Abstract: A vexing issue in both scholarly and elite discourse on public administration concerns how best to shape administrative institutions in order to promote trust in government. The underlying assumption is that attitudes towards the bureaucracy are an antecedent of trust and thus by changing attitudes towards the bureaucracy via administration reform one can “move the needle” on trust. Unfortunately, there is limited evidence to support this assumption. In this research, I ask two related questions: do attitudes towards the bureaucracy affect trust and how big is that affect relative to other factors commonly used to explain variation in trust? I address these questions by creating a macro-level measure of yearly Bureaucratic Approval using over 100 items administered between 1973 and 2013 that capture attitudes towards the Federal bureaucracy. I include this measure in a model of trust along with other variables commonly found in the literature on trust in political science. My findings suggest that Bureaucratic Approval does indeed move the needle on trust in the short-term and these findings are consistent across multiple modeling specifications. While the point estimate of this effect is large relative to those for other actors and institutions, the standard error of the estimates make inferences about magnitudes more complicated. I conclude with a discussion of the implications of these findings and directions for future research.
Introduction

The decline in measures of trust in the Federal government in the United States since the 1960’s is a phenomena of interest to both scholars and practitioners alike. This interest includes efforts to explain the antecedents of trust as well as identify remedies to staunch the decline. Unfortunately, these efforts are not well-integrated. Scholars, mostly in political science, interested in the antecedents of trust tend to look towards attitudes towards elected officials and how citizens’ feel about large policy domains like the economy. Those interested in remedies, often in public administration, tend to focus on changing administration institutions in order to increase trust. While some of these reforms are broad and structural in nature, others have involved increasing use of performance reporting and making information more accessible to citizens. This creates a problem when proposed solutions are not aligned with the known antecedents of political trust. The purpose of this research is to better integrate our understanding of these antecedents of trust in government and the role that public administration might play as a solution. In essence, before we should engage in costly efforts to change administrative institutions as a way to improve trust we should be certain that the bureaucracy does indeed move the needle on trust.

The purpose of this study is to remedy this gap using a longitudinal analysis of aggregate public opinion. I examine whether a measure of aggregate attitudes towards the Federal bureaucracy, bureaucratic approval, explains variation in trust over time when controlling for other explanatory factors. The two research questions addressed here are does bureaucratic approval affects trust in government and what is the magnitude of this effect compared to those for other political actors and institutions like the president or Congress. Addressing these two questions are important for two reasons. First, it attempts to bring the bureaucracy into theories and models of trust used in the political science. Citizens are more likely to interact with the
Federal bureaucracy than elected officials like the president or Congress. Consequently their experiences may influence perceptions about the trustworthiness of government as much as or more so than their attitudes towards elected officials. Unfortunately, attitudes towards the bureaucracy are not included in analyses of trust on political science. Second, this analysis speaks to the issue of whether administrative reform is a sensible way to restore trust. Administrative reform is not a frictionless endeavor and costs time and resources to implement. While there are a variety of justifications for engaging in reform that exist apart from enhancing political trust, the normative benefits of reform are often those that are trumpeted most loudly by proponents.

The paper proceeds with a literature review that explores trust in government and why that is a construct of interest and then turns to the relationship between agency performance and political trust from the public administration/management literature and critiques the limited evidence which suggestion that such a relationship exists. The review then provides a summary of the literature on trust from political science which informs choices about how to model trust in government and the development of key independent and control variables. The paper then turns towards a discussion of the methods and data used to explain macro-level variations in trust followed by the analysis of trust over a nearly 40 year period for which data is available. The results suggest that mass attitudes towards the Federal bureaucracy do indeed affect political trust in the short-term and are robust to various approaches to modeling the data. The paper concludes with a discussion of these findings, including an assessment of their strengths and limitations, as well as directions for future research.
Trust in Government and Why It Matters
A full review of the literature on trust and trust in government is beyond the scope of this analysis. The pertinent issue is what is trust and why does trust in government matter? Defining trust turns out to be no easy feat and different conceptualizations exist. One common theme is that trust exists within relationships and thus the common tripartite formulation that “A trusts B to do, with respect to, X” (Hardin 2006, 19). This three part relationship involves characteristics of both the truster (A) and the trusted (B) as well as the context of the situation (X) in which trust is to take place. A truster takes a risk in trusting and leaves themselves vulnerable to the actions of the trusted (Luhmann 1979, 24). Luhmann argues that this risk taking is important because it reduces complexity in social interactions and enables cooperation and coordination (1979, 24-25). In terms of trust in government, this risk taking behavior can be linked to a variety of important outcomes. In Easton’s conceptualization of diffuse political support, trust is important because it enables policymakers to govern by creating “… a reservoir of favorable attitudes or good will that helps members to accept or tolerate outputs to which they are opposed or the effect of which they see as damaging to their wants” (1965, 273). Extending this logic, more recent work has focused on the important of trust in government in securing voluntary compliance (Braithwaite 1998; Scholz & Lubell 1998; Tyler 1998; Levi & Stoker 2000). For public management, this suggests that trust in government is important because it eases the cost of program implementation and administration by reducing the need for coercion forms of control and oversight to detect noncompliance.

There is a debate as to whether trust in government is trust in the sense that it exists in interpersonal relationships. Luhmann distinguishes between interpersonal and system trust which includes trust in institutions but notes that the latter still functions to reduce complexity as in interpersonal trust (1979, 48-58). Other scholars adopt the perspective that trust exists in both
“thick” and “thin” forms (Braithwaite 1998; Hardin 2006). Interpersonal trust based on intimate relationships is an example of “thick” trust. Hardin argues this this type of relationship is unlikely to arise between an individual and government institutions that they little interact with or know the motivations of the people therein (Hardin 1998, 16) The question then turns to what exactly is this “thin” form of trust and this is where authors diverge in their treatment and its importance. For Hardin, this “thin” form of trust deflates to confidence which is related to but not the same as “thick” trust (2006, 65). Braithwaite argues that both forms of trust are mutually reinforcing and lead to voluntary compliance on the part of citizens (1998, 344-345). In another approach, Tyler argues that “thick” trust may be based on rational calculations of self-interest, but also shared social identification with government (1998, 280-281).

While this debate is fascinating and conceptually important, this discussion does not appear to undercut the logic of the analysis being carried out here. The central question motivating this research is whether aggregate attitudes towards the bureaucracy affect the commonly used measure of trust in government. This is important because most attempts to increase trust, or confidence, are done via reforms of the bureaucracy and not towards other institutions of government. Even Hardin, a skeptic of trust in government as trust, writes, “Hence, if confidence in government is declining, we should address that problem by enhancing government’s competence, if possible” (2006, 65, also see pages 70-71). If more favorable aggregate attitudes towards the bureaucracy moves trust in government, then administrative reform designed to enhance competence or confidence in those institutions is justifiable. Thus one need not privilege the concept of trust in government as trust as it exists in interpersonal relationships to accept the utility of this analysis.
Micro-Performance Theory: The Link between Reform, Performance and Trust

The central theoretical mechanism in this analysis comes from Van de Walle and Bouckaert’s (2005) micro-performance theory. They suggest a model, Figure 1, in which agency performance is related to overall trust in government. As agency performance increases so too will satisfaction and trust with that agency and government in general (Van de Walle & Bouckaert 2003, 894). Ultimately, micro-performance theory provides a rational for engaging in administrative reform as a means to move the needle on trust in government. There are two key assumptions required for this rational to hold: an administrative agency (or agencies) must be associated with government and causality must run from attitudes towards the agency (or agencies) to government in general (Van de Walle & Bouckaert 2003, 895-896). In other words, an agency (or set thereof) is relevant during the process of attitude formation and that attitudes towards that agency (or agencies) must be impactful in influencing evaluations of trust in government. If this relationship holds, then it provides a powerful justification for engaging in administrative reform as a strategy to enhance political trust.

[Figure 1 here]

However, reforms may not always succeed and there is a long history of reform attempts that fail to accomplish the lofty goals that they start with (Radin 2012). In this case, failed reforms could lead to no change or even a decrease in trust. Additionally, reforms must succeed at enhancing performance for agencies that register in the public’s consciousness. Improving performance for agencies that the public does not connect to the government are unlikely to affect trust. The recent history of administrative reform draws heavily on the use of indirect tools

---

1 Van de Walle and Bouckaert do identify a third assumption that the link between an agency’s (or agencies’) performance and trust in government “be direct and linear” (2003, 895). I believe this assumption is not necessary for the internal logic of micro-performance theory and is in fact the hypothesis at the heart of this analysis. As they go on to note, “The main question therefore is what impact the performance of public services has on the evaluations of government in general as compared to other factors” (Van de Walle & Bouckaert 2003, 895).
of government like contracting out with for- and non-profits and subsidies in the tax code (Mettler 2011). The use of such tools obscures the role of government agencies and programs from citizens and makes it hard for citizens to understand how they benefit from public policy or administrative action (Mettler 2011). Thus reforms that rely on indirect tools of government may attenuate the conditions under which micro-performance theory holds by weakening the ability for individuals to connect public policy to agencies and agencies to the government.

On this last account, the evidence to support micro-performance theory at the U.S. Federal level is problematic. There are two studies, Morgeson, VanAmburg and Mithas (2011) and Morgeson and Petrescu (2011), which use attitudes towards specific Federal agencies to explain general trust in government. Both studies use responses to the American Customer Satisfaction Index’s (ACSI) survey. The ACSI includes a sample of Americans who had, or can recall, an experience with a Federal government agency. Items in the ACSI include a measure of general trust in government and indicators of satisfaction and confidence in the specific agencies. Both studies find that customer satisfaction with and confidence in a specific agency affect trust in government (Morgeson, VanAmburg & Mithas 2011, 270; Morgeson & Petrescu 2011, 469).

The problem with these studies are related to the ACSI as a data set. Again, the logic of micro-performance theory requires that individuals connect an agency or agencies to the Federal government.

