



How Politics Influences the Energy Pricing Decisions of Elected Public Utilities Commissioners



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ABSTRACT

An argument of those supporting the direct election of regulators is that election allows voter preferences to be translated easily into policy outcomes. However, a danger of this approach is that the low salience of regulatory issues among the median voter could allow for regulatory capture, where regulated firms use their influence to extract favorable outcomes. Although the role that institutional design plays in influencing capture has been evaluated by comparing appointed and elected regulators, evidence of the capture of elected regulators remains scant, and we know little about the conditions that may mitigate such capture. Here, we study electricity rate-making by Arizona's elected public utilities commission to determine how the economy, citizen complaints, and industry and interest group lobbying affect rate decisions. Leveraging original quantitative and interview data, we find that commissioners respond to voters and set pro-consumer electricity prices when inflation rises and when citizen complaints increase. We do not find that industry and interest group lobbying influence rate-making. We argue that commissioners are pro-behavior because prices are salient, and commissioners desire reelection. The result suggests that the electoral mechanism reduces chances of regulatory capture, although the matter of electoral pandering remains unresolved.

1. Introduction

Proponents of electing regulators directly have long argued that doing so allows for voter preferences to more easily be translated into policy outcomes. A number of scholars, including Bawn (1995); Brehm and Gates (1999); Epstein and O'halloran (1999); Huber and Shipan (2002) and Gormley and Balla (2012), have outlined the possibility that giving voters the ability to directly reward or punish regulators can lead to more voter-centric policy outcomes than would be the case if voters were only the indirect principals of regulators. Indeed, the desire for creating the imprimatur of democratic accountability in policy-making historically led to the direct election of U.S. senators (West and Stone, 2013), the direct election of utilities commissioners in several states (Berman, 2016), and has led to repeated attempts to increase the number of elected judicial positions (Shugerman, 2012).

Despite the view that direct election leads to more representative public policy outcomes, however, there is good reason to believe that electing policy-makers will not translate into policy that more concretely maps onto voter preferences. Specifically, in areas of regulatory policy, where the median voter may not care about or even follow regulatory changes, small organized interests could conceivably

dominate policy-making and extract concessions from regulators even if those regulators are elected (Dal Bó, 2006; Gormley, 1983, and Besley and Coate, 2003). In particular, the entities regulated by a regulatory body can “capture” that regulatory body and push policy outcomes away from the preferences of the median voter who put members of that regulatory body into office (Stigler, 1971 and Peltzman, 1976).

We are thus faced with two opposing messages about the wisdom of electing regulators. On one hand, election should lead to more accountable regulators and consequently more voter-centric policy. On the other hand, the complexity of many regulatory issues (Mullin, 2008) and the generally low salience of regulatory policy-making among voters (Besley and Coate, 2003) opens the door for regulated entities to capture elected regulators and extract less voter-centric policy. And yet, to quote Dal Bo, “the empirical evidence on the causes and consequences of regulatory capture is scarce” (2006: 220). Moreover, the evidence is especially scarce with respect to detecting variation in regulatory capture among elected regulators: what does regulatory capture look like, and what factors motivate elected regulators to pursue voter-centric rather than firm-centric decisions and vice versa?

In this paper, we take up this important and timely matter and

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evaluate how economic and interest group factors influence the regulatory behavior of elected regulators. We specifically analyze how these factors influence the electricity rate setting behavior of Arizona's elected utility regulatory commission, the Arizona Corporation Commission, and we measure regulatory capture as the difference between the electricity rate that the Commission sets for a regulated utility and the electricity rate that a regulated utility requests in its application to the Commission for a rate increase.¹ We focus on the rate-setting behavior of elected public utilities commissioners because this represents one of the best examples of a regulatory policy area where the capture of elected regulators could occur: the median voter typically does not care about electricity regulation but regulated utilities very much do, opening the door to the potential for the capture of elected regulators by regulated utilities.

We focus on policy-making in Arizona for several reasons: first, unlike many other states and especially those states with elected utilities regulators, Arizona is extremely transparent in terms of sharing Commission records and makes the entire Commission rate decision-making process, including utility proposals and complaints from industry, interest groups, and ordinary consumers, available to the public, meaning that we can analyze how involvement by various groups in the rate-making process influences the final rate decision. We also focus on Arizona because the state has elected its public utilities commissioners since the creation of the Arizona Corporation Commission in 1912 (Berman, 2016). The long history of regulation by elected commissioners matters because it suggests that longstanding relationships between regulators and regulated utilities have formed and cemented, meaning that enough time has passed for us to detect regulatory capture, should it exist.

We find ultimately that Arizona's elected regulators are accountable to the public and largely demonstrate voter-centric (or “pro-consumer”) behavior when deciding electricity rates. Specifically, the regulators respond to rising inflation and, perhaps, to increases in the number of consumer complaints by setting electricity rates lower than the amount requested by utility companies. At the same time, however, we fail to find evidence that a larger number of pro-utility testimonials lead to more pro-utility electricity prices. The results, we argue, suggest that elected regulators are constrained by the electoral mechanism and work to exhibit pro-consumer behavior in areas such as electricity pricing where the desires of the median voter are likely to be clearly understood. And yet, the results also hint at the possibility that elected regulators may engage in election-related pandering rather than crafting of prudent policy decisions.

2. Elected Utilities Commissions and Pro-Consumer Behavior

In the fifty states, public utilities commissions are tasked with regulating the generation and sale of electricity and setting the rates that electric utility companies can charge consumers. In several states, public utilities commissioners are selected by voters in a general election (Coate and Besley, 2000; and Besley and Coate, 2003). The justification of electing public utilities commissioners is based on the logic of institutionalizing democratic accountability. If voters are able to directly punish and reward commissioners for the latter's regulatory choices, then commissioners will prioritize the wants of the median voter in their own regulatory decision-making and will make policy choices that are aligned closely to the preferences of the median voter (Epstein and O'halloran, 1999; Huber and Shipan, 2002 and Gormley and Balla, 2012). And indeed, both Kwoka (2002) and Besley and Coate (2003) find that electoral accountability induces pro-consumer behavior in the form of lower electricity rates compared to the rates that are

observed by residents of states where regulators are appointed and therefore not subject to direct electoral oversight.

Although the stated goal of directly electing commissioners is to facilitate the transfer of the median voter's preferences into regulatory policy, it is possible that elected commissioners may actually make policies that benefit regulated utilities more than the median voter. This is because the median voter may be largely uninterested in regulatory policy and may lack the motivation and sophistication to monitor elected commissioners effectively (Kogan, Lavertu, and Peskowitz 2016) while regulated utilities possess high levels of information and motivation and can use that information and motivation to attempt to extract policy concessions from elected commissioners (Olson 1965 and Dal Bó, 2006).

