. Presidents arguably have difficulty eliciting a market response through their signals when they do not have unilateral control over their promises. Only when Congress began debating, later confirming President Clinton's preferences, did the market respond with a long-term decline in the thirty-year yield. Moreover, Clinton's credibility faded during his first few months in office—from February 16, 1993, when 57 percent approved of Clinton's handling of the economy, to 39 percent approval on June 5, 1993—further limiting the impact of his signals on long-term interest rates.

### Money Supply

Unlike Grier (1989), who finds election year effects on the money supply, Table 3 demonstrates little impact for George Bush in 1992 on the money supply. Neither Bush's signal in his 1992 State of the Union address nor the policy actions taken to affect the money supply had an impact on the money supply (Model 1 in Table 3). Consistent with

12. Another way to measure market forces (in a model not displayed) is the effect of the change in the daily close of the Dow Jones Industrial average on Treasury bill rates, which produces similar results.

13. These values are determined by solving this equation:  $\frac{\omega_0}{1-\delta_0}$ .

TABLE 3

Impact of Bush's Signal and Market Forces on the Monthly Money Supply, January 1985 through December 1995

	<i>Model 1</i>	<i>Model 2</i>
Signal (pulse) $\Delta$ , $\omega_{01}$	0.48 (0.18)	-153.24* (-2.20)
Market forces (step) $\Delta$ , $\omega_{02}$	3.9 (1.24)	-0.64 (-0.17)
Prime rate, $\omega_{03}$	-2.30* (-5.27)	-2.15* (-5.10)
Presidential approval $\Delta$		-0.04 (-0.63)
Approval $\Delta$ * Signal $\Delta$		-31.86* (-2.20)
Seasonal AR1	0.96* (24.46)	0.96* (43.00)
MA1	0.34* (3.82)	0.32* (3.54)
Mean of dependent variable	4.42	4.42
SEE	5.36	5.26
Q(36)(critical $\chi^2 \approx 43.77$ )	33.41	34.89
N = 119		

\*p &lt; .05 (two-tailed).

Note: Dependent variable, and pulse and step functions are differenced, as indicated by  $\Delta$ . Personal income is dropped from this model. *t* statistics are in parentheses.

other research, the prime rate had a pronounced impact on M1 money supply. An increase of about a point in the prime rate causes a decline in change of the money supply; this is exactly why the Fed raises interest rates in the face of an "overheated" economy. The money supply also follows a seasonal pattern of fluctuation.

Where at first glance one may argue that the prime rate's impact on the money supply is an example of presidential influence over monetary policy (like Grier 1989) because the Fed also manipulates the money supply, this finding is more indicative of limited presidential influence over monetary policy even when the president can make fiscal decisions unilaterally (in this case, by directing the secretary of the treasury to release money). Indeed, Model 2 demonstrates that the president's signal, when interacted with his low approval ratings in January of 1992, has a negative effect on the change in the money supply—the exact opposite of what the president wanted.<sup>14</sup> Bush's experience in having the opposite effect than he intended with his signal was due in part, according to Model 2, to his lack of credibility on the economy in 1992. These results indicate the president's signaling authority, especially when he is not credible, is limited with regard to fluctuations in the money supply, fluctuations that are ultimately a function of the prime rate and other forces outside of the president's control.

## Discussion and Conclusion

Do the president's signals affect the economy? This article theorized that the president should have some impact on the market through signals when two conditions are

14. At first glance, one may infer that the negative interaction coefficient is consistent with the impact of the prime rate on change in the money supply. But keep in mind that there should be an inverse relationship between interest rates and money supply (as an increase in interest rates often is an attempt to cool off a roaring economy, perhaps to keep inflation in check), and Bush wanted the money supply to increase (Bush's signal should have resulted in a positive change in the M1 supply).

met: (1) the president has legitimate and unitary control to act on his signals and (2) the president has credibility with the marketplace. I provide support for condition 1, yet limited support for condition 2. In addition, I argued that signaling effects should occur in the short term, an effect for which I also find evidence.

The president's signals affected the marketplace when he had the unilateral and constitutional authority to act on his preferences. Accordingly, the market is less responsive when it must wait for Congress to pass legislation to support the president's signals. The president's signal led to a decline in the price of oil because the oil market knew the president would follow through with his directive (he had credibility in the marketplace) and that he could act on his signal (the president has the formal and unilateral authority to release oil from the strategic petroleum reserves).<sup>15</sup>

Signaling effects occur in the short term. This was the case primarily in 2000, when presidents requested action over a relatively short period of time. In contrast, President Clinton had no significant impact on the yield of the thirty-year Treasury bill, in part because confirmation of his signal took at least seven months. There were also many intermediary steps between the president's signal and the actualization of his preferences for deficit reduction. The congressional process can be long and arduous, and the market understood that Clinton's budget might not have passed a reluctant Congress. Although President Clinton later signed deficit reduction into law, the market did not respond to his signal because presidents do not have unitary authority over the budget. The market waited until the budget passed before a decline in long-term interest rates began. This is not to say that deficit reduction was not a factor in bringing down long-term interest rates, just that the president's signal had no influence on the long-term rates.