---

2 Van de Walle, Kampen and Bouckaert (2005) provide some evidence using data from Belgium that evaluations of civil servants in general and particular actors and institutions, like politicians, the courts, post officers etc. do affect general evaluations of trust in government. There is a richer body of literature about how micro-performance theory may affect attitudes towards lower-levels of government especially those offered by local governments (see for example: Van Ryzin, Muzzio, Immerwahr, Gulick & Martinez 2004). This analysis focuses only on the U.S. Federal level.

3 Morgeson and Petrescu (2011) conduct both a pooled and agency-specific analysis for the IRS, Medicaid, Medicare, National Park Service, Social Security Administration and Veteran’s Affairs. Their pooled results are similar to the ones found in Morgeson, VanAmburg and Mithas (2011). The results for individual agencies show a little more variability. In terms of the relationship between customer satisfaction with the agency and trust, the pooled results appear are driven by experiences with one specific agency. In this case, customer satisfaction with the IRS was related to trust in government, but the relationship did not reach statistical significance in the other five agencies (Morgeson & Petrescu 2011, 469). In terms the relationship between agency confidence and trust in government, the results found in the pooled analysis hold for all but the VA (Morgeson & Petrescu 2011, 469).
government and that their experience with those agencies affects trust. The ASCI specifically includes respondents who can remember directly interacting with a Federal agency and their experiences interacting with it. The increasing use of indirect policy tools suggests that such an interaction is also increasingly uncommon especially at the Federal level. These two studies find evidence to support micro-performance theory under conditions that are most favorable to generating support for the theory. Another important weakness of the ASCI data is that it does not include competing explanations of trust in the political science literature. Political scientists have looked at attitudes towards political actors and institutions like the president and Congress, highly salient policy areas like the economy and crime and partisanship or political ideology to explain general trust4. This may lead to the problem of missing variables that are strongly related to dependent variable.

Working through the second problem is much easier than the first. A more robust test of micro-performance theory needs to include variables that control for other factors that affect trust in government. This would provide a way to assess whether the bureaucracy does affect trust and, if so, the magnitude of that effect relative to those for other government institutions. Addressing the second problem is more complex and requires assessing how the public connects administrative institutions to government. The ASCI solves this problem by focusing on self-reports of direct interaction with an agency. Yet how do citizens connect agencies that they do not directly interact with or do so irregularly to the government? Bandura’s theory of social learning might suggest alternative pathways apart from direct experience. He writes “… virtually

---
4 In later work, Morgeson does account for the influence of partisanship and political ideology on general trust in government which then functions to influence expectations about Federal agency performance (2013, 293-295). However, this is a significant re-structuring of the logic model of micro-performance theory with causality running from general trust in government to satisfaction and confidence with specific agencies. Such a re-structuring undermines the logic of administrative reform as a means of improving trust in government because trust conditions expectations about agency performance rather than responds to it.
all learning phenomena resulting from direct experiences can occur on a vicarious basis through observation of other people’s behavior and its consequences for them. Man’s capacity to learn by observation enables him to acquire large, integrated units of behavior by example…” (1971, 2). There are two possible mechanisms through which such social learning occurs and involves learning from information provided by political elites or the media and the experiences of relevant others.

Interestingly, Van de Walle and Bouckaert seemingly adopt this social learning perspective by suggesting that highly visible events, like scandals, are likely to attract citizens’ attention to a specific agency or set of agencies (2003, 899-900). They suggest the lesson is it to adopt better or more persuasive communication strategies that link reforms to the event that has captured the public’s attention (Van de Walle & Bouckaert 2003, 900). In fact, social learning in this manner appears to be fall under Baumgartner and Jones’ discussion of agenda-setting in policy systems with punctuated equilibrium (1993). Baumgartner and Jones note that policy systems are stable monopolies in the short-term, but are destabilized over time by the generation of new ideas and mobilization of new or previously apathetic interests (1993, 3-24). In this case, a high profile event like a scandal might trigger attention to an agency, or set of agencies, because it offers policy entrepreneurs the opportunity to generate new policy ideas and mobilize interests to upset an existing policy monopoly. However, it also suggests how some citizens might be attuned to the performance of specific agencies in lieu of direct experience because those agencies are the focus of an existing, and stable, monopoly. In either case, citizens need not have a direct experience with an agency to learn about how it performs, but do so indirectly via information provided to them by political elites and the media.
Apart from political communication, social learning might occur due to interactions with others. Individuals exist in a social environment in which family, friends or close acquaintances may directly experience the performance of a Federal agency or program. For instance, an adult might learn about the performance of the Social Security Administration or the Medicare program while helping care for his elderly parents. Consequently, a citizen can learn to connect the agency or program to the government and have attitudes about that agency or program affect trust in government in lieu of a direct experience. Overall this does not suggest that Mettler’s concern about the increasingly obscured role of the state is inappropriate, but these two mechanisms of social learning do suggest ways that individuals can learn about a government they only infrequently have direct interaction.

The review to this point has briefly described micro-performance theory which suggests that the performance of administrative agencies affects trust in government. The evidence for this at the U.S. Federal level is problematic because it only looks at those narrow instances when citizens directly interact with such an agency and does not include other relevant explanatory factors. Social learning via the provision of information by political elites or the media and from relevant others have been offered as mechanisms through which we can move beyond the reliance of direct experience as a way to form attitudes about agency performance. While there are any number of ways to develop a more robust way to test micro-performance theory, the next section develops the approach used in this analysis which relies on aggregate public opinion data over time.

A Macro-level Account of Micro-Performance Theory: The Concept of Bureaucratic Approval

A hurdle in this analysis is that micro-performance theory is really a micro-level account of the individual’s attitude formation process when tasked with forming an opinion about
political trust. For a macro-level analysis, I am not concerned about the process of attitude formation at the individual-level. However, I think it is possible to reformulate the essential insights of micro-performance theory into a macro-level account of public opinion. In this account, following the lead of Yackee and Lowery (2005), approval for the bureaucracy is an unobserved latent construct that represents observable attitudes toward particular administrative agencies or institutions for which survey data is available. This construct is akin to presidential and Congressional approval in that higher levels of approval for the Federal bureaucracy represents more favorable evaluations of the bureaucracy over time. Changes in bureaucratic approval are the results of changes in observable attitudes towards specific administrative institutions. If bureaucratic approval helps to forecast trust, then this suggests that improving attitudes towards the bureaucracy via administrative reform may be an effective way to improve mass political trust.

Additionally, there are two benefits to working with aggregate public opinion. First, it is easy to include other explanatory factors commonly found in the political science literature. This overcomes one of the drawbacks of the studies by Morgeson and colleagues. Second, it also allows me to examine the magnitude of the bureaucracy’s effect on trust relative to those for other political actors and institutions which is my second hypothesis. Consequently the key insights of micro-performance theory can be expanded into an account of macro-level public opinion. A logic model for this macro-level account of micro-performance theory is displayed in Figure 2.

While there are benefits to this approach, there is one key assumptions and limitation that bear some consideration. First, the core assumption is that there is a latent attitude towards the
bureaucracy that can be captured by aggregating attitudes towards specific agencies and institutions. In essence, there is something holding together attitudes towards a diverse set of attitude objects. Fortunately the technique employed to generate the bureaucratic approval series, Stimson’s dyad-ratios algorithm, provides a way to assess: 1) how well the observable items correlate with the series constructed to represent the latent construct and 2) the amount of variance that the bureaucratic approval series explains in the component series. Thus there are some ways to assess the appropriateness of this assumption. Second, the core limitation is that this approach provides an assessment of whether aggregate attitudes towards the bureaucracy affect macro-level trust. Unlike the studies by Morgeson and colleagues that use the ASCI, this approach cannot distinguish the impact that any one particular agency or institution has on trust. Consequently, this analysis cannot suggest that a certain agency or agencies have a more dominant impact on trust than others and should be the focus of reform efforts which is a concern expressed by Van de Walle and Bouckaert (2003, 899-901). Despite this limitation, reform initiatives tend not to be narrowly targeted towards specific agencies and thus this approach is useful for identifying if improving aggregate attitudes towards the bureaucracy in general will enhance trust.

Yackee and Lowery (2005) provide a preliminary approach to developing a macro-level measure of bureaucratic approval\(^5\). They do so by identifying four items asked about Federal agencies in general intermittently between 1983 and 1999\(^6\) and use Stimson’s dyad-ratios

\(^5\) Yackee and Lowery’s interest is primarily in explain what moves bureaucratic support. They include a measure of trust in government as an explanatory variable and find that it does not affect predict changes in their measure of bureaucratic approval (Yackee and Lowery 2005, 527-28).

\(^6\) Yackee and Lowery’s (2005, 517) 4 indicators are:

1. Dealing with a federal government agency is often not worth the trouble. (Completely Agree, Mostly Agree, Most Disagree, Completely Disagree, Don’t Know.)
2. What is your opinion of most federal government departments and agencies? There may be exceptions, of course, but would you say your opinion of most federal government departments and agencies is highly favorable, moderately favorable, not too favorable, rather unfavorable or don’t know.
algorithm to extract a composite series that reflects common movement from their four component indicators\(^7\). In their analysis, Yackee and Lowery specifically look for items that ask respondents about Federal agencies or programs in general and ignore those for specific Federal agencies or programs in order to avoid capturing agency-specific effects (2005, 517). Their choices are defensible in the case of excluding items that address attitudes towards the military\(^8\). However, Yackee and Lowery’s approach is also too conservative given the paucity of the available data on attitudes towards administrative institutions and personnel and how Stimson’s algorithm works\(^9\). This approach constrains Yackee and Lowery to generating a limited 16-year series and leaves them unable to perform a full multivariate analysis.

