Elections, Information, and Policy Responsiveness in Hybrid Regimes

Michael K. Miller
Princeton University

Abstract

Despite widespread scholarly interest in hybrid regimes, the influence of autocratic elections on policy choice has been neglected. This paper argues that semi-competitive elections allow citizens to credibly signal dissatisfaction through their vote share for the ruling party. To balance the interests of citizens and their elite coalitions, ruling parties adjust policy and patronage based on this election information. After illustrating this logic with a formal model, I present the first cross-country analysis of policy-setting within hybrid regimes. Looking at 277 autocratic elections in 91 countries from 1975–2004, I find that negative electoral shocks to the ruling party lead to higher education and social welfare spending and lower military spending following elections. In contrast, there is no policy effect leading up to elections. Further, I find that oil wealth reduces policy responsiveness by making patronage cheaper, illustrating a potential mechanism for the resource curse.

1 Introduction

Over the past few decades, hybrid regimes have spread across the globe. Although at root autocratic, these regimes adopt many of the trappings of democracy, including multi-party elections, legislatures, and independent courts. Of 139 countries that were not consolidated democracies for the whole of 1975–2004, 108 held multi-party elections at some point in the

Thanks to Carles Boix, Grigore Pop-Eleches, Adam Meirowitz, Christine Percheski, attendees at Princeton’s Research Seminar in Comparative Politics, and conference participants at APSA 2009, APSA 2010, and the University of Michigan for helpful advice.
period. This paper addresses a surprisingly overlooked question: Do the outcomes of autocratic elections influence the policies that ruling parties choose?

The rise of authoritarian elections has prompted widespread scholarly interest in categorizing and understanding electoral authoritarian (EA) and other hybrid regimes (Diamond 2002; Levitsky and Way 2002; Schedler 2002; Geddes 1999, 2006; Howard and Roessler 2006; Gandhi and Lust-Okar 2009), with several case studies illustrating how their democratic components operate (Hermet et al. 1978; Ottaway 2003; Magaloni 2006; Schedler 2006; Brownlee 2007; Gandhi 2008; Levitsky and Way 2010; Malesky and Schuler 2010). Despite this scholarly attention, there is still a much poorer understanding of hybrid regimes than full democracies or closed dictatorships (Diamond 2002; Epstein et al. 2006; Gandhi and Lust-Okar 2009).

The literature has overwhelmingly focused on two subjects. One is the effect that multipartyism has on regime duration and the likelihood of democratization (Geddes 1999, 2006; Hadenius and Teorell 2007; Brownlee 2009; Lindberg 2009). The other is the purpose of adopting democratic elements, such as elections (Geddes 2006; Lust-Okar 2006; Magaloni 2006, 2008; Gandhi and Lust-Okar 2009), mass parties (Smith 2005; Geddes 2006; Brownlee 2007; Greene 2007; Gehlbach and Keefer 2008; Magaloni 2008), and legislatures (Gandhi and Przeworski 2006, 2007; Gandhi 2008; Wright 2008; Boix and Svolik 2010).1 Besides their legitimizing role, past studies mainly characterize quasi-democratic institutions as tools designed to either manage elite bargaining (Geddes 2006; Magaloni 2006, 2008; Gandhi 2008) or frustrate popular organization (Lust-Okar 2006; Przeworski 2009a).

I challenge this view by arguing that autocratic elections serve to channel popular demands and engender policy concessions. Autocrats struggle to ascertain citizen preferences, a quandary that Wintrobe (1998) calls the “Dictator’s Dilemma.” Elections allow groups to signal dissatisfaction through their vote share for the ruling party. Armed with this information, rulers adjust policy and patronage to placate citizens and hold on to power. Despite support for this idea in previous case studies (Eisenstadt 2004; Case 2006; Magaloni 2006), this is the first cross-national study to show that autocratic election outcomes have a substantive effect on policy.

1 Another strain of empirical work concerns the strategic interaction of EA regimes, oppositions, and international observers (Schedler 2002, 2006; Howard and Roessler 2006; Beaulieu and Hyde 2009; Levitsky and Way 2010; Hyde 2011).
The formal model discussed below introduces an electoral mechanism that allows the ruling party to credibly ascertain citizen preferences and calibrate policy. Previous theories on information revelation in autocratic elections have not adequately confronted the credibility problem in voter signaling. By offering policy shifts at the expense of patronage, the ruling party determines how much voters are willing to "pay" for policy. This leads to the credible revelation of voter preferences in any number of spatial dimensions, even with a secret ballot and without the possibility of the ruling party's defeat. Hence, policy responsiveness can be obtained even when the winning party is preordained. The implication is that although controlled elections do not make democracy, they can play an important role in policy-making and regime change.

To test the theory, I look at the policy impact of 277 autocratic elections in 91 countries from 1975-2004. Using error correction models, I show that falling vote totals for the regime correlate with policy concessions immediately following elections, specifically increases in education and social welfare spending and decreases in military spending. In contrast, there is no relationship between spending and popularity prior to elections, demonstrating that elections genuinely reveal information. Further, as predicted by the formal model, the electoral effect on spending is absent in countries with large oil wealth.

The following section reviews the literatures on elections, information-gathering, and policy responsiveness in autocracies, as well as the connections that have been drawn between them. Section 3 presents a unified theory of these three elements of hybrid regimes, outlines three types of electoral information-gathering, and discusses several illustrative cases. Section 4 introduces a formal model of authoritarian elections and derives hypotheses relating electoral outcomes and policy change. Section 5 presents the empirical results on policy responsiveness within hybrid regimes. Section 6 concludes.

2 Authoritarian Elections, Information, and Policy

Responsiveness

This paper's theory links three distinct aspects of modern autocratic regimes: elections, information revelation, and policy choice. The current section overviews the literatures on each,
as well as the connections that have been drawn between them. The next section presents a theory connecting all three.

**Authoritarian Elections**

The large majority of modern autocracies hold multi-party elections. Most scholars characterize these elections as having little to do with policy or substantive representation. Although elections may provide autocrats a veneer of legitimacy in the eyes of international observers (Schedler 2002; Levitsky and Way 2006, 2010; Hyde 2011), many regimes have adopted elections while facing minimal outside pressure (Magaloni 2008). The expense and potential danger of holding elections, as well as the variation in their adoption by different regimes, suggest the existence of internal motives.

Although the motives for autocratic elections may be highly varied (Zaslavsky and Brym 1978; Gandhi and Lust-Okar 2009), two explanations have garnered the most attention in the literature. First, overwhelming electoral victories by dominant parties display strength, currying popular resignation and heading off challenges by opposition and intra-party elites (Wedeen 1999; Geddes 2006; Magaloni 2006; Malesky and Schuler 2008; Simpser 2008; Przeworski 2009a; Blaydes 2011). Ruling parties cultivate a “public image of invincibility” in order to “discourage potential divisions within the ruling party” (Magaloni 2006: 9). To magnify their image of electoral dominance, ruling parties commit ballot-stuffing and other forms of electoral manipulation even when their victories are all but certain (Simpser 2008). To Przeworski (2009a: 17), elections in dictatorships are displays of intimidation that the regime can “force everyone to appear in a particular place on a particular day and perform the act of throwing a piece of paper into a designated box.”

Second, elections help to distribute patronage to voters and keep local leaders dependent on the central regime (Zaslavsky and Brym 1978; Lust-Okar 2006; Chandra 2007; Malesky and Schuler 2008; Blaydes 2011). Particularly in the Middle East, “the distribution of state resources trumps by far any role of elections as arenas for contests over the executive or critical policies” (Lust-Okar 2006: 459). Voters in clientelist regimes are primarily motivated “to secure some of the vast material benefits at the disposal of those who implement policy. . . . And the vote is the currency through which individuals secure such goods for themselves or their micro-communities” (Chandra 2007: 91). Local representatives appeal to the central regime
for government favors and citizens elect the legislators able to funnel the most spending to their district. In this way, elections also help to monitor and promote local politicians, who are rewarded based on their vote-getting and patronage-spreading skills (Barkan and Okumu 1978; Zaslavsky and Brym 1978; Brandt and Turner 2007; Koehler 2008; Blaydes 2011).