Contrarily, though, it is also possible that the median voter may care deeply about electricity prices, which are directly observable every month. In this scenario, the median voter may penalize elected commissioners for increases in electricity prices, resulting in the situation where elected commissioners generally side with consumers rather than utilities. Kwoka (2002), following Primeaux and Mann (1986), argue that elected commissioners may consider themselves to be representatives of the median voter in stating that “Popularly elected commissioners, in short, may see themselves as agents of consumers” and cater to the “preferences of the dominant voting constituency, usually residential customers” (2002: 280-281). And indeed, there is anecdotal evidence that many in the general public regard direct election as an antidote to regulatory capture. A recent editorial in a Colorado newspaper advocates selecting that state's public utilities commissioners through direct election on the premise that “An elected board would answer to the people served by regulated industries” (Colorado Editorial Summit Daily 2017). However, scant empirical evidence exists about how and when elected commissioners prioritize the demands of voters over those of utilities, and we undertake this study to better understand when elected commissioners put the interests of voters above those of utilities.

While both the benefits and risks of giving regulatory responsibility to elected commissioners has been well documented, we know very little about drives pro-consumer as opposed to pro-utility behavior among elected commissioners. Part of the reason for this lack of knowledge derives from Dal Bo's comment that “One problem with the work on selection methods is that it highlights a relative difference only” (2006: 219). Essentially, much of the work on electoral accountability and regulatory capture has focused on comparing the regulatory behavior of elected and non-elected policy-makers, leading to greater understanding of how variation on the electoral/non-electoral dimension influences variation in policy setting along the pro-consumer/pro-utility dimension (Navarro, 1982; Hagerman and Ratchford, 1978; Boyes and McDowell, 1989; Smart, 1994; Kwoka, 2002, and Besley and Coate, 2003 all fit this paradigm). While the focus on comparing elected and non-elected policy-makers has been useful, we have largely not paid attention to how economic trends and variation in communication with constituents and interest groups influences decision-making among elected commissioners along the pro-consumer/pro-utility axis. Do elected commissioners pay attention to economic trends and craft ratemaking in such a way as to reduce the brunt of adverse economic shocks on voters and thus improve reelection chances? Furthermore, are commissioners responsive to signals from industry, interest groups, and ordinary voters during the rate-making process and if so, to whom are they most responsive?

We study the ratemaking of Arizona's commissioners to unlock how economic and interest group factors influence pro-consumer versus pro-utility behavior among elected regulators. Our paper proceeds as follows: we first describe the rate setting process in Arizona, deriving an observable definition of capture in this process. We then state our hypotheses, based on this definition. We test these hypotheses, finding that inflation and the complaints of ordinary consumers influence the Commission's ratemaking behavior while testimonials from businesses

¹ We discuss this further in the data section of the paper, but a larger value for (the Commission's Decided Electricity Rate—the Utility's Proposed Electricity Rate) indicates a greater possibility of capture.

and interest groups associated with utilities appear not to influence ratemaking. We validate our findings with interview evidence and make two conclusions: first, that elected regulators appear to make rate decisions that are aligned with consumer-voter rather than utility interests; and second, that elected regulators may pander, creating a situation where policy choices are suboptimal from a planner's point of view (Dal Bó, 2006).

3. How Reelection Drives the Ratemaking of Elected Commissioners

Prior to stating our hypotheses, we briefly describe how the electricity rate setting process works for Arizona's public utility commissioners. A regulated electric utility initiates a rate case by filing a rate proposal with the Arizona Corporation Commission, the official name for Arizona's public utility commission. We assume that utilities always propose electricity rates that are higher than current electricity rates based on the logic that utility companies desire higher profits and that the demand for electricity is relatively inelastic. The Commission then allows for interested third party groups, which may be other firms that receive electricity from the utility in question, interest groups, or ordinary consumers, to testify or comment about the proposed rate change.²

Crucially, the Commission does not specifically seek out the comment or testimony of any particular third parties. Rather, interested third parties are given a chance to issue comments or testimony by offering public comments online or in person, or by requesting to become an intervenor (or a formally interested party) in a case and offering testimony as an intervenor.³ As the Commission does not seek out input from specific third party entities but instead requires these entities to initiate their own contact with the Commission regarding rate cases, we believe that it is unlikely that the Commission is colluding with key stakeholders to predetermine rate case decisions.

Once public comments and testimonies have been issued, the affected utility has an opportunity to respond to third party comment and testimony. Following this, third parties may issue more comment and testimony. Finally, the Commission issues a decision and sets electricity rates for the utility that filed the proposal. The Commission can take one of three actions: it can set electricity rates higher than the amount that the utility proposed; it can set electricity rates at the same amount that the utility proposed; or it can set electricity rates lower than the amount that the utility proposed.

Here, we are interested in the difference between a public utilities commission's final decided upon electricity rate for a utility and that utility's initial proposal amount for the same electricity rate. This quantity yields a measure of the public utility commission's favoritism for electric utility companies. A value greater than 0 indicates that the Commission is generous, since the Commission is giving the utility company more its requested amount. A value equal to 0 indicates that the Commission is meeting the request of the electric utility company. A value less than 0 is more indicative of pro-consumer behavior by the Commission since the Commission is giving the electric utility company less than what the company requested. We now look at how economic and interest group factors influence the degree to which the Arizona Corporation Commission meets the electricity rate proposal amounts of that state's electric utility companies.

We first analyze how economic trends affect electric rate setting by the Arizona Corporation Commission. A long line of scholars have shown that elected policy-makers are responsive to the economic needs

² The process of becoming an intervenor is described in the following document: "Intervention in Utility Cases at the Commission." This document is available at: <http://www.azcc.gov/divisions/hearings/documents/interventionlr-final.pdf> (accessed 24 October 2017).

³ Individuals can submit testimony using the following address: <http://eservice.azcc.gov/Utilities/PublicComment> (accessed 24 October 2017).

of constituents since the reelection chances of the policy-makers suffer when conditions in the economy deteriorate (Tufte, 1980). Hibbs (2000) demonstrated for example that support in presidential elections for the incumbent's party is based partly on improving economic conditions (in terms of disposable income) for voters. Relatedly, Kinder and Kiewiet (1979) link voting in congressional elections to a person's opinion about the general condition of the economy rather than a person's own financial situation. More recently, Ansolabehere et al. (2014) extend the "sociotropic" explanation of Kinder and Kiewiet (1979) and find that individuals vote based on perceptions of how individuals similar to themselves are faring economically.