The approach adopted here is less conservative and includes all available items that ask about attitudes towards any component of the bureaucracy, including towards specific agencies and personnel, with the exception of items about the military. Yackee and Lowery would argue that it is unlikely that attitudes towards NASA share something in common with attitudes towards the Department of Agriculture. Attitudes towards the former depend on how an individual feels about space exploration or the value of science and technology while attitudes

---

\(^7\) Stimson created the algorithm to create his measure of Policy Mood and his technique will be discussed in greater depth later. Essentially his algorithm is a time series analog to factor analysis of cross-sectional data.

\(^8\) While the military is a quintessential bureaucracy and one for which there lots of public opinion data is available, the public is likely to draw on a very different set of considerations when forming an opinion about it than other parts of the Federal bureaucracy. Stimson (1999) also makes such a distinction in his calculation of policy mood and includes no items that ask about foreign policy or the military.

\(^9\) Stimson designed the algorithm to extract common movement from a related but surprisingly diverse set of policy indicators including attitudes towards government aide to racial minorities and the poor, support for government provided health care as well as a host of other policy specific attitudes that collectively reflect the public’s mood for more liberal or conservative policy. Appendix 3 in his book provides a summary of all the indicators used to construct the Policy Mood series (Stimson 1999).
towards the latter might depend on attitudes towards farmers or domestic agricultural production. In essence, there is no latent construct that connects these seemingly disparate indicators together. However, as mentioned previously Stimson’s algorithm provides a way to assess these concerns empirically. Another concern for construct validity would be whether the measure of bureaucratic approval differs from other constructs of interest like trust in government and approval of other political actors and institutions. A way to address this concern would be to show that a measure of bureaucratic approval is poorly correlated with these other constructs. These concerns about construct validity will be address when I discuss the development of my bureaucratic approval measure in the next section of the paper. The review now turns to the literature on political trust in political science to identify other relevant explanatory variables and approaches to modeling the variables.

**Summary of Approaches & Findings on Trust in Government from Political Science**

Much of the literature in political science incorporates a performance orientation towards explaining variation in trust in government. Performance for political actors and institutions are captured using readily available measures of approval. These approval measures are assumed to respond to changes in perceptions of the president’s or the Congress’s performance. This performance-orientation fits well with the logic of micro-performance theory outlined above. I provide a brief overview of this literature to identify constructs used to explain political trust, their measurement and modeling strategies. In order to bound this summary, I look only at those studies that examine aggregate trust in government over time and ignore those studies that analyze trust at the micro-level. This ignores some seminal studies on trust, but often the insights

---

10 Though see Hibbing and Theiss-Morse’s (2001) work which suggests that this performance-orientation is inappropriate and instead show that attitudes towards government (they do not specifically use a measure of trust) are influenced by perceptions of political process.
from these micro-level studies have been carried over to macro-level approaches. The studies I examine are: Chanley, Rudolph and Rahn 2000, 2001; Chanley 2002; Keele 2007; and Hetherington & Rudolph 2008. All studies use some form of an autoregressive distributed lag (ADL) model. A clear distinction in these approaches are the two studies by Chanley, Randolph and Rahn (2000, 2001) that use a vector autoregressive (VAR) modeling strategy which allows for the joint estimation of several models to test for reciprocal causation between potentially endogenous variables. This will be addressed further when I discuss the methods and data for this analysis. Additionally, these studies employ similar, or very similar, measurement strategies for the dependent and independent variables. In particular, they involve the extensive use of Stimson’s algorithm to create their measures of trust and many of the key independent variables.

While there are some more idiosyncratic variables that will be addressed shortly, the discussion below focuses on variables common in a majority of the studies (3 out of 5). One clear result seems to be that presidential approval does not affect trust in government over time. This result is curious given that the president is the most noticeable political figure in the nation. Additionally, the preponderance of evidence does suggest that perceptions of the economy matter. There is unambiguous evidence that the effects are statistically significant in two studies (Chanley, Randolph & Rahn 2000; Keele 2007). In Hetherington and Rudolph’s (2008) study, consumer sentiment does affect trust in one model specification. However, the coefficient is no longer statistically significant when an interaction term between consumer sentiment and another variable is introduced into the model. Lastly there appears to be consistent evidence that the public’s concern about crime does negatively affect trust.

---
12 Specifically Hetherington and Rudolph (2008) create an interaction term between consumer sentiment and a variable which captures the % of respondents reporting the economy as the most important problem facing the
Despite the many similarities across studies, in terms of time period of analysis, construct operation, measurement and modeling strategies, there are some notable differences. Of the three studies that include Congressional approval, only the latter two (Keele 2007; Hetherington & Rudolph 2008) find that it affects trust. Studies find mixed results for the effect on international affairs on trust with only one study (Chanely 2002) finding unambiguous evidence. Lastly, the studies that incorporate political scandals diverge in how the operationalize the construct. The two studies that show scandals depress trust treat them as a series (Chanley, Rudolph & Rahn 2000; Hetherington & Rudolph 2008)\textsuperscript{13}. They differ however in that the former (CRR) conceptualized presidential and Congressional scandals as distinct, with only Congressional scandals depressing trust, while the latter (HR) does not differentiate. This raises the question of whether Hetherington and Rudolph’s result are sensitive to the inclusion of Congressional scandals in their measure. Keele operationalizes scandals in a completely different manner in which each scandal is a discrete series\textsuperscript{14}. Keele findings that the signs on the coefficients vary from scandal to scandal and only a few of the scandals that negatively affect trust are statistically significant (2007, 249-50). Further, the tests for statistical significance for some specific scandals, like Watergate, are sensitive to model specification\textsuperscript{15}.

Additionally, many of these studies employ idiosyncratic variables to explain trust in government that appear to show an effect on trust. These variables might be in one or two studies but are not consistently used in a majority of the studies. For instance, Chanley, Rudolph and nation. Their analysis suggests that perceptions of the economy affect trust most when the public is most concerned about it.

\textsuperscript{13} Where the series takes a value of 1 if a scandal is present at time $t$ and 0 otherwise.

\textsuperscript{14} Each event is a discrete series in which the series takes a value of 1 during a specific scandal and 0 otherwise (Keele 2007, 246).

\textsuperscript{15} In this case, the coefficient is negative and statistically significant in one model specification. The sign of the coefficient does not change, but Watergate’s effect is no longer statistically significant in another model. (Keele 2007, 249-50).
Rahn (2001) find that an index of confidence in political actors and institutions significantly affects trust. This occurs in their study in which they do not include a variable for Congressional approval and do not find that presidential approval effects trust. The confidence variable may be attenuating the relationship between presidential approval and trust as well as partially capturing sentiment towards the Congress. Keele (2007) includes two measures of social capitol, civic engagement and generalized social trust, and finds that these two variables have no short-run effect on trust, but do have a statistically significant effect in the long-run. Hetherington and Rudolph (2008) also include a measure of generalized social trust and find that it has a significant effect. However they do not also include a measure of civic engagement. Lastly, Keele (2007) includes a measure of macropartisanship[^16] as a control variable and finds that it has a significant short and long-term effect on trust. Because it is a control variable, Keele spends little time trying to understand the results but suggests in a footnote it is due to changes in macropartisanship in response to presidential performance (2007, 250). This does raise the issue though of whether this measure is attenuating the relationship between presidential approval and trust included in his model.

Overall, the summary of the literature on trust in political science provides conflicting guidance about which constructs and measures to include in a model of political trust. There appears to be the most solid evidence that perceptions of the economy as well as concern about crime are important variables to include in a model of trust. These are sensible control variables, but a primary concern of this study is whether trust in government is affected by attitudes towards specific actors and institutions. The evidence here is much less clear cut. In general, I think it prudent to include attitudes towards both the president and Congress in any model so that

[^16]: This is the aggregate % of Democratic identifiers over time (see Erikson, MacKuen & Stimson 2002 for a discussion of the construct and its operation).
the effects can be compared towards the effect for bureaucratic support. Additionally, there seems to be strong evidence to include Keele’s social capital measures and macropartisanship into any model. Lastly, most of the studies have been focused on explaining what effects trust in both the short- and long-term. This is usually done via the inclusion of trust as a lagged independent variable to capture how shocks in the variables affect trust over time. A particularly promising approach is Keele’s (2007) use of the error-correction modeling framework which includes parameters to estimate both short- and long-term effects of the independent variables on trust as well as how quickly past changes in the independent variables are process through the dependent variable. Overall, this suggests that I adopt modeling approaches that can test for both contemporaneous and long-term effects.

Data & Methods

Again, this analysis is designed to assess two basic research questions: does the bureaucracy move the needle on trust and is this effect greater than the effects for other political actors and institutions. I will first discuss the construct of interests and their measurement and then turn to a discussion of my modeling strategy. All data was collected from publicly available sources like the Roper Center’s public opinion archives, Gallup and the World Values Survey. A central concern with the measurement of my constructs of interest is that there is both a plethora and a paucity of data. Since the 1970’s, many polling firms have adopted the first item of the ANES’s Trust in Government index. There are also lots of items that measure Congressional approval. Unfortunately, no one series, for trust or approval, covers the entire time period of the analysis and there is often slight variation in the wording and response choices of similar items.

17 The first item in the ANES index is: “How much of the time do you think you can trust the government in Washington to do what is right-just about always, most of the time, or only some of the time?”.
across different polling firms. Despite being related to the same underlying construct, trust or approval, these differences make it inappropriate to simply combine like indicators into a single series. On the other hand, there are only intermittent measures of attitudes towards the bureaucracy (Yackee & Lowery 2005).

I need a tool capable of putting together measures of key constructs that works under both conditions and James Stimson’s (1991, 1999) dyad-ratios algorithm works in both instances. Stimson originally developed this algorithm to produce an estimate of the public’s preference for more or less government involvement across a wide variety of domestic policy domains which he termed Policy Mood (1991, 1999). It requires partially overlapping sets of items that are asked in the same wording and response format over at least two different points in time (Stimson 1991, 1999). The algorithm works by extracting the common movement from these sets of related indicators (Stimson 1991, 1999). This common movement is then scaled to a value between 0 and 100 with the meaning of the score based on the coding of the marginals prior to processing by the algorithm (Stimson 1991, 1999). All series produced using Stimson’s algorithm will be coded so that higher scores indicate more favorable attitudes. This technique has been used to extract a single series of trust in government and congressional approval from similarly worded indicators of these constructs from different polling firms. Additionally, the only other study to attempt to create a macro-level measure of attitudes towards the Federal bureaucracy by Yackee and Lowery (2005) use this technique to create their bureaucratic measure.