**Information**

A critical problem in non-democracies is gathering credible information on citizen preferences (Tullock 1987; Wintrobe 1998; Piketty 1999; Congleton 2001; Cox 2009). First, dictators need to know the total level of opposition facing their regimes. Allowing dissatisfaction to fester risks overthrow, either from popular rebellion or a centrally led coup. Awareness of this threat can prompt a ruler to either lessen disaffection (through payoffs or policy shifts) or initiate a regime transition (Cox 2009; Pop-Eleches and Robertson 2009), making knowledge of citizen opposition valuable and highly consequential. Second, autocrats want to know the policy preferences of their citizens to allow for policy concessions and to identify optimal policies. Because of limited knowledge and policy shocks, a dictator may require citizen inputs to identify his own ideal policy or be warned of failing programs. It took the Chinese leadership three years to recognize that mass collectivization during the Great Leap Forward was causing widespread famine. Subsequently, China has allowed village elections and periodic episodes of liberalization to gather information from citizens (Lorentzen 2009).

Few options for comprehensive and credible information-gathering are available in non-electoral autocracies. A number of recent studies discuss the potential of protests as signaling devices in autocracies (Lohmann 1993; Ginkel and Smith 1999; Robertson 2007; Lorentzen 2009), but protests are inherently difficult to control. Free media can play a limited role in exposing information on government performance (Egorov et al. 2009). Dictators can establish a security apparatus or mass party to independently aggregate information and administer policy, but this carries dangers of abuse and independent threat (Tullock 1987; Congleton 2001; Myerson 2008).

**Policy Responsiveness**

By definition, autocracies do not base their power on the consent of the governed. However, autocrats cannot entirely ignore the preferences of citizens without risking social unrest and violent overthrow. Several analyses of dictatorship consider how this pressure leads to a mix
of policy concessions, payoffs, and repression (Wintrobe 1998; Haber 2006; Desai et al. 2008; Gandhi 2008; Bohlken 2010; Kim and Gandhi 2010). For instance, Desai et al. (2008) argue that autocracies provide a balanced mix of welfare spending and political liberalization under pressure of revolt. Although opinions differ on which groups are most likely to be appeased with policy concessions, the military and urban groups are among the common targets because of their potential for revolt (Huntington 1968, 1991; Bueno de Mesquita et al. 2003; Stasavage 2005).

Few studies have investigated how quasi-democratic elements affect autocrats’ policy choices. Gandhi (2008) and Conrad (forthcoming) test the policy impact of dictatorial legislatures, particularly for spending and civil liberties, whereas Kim and Gandhi (2010) show that legislatures are associated with higher wages for labor. Surprisingly, the literature has overlooked the impact of multi-party elections and their outcomes on policy.

**Authoritarian Elections and Information**

Some recent scholarly work takes seriously the informational component of authoritarian elections, particularly in revealing the overall strength of opposition (Eisenstadt 2004; Case 2006; Magaloni 2006; Brownlee 2007; Cox 2009; Pop-Eleches and Robertson 2009; Herron forthcoming). Studies of elections in the Soviet Union even note the informational value of totalitarian elections, in which voters were given only a single option (Zaslavsky and Brym 1978; Karklins 1986; Roeder 1989). Although citizens lacked an opportunity to vote against the regime, the authors argue that disaffection was signaled through abstention, a rising practice that foretold the plunging legitimacy of the Soviet Union.

Reflecting the severity of their informational problems, autocrats are constantly surprised by electoral results, often discovering their regimes to be much less popular than they believed. Examples include Chile in 1988 and 1989 (Angell and Pollack 1990), Mexico in 1988 and 2000 (Eisenstadt 2004; Magaloni 2006: 245), Singapore in 1991 (Leong 2000), Morocco in 2007 (McFaul and Wittes 2008: 30), and Vietnam in 2007 (Malesky and Schuler 2008). Perhaps the most dramatic example is the Polish election of 1989. The incumbent Communist government expected to be competitive, if not win a large legislative majority, but failed to win a single one of the 261 openly contested seats (Lewis 1990).

**Authoritarian Elections and Policy Responsiveness**
Compared to patronage, the idea of policy responsiveness in EA regimes is met with greater skepticism by contemporary scholars. However, adjusting to citizen preferences is a mainstay of successful dominant parties. For instance, Blaydes (2011) shows that Egyptian leaders manipulate the budget in advance of elections, particularly to coopt public sector employees and the urban poor. Similar evidence is found for Mexico in Magaloni (2006) and for Malaysia in Pepinsky (2007). Hyde and O'Mahony (2010) find that pre-electoral fiscal manipulation is more likely when international monitors make electoral fraud more difficult.

Controlled authoritarian elections have also triggered several democratic transitions by credibly signaling a popular demand for democracy. Citizens willing to forgo patronage and risk retribution to vote in favor of democratic reform credibly communicate a strong desire for democracy. To avoid violent removal, authoritarian rulers have an interest in acceding to this demand once disaffection reaches a certain level (Cox 2009). Holding on to power for too long can also eliminate the chance for the ruling party to later compete under democracy. The 1988 plebiscite in Chile, for instance, convinced Augusto Pinochet to accede to democracy despite his overwhelming grip on government institutions (Angell and Pollack 1990). Similar outcomes occurred in Ecuador in 1979 and Poland in 1989. Election and protest signaling often work hand in hand, as occurred in the Philippines in 1986 and the Color Revolutions of Serbia, Georgia, and Ukraine.

**Information and Policy Responsiveness**

Several recent studies argue that autocratic legislatures help to reveal information to secure power-sharing deals (Congleton 2001; Gandhi and Przeworski 2006, 2007; Magaloni 2006, 2008; Gandhi 2008; Wright 2008; Boix and Svolik 2010). Gandhi and Przeworski (2006) claim that multi-party legislatures secure opposition loyalty by providing a forum in which bargains are struck between competing parties, which act as proxies for societal interests. Gandhi’s (2008) book takes the idea the farthest, showing that regimes adopt multi-party legislatures when their need for cooperation is high, and legislatures in turn correlate with policy concessions and better economic outcomes. As Gandhi (2008: 12) argues, “when dictators need to incorporate larger groups, such as unions, professional associations, and religious organizations, they use legislatures and political parties. Legislatures provide information about the preferences of these groups, a safe forum in which the regime can negotiate with them, and an efficient mechanism by which to target spoils and policy concessions.” However, these studies
typically leave legislatures as a black box, failing to explain how information revelation occurs consistent with individual incentives.

3 Theory: Combining the Three Elements

This section outlines a unified theory that autocratic elections are used to gather information to optimally adjust policy. Past versions of this idea have been limited to individual country cases, whereas this paper presents a comprehensive theory and empirical test for all hybrid regimes. Moreover, past theories have not confronted the critical strategic problem of information credibility, which is a core concern of this section and the paper’s formal model.

3.1 The Logic of Authoritarian Elections

No durable regime can rule by repression alone. To hold onto power, autocrats must satisfy both the masses and a supporting group of elites. The propensity for discontented citizens to revolt is a bedrock assumption of many studies of autocracy (Acemoglu and Robinson 2006; Gandhi and Przeworski 2006; Smith 2008; Cox 2009). However, the large majority of violent turnovers in autocracies are initiated by government insiders, particularly the military.\(^2\) As a result, the recent literature on autocratic institutions has focused much of its attention on how rulers maintain their elite coalitions (Tullock 1987; Congleton 2001; Bueno de Mesquita et al. 2003; Geddes 1999, 2006; Magaloni 2006, 2008; Gandhi 2008; Myerson 2008; Svolik 2009; Boix and Svolik 2010).

Autocrats with limited resources need to continually shift their favors between elites and the masses based on potential threats (Bueno de Mesquita et al. 2003; Magaloni 2006; Desai et al. 2008; Gandhi 2008), a balance that Magaloni and Kricheli (2010) term the “guns vs. votes” tradeoff. To complicate matters, the “masses” are really a collection of intersecting groups, often with opposing interests. Generally, groups revolt when they are sufficiently dissatisfied with the existing regime that the expected benefits and costs of violent opposition outweigh the value of the status quo. It is thus highly valuable for autocrats to know how disaffected particular groups are. Armed with this knowledge, the autocrat can engage in

\(^2\) According to the Archigos dataset, about 60% of violent turnovers are initiated by military actors, with a further 9% by other government actors (Goemans et al. 2009).
strategic concessions to preempt revolt (Acemoglu and Robinson 2006; Haber 2006; Desai et al. 2008; Bohlken 2010).