We take seriously the work of the scholars mentioned previously and believe that voters' own economic well-being (Hibbs, 2000) as well as voters' impressions of the economic wellbeing of others (Kinder and Kiewiet, 1979; Ansolabehere et al., 2014) influences the Election Day decisions of these voters. We believe further that voters take economic considerations into account when selecting commissioners, and we also believe that reelection-seeking commissioners take economic considerations into account when determining electricity rate cases in order to appeal to the economic considerations of voters. Even for lower salience offices, elections generally induce behavior that may be more congruent with voter needs and attitudes (Bonneau and Hall, 2009; Gordon and Huber, 2007). Indeed, as the economy worsens, these changes may prime the salience of monthly utility bills among consumers, further inducing congruent behavior from elected officials (Lax and Phillips, 2009).

One way in which the Commission could take voters' economic considerations into account is by adopting a pro-consumer ratemaking strategy in response to rising inflation. Rising inflation is arguably a motivator for rate increase proposals by regulated utilities, as rising inflation without an adjustment in electric price threatens firm profitability. If the Commission were fully captured by a regulated utility, it would treat increases in inflation as an opportunity to adjust electricity prices upward in a pro-utility manner and protect the profitability of the utility.

However, commissioners are also cognizant of the effect of rising inflation on the median voter, who *ceteris paribus* would experience an increase in electricity costs if the Commission were to adjust electricity prices upward in response to rising inflation. Given that the cost of electricity is arguably the most salient feature on which the median voter bases his or her opinion about elected commissioners (Besley and Coate, 2003), the Commission may be loath to increase electricity prices in response to inflation and may actually adjust proposed rate prices downward in a pro-consumer direction in response to rising inflation. The logic here is first that rising inflation unchecked by rate adjustment will increase electricity cost for the median voter. Commissioners do not want to be evaluated negatively by voters for not addressing increased inflation and therefore use the opportunity provided by an electricity rate case to adjust proposed electricity rates in a pro-consumer direction and signal relief to the median voter.⁴

Inflation Hypothesis: As inflation rises, a commission is more likely to set rates that are pro-consumer rather than pro-utility in character.

Another way in which economic conditions could influence the ratemaking behavior of the Commission is in the case of rising unemployment. Increased unemployment could increase the salience of electricity costs among the median voter and lead to the Commission

⁴ We are aware of the rich literature that exists on partisan business cycles and that shows that right-leaning governments tend to worry about inflation and attempt to reduce it through policy actions (Hibbs, 1977; Iversen and Soskice, 2006). We largely leave discussion of this literature out of our paper, mainly because electricity regulators do not have the macroeconomic tools at their disposal to impact inflation and can only adjust to inflation through ratemaking. We evaluate the possibility that the partisan composition of the Commission could interact with rising inflation to influence ratemaking and do not find evidence of this interacting. A result of this estimation is available in Table A3 of the appendix of the paper.

adopting pro-consumer electricity rates in order to again signal relief to the median voter.⁵

Unemployment Hypothesis: As the unemployment rate rises, a commission is more likely to set rates that are pro-consumer rather than pro-utility in character.

It is possible, of course, that unemployment may not discernibly influence Commission behavior. One reason is that most electric utility companies have separate special assistance rates for low-income residents. Unemployed households may qualify for these low-income rates, meaning that the Commission sees less of a need to adjust rates in response to rising unemployment.⁶ Another reason is that the population of the unemployed may not include the median voter, which is highly likely given the vast literature (Verba et al., 1995 and Basinger et al., 2012) showing that the unemployed tend to not participate in political processes. Although it is possible that the median voter may care about the unemployed when casting his or her vote in a commissioner race, Ansolabehere et al. (2014) suggest that this is unlikely since the median voter, who is likely employed, votes based on the economic situation of those to whom he or she is similar (a population that is also likely to be composed of those who are employed). Therefore, although we include the *Unemployment Hypothesis* for exploratory reasons, we would not be surprised if this hypothesis fails to attain empirical support.

Our next set of hypotheses deals with how third party businesses, non-business interest groups, and ordinary voters can use their influence to sway the ratemaking behavior of the Arizona Corporation Commission. In Arizona electricity rate cases, three types of third party actors typically have the opportunity to provide comments or testimony: businesses, non-business interest groups, and consumer-voters. The Commission does not solicit the opinions of these groups. Rather, these groups monitor rate case initiations independently and then offer comments or testimony.

The opinions of businesses and non-business interest groups concerning a rate proposal may be especially important to commissioners because these groups may be considered to be experts on the ramifications of a rate change, both in terms of the possible substantive policy effects of a rate change (Hall and Dearnorff, 2006) as well as the possible electoral impacts of a rate change (Hansen, 1991). Moreover, businesses and non-business interest groups are capable of mobilizing and exerting pressure on commissioners to best represent their interests (Olson 1965). Commissioners may consequently scrutinize closely the testimonies of businesses and non-business interest groups and pay special attention to the number of businesses and interest groups supporting a rate increase compared to the number of businesses and interest groups opposing a rate increase as a reliable signal of whether increasing electricity rates makes sense on policy grounds or in terms of popularity. A larger number of third party businesses favoring the rate increase compared to businesses opposing the rate increase may indicate broad-based support for increasing rates and lead to pro-utility behavior by the Commission. The same phenomenon might occur with respect to how the Commission weighs favorable versus unfavorable testimonies from non-business interest groups.

Business Testimony Hypothesis: As the number of pro-utility business testimonies that the Commission receives increases in size relative to the number of pro-consumer business testimonies that the Commission receives, the Commission is more likely to set electricity rates that are

⁵ We evaluate the possibility that the partisan composition of the Commission could interact with rising unemployment to influence ratemaking and do not find evidence of this occurring.

⁶ As of 2016, 85,000 customers out of 1.2 million customers received income assistance electricity rates from the largest provider of electricity in Arizona, the Arizona Public Service Corporation. Arizona Public Service Corporation, "APS Seeks to Expand Support to Limited-Income Customers," 6 July 2016. Available at <https://www.aps.com/en/ourcompany/news/latestnews/Pages/aps-seeks-to-expand-support-to-limited-income-customers.aspx> Accessed 25 October 2017.

pro-utility in character.