Finally, the models produce tentative support for the credibility hypothesis. On the one hand, a lack of credibility on the economy appears to have hurt President Clinton's ability to affect long-term interest rates in 1993 and President Bush's attempts to affect money supply through his signal alone. On the other, credibility could have influenced the oil market's response, where President Clinton had credibility that he would act on his signals because he presided over one of the most expansive economies in American history. These findings are suggestive, but consistent with my expectations: signals from credible presidents are likely to affect the marketplace.

Yet with few opportunities for presidents to exert unitary influence over the economy, presidents are necessarily limited in their ability to translate their economic preferences through signals into a demonstrable impact on the economy. Much as the presidency-economy literature has concluded for all other tools at the president's disposal, the president's economic signals are limited in their impact. This does not bode

15. Lacking more cases, we cannot say for sure that these factors all contributed to the president's success, nor can we say with certainty that the presence of unfavorable conditions (time delay, need for congressional action) limited the influence of signals. It is likely, based on the theory and results, but additional cases are needed to know more precisely the causality of these relationships (King, Keohane, and Verba 1994). Indeed, an astute reviewer observed that the success of any presidential signal that depends on a congressional response may vary by the policy itself. Major legislative initiatives are more difficult to push through Congress (see Eshbaugh-Soha 2005; Light 1999), so the market might be even less likely to respond to a presidential request for such a policy. Preliminary analyses (again see footnote 8) suggest this is not the case for President Reagan in 1981. But variation by policy is a worthwhile extension of this article's findings.

well for presidents who need a sound economy to ensure their reelection. A president must take advantage of favorable conditions to be successful; rarely does he have the power and authority to create them.

Overall, the signaling process is based on the premise that markets anticipate the results of concrete action and respond to the intentions of trustworthy authorities. Presidential signals seem to have an impact on market indicators well before the president fulfills his promise to act, so long as presidents have the unilateral authority to act, they act in the short term, and have some measure of credibility in the marketplace. Despite some support for presidential influence through signals, these results should be interpreted with caution. This article tests only a handful of market indicators and presidencies. Therefore, this theory must be tested across more cases to ensure that these conditions for influence are generalizable across most economic situations and indicators (see King, Keohane, and Verba 1994, ch. 6). Future studies may even refine this theory, offering alternative rival hypotheses or additional conditions or qualifications for signaling effectiveness. Exploring these questions is vital to ascertain the extent to which presidential signals influence the market economy.

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## Appendix

TABLE A1  
Presidential Signals

<i>President</i>	<i>Date</i>	<i>Quotation</i>
Bush	January 28, 1992: State of the Union Address	“I have directed Cabinet departments and Federal agencies to speed up pro-growth expenditures as quickly as possible. This should put an extra \$10 billion into the economy in the next 6 months.” “And I have . . . directed the Secretary of the Treasury to change the Federal tax withholding tables. . . . This initiative could return about \$25 billion back into our economy over the next 12 months.”
Clinton	February 14, 1993: Address to the Nation on the Economic Program	“Change must begin at the top. And in my budget there will be more than 150 specific cuts in Government spending programs. Then I’ll ask the wealthiest Americans to pay their fair share. . . . I had hoped to invest in your future by creating jobs, expanding education, reforming health care, and reducing the debt [deficit] without asking more of you. But I can assure you of this: You’re not going alone anymore. . . . And for the first time in more than a decade, we’re all in this together. More important, here’s the payoff: Our comprehensive plan for economic growth will create millions of long-term, good-paying jobs, including a program to jumpstart our economy with another 500,000 jobs in 1993 and 1994. . . . And we’ll do it all while reducing our debt [deficit].”
Clinton	September 23, 2000	“Yesterday I directed the Secretary of Energy to exchange 30 million barrels of crude oil from the Strategic Petroleum Reserve over the next 30 days.”

TABLE A2  
Augmented Dickey-Fuller Tests for Unit Roots

	<i>Minimum AIC at Lag</i>	<i>No Constant or Trend</i>	<i>Constant Only</i>	<i>Constant with Trend</i>
Cushing oil	0	0.12	-2.75	-2.76
European oil	8	-0.06	-3.03	-3.10
Thirty-year Treasury yield	0	0.24	-0.91	-0.72
Money supply	13	0.20	-1.10	-3.51

Note: The null hypothesis for the Augmented Dickey-Fuller Unit Root test is that the series are integrated. Critical values (at  $p = .05$ ) for the ADF test are: No Constant or Trend, -1.95; Constant Only, -2.92; Constant with Trend, -3.5.