Elections are an ideal method for gathering this information. When citizens express greater opposition at the ballot box, ruling parties can interpret this as lower satisfaction with current policy. As explored below, autocrats can also use variation in vote support across regions to gauge the opposition threat of particular groups. Upon encountering this signal, autocrats can then implement policy concessions. These may take the form of general public goods or policies targeted at individual groups. In this way, the demands of citizens and the elite coalition can be precisely balanced.

Forms of this argument have appeared in several case studies of EA regimes (e.g., Eisenstadt 2004; Case 2006; Magaloni 2006). However, there is a problem of information credibility that has not been satisfactorily addressed. If citizens can express opposition to the regime and gain policy concessions, then shouldn’t they always signal maximal dissatisfaction? By extension, how can these signals communicate any credible information?

I argue that this credibility problem is solved by the strategic targeting of patronage and punishment. In virtually every EA regime, the regions (and sometimes individuals) that vote for the ruling party are rewarded with spending, whereas the centers of opposition are starved of government funds or otherwise repressed. Case studies have investigated the connection between authoritarian elections and patronage in Mexico (Magaloni 2006; Magaloni et al. 2007), Egypt (Koehler 2008; Blaydes 2011), Jordan (Lust-Okar 2006), Singapore (Leong 2000), China (Kennedy 2010), Taiwan (Wang and Kurzman 2007), and Napoleon III’s France (Zeldin 1958). Magaloni (2006) and Magaloni et al. (2007) overview the sophisticated use of patronage in Mexico during the PRI’s hegemonic rule. The PRI distributed individual payoffs and geographically targeted public goods to sway votes, often under the guise of government initiatives like the poverty relief program Pronasol. Controlling for development, districts with larger margins of victory for the PRI received significantly higher Pronasol spending (Magaloni et al. 2007: 201).

Groups or regions that express opposition gain general policy concessions, but at a personal cost. By offering policy shifts at the expense of patronage, the ruling party credibly determines

---

3 Although this is not explored here, it also follows that groups with a greater chance of success in armed opposition should gain greater concessions (Huntington 1968, 1991; Bueno de Mesquita et al. 2003; Stasavage 2005).
how much each group of voters is willing to “pay” for policy. The formal model in the
next section demonstrates how a calibrated reward system can reveal group preferences in any
number of spatial dimensions and without violation of the secret ballot.

3.2 Three Types of Information-Gathering in Authoritarian Elections

What sort of information is revealed by authoritarian elections? I argue that hybrid regimes
gather three types of information of varying complexity, examples of which are littered through-
out the autocratic case study literature. Most simply, autocrats can ascertain their overall
level of support in the population, which may lead them to make policy concessions on issues
of general interest. Second, they can analyze the distribution of votes to determine how their
support varies across groups and regions. Lastly, they can use the success of particular op-
position parties to identify new issues of public concern. Note that ballot-stuffing and other
forms of electoral fraud do not nullify this information-gathering, since the regime itself sees
the true vote tally.

General Support

The most straightforward signal that elections can provide is the general level of support
for the ruling party (Karklins 1986; Eisenstadt 2004; Case 2006; Langston 2006; Magaloni
provide information about rulers, their critics, and the support competing factions command
in the wider population.” As noted above, poor election outcomes have convinced several au-
tocrats to liberalize rather than risk violent removal.

Under more stable conditions, elections allow ruling parties to gauge their support in the
general population and then calibrate spending priorities to balance the demands of the
masses and elites. Case (2006: 96) explains that in the EA model favored by Asian leaders
(typified by Singapore and Taiwan), “elections were not intended to produce turnovers but
instead to provide feedback, registering fluctuations in support so that governments might
adjust their policy course but never leave office.” However, such an electoral mechanism has
not been tested cross-nationally. In Section 5, I confirm that autocratic election outcomes pre-
dict changes in three types of government spending.

Group Support
The distribution of votes across electoral districts can also indicate variation in support among groups identifiable by their geographical spread. This may include groups defined by ethnicity, age, income, and so on. As Magaloni (2006: 9) contends, “Hegemonic-party regimes employ elections as a key instrument for obtaining information about the extent of the party’s mass support and its geographic distribution. . . , rewarding supporters with access to government funds and punishing defectors by withdrawing them from the party’s spoils system.” The formal model in the next section shows how groups with varied preferences can send credible information to the ruling party.

In autocratic Poland and Mexico, for example, elections allowed rulers to “acquire information about incumbent and opposition popularity across segments of the population” (Eisenstadt 2004: 36). Pravda (1978: 192) concurs that in Polish elections under Communism, “patterns of turn-out and negative and selective voting are sufficiently marked to make possible the grouping of regions and cities according to levels of political acceptance.” Discussing the highly uncompetitive elections held in Portugal from 1933–74, Schmitter (1978: 154) comments, “Another possible communications function ‘hidden’ within non-competitive elections is the utilisation of information about specific changes in opposition strength to determine the nature and location of public policy outputs.”

This type of information-gathering was even evident in what is probably the first identifiable EA regime, France under Napoleon III (1848–70). We find all the familiar elements of modern hybrid regimes: universal male suffrage in uncompetitive elections, a nearly powerless legislature, a mass party structure (with government-appointed mayors in each town), limited opposition to the executive, and an extensive use of patronage to reward loyalists and punish dissenters (Zeldin 1958). This system allowed for the sophisticated analysis of variation in vote support. In the 1857 election, for instance, “The ministers were less impressed by the huge total majority than by the strength of the republicans in the towns and the danger it boded for the future” (Zeldin 1958: 75). Napoleon III himself commented, “We must reflect seriously about the results of the last elections, but it all consists in finding the means to reduce the number of discontented in Paris and Lyons” (quoted in Zeldin 1958: 77). Hence,

---

4 The mayors appealed to each town for pro-Bonapartist votes by stressing the need for public projects and favors. Zeldin (1958: 82) describes the pitch to voters: “Their taxes go almost entirely to the state, and it is from the state, therefore, that they must beg back their money. . . . It is essential for them to keep on good terms with the government in order to get the subsidies they require.”
as far back as the 1850s, autocrats were using semi-competitive elections to draw inferences about opposition threats and potential responses.

**Opposition Innovation**

Although it has become the norm in recent years, not all hybrid regimes have allowed true multi-party competition. Numerous autocracies countenanced either no alternative at all (the Soviet Union), a choice of multiple candidates from a single party (Tanzania in 1965, Cameroon in 1985), opposition only from independents (local elections in China), or opposition from regime-controlled alternative parties (Senegal under Leopold Senghor, Egypt in 1976).\(^5\) Since such systems are often sufficient to gauge variation in ruling party support,\(^6\) why do hybrid regimes allow multiple parties?

First, in multi-party competition, the popularity of specific parties can indicate the direction of policy preferences. For instance, Mexico’s ruling PRI “tacked back-and-forth between the left and the right over time” based on electoral gains by the populist PRD or conservative PAN (Greene 2007: 73). After a sharp rise in support and funding for pro-business “NDP-independents” in 2000, Egypt’s ruling NDP “renovated its coalition to reflect demographic and economic changes” by incorporating these independents into the party’s General Secretariat and adjusting economic policy to reflect the growing power of modernized business interests (Brownlee 2007: 134).

Second, opposition parties are motivated to find new issues of public concern, an innovative function that can warn ruling parties of potential cleavages. As Huntington (1968: 147) notes on dominant-party systems, “the minor parties play a significant role as bellwethers or warning devices, the rise and fall in their votes indicating to the dominant party the directions in which it must move to maintain its dominant position either by assimilating new groups or by innovating policies.” To stanch the opposition threat after his legalization of opposition parties in 1977, Egyptian President Anwar Sadat reacted with “constant policy innovations by which the President sought to stay a step ahead of his opponents” (Hinnebusch 1985: 71). Opposition elements became sources of pressure for “articulating ideals and interests unrep-

---

\(^5\) These alternative parties often came packaged with clear “directional” platforms, perhaps to make voter signaling as transparent as possible. In Egypt in 1976, for instance, voters chose between Left, Right, and Center parties.