Interest Group Testimony Hypothesis: As the number of pro-utility interest group testimonies that the Commission receives increases in size relative to the number of pro-consumer interest group testimonies that the Commission receives, the Commission is more likely to set electricity rates that are pro-utility in character.

At face value, on the other hand, the relationship between the number of ordinary voter-consumer complaints (or public comments) that the Commission receives in a rate case and the ratemaking behavior of the Commission may seem unclear. When members of the general public comment on a rate case, they appear to never endorse a rate increase and always write in opposition to the increase. This lack of variability in opinion may lead commissioners to believe that public comments are uninformative and commissioners may consequently ignore public comments during ratemaking. Moreover, commissioners may also infer that public comments are uninformative based on the idea that the median voter will not take the time to actually write and send a comment to the Commission.

However, it is also possible that the Commission could view the volume of public comments received against a rate increase as a reflection of public opinion and adjust policy accordingly (Kogan et al. 2016). That is, even if the Commission believes that the median voter is not one of the individuals submitting a public comment, it may believe that a larger number of complaints from the public could portend an impending increase in the salience of electricity cost to the median voter and thereby serve as a warning to the Commission about potential opposition from the median voter toward the Commission's regulatory decisions.

Consumer-Voter Complaints Hypothesis: As the (logged) number of consumer-voter complaints the Commission receives increases, the Commission is more likely to set electricity rates that are more pro-consumer in character.

4. Data

Arizona offers a uniquely rich environment for testing the hypotheses above. Arizonans have elected their Commission for over a century: if regulatory capture could obtain in such institutional arrangements, arguably it should have happened by the 100-year mark. Moreover, our hypotheses speak to granular issues: we conjecture that economic and political factors influence specific regulatory decisions at the state level. As such, the availability and transparency of data in Arizona throughout the cycle of proposals and decisions allows us to test our hypotheses in a way that would not be feasible for many other states.

We study a time period (2008–2014) that is both contemporary and tractable given online availability of decision documents. We supplement our quantitative analysis via an interview with a former Commissioner; this modern time period allowed us to recruit an interviewee who served during the period under study. This time horizon further allows us to analyze a period of economic downturn, during which fiscal pressures mounted on consumers and regulated utilities alike. As such, these years are a sort of "stress test" for the Commission: were regulatory capture occurring, its impact would be most keenly seen and felt during a period of great recession. Conversely, if the Commission responds to consumer concerns during this period, such a dynamic would speak to responsiveness of this democratic institution.

We gathered our original data directly from the Arizona Corporation Commission website. Our dependent variable is the difference between the final electric rate imposed by the Commission and a utility company's proposed electric rate. In the Appendix, Table A2, we model proposals and decisions separately: our results are robust to this alternative. Some utility companies charge for electricity on a per day basis while others charge on a per month basis. We therefore standardize our dependent variable based on bill frequency so that daily and monthly rates can be analyzed together without statistical estimation issues. The

Commission publicly posts the rate schedules for each utility online.⁷ Moreover, the Commission makes available the full docket for each utility's rate case and from this docket, we can obtain a utility company's proposed rate as well as the final rate decided upon by the Commission from the docket.⁸ We look at fixed and time-of-use basic service charges across residential, commercial, agricultural, and private lighting sectors. We leave out variable charges (e.g. such as when electricity use charges rise sharply when a consumer crosses a certain kilowatt per hour threshold) We leave out variable charges since we do not have access to consumer electricity usage data and because properly incorporating variable charges into the analysis requires us to take consumer electricity usage levels into account.

Our data collection process for the dependent variable is as follows. For each Commission decision in a corresponding docket, an appendix schedule (Schedule H-3) enumerates the utility's proposed rate by sector. The decision also typically contains the commission's decided upon final rate. The time horizon of our dataset is limited by the online availability of these documents: we therefore analyze 219 rate decisions between 2008 and 2014. We then constructed our dependent variable by subtracting the proposed rate from the final rate. Many values are negative, indicating that the utility received less than it requested from the commission. Finally, we standardize the dependent variable based on bill or rate frequency (daily or monthly) to allow for combined analysis of the daily and monthly rates.

The unit of analysis for our data is firm-rate type. Our data are longitudinal in the sense that the Arizona Corporation Commission makes rate decisions over a span of six years. However, our data are not structured in panel form since we are unable to obtain repeated observations of the same firm-rate type over multiple years.⁹ Our data is perhaps best conceived of as a series of related but distinct cross-sections. Nonetheless, we account for time in our data in several ways and report findings in the Table A4 of the Appendix of the paper. First, we include year fixed effects and cluster standard errors by year to account for the possible influence of time and find that inflation is robust across both specifications while consumer complaints nearly achieves statistical significance when standard errors are clustered by year. And second, we account for the possibility that the same group of commissioners may be making rate decisions in multiple years and include both fixed effects and clustered standard errors that group together observations in which the unique membership configuration of the Commission was the same. Here, inflation retains its robustness while consumer complaints is robust when commission fixed effects are used.

We test our economic hypotheses using two variables: *Inflation* and *Unemployment*. Inflation is the change in the Consumer Price Index as reported by the United States Bureau of Labor Statistics for the corresponding half-year in which the Commission has made an electricity rate decision.¹⁰ A negative and significant relationship between Inflation and the dependent variable signifies support for the inflation hypothesis. Unemployment is the year-to-year change in unemployment rate for Arizona from one-year prior to the effective date of the Commission's rate-making decision. A negative and significant relationship between Unemployment and the dependent variable signifies support for the unemployment hypothesis.

To test our hypotheses regarding the effect of external testimony from businesses and organized non-business interest groups, we

gathered data from the docket archives of the Commission, the same place where the utility proposal information is archived. For each testimony listed, we noted the identity of the testifier, and whether it was in favor of or opposed to the utility's proposal. We then aggregated this information into a count of testifiers in favor and opposed by identity (business or non-business interest group). We determined whether a testifier was a business or non-business interest group based on whether the testifier was listed as a firm or an association. A firm was classified as a business while an association was classified as a non-business interest group. We evaluate the business and interest group hypotheses with the use of two variables, *Business Testimony Advantage* and *Interest Group Testimony Advantage*, that each measure the number of testimonials that were given by businesses (or respectively, interest groups) in favor of a rate increase subtracted by the number of testimonials that were given by businesses (or again respectively, interest groups) in opposition to a rate increase. A positive and significant relationship between Business Testimony Advantage and the dependent variable signifies support for the business testimony hypothesis while a positive and significant relationship between Interest Group Testimony Advantage and the dependent variable signifies support for the interest group testimony hypothesis.