---

18 For a discussion of these differences with respect to political trust see Chanley, Rudolph & Rahn 2000 or Hetherington & Rudolph 2008.
19 See Appendix 1 of Stimson’s Public Opinion in America: First Edition (1991) for a more detailed discussion of the dyad-ratios algorithm. The program used to run the algorithm, WCALC, is publicly available from Stimson’s website (http://www.unc.edu/~jstimson/Software.html) along with additional documentation.
20 This approach is a common technique employed by researchers particularly those interested in attitudes towards government. Durr, Gilmour and Wolbrecht (1997) use it to construct a measure of congressional approval while Chanley, Rudolph and Rahn (2000), Keele (2007) and Hetherington and Rudolph (2008) use it to construct measures of trust in government and congressional approval.
approval series. A summary of the variables used in this analysis appears in Table 1 and is followed by a more detailed discussion of the construction of each series.

[Table 1 here]

Trust in Government. My dependent variable is trust in government. To construct the variable, I employ the approach used by Chanley, Rudolph and Rahn (2000, 2001), Chanely (2002) and Hetherington & Rudolph (2008). This involves using variants of the first item of the ANES trust in government index from different polling firms. I keep items from each polling firm as separate variables and create a yearly series using Stimson’s algorithm. Table 1 in Appendix I contains all the items used to create the composite trust in government series as well as the loading scores for the component series and the percent of variance the composite series explains.

Bureaucratic Approval The key independent variable in my analysis will be a composite measure of attitudes towards the bureaucracy that I term, following Yackee and Lowery (2005), bureaucratic approval. Bureaucratic approval is a latent construct that represents favorable attitudes towards administrative institutions and personnel. This is an extension of Yackee and Lowery’s (2005) initial work to construct a macro-level measure of this construct. Two of the items they used were asked in the same format over at least two points in time and are included in the items that make up my measure of bureaucratic approval. In order to construct a longer series, I relaxed the criteria for inclusion imposed by Yackee and Lowery. Using the Roper Center for Public Opinion Research’s archives, I conducted keyword searches looking for survey items that appeared to assess favorability to the bureaucracy in terms attitudes towards both institutions (departments, agency and programs) as well as personnel (civil servants and

---

21 Keele (2007) uses a slightly different approach and includes variants of all the items from the ANES index.
22 I could only find one administration of their last two items which meant I could not use them for my analysis.
employees). I also used items that asked about attitudes towards Civil Servants from the World Values Survey. After initially collecting data, I returned to the Roper Center’s archives and conducted specific searches for government programs that I might have missed in the keyword searches (for example, for Food Stamps and Medicare and Medicaid).

Overall, I was able to identify over a 100 items over a 41 year period (1973-2014) that are administered in the same format over at least two points in time. These items are presented in Table 2 of the Appendix. For the yearly series, there are 100 items that Stimson’s algorithm uses to compute the measure of bureaucratic approval. In general, there are 4 broad types of indicators that can be categorized by whether they focus on institutions and personnel and whether they are towards specific or general attitude objects. Counts and a representative example of each type for the yearly bureaucratic approval series are provided in Table 2. Ten of the indicators ask about attitudes towards Federal institutions (departments, agencies or programs) in general. These items are those included in Yackee and Lowery’s (2005) analysis or are similar to those employed by them. The vast majority of items, 81, ask about attitudes towards specific Federal agencies. Only 9 items address attitudes towards personnel. Of these, six items address attitudes specifically about Federal personnel while the other three generally reference to “Civil Servants” or “government administrators” without being specific about the level of government being referenced.

Table 2 displays the estimates of the yearly Bureaucratic Approval series. While I do not

---

23 For institutions, the search terms were: Federal and (Government or government) and (Agen% or agen% or Depart% depart% or Program% or program%). For personnel the terms were: Federal and (Government or government) and (Civil or civil and Serv% or serv%) or (Employ% or employ%).

24 Five items are administered at different points in time within a year (i.e. quarters) and thus do not appear in the yearly series.
have access to their raw data, my yearly estimates in Figure 2 do appear to track with patterns Yackee and Lowery observe in their analysis: the series increases in the early 1980’s, decreases in the late 1980’s and early 1990’s, and then generally increases again throughout the rest 1990’s (2005, 519). Additionally, Yackee and Lowery (2005) results show that attitudes towards the bureaucracy are generally favorable which are also reproduced in my estimates. My estimates of bureaucratic approval are not identical to Yackee and Lowery’s due to the differences in the data used to construct the bureaucratic approval series, but these similarities suggest that my results are comparable to the only other study to attempt to create a time series of the same construct.

The literature review raised the issue of construct validity as a cause for concern due to whether the disparate items used to construct the latent measure of bureaucratic approval hang together and whether bureaucratic approval is distinct from other constructs of interest. I conducted an analysis of both issues and concluded that both challenges to construct validity are unlikely to affect the measure of bureaucratic approval. I have included this analysis in a separate appendix, Appendix II, to this paper.

[Figure 2 here]

Presidential Approval I follow Hetherington and Rudolph’s (2008) approach to measuring presidential approval by using Gallup’s presidential approval question: “Do you approve or disapprove of the way President ______ is handling his job as president?” which is available from 1960 to the present. I average responses within each year to create a measure of yearly Presidential Approval.

Congressional Approval My measure of Congressional approval comes from the approach originally used by Durr, Gilmour and Wolbrecht (1997). This was updated by Chanley, Rudolph and Rahn (2000) who revise the original procedure by including only those questions that ask
about whether the respondent approves of the job that Congress is doing (see also Keele 2007 and Hetherington & Rudolph 2008 who also adopt this approach). They argue that doing so makes the responses more comparable to presidential approval. The downside of this revised approach is that standard approval items for Congress were not asked until 1974. In order to extend the series to its earliest possible point, I use the original approach of Durr and colleagues (1997). Again, the series will be coded such that higher values of the index, scores close to 100, indicate higher approval of Congress. Table 3 in Appendix I contains the items used for the Congressional approval series along with the loading scores for each component indicator and the percent of variance explained by the composite series.

Approval of Supreme Court I also include a measure of approval towards the Supreme Court. Such a series is not present in macro-level research on trust and its inclusion as an independent variable is novel. There is a larger literature on attitudes towards the court itself, but this discussion focuses on issues of what drives attitudes towards the court and whether confidence in the institution is the same as perceptions about the legitimacy of the institution (see for example: Mondak & Smithey 1997 or Gibson, Caldeira & Spence 2003). Ideally, accounting for Supreme Court approval will improve the estimates of the other variables of interest in the model. To create the measure, I focused on items identified in Mondak and Smithey (1997) and Gibson, Caldeira and Spence (2003). I used the Roper Center’s public opinion archives and conducted a keyword search using the term “Supreme Court”\(^\text{25}\). Table 4 in Appendix I includes all items used for the Supreme Court approval series along with the loading scores for each component indicator and the percent of variance explained by the composite series.

\(^{25}\) Overall, the indicators I collected address approval for the institution, similar to items for the president and Congress, but also for confidence, affect (including items with both Likert-like favorability scales as well as feeling thermometers) as well as a set of items that asks about perceptions of the court’s ethical and moral practices.
Control Variables

I will also include several additional variables that are likely to affect general trust in government. The purpose of including these variables is to simply bring variance out of the error term and into the model in order control for its effects and improve the estimates of the main independent variables of interest described above. I am not interested in explaining their effects on trust, but include them so that I have more confidence in the estimates provided by the model. I intend to include controls for the following indicators: perceptions of economic performance, social capital including civic engagement and interpersonal trust indicators and an indicator of perceptions of crime as the most important problem facing the nation. I will explain my measurement strategy for each of these control variables briefly in the following paragraphs.

Perceptions of Economic Performance

Perceptions of economic performance is a fairly robust explanatory factor in models of trust. I will use the yearly series of the Index of Consumer Sentiment (ICS) from the University of Michigan’s Survey of Consumers26.

Social Capitol Indicators

Keel (2007) finds that social capitol, measured with indicators of civic engagement and interpersonal trust, has a long-term effect on general trust in government (see also Hetherington & Rudolph 2008). I adopt Keele’s (2005 & 2007) approach to measuring general social (or interpersonal) trust by using standard items available from the Roper Center’s archives. I depart slightly from Keele’s (2005 & 2007) approach to measuring civic engagement in two fairly minor ways. First, I keep some items he codes together into one series on time spent

---

26 One hazard of using a measure like the ICS is that studies have shown that it is a powerful predictor of attitudes towards political actors and institutions (see for instance Erikson, MacKuen and Stimson 2002 for the relationship between presidential approval and economic performance). This colinearity could affect the estimates for the ICS as well as the key independent variables. Analysts typically address this issue by detrending the economic component from the approval series by regressing ICS on the variable of interest, for example presidential approval, and using the residuals from that regression (see for example Keele 2007; Hetherington & Rudolph 2008). For this analysis, I will take this approach and the key independent variables will be detrended of their economic component.
volunteering as separate series. Second, Keele (2005) includes three separate component series about engaging in civic activities that come from one question asked by the Roper Organization over a 20 year period\textsuperscript{27}. In my coding, I coded one series that is percentage of respondents engaging in at least one of the activities listed in the item\textsuperscript{28}.