\(^6\) In the 1965 Tanzanian elections, voters signaled “their general attitudes toward the regime as expressed through their acceptance or rejection of incumbents” and “clearly the party’s top leadership learned much from the results” (Foltz 1973: 163).
resented in the dominant party and able, to the degree these views threatened to capture wider support, to force the elite to at least partially accommodate them” (Hinnebusch 1985: 221). In Malaysia, the government performed poorly in a 1999 election following the Asian financial crisis and opposition claims that policies favored elites and big business. In response, Prime Minister Mahathir Mohamad forced a pro-business finance minister from office, canceled several government-funded mega-projects, and started enforcing corruption rules (Case 2006: 107-8).

Third, opening a single-party regime to competition is seen by many autocrats as a way to reinvigorate sclerotic party bureaucracies. Coulon (1990: 425) describes President Abdou Diouf’s 1981 decision to allow independent opposition parties in Senegal: “In Diouf’s view, the free political competition that had been inaugurated should, in turn, incite the Socialist party to renew itself in order to keep its dominant position.” Specifically, Diouf hoped that multi-party elections would renew “the lines of communication between the government and the civil service on the one hand and the citizens on the other” (Coulon 1990: 428). Liberalization measures in Napoleon III’s France in 1860 resulted from a similar impulse: “[Duc de] Morny advocated liberal concessions, not from mere weakness, but from a positive belief in their desirability. ‘A government not subject to control or to criticism is like a ship without ballast. The absence of contradiction blinds a government and sometimes leads it astray, and it does not reassure the country’” (Zeldin 1958: 127).

3.3 Illustrative Example: Singapore

In many ways, Singapore represents a least-likely case for finding evidence of policy responsiveness from elections. Although the country has allowed multi-party competition since its independence, the ruling PAP has not been seriously challenged in decades, never losing more than 6 of 87 legislative seats since 1963 (and not more than 4 seats prior to 2011). Moreover, the PAP’s leaders frequently claim that they are above public and interest-based pressures, emphasizing a technocratic and pragmatic policy-making style (Mutalib 2003; Worthington 2003). Perhaps the most common metaphor used to describe Singaporean elections, and one borrowed by PAP leaders, is elections as a report card on the previous five years of government rule. If these years were prosperous and efficient, the voters accede to another
five years, during which the government claims the mantle to rule in the manner it thinks best.

Even so, the PAP is not immune to public demands. The government spends a great deal of time gathering public input on current and potential policies through open media, MP constituency meetings, and institutionalized fora like the Feedback Unit (Mutalib 2003; Rodan and Jayasuriya 2007). As Worthington (2003: 48) notes, “the government has found the flexibility to change policy in response to feedback on large scale general public dissatisfaction.” According to Mutalib (2003: 275), the state’s “careful data collection” has allowed it to “establish a profile of the electorate...[to] effectively galvanise public support for its policies and programs...and neutralise pockets of political opposition.” In reaction to a recent public outcry, for instance, the PAP chose to forestall a planned change in how non-English languages would be weighted in school grading.

Elections are still another source of public input that the PAP uses to determine policy. To ensure this information is credible, Singapore’s rulers openly acknowledge the use of patronage to punish opposition strongholds. Precincts that elect opposition legislators are routinely denied upgrades to public housing (Leong 2001; Yeo 2002: 220-1; Mauzy and Milne 2002: 94, 149; Mutalib 2003: 354, 383; Worthington 2003: 43), the source of housing for more than 80% of Singaporeans. A 2006 news story on the PAP’s official website made the electoral inducement perfectly plain: “Senior Minister Goh Chok Tong raised the question on why do Hougang and Potong Pasir [the districts with opposition representation] residents want to lose out on upgrading by not voting the PAP in the coming General Elections?” As Prime Minister, “Goh warned that where opposition candidates won, the government would withhold resources, ensuring that the housing under their care ‘will become slums’” (Case 2006: 106).

The regime reacts strategically to signs of erosion in electoral support by innovating and adapting policies. In the 1984 election, the opposition criticized a highly controversial plan, called the Graduate Mother Scheme, designed to encourage procreation by well-educated women. The plan was “pinpointed as responsible for the PAP’s decline in the popular vote” by Prime Minister Lee Kuan Yew and was quickly withdrawn the following year (Mauzy and Milne 2002: 150). In 1997, the PAP pivoted to make housing improvement a key focus of its legislative campaign following an enthusiastic response toward the plan in a local election.

---

7 The story can be viewed at www.pap.org.sg/articleview.php?id=388&cid=51.
(Leong 2000: 200-1). In a 2009 survey, 85% of Singaporeans agreed that voting was “the most meaningful way in which to tell the government how the country should be run.”

Perhaps the best test is to see how the PAP adjusted policy following its disappointing electoral performance in 1991, when it lost four legislative seats and saw its popular vote total drop to 60%, its worst showing since 1963. Despite the modest losses, this outcome “sent shock waves through the PAP” (Worthington 2003: 41). Leong (2000: 200) points to a significant policy impact: “While Goh took the elections as a rejection of his consultative style, his lieutenants in the government focused on policies and the process of policy-making to identify the causes of PAP’s disappointment.” Several political observers pointed to a deterioration in support among poorer voters and the Chinese majority. Indeed, the three new seats lost were all in Chinese working-class districts, leading the Deputy Prime Minister to comment that the Chinese majority “felt neglected by the government and sent ‘the PAP an important signal’” (Mauzy and Milne 2002: 151). Chua Beng Huat, a scholar in Singapore, claims that this led the PAP to increase its representation of Chinese ministers. In addition, in 1992, the PAP founded the Chinese Development Assistance Council, a redistributive community development and social services organization specifically aimed at Chinese citizens (Worthington 2003: 49).

In total, social welfare spending (defined below) rose from 0.46% to 0.65% of GDP between 1991 and 1993.

4 A Formal Model of Authoritarian Elections

This section outlines a model of preference signaling through authoritarian elections. The model is deliberately simple and stylized, leaving out many important elements of authoritarian politics to hone in on the electoral mechanism. Two sets of actors are involved. On one side is the ruling party or leader, which for simplicity will be understood as a unitary actor and referred to as the dictator. On the other side are groups of voters, whose ideal points are unknown to the dictator. The groups can be interpreted as either electoral districts or voter

---

8 This figure comes from the National Orientations of Singapore Survey, conducted in 2009 by the Institute of Policy Studies at the Lee Kuan Yew School of Public Policy. Survey results can be found at www.spp.nus.edu.sg/ips/nos_4_2010.aspx.
9 Personal interviews, July 28–August 19, 2010.
10 Personal interview, July 28, 2010.
11 A parallel Malay organization, Mendaki, was founded in 1981 in the same year as the PAP’s first post-1965 loss of a legislative seat, then considered a “psychological breakthrough” for the opposition (Yeo 2002: 214).
types spread across the electorate. Although the model can be adjusted to work on the individual level, the current model works without violation of the secret ballot. The dictator need only know vote totals at the group level to gather credible preference information.

The dictator offers groups a tradeoff between patronage and policy. Lower vote support for the party by a specific group is interpreted as greater frustration with the current regime, leading to policy concessions. To make this signaling credible, patronage is simultaneously decreased. In essence, groups are asked how much they are willing to “pay” for policy shifts. The model thus reinterprets the widespread use of electoral patronage as partly a method of ensuring the credible communication of policy preferences. With this mechanism in place, groups are incentivized to reveal their true preferences and the dictator makes the corresponding policy adjustments.

The result is surprising given the formal literature on “sender-receiver models” that generally finds credible information revelation is imperfect or impossible when preferences diverge (Crawford and Sobel 1982; Potters and van Winden 1992). Nevertheless, this paper’s simple mechanism achieves perfect revelation of group ideal points in any number of dimensions. Autocratic policy choice has been modeled by Gandhi (2008) and Desai et al. (2008), but they assume perfect information. Semi-democratic elections, marred by incumbent abuse or the threat of violence, have been modeled by Ellman and Wantchekon (2000), Cox (2009), Przeworski (2009b), and Collier and Vicente (forthcoming). However, these models focus on the interplay between autocratic incumbents and challengers rather than the voting strategies of citizens. Further, no previous formal model provides clear expectations for how autocratic electoral outcomes should impact post-election policy choice.