We evaluate our consumer-voter complaints hypothesis with a *Consumer Complaints* variable that is the logged number of consumer comments in opposition to a rate change that consumers file with the Commission during a rate case. These comments are also archived at the Commission's website. As this variable takes on extremely high values for some utilities, we utilize its natural log in our empirical analysis. A negative and significant relationship between Consumer Comments and the dependent variable signifies support for the consumer-voter complaints hypothesis, as this suggests that the Commission adjusts rates downward from what utility companies propose as consumer complaints toward the utilities' proposed rates increase.

We acknowledge that the size of an electric utility company (in terms of its number of customers) may influence how the Commission deals with that company in rate-making dealings. We therefore control for the number of customers a firm has with a logged number of *Customers* variable. This data is also readily available online from the Commission website.¹¹

We also control for how the electoral calendar of commissioners might play a role in influencing how commissioners handle electricity ratemaking with an *Electoral Proximity* variable. Commissioners ostensibly want to signal to the median voter that they care about voter preferences for low electricity prices and therefore time pro-consumer electricity rate decisions strategically so as to gain voter support in future elections. At first glance, it may seem that commissioners are more likely to make pro-consumer rate decisions as the next Commission election gets closer in time based on the logic that commissioners want pro-consumer pricing decisions to be fresh in the mind of the median voter when he or she goes to the polls. However, when voting, the median voter may not pay attention to current Commission decisions so much as he or she pays attention to current electricity prices, which are based on Commission pricing decisions that have already occurred. This suggests that vote-seeking commissioners will attempt to make pro-consumer pricing decisions well in advance of the next Commission election so that voters observe actual lower prices (rather than Commission decisions promising future lower prices) when they vote. The logic behind our explanation here comes from a long line of research in political economy (Tufte 1978; Arcelus and Meltzer, 1975; Hibbs, 1987 and Franzese, 2002) suggesting that there is an incumbency advantage associated with positive economic outcomes for voters. Specifically, we agree with Nordhaus' view that incumbents attempt to "buy" votes from voters (Nordhaus, 1975; Franzese, 2002)

⁷ <http://www.azcc.gov/Divisions/Utilities/Tariff/Tariffs-elect.asp>.

⁸ <http://edocket.azcc.gov/Search/DocketDetailSearch>.

⁹ There are two reasons for this. First, within the 2008-2014 period, most utility firms only appeared before the Commission for a rate case once, where the proposed rates for several rate types of a given firm were considered at the same time; and second, many firms utilize rate type definitions (such as "Extra Large Commercial Time-of-Use") that may have changed over time, making across time comparisons difficult.

¹⁰ Unfortunately, we use the Bureau of Labor Statistics values for the Phoenix-Mesa metropolitan area, as the Bureau of Labor Statistics has not calculated more local measures of inflation.

¹¹ <http://www.azcc.gov/Divisions/Utilities/Annual%20Reports/Electric.asp>.

and also agree with the view summarized in Ashworth (2012) that voters are retrospective in terms of how they evaluate incumbents come election time. Incumbents striving for reelection through buying votes combined with retrospective behavior on the part of voters suggests that commissioners time pro-consumer ratemaking decisions strategically by displaying pro-consumer ratemaking behavior far in advance of the next election in order to allow for enough time to elapse for pro-consumer prices to be observed by voters prior to Election Day.

Finally, the partisan composition of the Commission may also influence the ratemaking behavior of the Commission and needs to be controlled. Several scholars have shown that the right-leaning policy-makers tend to adopt anti-regulatory stances and favor the interests of firms while left-leaning policy-makers generally favor regulation as a way to reduce fiscal pressures on wage-earners (Hibbs, 1977 Hibbs 1989; Alt and Lowry, 2000 and Iversen and Soskice, 2006). The impact of policy-maker partisan composition on attitudes about consumer advocacy has been analyzed by Holburn and Vanden Bergh (2006), who find a positive relationship between left-leaning (or Democratic) state legislatures and the funding of consumer advocacy groups.

To control for partisan composition on Commission behavior, we gathered original data on the partisan composition of the Commission from two sources. First, Ballotpedia, which is verified by the Arizona Secretary of State.¹² Second, we gathered information on the composition of the Commission from its own annual reports on its website.¹³ Using these data, we constructed a variable measuring the proportion of the Commission at the time of a rate decision that ran as a member of the Republican Party. In our data, this variable, *Republican Advantage*, ranges from 0.6 to 1: Republicans held the majority on the Commission for the full span of the data, although Democrats constituted a sizeable minority around the middle of the 2008-2014 interval.

A clear drawback of our design is that Republicans held the majority of seats on the Commission throughout all the years under study. Therefore, this control variable cannot be utilized to analyze the full range of possible party effects on rate setting decisions. However, while we cannot account for the effect of Democratic control of the Commission on ratemaking, we can compare the impact of a bare Republican majority relative to a Republican supermajority. For our purposes, a supermajority is anything partisan advantage above and beyond a minimum winning coalition, since there are no vetoes or filibusters at the Commission. Indeed, we analyze periods in which Republicans held only a bare (three seats to two) majority, as well as periods with total Republican dominance (five seats to zero). Generally, supermajorities make it easier and more efficient for politicians to assemble winning coalitions (Groseclose and Snyder 1996). If partisan preferences influence the Commission, pro-utility decisions may obtain more frequently and easily when Republicans hold a supermajority, relative to a bare majority.

For the statistical component of our analysis, we utilize ordinary least squares regression. We also conduct four robustness checks. In our first robustness check, we add a binary control variable corresponding to whether a rate case involved a daily versus monthly rate. In our second robustness check, we recognize that rate decisions involving the same electric utility company are not independent of one another and cluster our standard errors by utility company to reflect that errors are not distributed independently and identically. In our third robustness check, we entertain the possibility that partisan composition of the Commission could influence how inflation affects ratemaking; and in the fourth robustness check, we account for temporal patterns in our data.¹⁴

In addition to our quantitative analysis, we also surveyed a former

commissioner of the Arizona Corporation Commission to ask about the role that electoral pressures play on the Commission's rate decision-making. One of the authors invited current and former commissioners from the year 2000 to the present to take part in the survey. The 2000-2015 time period was selected since it includes commissioners who would have served during the 2008-2014 period that was the subject of our quantitative analysis. Of the seven current and former commissioners for whom we could find contact information, one former commissioner agreed to take part in the survey and has corroborated findings from this study.¹⁵ That commissioner's corroboration is discussed in the next section.