*Most Important Problem: Crime* As discussed in the literature review, lots of macro-level studies employ indicators of the public’s perception of the most important problem (MIP). Only the perceptions of crime as the MIP seem to consistently affect trust across these studies. Several polling firms use versions of an MIP item\textsuperscript{29}. I collected the percentage of respondents reporting crime as the most important problem on MIP items from 1973 to 2014 for various polling firms. I then used Stimson’s algorithm to create a single yearly series from this data.

*Macropartisanship* Lastly, I include a measure of macropartisanship given the large effects Keele (2007) uncovers in his analysis. I draw on the foundational work of Erikson, MacKuen and Stimson (2002, 121) who measure it as the percent of respondents identifying themselves as Democrats when given a standard two-party identification question. Several polling firms use the

\textsuperscript{27} The text of the questions is: “Here is a list of things some people do about government or politics. Have you happened to have done any of those things in the past year? (If ’Yes,’ ask:) Which ones?..Written your Congressman or Senator. Attended a political rally or speech. Attended a public meeting on town or school affairs. Held or run for political office. Served on a committee for some local organization. Served as an officer of some club or organization. Written a letter to the paper. Signed a petition. Worked for a political party. Made a speech. Written an article for a magazine or newspaper. Been a member of some group like the League of Women Voters, or some other group interested in better government.” He creates series for “attended a public meeting on town or school affairs”, “served on a committee for a local organization”, “served as an officer of some club”

\textsuperscript{28} More formally I coded it as 1 minus the percentage of respondents who reported not being involved in any of the activities or reported they didn’t know if they were involved since respondents could indicate that they have participated in multiple activities.

\textsuperscript{29} These include: Gallup, ABC News/Washington Post, CBS News/New York Times, Associated Press/IPSOS, Los Angeles Times, Princeton Survey Research and Quinnipiac University.
same or very similar items and so I collected data from each firm and then used Stimson’s
algorithm to create a single composite yearly series from 1972 to 2014\textsuperscript{30}.

**Inspecting the Dependent and Key Independent Variables & Modeling Strategies**

Before moving forward, I briefly inspect the key variables used in my analysis. *Figure 4*
includes results for trust in government and approval for the president, Congress and the
Supreme Court. Interestingly, attitudes towards the bureaucracy are consistently more favorable
than those towards the Congress and the Supreme Court and can occasionally be more favorable
than towards the president. Lastly, there appears to be some similarities in movement over time
between trust and bureaucratic support, but it is hard to distinguish if they are responding to
common exogenous shocks or there is a relationship between the two variables. If there is a
relationship, it suggests that bureaucratic support helps increase trust from where it would be
otherwise given the relatively poor evaluations of other institutions, like the Congress, and the
generally favorable evaluations of the bureaucracy.

[Figure 4 here]

I conducted extensive testing of the key dependent and independent variable series for
mutual Granger causation and order of integration. Based on testing, provided in Appendix 3, I
can conclude that there are no issues with the trust series Granger causing any of the key
independent variables. The results of the order of integration tests suggest that the order of
integration is complex for my series. The series for trust, Congressional approval and Supreme
Court approval appear to be best characterized as fractionally integrated. While the series for
presidential and bureaucratic approval appear to be more easily characterized as stationary, \( I(0) \),
and non-stationary, \( I(1) \), processes respectively.

\textsuperscript{30} These include: Gallup, Roper, ABC News/Washington Post, CBS News/New York Times, Associated Press,
Overall, this suggests the need to be cautious in how I approach modeling the data. I need to be sensitive to the fact that most of the series are not stationary. Traditionally, the guidance in the methodological literature is to use estimate models using data in first differences rather than in levels. One concern with this pre-whitening of the data is that it throws out information and limits the analysts to look at how changes in the independent variables lead to changes in the dependent variable in the short-term (Lebo Walker & Clarke 2000; Keele 2007; De Boef & Keele 2008; Grant & Lebo 2014). The classical approach has been to look towards models that adopt an error correction framework and allow for the possibility that the dependent variable and one, or more, of the independent variables are co-integrated with one another (Keele 2007; De Boef & Keele 2008). This error correction approach allows for the estimation for long-run equilibrium between variables and the inclusion of long-term effects. The new approach is to eschew the “knife’s edge” distinction between stationary and non-stationary series and instead employ models that use fractional differencing and co-integration (Box-Steffensmeier w/Smith 1998, w/Tomlin 2000; Lebo Walker & Clarke 2000; Grant & Lebo 2014). These approaches allow the analyst to difference a variable based on its own order of integration which avoids the potential to over difference series that are not truly I(1) processes (Grant & Lebo 2014). In this approach, series are differenced by their own particular order of integration. There is also the chance that series are fractionally co-integrated although this does not appear to be the case with my data.

In this analysis, I employ both a variety of techniques to estimate relationships between my variables. I employ the traditional approach by estimating an OLS model in first differences and then a Box-Jenkins-type model with autoregressive and I(1) components. I then turn to estimating a single equation error-correction model to see if I can capture long-run relationships
between my variables. Finally, I will estimate a model with fractionally differenced variables. An overview of these modeling approaches and estimating equations is provided in Table 3. I employ a diverse set of approaches in the belief that if results are consistent across approaches, then this provides robust support for my findings regardless of the weakness of any one approach.

[Table 3 here]

**Hypotheses**
A summary of the hypotheses that my models will test which are displayed in Table 4. My first hypothesis (H1) deals with the short-term, or contemporaneous, effect of aggregate attitudes towards the bureaucracy on trust in government. In order to provide support for the macro account of micro-performance theory, the coefficient for bureaucratic approval should be positive and statistically significant. This hypothesis is tested in all modeling approaches. The second hypothesis (H2) tests the magnitude of this short-term effect on trust compared to those for other political actors and institutions. In fact, there are three separate hypotheses being tested here which examines the size of the effect for bureaucratic approval relative to presidential approval (H2A), Congressional approval (H2B) and approval for the Supreme Court (H2C). I test these hypotheses using a Wald test of the coefficients from the models. The next set of hypotheses are extensions of H1 and H2 but for long-term effects and are tested only in the error correction model. Thus H3 examines whether the lagged value of bureaucratic approval is positive and statistical significant and H4 extends the logic of H2 to examine if the magnitude of the long-term effect is large relative to presidential approval (H4A), Congressional approval (H4B and approval for the Supreme Court (H4C).

[Table 4 here]

**Findings**
I begin by discussing my findings for Model I (OLS in First Differences) and Model II (ARIMA). The results and diagnostic tests for Model I and II are provided in Table 5. Both models are statistically significant and I can reject the null hypothesis that the coefficients in either are all equal to 0\textsuperscript{31}. The one troubling diagnostic is for the Breusch-Godfrey test for serial correlation in the residuals for Model I which is close to rejecting the null hypothesis of no serial correlation at conventional levels of significance ($\alpha=0.05$)\textsuperscript{32}. The Ljung-Box Q test statistic for Model I does provide additional support that the residuals are a white noise process.

[Table 5 here]

Overall, Model I and II provide very similar findings with respect to my hypotheses. In terms of H1, bureaucratic approval is positive and statistically significant in both models\textsuperscript{33}. The results for H2 about the magnitude of the effects are more complicated. Both models suggest that the effect of bureaucratic approval is greater than the effect for presidential approval (H2A)\textsuperscript{34}. However, I cannot reject the null hypothesis that the coefficients for bureaucratic approval is equal to the coefficients for approval for Congress (H2B)\textsuperscript{35} or the Supreme Court (H2C)\textsuperscript{36}. Overall, results from both models suggest that bureaucratic approval does affect trust in government in the short-term. Its effect is greater than the effect for the president, but we cannot

\textsuperscript{31} via the model F-test statistic in Model I and the model Wald $\chi^2$ statistic in Model II.

\textsuperscript{32} This appears to be an issue for the first lag of the residuals and subsequent tests on lags of 2 or more indicate no problem with serial correlation.

\textsuperscript{33} In Model I, I test the null hypothesis that the coefficient for bureaucratic approval is equal to 0 using a Wald F-test. The test statistic is 5.79 with a p-value of 0.02 indicating that I can reject the null hypothesis. In Model II, the test statistic for the same hypothesis is a Wald $\chi^2$ of 5.37 with a p-value of 0.02.

\textsuperscript{34} In Model I, I test for the null hypothesis the coefficients for bureaucratic and presidential approval are equal using a Wald F-test. The test statistic is 5.59 with a p-value of 0.03. In Model II, Wald $\chi^2$ statistic for the same null hypothesis is 4.19 with a p-value of 0.04.

\textsuperscript{35} In Model I, the Wald F-test statistic for the null hypothesis the coefficients for bureaucratic and Congressional approval are equal is 1.26 with a p-value of 0.27. In Model II, the Wald $\chi^2$ test statistic for the same null hypothesis is 0.57 with a p-value of 0.45.

\textsuperscript{36} I implement the same tests as above for the equality of the bureaucratic approval and Supreme Court approval coefficients. For Model I, the Wald F-test statistic is 2.56 (0.12). For Model II, the Wald $\chi^2$ test statistic is 2.09 (0.15).
rule out the possibility that its effect is comparable to those for the Congress or the Supreme Court.

I now turn to the results from Model III, the single equation error correction model, which provides a test of whether bureaucratic approval affects trust in the long-term (H3) and whether those long-term effects are greater than those for other political actors and institutions (H4) in addition to the first two hypotheses. The results for Model III are displayed in Table 6. While a distinct advantage of this approach is the ability to estimate long-run effects, a disadvantage, particularly for study with a modest number of time periods like this, is that it does so at the cost of a significant number of degrees of freedom (Keele 2007; De Bouf & Keele 2008). In addition to estimating a coefficient for the short-term effects for all independent and control variables, this model also requires the estimation of an Error Correction coefficient and coefficients for the long-term effects of the independent and control variables (Keele 2007; De Bouf & Keele 2008). The Error Correction (ECM) coefficient, the lagged value of the dependent variable, is the rate at which the dependent variable adjusts to shocks in the independent and control variables. My strategy, also employed by Keele (2007), was to estimate a full model and then drop coefficients that appeared to be insignificant at forecasting trust and estimate a restricted model. In order to ensure that this decision to exclude these variables did not affect the results, I estimated the reduced model and used an F test of the null hypothesis that the excluded coefficients all equaled 0. The results of this test are reported in the table below and suggest that the restrictions I imposed are appropriate.