4.1 Basic Elements and the Perfect-Information Case

The basic framework is an \( m \)-dimensional spatial model. The dictator chooses a policy \( X \in \mathbb{R}^m \). This can incorporate anything in the political realm, such as tax policy, spending, land reform, and political repression. The dictator has an ideal point \( D \) and \( N \) citizen groups (indexed by \( i \)) have ideal points \( \{X_i\} \). All actors face utility losses equal to the squared distance of their ideals from the chosen policy.

The dictator additionally distributes targeted payoffs \( \{k_i\} \) (not necessarily positive) to each group. These payoffs include both patronage and punishment. To distinguish among different
types of autocracies, the payoff $k_i$ costs the dictator $\alpha k_i$, where $\alpha > 0$ is a constant factor that captures the difficulty of distributing rents and punishments. For instance, petrostates have direct access to enormous revenues that leaders distribute to loyal citizens, implying a very low $\alpha$. In contrast, economically developed autocracies with small public sectors find it more difficult to accumulate rents (Greene 2007, 2010), implying a high $\alpha$.

The dictator gets an intrinsic benefit from ruling, $f(U)$, which is a function of the sum of individual utilities, $U = \sum_i u_i$. I assume $f$ is increasing, strictly concave ($f'' < 0$), and that $f'$ is not everywhere above or below $\alpha$. The first assumption reflects the fact that dictators are better off with happier subjects, either because of a decreasing risk of social unrest (Tullock 1987; Wintrobe 1998), greater cooperation in economic production (Gandhi 2008), or a reduced likelihood of future electoral turnover. The second assumption is of decreasing marginal returns of subjects’ happiness to the dictator’s utility. The third assumption eliminates cases in which the dictator is motivated to either give or take an infinite amount in payoffs.

The utilities are thus the following:

$$u_i = k_i - d(X - X_i)^2$$
$$u_D = -\alpha \sum_i k_i + f(U) - Nd(X - D)^2$$

where $d(\cdot)$ is distance and $u_D$ is the dictator’s utility. The squared distance is multiplied by $N$ in the dictator’s utility function so that payoffs and policy are on the same scale as for the groups. The dictator’s task is to pick a combination $\{X, \{k_i\}\}$ that maximizes $u_D$.

Before evaluating the electoral mechanism, consider the perfect-information case in which the dictator knows $\{X_i\}$. What will the dictator choose? First, we can establish first-order conditions on the payoffs $\{k_i\}$:

$$\frac{\partial u_D}{\partial k_i} = 0 = -\alpha + f'(U)(1)$$
$$\Rightarrow f'(U) = \alpha$$

Hence, the dictator dispenses enough patronage to get the desired level of total utility.

To determine the equilibrium location of $X$, note that the dictator will place $X$ somewhere on the line connecting $D$ and $\overline{X}$, the $m$-dimensional mean of $\{X_i\}$. If not, moving towards this
Fig. 1 The figure displays the basic elements of this paper’s model: a distribution of group ideal points \( \{X_i\} \), the average group ideal \( \bar{X} \), the dictator ideal point \( D \), the chosen policy \( X \), the distance \( d_l(X - X_i) \), and the distance \( d_p(X - X_i) \).

Line would simultaneously increase \( U \) and decrease \( d(X - D) \). It follows that the dictator’s choice of \( X \) can be reduced to a one-dimensional placement along this line. Let \( d_l(X - X_i) \) indicate the distance between \( X \) and \( X_i \) that lies along this line. Figure 1 presents a visualization. Let \( s_i \in \{-1, 1\} \) indicate the side of \( X \) on which \( X_i \) lies, measured so that \( s_i = 1 \) if \( X_i \) lies on the side opposite from \( D \), and -1 otherwise.

\[
\frac{\partial u_D}{\partial X} = 0 = f'(U) \{- \sum_i 2d_l(X - X_i)s_i \} - 2Nd(X - D)(-1)
\]

\[
\Rightarrow d(X - D) = \frac{\alpha}{N} \sum_i d_l(X - X_i)s_i
\]

Note that \( \frac{1}{N} \sum_i d_l(X - X_i)s_i \) is equal to the distance between \( X \) and \( \bar{X} \). Hence, this condition implies that \( X \) will be placed \( \frac{\alpha}{1+\alpha} \) of the way from \( D \) to \( \bar{X} \). A larger \( \alpha \), which means individual payoffs are more expensive for the dictator, thus implies greater policy concessions to citizens.

4.2 Authoritarian Elections and Imperfect Information

We now consider the imperfect-information case in which the dictator does not know the group ideal points. Errors are costly, since \( U \) decreases with the squared distance of a mistakenly chosen policy \( X \) from the correct target established above.

\[\text{This may seem egalitarian at first, but not so if the dictator’s ideal is an outlier relative to the groups.}\]
The location of \( D \) is known to all, but \( i \) is the only actor who knows the location of \( X_i \). There are common priors over the location of each group ideal: \( X_i = X_i^0 + \epsilon_i \). For each \( i, \epsilon_i \) is an error term such that \( E[\epsilon_i] = 0 \). Let \( X^0 \) equal the policy \( X \) that would be chosen if \( X_i = X_i^0 \) for all \( i \).

The task is to show that an authoritarian election can provide perfect information on group ideal points. Assume there exists only one election (so there are no inter-temporal strategic effects). Each group sends a signal \((v_i, \theta_i)\) to the dictator. \( v_i \in [0, 1] \) is the vote share in favor of the dictator, hence a lower \( v_i \) indicates greater dissatisfaction with the expected policy. In fact, we can interpret each signal \( v_i \) as implying a particular distance from \( X^0 \), with lower \( v_i \) corresponding to greater distance. Assume there exists a strictly decreasing (and thus invertible) function, \( v_i = g(d(X^0 - X_i)) \), which translates policy distances into vote shares.

\( \theta_i \) indicates the preferred direction of policy change. As a combination of distance and direction, the signal \((v_i, \theta_i)\) implies an ideal point location \( \tilde{X}_i \). We can thus speak equivalently of the signal \( \tilde{X}_i \) sent by each \( i \).

The dictator can adjust policy on the basis of the election, but needs to implement a system of reward and punishment to make the signals credible. Since a higher \( d(X^0 - X_i) \) pulls \( X \) toward \( X_i \), each group is incentivized to overstate \( d(X^0 - X_i) \) unless there exists a countervailing penalty. A credible \( \tilde{X}_i \) signal thus requires a patronage adjustment given by \( h(\tilde{X}_i) \). We can now solve for what \( h(\tilde{X}_i) \) must be to ensure that it is optimal for each group \( i \) to send the signal \( \tilde{X}_i = X_i \). For clarity of presentation, I omit the subscript \( i \) from some of the notation.

Consider the signals \( \tilde{X}_j \) for all \( j \neq i \) to be given. Let \( \tilde{X} \) equal the policy \( X \) that would be chosen if the dictator believed that \( X_i = \tilde{X}_i \) and \( X_j = \tilde{X}_j \) for all \( j \neq i \). This will lie on the line between \( D \) and \( \tilde{X}_j \). Let \( d_l(\tilde{X} - \tilde{X}_i) = \tilde{d}_l \) indicate the distance between \( \tilde{X} \) and \( \tilde{X}_i \) that lies along this line, and let \( d_p(\tilde{X} - \tilde{X}_i) = \tilde{d}_p \) indicate the distance perpendicular to this line. It follows that

\[
d(\tilde{X} - \tilde{X}_i)^2 = \tilde{d}_l^2 + \tilde{d}_p^2.
\]

Recall that

\[
u_i = h(\tilde{X}_i) - d_l(X - X_i)^2 - d_p(X - X_i)^2.
\]

---

13 To extend this model to the individual level, we can assume that ideal points are spread with a known distribution around the group ideal and voters support the dictator if within a certain distance threshold. This would lead to a share of each group voting for the dictator, as captured in \( v_i \).