5. Results

We present our results in Table 1. First, there is a negative and statistically significant association between inflation and the final service charge imposed. As inflation rises, the Commission is likelier to impose a final charge lower than the utility's proposal. We find support for the *Inflation Hypothesis*.

However, our results regarding these macroeconomic variables are mixed: there is no statistically significant association between the unemployment rate and the final decision of the commission. We fail to find support for the *Unemployment Hypothesis*. This mixed result is unsurprising. Unemployed households in Arizona qualify for a special low-income rate, ameliorating the direct effect of rate increases on unemployed consumer-voters. Moreover, the median voter herself is unlikely to be unemployed, whereas increases in inflation impact all consumer-voters, especially those of higher incomes.

There is no statistically significant association between interest group testimony advantage and utility company success. Further there is no significant association between industry (businesses lobbying alone) testimony advantage and utility company success. We fail to find support for the *Interest Group Testimony Hypothesis* and the *Industry Testimony Hypothesis*.

However, there is a negative and statistically significant association between the volume of consumer complaints and the rate imposed by the commission. That is, as more consumer-voters express opposition to a proposed increase, the lower the Commission sets the final service charge relative to this proposal. We find support for the *Consumer-Voter Complaints Hypothesis*.

Regarding the control variables, there is a negative and statistically significant association between election proximity and utility company success. Future work should explore this dynamic in detail. We speculate that perhaps because rate changes take some time to go into effect, commissioners might prefer to make pro-consumer changes well in advance of elections to reap the reward. Further, it might actually be safest to make anti-consumer changes right before elections, given that the media may not cover such changes for a low salience election. Therefore, Commissioners could be safely ensconced in another term by the time consumer-voters see bill increases. There is no statistically significant association between the size of the utility company (measured by the log of the number of customers it serves) and utility company success.

Additionally, there is no statistically significant association between the number of customers (logged) a utility serves and its success before the Commission. Finally, there is no statistically significant association between the Republican advantage on the Arizona Corporation Commission and utility company success.

Based on the regression estimates of Table 1, Fig. 1 presents the effect of inflation on utility company success.¹⁶ Holding all other variables at their mean, as inflation rises from two standard deviations

¹² See, e.g., http://ballotpedia.org/Arizona_Corporation_Commission.

¹³ <http://azcc.gov>.

¹⁴ Results in all four of these cases largely validate our main empirical findings, and the checks can be seen in the paper Appendix.

¹⁵ The interview was held by phone on April 13, 2017.

¹⁶ The estimates in Figs. 1 and 2 were derived using the margins command in STATA 12.1 and 14.1, with confidence intervals estimated via the delta method.

Table 1
OLS Regression Estimates of the Effect of Consumer Complaints, Party, Testimony, and Firm Size on Utility Company Success.

	β (SE)
Inflation	- 0.51 [†] (0.29)
Unemployment	0.14 (0.21)
Electoral Proximity	- 0.003* (0.001)
Industry Testimony Advantage	1.19 (1.00)
Interest Group Testimony Advantage	0.27 (0.31)
Consumer Complaints (log)	- 0.24 [†] (0.14)
Republican Advantage	4.94 (3.09)
Customers (log)	-0.08 (0.09)
Constant	- 1.59 (1.12)
N	219
r ²	0.18

[†]p < 0.10,* p < 0.05. Robust standard errors in parentheses. Dependent variable is the difference (standardized by rate type) between firm's proposed service charge and the service charge imposed by the commission. Higher values of the dependent variable indicate a more favorable decision for the utility. Testimony advantages are the number of testifiers in favor of the proposed rate minus the number of testifiers opposed, by sector.

below its mean to two standard deviations above, the model predicts that the difference between the proposed and final adopted service charge decreases from 1.14 to about -1.14, a decrease of over two standard deviations.

Moving on, Fig. 2 shows that as the logged number of consumer complaints opposed to the proposed rates increases from its observed minimum of zero to two standard deviations above its mean, the predicted difference between the proposed and final charge declines from about 0.95 to -0.13, a difference of over a standard deviation. Interestingly, external economic factors exert twice as much influence on the commissions' decisions compared to consumer-voter complaints.

An interview with a former commissioner of the Arizona Corporation Commission validates the findings from our statistical analysis. The commissioner was asked how reelection considerations

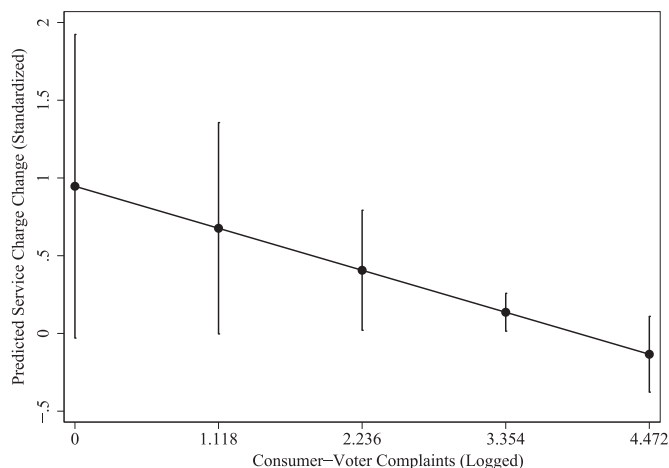


Fig. 2. Predicted Rate Difference, by Consumer-Voter Complaints, 95% CI.

influence how commissioners approach electricity rate decisions and how close electoral contests affect decision-making. The commissioner mentioned that commissioners want to get re-elected. Further, the commissioner mentioned that some commissioners have “aspirations to move onward.” Goals of reelection and career ambition ostensibly influence the policy decisions of commissioners, whom this commissioner acknowledged were “human” and engaged in a “perpetual election cycle.” A takeaway from the interview is that ambitious commissioners will pay attention to the wishes of consumer-voters and act in accordance with those wishes even though these same commissioners must simultaneously maintain a fiscally healthy regulatory climate for regulated electric utility companies.

6. Conclusion

When commissioners for public utility regulatory bodies stand for reelection, presumably the most important factor to voters is their utility bill. Elected utilities commissioners seem to understand this and use the opportunity afforded by electricity rate increase proposals to adjust rates in a direction favored by the median voter. First, commissioners respond to increases in inflation by setting rates in a pro-consumer direction; not surprisingly, we do not see the same phenomenon with respect to unemployment, as unemployment is an issue that is less likely to garner the interest of the median voter. Second, also commissioners respond to the magnitude of complaints from consumers by adjusting rates in a pro-consumer/pro-voter direction. That this adjustment does not occur in the opposite direction in response to pressure from utility-favoring businesses and interest groups suggests that the regulatory capture of elected commissioners by regulated utilities and their allies might be more difficult to achieve than appears to be the case at first glance.