[Table 6]

---

37 It is important to note the t-statistic on this coefficient is not normally distributed and so critical values must be calculated by hand according to a formula developed by MacKinnon (2010; see also Grant & Lebo 2014).

30
Overall, I can reject the null hypothesis that all the coefficients in the model equal 0. There does not appear to be any time varying volatility (ARCH effects) and that the residuals are best characterized as a white noise process. The diagnostics do suggest that there may be an issue with heteroscedasticity. While I cannot reject the null hypothesis at conventional levels ($\alpha=0.05$) of statistical significant, the p-value on Breusch-Pagan $\chi^2$ test is 0.0514 and I would reject the null hypothesis of homoscedastic variance in the error terms at a different level (i.e. $\alpha=0.1$) of significance. However additional testing suggests this may not be an issue with the model.\footnote{White’s test for heterscedasticity yields a $\chi^2$ test statistic of 40.00 with a $p$-value of 0.43.}

Again, the short-term results for the restricted version of Model III are similar to those form my first two models. The short-term coefficient for bureaucratic approval is positive and statistically significant\footnote{The Wald F-test statistic is 6.39 with a $p$-value of 0.02.} which provides support for H1. Again, the results for H2 are more complex. Approval Supreme Court drop out of the restricted version of Model III and the test of the restrictions imposed indicate that I cannot reject the null hypothesis that its coefficient is equal to 0. Given that bureaucratic approval is positive and statistically significant, this does provide some support for some support for H2C. The results suggest, similar to those from previous models, that I cannot reject the null hypothesis that the coefficients for bureaucratic and Congressional approval (H2B) are equal\footnote{The Wald F-test statistic is 1.35 with a $p$-value of 0.26.}. Unlike previous models, the results suggest I cannot reject the null hypothesis that the effect of bureaucratic and Presidential approval are equal (H2A) at conventional levels of statistical significance although the results are close to statistical significance\footnote{The Wald F-statistic is 4.12 with a $p$-value of 0.0536.}.

The results for long-term effects are also interesting. Unlike the full version of Model III, the coefficient on the lagged dependent variable (the ECM coefficient) is statistically significant.
based on my calculation of the appropriate MacKinnon critical values (MacKinnon 2010). This is important because it indicates that error correction is occurring. If no error correction was occurring, then it would be inappropriate to model the data using this approach (Grant & Lebo 2014). The value of the coefficient, 85%, indicates the rate at which long-term trust adjusts to changes in the independent and control variables. This suggests that most of the shock is absorbed relatively quickly which is likely an artifact of conducting a yearly analysis. The results for the key independent variables suggest that only Congressional approval exerts any long-term effect on trust in government.  

I cannot reject the null hypothesis that the coefficient for bureaucratic approval equals 0 which means there is no support for H3. Because of this and because presidential and Supreme Court are presumed to be 0 because of the restrictions in the model, there is no support for H4A or H4C. I also cannot reject the null hypothesis that this coefficient is equal to Congressional approval which means there is no support for H4B. Overall the results from Model III suggest, much like Models I and II, the bureaucracy exerts only a short-term, or contemporaneous, effect on trust.

Last, I present results for Model IV using fractionally differenced data. Each variable in the model has been run through a filter and differenced by its own value of \( d \). The important thing to note is that once each variable has been fractionally differenced, the unit roots tests unambiguously show them to be stationary. Furthermore, because each variable has been differenced by its own value of \( d \), there should be no concern that over differencing has resulted

---

42 The Wald F-test statistic is 16.73 with a p-value of 0.00.
43 The Wald F-test statistic is 2.69 with a p-value of 0.11.
44 The Wald F-test statistic is 0.06 with a p-value of 0.81. This is of some interest since the model results seem to suggest that the lagged value of Congressional approval does affect trust.
45 To fractionally difference the data, I use the STATA command ROBLPR to estimate the value of \( d \) for the first difference of each variable and then use RATS to fractionally difference the series (see Grant & Lebo 2014). I use this two-step technique because STATA's ARFIMA technique can handle values of \( d \) from -0.5 to 0.5 and one variable in my series, Presidential Approval, has a value that exceeds this when differenced.
in building in moving average processes into the variables (see Grant & Lebo 2014 for a discussion of this concern). The results for Model IV are displayed in Table 7. I can reject the null hypothesis that all the coefficients in the model are equal to 0 (the F-test statistic for the model). The results from the Breusch-Godfrey test do indicate some issues with serial correlation. The presence of serial correlation does not bias the estimates of Model IV, but do affect the estimate of the standard errors and consequently my ability to conduct inference on the coefficients. In order to address this problem, I estimate a second model, IV:B, using Newey-West standard errors that are robust to the presence of serial correlation\(^{46}\).

[Table 7 here]

Again, estimating the model using Newey-West standard errors does not affect the results I observe in previous models with respect to H1. The coefficient for bureaucratic approval is positive and statistically significant and I can reject the null hypothesis that it equals 0\(^{47}\). The results are also generally consistent with previous models for H2 concerning the magnitude of the effect of bureaucratic approval relative to other political actors and institutions. I cannot reject the null hypothesis that bureaucratic approval is equal to approval for Congress (H2B)\(^{48}\) and the Supreme Court (H2C)\(^{49}\). The results from this model depart from previous findings in suggesting that I also cannot reject the null hypotheses that bureaucratic approval is equal to approval for the President (H2A) at conventional levels (\(\alpha=0.05\)) levels but the value of the Wald test static is close to statistical significance at this level\(^{50}\).

---

\(^{46}\) I estimate the model with Newey-West standard errors using one lag of the residuals. The Breusch-Godfrey test indicates that the first lag is serially correlated at conventional levels of statistical significance while the second lag is serially correlated at \(\alpha=0.1\). All other lags of the residuals are not statistically significant.

\(^{47}\) The Wald F-test statistic is 4.82 with a p-value of 0.04.

\(^{48}\) The Wald F-test statistic is 1.70 with a p-value of 0.21.

\(^{49}\) The Wald F-test statistic is 2.44 with a p-value of 0.13.

\(^{50}\) The Wald F-test statistic is 4.12 with a p-value of 0.0556.
An extension of the fractionally differenced least squares model would be to look for evidence of fractional co-integration and then estimate a fractional error correction model. While the guidance in the literature is slightly unclear, the approach is similar to the two-stage Engle-Granger error correction approach. This three-stage approach is discussed in Box-Steffensmeier and Tomlin (2000) and Grant and Lebo (2014). This requires the analyst to regress trust on a potential co-integrating independent or control variable (or variables) in level form and save the residuals. The residuals are then inspected to see if they have a significantly lower order of integration than either of the parent series. If co-integration occurs, the residuals are fractionally differenced by their own value of $d$ and then included in the regression model. I’ve examined the data for fractional co-integration and it appears that none of my independent variables fractionally co-integrate with trust in government. Despite conducting exhaustive testing, I could find no combination of trust and other variables that possessed a significantly lower order of integration than at least one of the parent series. Given these findings, I follow the guidance in Lebo and Moore (2003) and concluded that when there is no evidence of fractional co-integration the best modeling approach is to run a fractionally differenced least squares model as I have done in Model IV. Again, this suggests that there is no long-run effect of bureaucratic approval on trust.

(Table 8)

A summary of my findings is displayed in Table 8. In a subsequent update to their conference paper, Taylor and Grant write, “Time series analysts do not have the luxury of being able to replicate studies with new data but robustness checks can come from finding similar results across diverse modeling choices” (2015, 37). Overall, the findings are consistent across the different models that the bureaucracy does affect trust in the short-term (H1). The results for
H2 generally appear consistent across models. Bureaucratic approval does appear to exert a consistently larger effect than Presidential approval in most models (H2A). It does not appear to exert a larger effect than approval for Congress (H2B) or the Supreme Court (H2C). These consistent findings across a variety of different modeling specifications provide some assurance that they are indeed robust. Additionally, I find no evidence to support H3 or H4 that bureaucratic approval exerts a long-term effect on trust and that this effect is large relative to other actors and institutions. I now turn to a discussion of the implications of these findings.

Implications
This analysis is unique in that it brings aggregate attitudes of the bureaucracy into a longitudinal analysis with other variables commonly used to explain trust in government. The findings are important because they suggest that macro-level attitudes towards the bureaucracy do move the needle on trust. This effect is only in the short-term, but the size of this effect is comparable to (in Models I, II, III:B and IV:B) the short-term effect for Congressional approval. This is important because Congress is the institution that has been found to exert the most influence on trust in government in the literature on trust in American politics. Consequently to find that the bureaucracy exerts an effect comparable to Congress suggests that it is an important determinant of political trust. Overall, I think there are several important implications that arise from these results.

The first concerns how best to model trust in future empirical work in either political science or public administration. Future studies of trust in government should attempt to control for this explanatory factor and failure to do so would involve excluding a potentially relevant explanatory variable. This is of particular importance for the studies of political trust in the political science literature which do not include such a variable. My findings suggest that the
bureaucracy plays an important role in explaining trust at the aggregate level and that it should be treated as institution on par with others in the American political system. For the public administration literature, this study is important because it provides a synthesis of the broader literature on macro-level trust in American politics and identifies and controls for other explanatory factors that do affect trust. The bureaucracy does appear to affect trust, but so does the Congress and, depending on the model, one or more of the control variables. Not accounting for these other covariates again leads to the problem of miss-specified models.