14 This may be captured through support for particular opposition parties or through direct communication.
In equilibrium, \( i \) will send a signal \( \tilde{X}_i \) that is optimal with respect to \( \tilde{d}_l \), implying the first-order condition:

\[
\frac{\partial u_i}{\partial \tilde{d}_l} = 0 = h'(\tilde{d}_l) - 2d_l(X - X_i) \frac{\partial d_l(X - X_i)}{\partial \tilde{d}_l} \\
= h'(\tilde{d}_l) - 2d_l(X - X_i)(\frac{-\alpha}{N(1 + \alpha)}) \\
= h'(\tilde{d}_l) + \frac{2\alpha}{N(1 + \alpha)}d_l(\tilde{X} - X_i)
\]

The second line follows because \( \tilde{d}_l \) changes \( \tilde{X}_j \) as one of \( N \) averaged terms, and the dictator adjusts \( X \) to lie \( \frac{\alpha}{1 + \alpha} \) of the way from \( D \) to \( \tilde{X}_j \). The third line follows because \( \tilde{X} \) is the expected location of \( X \) given the signal \( \tilde{d}_l \).

For credible signaling to be in equilibrium, it must be optimal to send the truthful signal \( \tilde{d}_l = d_l(\tilde{X} - X_i) \). Hence, we must have

\[
h'(\tilde{d}_l) = -\frac{2\alpha}{N(1 + \alpha)} \tilde{d}_l \\
\Rightarrow h(\tilde{d}_l) = C_i - \frac{\alpha}{N(1 + \alpha)} \tilde{d}_l^2
\]

where \( C_i \) is a constant with respect to \( \tilde{d}_l \).

In equilibrium, it must also be the case that \( i \) sends a signal \( \tilde{X}_i \) that is optimal with respect to \( \tilde{d}_p \). The analysis is the same, with the exception that \( \frac{\partial d_p(X - X_i)}{\partial \tilde{d}_p} = -\frac{1}{N} \). This is because \( \tilde{d}_p \) only affects the direction of the line along which \( X \) is set, which can be adjusted toward \( \tilde{X}_i \) without entailing a greater distance from \( D \). The parallel analysis leads to the condition

\[
h(\tilde{d}_p) = C_i - \frac{1}{N} \tilde{d}_p^2
\]

where \( C_i \) is a constant with respect to \( \tilde{d}_p \).

The specified patronage function makes it strictly optimal to truthfully reveal ideal points. From here, the dictator selects the policy \( X \) according to the previous analysis and distributes the payoffs \( k_i \). This is ex-post credible given that the dictator only cares about the total utility \( U \) and the \( \{C_i\} \) terms can be adjusted to get the desired level. Using a construction similar to
the Groves-Clarke mechanism, the Appendix explains how these terms can be set independent of $\tilde{d}_p$ and $\tilde{d}_l$ for each $i$.

The following proposition summarizes the equilibrium.

**Proposition 1.** The following constitutes an equilibrium in the EA electoral mechanism:

1. Each group $i$ signals a truthful $\tilde{X}_i = X_i$ through the true direction $\theta_i$ and vote support $v_i = g(d(X^0 - X_i))$. Say that this corresponds to the distances $\tilde{d}_l(i)$ and $\tilde{d}_p(i)$.

2. The dictator updates beliefs about $\{X_i\}$ based on these signals.

3. The dictator sets policy $X_{\frac{\alpha}{1+\alpha}}$ of the way from $D$ to $\bar{X}$ on the line between the two points and sets payoffs

$$k_i = C_i - \frac{\alpha}{N(1 + \alpha)} \tilde{d}_l(i)^2 - \frac{1}{N} \tilde{d}_p(i)^2$$

with $\{C_i\}$ adjusted so that $f'(U) = \alpha$.

**4.3 Implications**

The model leads to several testable implications concerning autocratic policy, a subject that has been neglected in existing work on hybrid regimes. Although not explored here, the model also has implications for regime transitions, including the autocrat’s choice to adopt elections\textsuperscript{15} and democratization.\textsuperscript{16}

As Proposition 1 summarizes, groups with lower vote support for the ruling regime will be met with lower patronage and greater policy concessions. Moreover, the magnitude of policy responsiveness depends on $\alpha$. These points are captured in the following hypotheses.

**Hypothesis 1:** Groups that express greater opposition to the dictator (through lower vote totals) will receive less patronage.

\textsuperscript{15} Dictators should favor electoral authoritarianism when faced with greater uncertainty over citizen preferences and loyalties. A supporting example is Anwar Sadat’s abrupt choice to accept multi-party legislative competition in Egypt in 1976 despite minimal internal pressure for democratic reform. Sadat’s switch is intimately linked to the fact that 1973–6 was the period of the greatest policy flux in Egypt’s post-1952 history, which created uncertainty over the regime’s political strength. Since Sadat did not believe the existing system could effectively channel citizen demands (Israeli 1981: 93; Waterbury 1983: 370), he turned to multi-party elections as a natural source of interest articulation.

\textsuperscript{16} In particular, dictatorships should be less likely to resist democratization when distributing patronage becomes more costly. As $\alpha$ gets larger, the dictator sets policy closer to the group mean, reducing the advantage from controlling policy under an EA system versus allowing the groups to set policy themselves. This is in accord with Greene (2007, 2010), who argues that dominant parties succumb to democratization when economic privatization reduces state-controlled resources.
Hypothesis 2: Lower vote totals for the dictator will be associated with policy concessions.

Hypothesis 3: The degree of policy responsiveness will be higher when the dictator's cost of dispersing patronage is higher.

Hypothesis 1 has been empirically demonstrated in numerous studies (Magaloni 2006; Magaloni et al. 2007; Blaydes 2011), hence is not reinvestigated here. Empirical results in the next section validate Hypotheses 2 and 3. When general vote support for the ruling regime wanes, leaders respond by spending more on education and social welfare and less on the military. However, this responsiveness is mitigated by the regime’s oil wealth, as predicted by Hypothesis 3.

5 Policy Responsiveness in Hybrid Regimes

This section tests the prediction that falling vote totals for autocratic ruling parties correlate with policy concessions. To allow for a cross-country sample, the empirical approach corresponds to a simple one-dimensional version of the formal model in which citizens desire more of certain types of spending than elites. To identify three appropriate spending indicators, I adhere closely to the literature on government spending and democracy. I then overview the empirical approach, discuss the data, and present the empirical results.

5.1 Spending Indicators

This section tests policy responsiveness using three indicators: spending on education, military, and social welfare. All three have been extensively examined in the literatures on government spending behavior and the policy impact of democracy. These literatures provide clear theoretical expectations on how citizen and elite preferences differ—generally, elites within autocracies prefer more military spending and less education and social welfare spending. Further, the three choices closely follow those in Gandhi’s (2008) study of autocratic legislatures, in which she theorizes that multi-party legislatures under autocracy correlate with policy concessions. She tests this with three indicators: a combination of social welfare and education spending, military spending, and various measures of civil liberties. Changes in civil liberties (which yield mixed results in Gandhi 2008) are highly likely to be endogenous to electoral outcomes and prior choices to liberalize, and hence are dropped. Because education
has much better data coverage, social welfare and education spending are tested separately in the current paper.

Education is among the most thoroughly investigated elements of government spending, with researchers generally finding that democracies and more politically competitive polities spend more on education as a response to citizen demand (Ames 1987; Brown 1999; Kaufman and Segura-Ubiergo 2001; Lake and Baum 2001; Baum and Lake 2003; Brown and Hunter 2004; Avelino et al. 2005; Stasavage 2005; Hecock 2006; but see Mulligan et al. 2004). As Brown (1999: 681) argues, “democratic politicians, facing electoral pressures, are compelled to provide a minimum level of educational opportunity for their citizens.” Citizens desire more education as a builder of human capital and a leveler of inequality (Brown and Hunter 2004; Stasavage 2005; Hecock 2006; Gandhi 2008; Hicken and Simmons 2008), whereas autocrats favor education spending only up to a point. Although education improves the earning capacity of citizens in the long term, it competes with spending priorities in the short term and facilitates democratic opposition (Lipset 1959; Kamens 1988).

The division between autocratic elites and citizens is even clearer for public spending on social security and other elements of social welfare, which is almost exclusively redistributive in its effect and favored by the mass public (Brown and Hunter 1999; Desai et al. 2008; Gandhi 2008). There is ample evidence that democracy is associated with greater social welfare spending (Ames 1987; Husted and Kenny 1997; Brown and Hunter 1999; Lake and Baum 2001; Avelino et al. 2005; Desai et al. 2008; Haggard and Kaufman 2008; but see Kaufman and Segura-Ubiergo 2001 and Mulligan et al. 2004).