The electioneering behavior by the commissioners reveals that elected regulators, like their legislative and gubernatorial colleagues, represent their constituents dynamically (Stimson et al., 1995; Soroka and Wlezien, 2010) and keep their pulse on median voter demands in hopes of winning reelection (Lax and Phillips, 2012). Elected regulatory officials, it then appears, are constrained by the same accountability mechanisms as other kinds of elected officials.

There is one implication of this work. The implication pertains to the tradeoff between electoral accountability and pandering in public policy that exists when voters can select their regulators. The electioneering exhibited by the Arizona Corporation Commission could be regarded as normatively good insofar as the electioneering shows regulators pay attention to the concerns and demands of voters. However, this opens up the possibility that elected regulators put aside prudence in policy making in favor of satisfying the short-term wishes of voters.

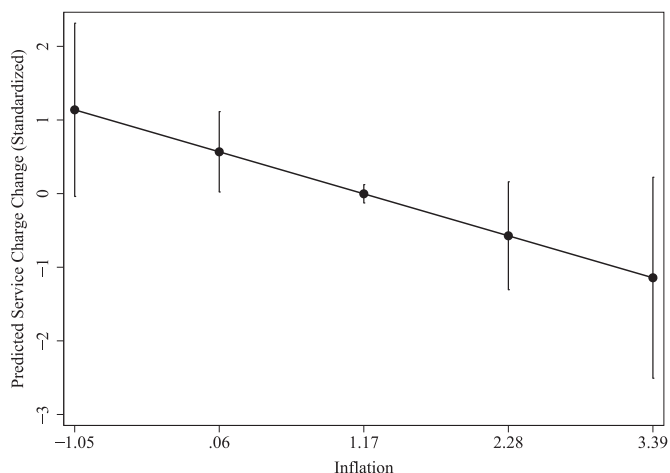


Fig. 1. Predicted Rate Difference, by Inflation, 95% CI.

In the area of electricity policy, this could mean that regulators set prices at levels that please voters but do not allow for utilities companies to make important upgrades to infrastructure (Dal Bó, 2006). Moreover, Mullin (2008) suggests that increasing the expertise or specialization of regulators will not by itself blunt the risk of pandering since high-salience issues, even if they are technical in nature, have a tendency to become politicized. Future work should look at how electoral accountability can be maintained without creating too many incentives for pandering.

There are also two possible extensions of the work. Owing to a lack of variability in our partisan composition data, we have been unable to show how party competition may influence electioneering among regulators. An expansion of this project looking at rate decisions across the universe of states electing their regulators would highlight whether party competition influences or mediates other factors that in turn influence ratemaking behavior. We also have not analyzed how campaign contributions affect ratemaking, both because Arizona in the pre-*Citizens United v. FEC* (558 U.S. 310 [2010]) period employed a very strict “Clean Money” policy toward candidates; and because the

industry-specific origins of “dark money” contributions in the post-*Citizens United* period have been largely untraceable. Future work should rely on interviews and unique data collection methods to uncover industry-specific contributions to elected regulators and unlock how campaign spending changes policy.

The ballot box ought to constrain elected officials. This maxim underpins the bedrock of republican governance. If those elected are influenced by smaller factions within society, such as political parties or special interest groups, but not by the preferences of the voters themselves, then the machinery of democracy breaks down (*Federalist* No. 10, Hamilton et al., 2008). Hearteningly, we show that this breakdown may be slowed or even prevented in the case of elected regulators. Elected regulators respond to intense opposition from consumer-voters, in the case we study, suggesting creating an electoral connection between regulators and consumer-voters arguably ought to be explored for other agencies and locales. The electoral connection arguably serves as a protection against the capture of the regulators by special interests but creates a potential challenge with respect to pandering in the design of public policy.

Appendix A. Appendix

This Appendix reports the results of several additional statistical analyses aimed at probing the robustness of our results. Table A1 reports estimates from two OLS models. The first column of Table A1 retains the same specification as the model reported in Table 1, but adds a dummy variable equal to one for rate decisions that deal with daily, as opposed to monthly, rates. The second column of Table A1 includes standard errors clustered by utility company to account for unmodeled heterogeneity at the firm-level in our data. While using fixed effects for firms could also account for unmodeled heterogeneity, such an approach is undesirable here because many other covariates vary across firms, not within them. As such, firm fixed effects wash out the effects of any such covariates

Table A1 shows that the two explanatory variables presented in Table 1 are robust to these alternative specifications. Inflation and the number of consumer-voter complaints remain negatively and statistically significantly associated with service charge increases. Interestingly, clustering standard errors at the firm level changes the statistical significance of several covariates: testimony variables, changes in unemployment, and the number of customers firms serve become significant under this specification. Given the sensitivity of these results to specification, however, they should be treated with caution.

Table A1
OLS Regression Estimates Adding Daily versus Monthly Variable and Firm Clustered-Errors.

	Daily Rate Dummy β (SE)	Utility-Clustered Errors β (SE)
Daily Rate	-0.20 (0.15)	-
Change in Inflation	-0.50 [†] (0.29)	-0.51* (0.15)
Change in Unemployment	0.13 (0.21)	0.14* (0.04)
Electoral Proximity	-0.003* (0.001)	-0.003 [†] (0.001)
Industry Testimony Advantage	1.18 (1.01)	1.19 [†] (0.30)
Interest Group Testimony Advantage	0.28 (0.31)	0.27 [†] (0.06)
Consumer Complaints (log)	-0.24 [†] (0.14)	-0.24 (0.19)
Republican Advantage	4.81 (3.09)	4.94 [†] (0.98)
Customers (log)	-0.08 (0.09)	-0.08 (0.08)
Constant	-1.54 (1.12)	-1.59* (0.27)
N	219	219
r ²	0.18	0.18

[†] $p < 0.10$, * $p < 0.05$. Robust standard errors in parentheses. Standard errors clustered by utility company in column 2. Dependent variable is the difference (standardized by rate type) between firm’s proposed service charge and the service charge imposed by the commission. Higher values of the dependent variable indicate a more favorable decision for the utility. Testimony advantages are the number of testifiers in favor of the proposed rate minus the number of testifiers opposed, by sector.