Second, the broader research question motivating this study is whether instrumental improvements in administrative performance via reform is an appropriate strategy to increase trust in government. While aggregate attitudes towards the bureaucracy do affect trust, I think the implications here are more nuanced. It is important to note that this effect occurs in the short-term only and that there was no support for any long-term effects (H3). This suggests that there might be an increase to trust with the successful implementation of a set of reforms, but this effect is only for changes from one period to the next and there is no long-run benefit of improved macro attitudes towards the bureaucracy. Either reforms must be continually implemented at every period, and moreover implemented successfully so that they enhance performance, or administrative reform is not a sensible strategy to enhance trust in government. Interestingly, another away to think about the implication of these findings is that they suggest that large scale administrative failures that diminish aggregate attitudes towards the bureaucracy may have little long-term impact on trust beyond changes in the next period.

Further, a key assumption inherent in this logic of reform as a strategy to enhance trust is that attitudes towards the bureaucracy are generally low and that they are they “low hanging fruit” which can be easily improved in order to enhance trust. My estimate of aggregate
bureaucratic approval suggests that this assumption is severely flawed. First, like Yackee and Lowery’s (2005) earlier estimate, my series suggests that aggregate attitudes towards the bureaucracy are quite favorable. In fact, in most periods of my study, aggregate approval of the bureaucracy exceeds approval for Congress and the Supreme Court. In a few periods, aggregate bureaucratic approval exceeds presidential approval. Far from being the low hanging fruit, aggregate attitudes towards the bureaucracy constitute an important reservoir of positive evaluations of the Federal government. Consequently there may be little room to greatly improve aggregate attitudes towards the bureaucracy beyond where they are observed over the years of this study.

Drawing on this last point, one theme in the public administration literature concerns the deleterious effects of bureaucrat bashing, in general by elected officials, on the morale of the public-sector workforce (see for example: Hall 2002, Goodsell 2004). While such bashing may indeed be harmful to the morale of public employees, my findings and those from Yackee and Lowery’s (2005) early analysis would appear to suggest that bashing does not appear to negatively influencing aggregate bureaucratic approval. While this is not controlled for specifically in my analysis, the argument in the bashing literature would seem to suggest that there is a decay in macro-level attitudes towards the bureaucracy within the last few decades as bashing has increased. As mentioned above, this is simply not the case. Interestingly, a more intriguing hypothesis is that bureaucrat bashing by elected officials may have negatively impact attitudes towards trust in government in general and towards specific branches of government specifically the Congress. This is not to suggest that concerns about bashing’s effect on morale is misplaced. However, it does suggest the need for additional research that examines how bashing affects morale. For instance, bashing on the part of elected officials may weaken morale because
public employees perceive it as a signal about how elected overseers perceive the intrinsic worth of their work or confidence in their ability to implement and administer policy.

Finally, if one is serious about reversing the decline in trust, my findings suggest that the institution to start with is the Congress. Aggregate approval of Congress is very low and attitudes towards Congress affect trust in both the short- and long-term. This suggests that today’s poor approval ratings affect trust now, but in future periods. Truly, Congress, as a political institution is the low hanging fruit to improve trust. Unfortunately, it may be truly hard to leverage this into an effective strategy to increase trust. As public opinion scholars note, aggregate approval of Congress is poor, but most citizens are quite happy with their own Senators and Representatives. Consequently future research might look at what can be done to change aggregate evaluations of the institution as a whole.

Lastly, there are a few limitations of this study that bear some discussion. First, unlike the studies by Morgeson and colleagues and as discussed earlier, my analysis is unable to identify the contributions that specific administrative institutions have on trust in government. In this case, I am not able to test some of the implications of micro-performance theory as developed by Van de Walle and Bouckaert (2003). My approach uses aggregate public opinion data and makes the assumption that more favorable macro-level attitudes towards the bureaucracy is the result of more favorable evaluations of specific administrative institutions.

The study is also limited by the paucity of available data on attitudes towards administrative institutions in the Federal government. The available data tends to be small series that are often only captured at two points in time and then discontinued. In order to create a series capable of a full multivariate analysis, and thus avoid the problems in Yackee and Lowery’s (2005) analysis, I needed to adopt a fairly permissive inclusion criteria for items used
to create the bureaucratic approval series. Despite this limitation, the bureaucratic approval series compares favorably, in terms of variance explained from component indicators, to the approval series for Congress and the Supreme Court which are also constructed using Stimson’s dyad-ratios algorithm. Additionally, this series does not appear well correlated with trust and other key independent variables suggesting that it is, in fact, capturing something distinct. I hope these results spur some interest in beginning a more serious effort to regularly capture public opinion towards administrative institutions so that this analysis can be extended.

Conclusion

I began with the question of whether the bureaucracy moves the needle on trust. The results presented in this analysis suggests that, at the aggregate level, the answer is an unambiguous yes although these effects occur only in the short-term. The results are robust to four different model specifications. Further the results indicate that the effect is comparable to that of Congress. Even though the bureaucracy does move the needle on aggregate trust, I have argued that administrative reform may not be a sensible strategy to improve trust as this effect occurs only in the short-term and evaluations of the bureaucracy are generally favorable.

REFERENCES


Figures & Tables

Figure 1: A Logic Model for Micro-Performance Theory

Figure 2. A Logic Model of Macro-level Micro-Performance Theory

Note: Reproduction of Figure 1 in Van de Walle and Bouckaert (2003, 894)
Table 1. Overview of Variables used in Analysis

<table>
<thead>
<tr>
<th>Dependent Variable (DV)</th>
<th>Independent Variables (IV)</th>
<th>Control Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust in Government</td>
<td>Presidential Approval</td>
<td>Consumer Sentiment</td>
</tr>
<tr>
<td></td>
<td>Gallup Presidential Approval Series</td>
<td>Social Trust</td>
</tr>
<tr>
<td></td>
<td>Congressional Approval</td>
<td>Civic Engagement</td>
</tr>
<tr>
<td></td>
<td>Items from Durr &amp; colleagues (1997)</td>
<td>Perceptions of Crime</td>
</tr>
<tr>
<td></td>
<td>Supreme Court Approval</td>
<td>Macropartisanship</td>
</tr>
<tr>
<td></td>
<td>Roper Archives (Key word search)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bureaucratic Approval</td>
<td>Sources &amp; Strategy consistent with approaches in the literature.</td>
</tr>
<tr>
<td></td>
<td>Yackee &amp; Lowery (2005) &amp; Additional Items</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Count and Example of Items used to construct the Bureaucratic Approval Series

<table>
<thead>
<tr>
<th>Focus is:</th>
<th>Institutional</th>
<th>Object is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>10 items (10%)</td>
<td>3 items (3%)</td>
</tr>
<tr>
<td></td>
<td>Ex: Dealing with a federal government agency is often not worth the trouble (Times Mirror/Gallup, Pew/PSRA)</td>
<td>Ex: (I am going to name a number of organisations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?)… The Civil service (World Values Survey)</td>
</tr>
<tr>
<td>Specific</td>
<td>81 items (81%)</td>
<td>6 items (6%)</td>
</tr>
<tr>
<td></td>
<td>Ex: Is your overall opinion of...Department of Education very favorable, mostly favorable, mostly unfavorable, or very unfavorable? (Pew/PSRA)</td>
<td>Ex: (Now here is a list of people in various kinds of occupations and professions. For each one would you tell me whether you have a generally high opinion of them, a fairly good opinion of them, not too good an opinion, or a poor opinion of them?)... Federal agency and department officials (Roper)</td>
</tr>
</tbody>
</table>
Figure 3. Yearly Bureaucratic Approval

Figure 4. Yearly Series for Trust in Government and Key Independent Variables
Table 3. Summary of Modeling Approaches and Estimating Equations

<table>
<thead>
<tr>
<th>Modeling Approach</th>
<th>Estimating Equation</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>I: OLS in First Differences</td>
<td>[\Delta Y_t = \alpha + \beta (\Delta X_t) + \epsilon_t]</td>
<td>Where: [\Delta Y_t = Y_t - Y_{t-1}, \Delta X_t = X_t - X_{t-1}]</td>
</tr>
<tr>
<td>II: Box-Jenkins ARIMA (1,1,0)</td>
<td>[\Delta Y_t = \alpha + \beta \Delta X_t + \rho (Y_{t-1} - X_{t-1}) + \epsilon_t]</td>
<td></td>
</tr>
<tr>
<td>III: Single Equation Error Correction</td>
<td>[\Delta Y_t = \alpha + \beta \Delta X_t + \gamma X_{t-1} + \theta Y_{t-1} + \epsilon_t]</td>
<td></td>
</tr>
<tr>
<td>IV: Fractionally Differenced OLS</td>
<td>[\Delta^{d}Y_t = \alpha + \Delta^{dx}X_t + \epsilon_t]</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Summary of Testable Hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>(H_0: \Delta \text{Approval}_t = 0)</td>
</tr>
<tr>
<td>H2</td>
<td>(H_0: \Delta \text{Approval}<em>t = \Delta \text{Approval}</em>{t-1}) for Others</td>
</tr>
</tbody>
</table>