In contrast, ruling elites desire more military spending than citizens (Huntington 1991; Bueno de Mesquita and Root 2000; Lebovic 2001). The “guns vs. butter” trade-off is a common trope (Russett 1982; Mintz 1989), although there is mixed evidence of a negative relationship between military and social spending (Russett 1982; Whitten and Williams 2011). As Bueno de Mesquita and Root (2000: 12) argue, military spending is an ideal source of targeted payoffs to autocratic allies: “Military budgets provide great opportunities for corruption among top political leaders. . . . Education, by contrast, is typically underfunded because. . . the opportunities for graft in education are dispersed too broadly to be of interest to a tightly knit leadership clique.” Moreover, autocrats rely on the military’s support for power and in many cases ruling parties consist of former or current military officers. Even when the military is ostensi-
Fig. 2 The figure shows means of education, military, and social welfare spending (each measured as % of GDP) as the proximity to an election changes. The value 0 indicates an election year, -2 indicates two years prior to an election, and 2 an election two years ago. The sample is all electoral authoritarian regimes from 1975–2004. As seen, there is no relationship between spending and electoral proximity. ($N = 82; 193; 275; 184; 130$)

bly non-political, military factions are typically the chief coup threats to autocratic rulers. In either case, autocrats are expected to heavily weight the military’s interest in greater defense spending.

As a preface to the empirical tests, Figure 2 displays the means of education, military, and social welfare spending based on electoral proximity. Years are categorized according to the time since or until the closest election, with 0 indicating an election year. Each series shows virtually no change in spending as election years near.\textsuperscript{17} Hence, proximity to an election is not sufficient for ruling parties to change their spending priorities. As I show, parties instead react to the outcomes of these elections.

\textsuperscript{17} There is a slight decline in military spending towards the election, but the standard error of the mean is large in comparison to this shift: 0.20 for election years and 0.56 for the years immediately before an election.
5.2 Empirical Approach

To test the effect of electoral shocks on changes in spending, I use error correction models (ECMs), which are increasingly becoming the standard approach for empirical work on government spending (Kaufman and Sugura-UBiergo 2001; Avelino et al. 2005; De Boef and Keele 2008; Gandhi 2008). ECMs predict changes in the dependent variable from changes in the independent variables and the lagged levels of the dependent and independent variables. The general empirical form of the ECM is the following:

$$\Delta Y_{it} = \alpha Y_{it-1} + \beta \Delta X_{it} + \gamma X_{it-1} + v_i + \varepsilon_{it}$$

where subscript $i$ denotes countries and $t$ denotes time. $Y_{it}$ is a spending measure, $X_{it}$ are a set of independent variables, and $v_i$ are country fixed effects, which are added to account for cross-country variation in spending priorities.

The ECM framework assumes that there exists an equilibrium relationship between $Y$ and the independent variables. The advantage of ECM analysis is that it can distinguish direct, immediate effects and longer-term effects of changes in the independent variables on $Y$. Coefficients on $\Delta X_{it}$ indicate the former and coefficients on $X_{it}$ indicate the latter.

The only alteration to the basic ECM framework in the current paper is that change is calculated over two years rather than one to allow sufficient time for electoral results to translate into spending changes. Hence, if an election occurs in Year $t - 1$, the dependent variable is spending change from Year $t - 1$ (the last budget decided by the previous legislature) to Year $t + 1$. Change variables are all changes from Year $t - 1$ to Year $t + 1$. To minimize multi-collinearity, the level variables (including the lagged spending levels) are from Year $t$. The exception is for Electoral Control, the ruling party’s portion of legislative seats, which is measured prior to the election.

The main explanatory variable of interest is Electoral Change, the change in the ruling party’s portion of legislative seats. The coefficient on this variable is expected to be negative for education and social welfare spending and positive for military spending. I also test whether this effect changes by the country’s resource dependence. Specifically, I interact Electoral Change with a dummy variable for whether the country is a petrostate. Given the reality of electoral fraud, Electoral Control and Electoral Change are not perfect measures of actual
voting. Hence, we must accept that the implied measurement error may bias some results away from significance.

The main ECM results are tested using OLS with robust standard errors clustered by country. Several alternative estimation techniques are tested as robustness checks. First, given budget constraints, there is a reasonable concern that changes in different types of spending are not independently determined. Although this would not necessarily bias the results, independently run regressions are less efficient. To address this concern, I run a seemingly unrelated regression (SUR) analysis that allows the residuals from multiple equations to be correlated (even in the absence of endogenous regressors). Because of sample size, this is only run for education and military spending.

Second, the models are also tested using panel-corrected standard errors (PCSEs) with an AR(1) correction for serial correlation, as recommended by Beck and Katz (1995). PCSEs account for both heteroskedasticity and contemporaneous cross-country shocks. This addresses concerns over year-specific factors that are unaccounted for.

Lastly, placebo tests address concerns over causation and omitted variable bias. Numerous factors may simultaneously lead to changing support for a ruling party and shifting patterns of public spending. Moreover, rulers may gather information on regime support through non-electoral means. If they shift spending as a result, this could produce a spurious correlation between spending changes and resulting electoral changes. To show that the electoral shocks themselves have a causal effect on spending, I run identical ECM regressions predicting spending shifts in the years prior to elections and in periods beginning two years after elections. If rulers are gauging their support through non-electoral means, their spending decisions should anticipate the electoral outcomes. In fact, I find that changes in spending are only significantly related to electoral outcomes in the period immediately following the election. Consistent with the literature on autocratic electoral surprises, this implies that elections genuinely reveal information to ruling parties in hybrid regimes.

5.3 Data and Sample

The country sample is all EA regimes from 1975–2004. EA regimes are those in which multiple parties compete in elections, according to the Database of Political Institutions (Beck et

\[\text{As the panel is unbalanced, the cross-country covariance matrix is calculated pairwise, rather than casewise.}\]
al. 2001; Keefer 2010), but which do not qualify as democratic (coded by Hadenius and Teorell 2007). Specifically, these regimes exceed an average score of 4 on DPI’s Legislative and Executive Indices of Political Competitiveness, the same coding used in Brownlee (2009). The sample omits EA regimes that experienced a democratic transition within two years of the election. Hence, all spending figures are taken from continuing EA regimes.

The sample includes all legislative elections and shifts in legislative seat shares that occur within EA regimes. DPI codes for the government’s portion of legislative seats (Electoral Control), which includes the seat shares of party fronts and allied parties. To maximize coverage, I include all events in which the ruling party’s seat share changes, sometimes due to special elections and by-elections. This produces a sample of 277 cases in 91 countries, 209 of which correspond to full legislative elections. A small number of cases are lost in the regressions for military and education spending because of missing data, whereas a much larger number are lost for social welfare.

The main explanatory variable is Electoral Change, the shift in the ruling party’s portion of legislative seats in the election (Beck et al. 2001; Keefer 2010). As a measure of ruling party strength, this is expected to be negative for changes in education and social welfare spending and positive for changes in military spending. In additional models, Electoral Change is interacted with Petrostate, a dummy variable for whether oil revenue exceeds 5 percent of GDP (Humphreys 2005; BP 2008). Petrostate identifies regimes with high resource wealth, which is expected to reduce policy responsiveness. Hence, the coefficient on Electoral Change × Petrostate should be smaller in magnitude than the coefficient on Electoral Change × Non-Petrostate.

19 Hadenius and Teorell (2007) is used to measure democracy because they additionally code for EA regimes. Hence, they have made an explicit judgment dividing democracies and EA regimes. The results are not affected by solely relying on their coding to define the sample, rather than including DPI’s finer categorization.

20 DPI uses the following coding for Legislative Competitiveness: 1 if no legislature exists, 2 if legislators are unelected, 3 if only single candidates are allowed, 4 if multiple candidates are allowed from a single party, 5 if multiple parties are legal but a single party wins all seats, 6 if multiple parties are represented but the largest party exceeds 75% of the legislature, and 7 if if the largest party holds less than 75% of the legislature. Executive Competitiveness is coded on a comparable scale.

21 For parliamentary systems, DPI codes all parties represented in the government as allies. For presidential systems, DPI codes as allies all parties that are either represented in the cabinet, support the executive on all major issues, or do not run their own presidential candidates (Keefer 2010).