Table A2
OLS Regression Estimates Separating Proposals and Decisions into Different Dependent Variables.

	Proposals β (SE)	Decisions β (SE)
Change in Inflation	0.41 [†] (0.23)	0.39 [†] (0.22)
Change in Unemployment	-0.003 (0.17)	0.02 (0.16)
Electoral Proximity	0.003* (0.001)	0.003* (0.001)
Industry Testimony Advantage	-0.76 (0.74)	-0.68 (0.69)
Interest Group Testimony Advantage	-0.43 (0.35)	-0.45 (0.36)
Consumer Complaints (log)	0.31 [†] (0.16)	0.32 [†] (0.17)
Republican Advantage	-3.40 (2.20)	-3.10 (2.04)
Customers (log)	-0.01 (0.09)	-0.02 (0.08)
Constant	1.14 (0.87)	1.06 (0.83)
N	219	219
r^2	0.18	0.17

[†] $p < 0.10$, * $p < 0.05$. Robust standard errors in parentheses. Testimony advantages are the number of testifiers in favor of the proposed rate minus the number of testifiers opposed, by sector.

Table A2 shows the results of two additional OLS models. To consider the possibility of endogeneity between firm proposals and Commission decisions, we model proposals and decisions as separate processes in Table A2. As above, all covariates remain the same as the primary specification reported in Table 1. Table A2 demonstrates that considering these processes separately does not change the statistical significance of any coefficient estimate reported in Table 1. This result underscores the appropriateness of utilizing the difference between proposals and decisions as our primary dependent variable.

Importantly, Table A2 shows that inflation and consumer complaints are *positively* associated with proposals and rate decisions, whereas these three variables are *negatively* associated with the difference between the proposal and the decision. This dynamic indicates that when inflation is high, utilities ask for higher rates, and they receive higher amounts in absolute terms. However, while the Commission recognizes the utility's need to make a profit, it utilizes some discretion in a pro-consumer direction under these conditions. That is, when conditions encourage utilities to ask for

Table A3
OLS Regression Estimates Interacting Party Composition and Inflation.

	β (SE)
Change in Inflation	3.15 (1.93)
Change in Unemployment	1.09 (0.50)
Electoral Proximity	-0.01* (0.002)
Industry Testimony Advantage	2.59* (0.70)
Interest Group Testimony Advantage	-0.07 (0.11)
Consumer Complaints (log)	-1.20* (0.48)
Republican Advantage	13.91* (4.83)
Customers (log)	0.27 (0.17)
Change in Inflation X Republican Advantage	-4.81 (2.50)
Constant	-8.70 (3.75)
N	219
r^2	0.18

[†] $p < 0.10$, * $p < 0.05$. Robust standard errors in parentheses. Dependent variable is the difference (standardized by rate type) between firm's proposed service charge and the service charge imposed by the commission. Higher values of the dependent variable indicate a more favorable decision for the utility. Testimony advantages are the number of testifiers in favor of the proposed rate minus the number of testifiers opposed, by sector.

higher than normal rate increases, these same conditions encourage the Commission to balance the needs of utilities and consumers moreso than in good economic times. It is unsurprising that consumer complaints are positively associated with greater proposal amounts. Given the temporal ordering, it would seem that these higher requested increases cause more complaints; causality in the opposite direction is not logically possible.

Table A3 considers the possibility that partisan composition could condition the effect of inflation on ratesetting behavior. Table A3 utilizes the same basic specification as Table 1 but includes a variable capturing the interaction between inflation and Republican advantage. If the partisan composition of the Commission conditions how inflation is dealt with during rate cases, then this interaction should be positive and significant. Table A3 shows, however, that this interaction fails to attain statistical significance at traditional levels. The partisan composition of the Commission does not appear to influence how the Commission responds to rising inflation during ratemaking.

Finally, to account for possible temporal dependencies in our data, Table A4 reports the results of four OLS regressions. Column one of Table A4 includes fixed effects for the year of Commission decisions. Column two clusters standard errors at the decision year. Column three includes fixed effects for each unique membership configuration at the Commission. Column four clusters the standard errors for each unique membership configuration at the Commission. Each of these specifications accounts in various ways for the possibility that the Commission's decisions might systematically vary during different periods of time, or with a different configuration of personnel. While the statistical significance of some covariates is sensitive to these different specifications, we find a negative and significant association between inflation and utility company success in all four models. However, consumer-voter complaints, which were negative and marginally significantly associated with utility company success in our primary model, exhibits a sensitive statistical relationship to success in Table A4. As such, we have more confidence in the association between inflation and utility success than the association between consumer-voter complaints and utility success.

Table A4

OLS Regression Estimates Using Year Effects, Year Clustered Errors, Commission Fixed Effects, and Commission Clustered Errors.

	Year FE	Year Clustered	Comm. FE	Comm. Clustered
	β (SE)	β (SE)	β (SE)	β (SE)
Change in Inflation	-1.50* (0.54)	-0.51* (0.07)	-1.30* (0.55)	-0.51* (0.07)
Change in Unemployment	1.32 (0.71)	0.14* (0.04)	0.73* (0.29)	0.14* (0.04)
Electoral Proximity	-0.01 (0.01)	-0.003* (0.0002)	-0.01* (0.003)	-0.003* (0.0002)
Industry Testimony Advantage	-1.52 (2.31)	1.19* (0.14)	1.57 (0.89)	1.19* (0.08)
Interest Group Testimony Advantage	-0.05 (0.39)	0.27* (0.09)	-0.34* (0.15)	0.27* (0.04)
Consumer Complaints (log)	1.70 (2.08)	-0.24 (0.13)	-0.39* (0.19)	-0.24 (0.09)
Republican Advantage	-6.79 (3.92)	4.94* (0.25)	1.38 (4.92)	4.94* (0.17)
Customers (log)	-1.91 (1.50)	-0.08 (0.06)	-0.39* (0.14)	-0.08 (0.05)
Constant	30.08 (18.41)	-1.59* (0.22)	8.67 (6.57)	-1.59* (0.23)
N	219	219	219	219
r^2	0.18	0.17	0.18	0.17

[†] $p < 0.10$. * $p < 0.05$. Robust standard errors in parentheses. Fixed effects for decision year (Column 1) and Commission membership change (Column 3) not reported for brevity. Dependent variable is the difference (standardized by rate type) between firm's proposed service charge and the service charge imposed by the commission. Higher values of the dependent variable indicate a more favorable decision for the utility. Testimony advantages are the number of testifiers in favor of the proposed rate minus the number of testifiers opposed, by sector.

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