Table 5. Results for Model I and Model II

<table>
<thead>
<tr>
<th>DV is (\Delta\text{Trust in Govt.}_t)</th>
<th>Model I: OLS in First Differences</th>
<th>Model II: ARIMA (1,1,0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term Effects ((\Delta X_t))</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presidential Approval</td>
<td>0.00 (0.03)</td>
<td>0.03 (0.04)</td>
</tr>
<tr>
<td>Congressional Approval</td>
<td>0.19 (0.08)*</td>
<td>0.21 (0.08)*</td>
</tr>
<tr>
<td>Supreme Court Approval</td>
<td>0.12 (0.11)</td>
<td>0.08 (0.17)</td>
</tr>
<tr>
<td>Bureaucratic Approval</td>
<td>0.45 (0.19)*</td>
<td>0.36 (0.15)*</td>
</tr>
<tr>
<td>Consumer Sentiment</td>
<td>0.27 (0.05)*</td>
<td>0.26 (0.05)*</td>
</tr>
<tr>
<td>Social Trust</td>
<td>-0.36 (0.18)‡</td>
<td>-0.35 (0.21)‡</td>
</tr>
<tr>
<td>Civic Engagement</td>
<td>0.20 (0.22)</td>
<td>0.36 (0.18)*</td>
</tr>
<tr>
<td>MIP: Crime</td>
<td>-0.14 (0.08)</td>
<td>-0.27 (0.07)*</td>
</tr>
<tr>
<td>Macropartisanship</td>
<td>0.35 (0.31)</td>
<td>0.06 (0.35)</td>
</tr>
<tr>
<td><strong>Constant &amp; Other Coefficients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.06 (0.29)</td>
<td>-0.09 (0.25)</td>
</tr>
<tr>
<td>(\phi(AR1))</td>
<td>-</td>
<td>-0.52 (0.21)*</td>
</tr>
<tr>
<td>N</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td><strong>Diagnostics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.48</td>
<td>-</td>
</tr>
<tr>
<td>F-test Model (df(\text{Model}, \text{dfResidual}))</td>
<td>5.04 (9,30)*</td>
<td>-</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-</td>
<td>-68.95</td>
</tr>
</tbody>
</table>
Wald $\chi^2$ Model - 105.82*  
Eigenvalue for AR polynomial - -0.53  
Breusch-Pagan ($\chi^2$) 0.56 -  
Breusch-Godfrey LM Test ($\chi^2$) 3.73‡ -  
Ljung-Box Q ($\chi^2$) 17.6 20.08  
LM Test for ARCH ($\chi^2$) 2.15 -  

Note: Years are 1974-2013. OLS Estimates. Standard error in parentheses. * p<.05. ‡p<0.10

### Table 6. Results for Model III

<table>
<thead>
<tr>
<th>DV is $\Delta$Trust in Govt.</th>
<th>Model III: Single Equations Error Correction</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A: Full Model</td>
<td>B: Restricted Model</td>
<td></td>
</tr>
<tr>
<td><strong>Short-term Effects ($\Delta X_t$)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presidential Approval</td>
<td>0.01 (0.03)</td>
<td>0.01 (0.03)</td>
<td></td>
</tr>
<tr>
<td>Congressional Approval</td>
<td>0.32 (0.08)*</td>
<td>0.30 (0.06)*</td>
<td></td>
</tr>
<tr>
<td>Supreme Court Approval</td>
<td>0.14 (0.12)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bureaucratic Approval</td>
<td>0.16 (0.22)</td>
<td>0.36 (0.17)*</td>
<td></td>
</tr>
<tr>
<td>Consumer Sentiment</td>
<td>0.29 (0.04)*</td>
<td>0.29 (0.04)*</td>
<td></td>
</tr>
<tr>
<td>Social Trust</td>
<td>-0.63 (0.24)*</td>
<td>-0.53 (0.20)*</td>
<td></td>
</tr>
<tr>
<td>Civic Engagement</td>
<td>0.31 (0.17)‡</td>
<td>0.25 (0.17)</td>
<td></td>
</tr>
<tr>
<td>MIP:Crime</td>
<td>-0.19 (0.07)*</td>
<td>-0.18 (0.07)*</td>
<td></td>
</tr>
<tr>
<td>Macropartisanship</td>
<td>0.25 (0.32)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Constant &amp; Other Coefficients</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-18.53 (15.26)</td>
<td>2.78 (7.80)</td>
<td></td>
</tr>
<tr>
<td>Trust in Govt.(_t-1)(ECM)</td>
<td>-0.84 (0.17)¹</td>
<td>-0.85 (0.16)²</td>
<td></td>
</tr>
<tr>
<td><strong>Long-term Effects ($X_{t-1}$)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presidential Approval</td>
<td>0.09 (0.04)*</td>
<td>0.06 (0.03)‡</td>
<td></td>
</tr>
<tr>
<td>Congressional Approval</td>
<td>0.25 (0.07)*</td>
<td>0.27 (0.05)*</td>
<td></td>
</tr>
<tr>
<td>Supreme Court Approval</td>
<td>0.12 (0.14)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bureaucratic Approval</td>
<td>-0.10 (0.24)</td>
<td>0.15 (0.14)</td>
<td></td>
</tr>
<tr>
<td>Consumer Sentiment</td>
<td>0.16 (0.05)*</td>
<td>0.18 (0.04)*</td>
<td></td>
</tr>
<tr>
<td>Social Trust</td>
<td>-0.39 (0.29)</td>
<td>-0.23 (0.24)</td>
<td></td>
</tr>
<tr>
<td>Civic Engagement</td>
<td>0.63 (0.27)*</td>
<td>0.52 (0.18)*</td>
<td></td>
</tr>
<tr>
<td>MIP:Crime</td>
<td>-0.33 (0.09)*</td>
<td>-0.28 (0.07)*</td>
<td></td>
</tr>
<tr>
<td>Macropartisanship</td>
<td>-0.28 (0.30)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>40</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

**Diagnostics**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted R²</td>
<td>0.74</td>
<td>0.75</td>
</tr>
<tr>
<td>F-test Model (df$<em>{Model}$, df$</em>{Residual}$)</td>
<td>6.78 (19,20)*</td>
<td>8.73 (15,24)*</td>
</tr>
<tr>
<td>F-test of Restrictions (df$<em>{Restricted}$, df$</em>{Full}$)</td>
<td>-</td>
<td>0.77 (4,20)</td>
</tr>
<tr>
<td>Breusch-Pagan ($\chi^2$)</td>
<td>0.58</td>
<td>3.80‡</td>
</tr>
<tr>
<td>Breusch-Godfrey LM Test ($\chi^2$)</td>
<td>0.40</td>
<td>0.31</td>
</tr>
<tr>
<td>Ljung-Box Q ($\chi^2$)</td>
<td>29.79*</td>
<td>24.28</td>
</tr>
<tr>
<td>LM test for ARCH ($\chi^2$)</td>
<td>0.00</td>
<td>1.22</td>
</tr>
</tbody>
</table>

Note: Years are 1974-2013. OLS Estimates. Standard error in parentheses. * p<.05. ‡p<0.10
The correct critical value for t-statistic on the ECM coefficient at ($\alpha=.05$) is -6.22 using the formula from MacKinnon (2010). The t-statistic from the model is -4.96 indicating the coefficient is not statistically significant.

The correct critical value for t-statistic on the ECM coefficient at ($\alpha=.05$) is -5.49 using the formula from MacKinnon (2010). The t-statistic from the model is -5.75 indicating the coefficient is statistically significant.

### Table 7. Results for Model IV

<table>
<thead>
<tr>
<th>DV is $\Delta^dy$Trust in Govt.</th>
<th>Model IV: A</th>
<th>Model IV: B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fractionally Differenced OLS</td>
<td>w/Newey-West S.E.s</td>
</tr>
<tr>
<td><strong>Short-term Effects ($\Delta^dx_t$)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presidential Approval</td>
<td>0.06 (0.04)</td>
<td>0.06 (0.03)</td>
</tr>
<tr>
<td>Congressional Approval</td>
<td>0.15 (0.07)*</td>
<td>0.15 (0.06)*</td>
</tr>
<tr>
<td>Supreme Court Approval</td>
<td>0.14 (0.11)</td>
<td>0.14 (0.08)</td>
</tr>
<tr>
<td>Bureaucratic Approval</td>
<td>0.40 (0.18)*</td>
<td>0.40 (0.17)*</td>
</tr>
<tr>
<td>Consumer Sentiment</td>
<td>0.27 (0.05)*</td>
<td>0.27 (0.05)*</td>
</tr>
<tr>
<td>Social Trust</td>
<td>-0.33 (0.19)</td>
<td>-0.33 (0.18)</td>
</tr>
<tr>
<td>Civic Engagement</td>
<td>0.19 (0.22)</td>
<td>0.19 (0.20)</td>
</tr>
<tr>
<td>MIP:Crime</td>
<td>-0.13 (0.08)</td>
<td>-0.13 (0.10)</td>
</tr>
<tr>
<td>Macropartisanship</td>
<td>0.48 (0.31)</td>
<td>0.43 (0.33)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.25 (0.30)</td>
<td>-0.25 (0.28)</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td><strong>Diagnostics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.49</td>
<td>-</td>
</tr>
<tr>
<td>F-test Model (9,30)</td>
<td>5.15*</td>
<td>4.26*</td>
</tr>
<tr>
<td>Breusch-Pagan Test ($\chi^2$)</td>
<td>1.16</td>
<td>-</td>
</tr>
<tr>
<td>Breusch-Godfrey LM Test ($\chi^2$)</td>
<td>4.24*</td>
<td>-</td>
</tr>
<tr>
<td>Ljung-Box Q ($\chi^2$)</td>
<td>17.06</td>
<td>-</td>
</tr>
<tr>
<td>LM test for ARCH ($\chi^2$)</td>
<td>1.98</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Years are 1974-2013. OLS Estimates and model with Newey-West standard errors estimated with 1 lag. Standard error in parentheses. * p<.05.

### Table 8. Summary of Findings

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3:B</th>
<th>Model 4:B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1: Bureaucratic Approval &gt; 0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H2A: Bureaucratic Approval &gt; Presidential Approval</td>
<td>Yes</td>
<td>Yes</td>
<td>No‡</td>
<td>No‡</td>
</tr>
<tr>
<td>H2B: Bureaucratic Approval &gt; Congressional Approval</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>H2C: Bureaucratic Approval &gt; Supreme Court Approval</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Long-term Effects (Model III only)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H3: Bureaucratic Approval &gt; 0</td>
<td></td>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>H4: Bureaucratic Approval &gt; Others</td>
<td></td>
<td></td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Note: Significant at $\alpha=0.1$. For III:B, Wald $\chi^2$ p-value is 0.0536. For IV:B, Wald $\chi^2$ p-value is 0.0556.