22 Results are not sensitive to variation in this percentage threshold.
The spending variables are coded as a percentage of GDP. *Education Spending* is total expenditures on education, including primary, secondary, and tertiary education (UNESCO 2007). *Military Spending* is total expenditures on the military (Norris 2008; World Bank 2008). *Social Spending* is all expenditures on social security and welfare (which does not include spending on education, health, or housing), taken from Easterly’s (2001) coding of IMF Government Finance Statistics data.

### Control Variables

The models include several controls, with some variation by type of spending. All models control for the following:

- The ruling party’s portion of legislative seats (*Electoral Control*). The coefficient is expected to have the same sign as *Electoral Change* and indicates the long-term effect of ruling party strength on spending.
- The level of spending, as required by the ECM setup.
- *Legislative Turnover*, a dummy variable indicating whether a legislative turnover occurs, as coded by the NELDA database (Hyde and Marinov 2010). A limited number of countries experience legislative turnover (45 of 277 cases), but do not democratize. This can occur if either the incumbent rulers maintain power because of control of the executive (as in Albania in 1991 and Russia in 1995) or a new party gains power but continues to rule in an autocratic manner (as in Zambia in 1991, Ukraine in 1994, and Macedonia in 1998). The variable tests whether changed control over the legislature exerts an effect on spending beyond the shift in seat shares. Since much of the literature emphasizes the relative powerlessness of autocratic legislatures, the expectation is that it will not.
- *GDP/capita* (ln) (natural-logged real GDP/capita, in 2000 dollars, from Gleditsch 2002) accounts for economic development. Also included is the change in *GDP/capita* (ln), a measure of economic growth, which simultaneously affects vote support and spending allowances.

---


24 The data for *Social Spending* is limited to 1975–2000.
• A dummy variable for Petrostate and its change (Humphreys 2005; BP 2008). The expected sign of Petrostate’s coefficient is unclear. Oil-rich countries have more disposable money to spend, but have less need to do so because they are able to distribute more patronage.\footnote{Previous results on oil wealth and public spending are conflicting. Desai et al. (2008) and Morrison (2009) find that oil-rich countries spend more, but Bueno de Mesquita and Smith (2009) find that they spend less.}

• To account for the changing time period, the models include both linear and quadratic terms for Year.

As a robustness check, some models additionally control for the level and change in Polity, a 21-point measure of democracy (Marshall and Jaggers 2010). This helps to discount the alternative hypothesis that changes in ruling party strength affect spending because they reflect shifts in a country's democratic character.

Control variables specific to each type of spending are also used. The education models account for the level and change in the percentage of the population aged 14 or younger (Youth %), taken from World Bank (2008). The military models control for the levels and changes in the average number of militarized interstate disputes (MIDs) the country was involved in over the previous 10 years (Ghosn and Bennett 2003) and a dummy for whether the country’s executive is a military officer (Military Leader) (Beck et al. 2001; Keefer 2010). Both are expected to be positive for military spending. To account for the size of the non-working population, the social welfare models control for the level and change in Dependents %, the percentage of the population under 15 or over 64 (World Bank 2008).

5.4 Results

Tables 1–3 present results for education, military, and social welfare spending, respectively. For each spending category, Models 1–3 estimate the ECM using OLS, with robust standard errors clustered by country. Model 1 is the base model. Model 2 divides the effect of Electoral Change by whether or not a country is a petrostate. Model 3 adds controls for the level and change in Polity. For education and military spending, the base models were combined using a SUR setup. This is presented as Model 4 in Tables 1 and 2. The final model in each table estimates the base model using PCSEs.

In each model of Table 1, Electoral Change has a significant negative coefficient, verifying as predicted that declining ruling party seat shares correlate with higher education spend-
Table 1 Error Correction Models Predicting Education Spending

<table>
<thead>
<tr>
<th></th>
<th>Error Correction Models (OLS)</th>
<th>SUR</th>
<th>PCSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>(\Delta \text{Education Spending} )</td>
<td>(-1.275^{**})</td>
<td>(-1.219^{*})</td>
<td>(-1.252^{***})</td>
</tr>
<tr>
<td></td>
<td>((-2.77))</td>
<td>((-2.58))</td>
<td>((-3.45))</td>
</tr>
<tr>
<td>Electoral Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electoral Change (\times)</td>
<td>(-1.314^{**})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Petrostate</td>
<td>((-2.87))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electoral Change (\times)</td>
<td>(-0.095)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petrostate</td>
<td>((-0.13))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electoral Control</td>
<td>(-0.602) ((-1.00))</td>
<td>(-0.557) ((-0.89))</td>
<td>(-0.604) ((-1.15))</td>
</tr>
<tr>
<td>Education Spending</td>
<td>(0.086) ((1.02))</td>
<td>(0.089) ((0.98))</td>
<td>(0.086) ((1.51))</td>
</tr>
<tr>
<td>Legislative Turnover</td>
<td>(-0.255) ((-1.53))</td>
<td>(-0.248) ((-1.38))</td>
<td>(-0.255^{*}) ((-1.96))</td>
</tr>
<tr>
<td>(\Delta \text{Youth %} )</td>
<td>(-0.244^{*}) (-2.28))</td>
<td>(-0.247^{*}) (-2.32))</td>
<td>(-0.260^{*}) (-2.25))</td>
</tr>
<tr>
<td>Youth %</td>
<td>(0.046) ((1.58))</td>
<td>(0.054) ((1.70))</td>
<td>(0.046) ((1.33))</td>
</tr>
<tr>
<td>(\Delta \text{GDP/capita (ln)})</td>
<td>(0.332) ((0.58))</td>
<td>(0.326) ((0.55))</td>
<td>(0.387) ((0.67))</td>
</tr>
<tr>
<td>GDP/capita (ln)</td>
<td>(1.139^{*}) (2.06))</td>
<td>(1.176^{*}) (2.10))</td>
<td>(1.152^{**}) (2.93))</td>
</tr>
<tr>
<td>(\Delta \text{Petrostate} )</td>
<td>(-0.608) ((-1.96))</td>
<td>(-0.622) ((-1.98))</td>
<td>(-0.608^{*}) ((-2.02))</td>
</tr>
<tr>
<td>Petrostate</td>
<td>(-0.563) ((-1.22))</td>
<td>(-0.553) ((-1.17))</td>
<td>(-0.563) ((-1.26))</td>
</tr>
<tr>
<td>(\Delta \text{Polity} )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>(-9.098^{*}) (-2.28))</td>
<td>(-9.644^{*}) (-2.39))</td>
<td>(-9.147^{*}) (-2.42))</td>
</tr>
<tr>
<td>(\text{Year}^2)</td>
<td>(0.002^{*}) (2.28))</td>
<td>(0.002^{*}) (2.39))</td>
<td>(0.002^{*}) (2.43))</td>
</tr>
<tr>
<td>Fixed Effects?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>N</td>
<td>237</td>
<td>237</td>
<td>236</td>
</tr>
<tr>
<td>Countries</td>
<td>76</td>
<td>76</td>
<td>75</td>
</tr>
<tr>
<td>Adjusted (R^2)</td>
<td>0.156</td>
<td>0.162</td>
<td>0.154</td>
</tr>
</tbody>
</table>

Notes: The error correction models predict changes in education spending surrounding elections, based on changes in ruling party support. The sample includes all electoral authoritarian regimes from 1975–2004. Electoral gains by the ruling party lead to decreases in education spending. Moreover, this policy responsiveness is mediated by oil wealth, as predicted by the paper’s model. \(t\) statistics (based on standard errors clustered by country) are shown in parentheses. Model 4 uses a seemingly unrelated regression setup. Model 5 uses panel-corrected standard errors with an AR(1) correction. 

\(* = p < 0.05, ** = p < 0.01, *** = p < 0.001\)
Table 2 Error Correction Models Predicting Military Spending

<table>
<thead>
<tr>
<th></th>
<th>Error Correction Models (OLS)</th>
<th>SUR</th>
<th>PCSE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>ΔMilitary Spending</td>
<td>8.186</td>
<td>8.669</td>
<td>7.414*</td>
<td>8.887**</td>
</tr>
<tr>
<td></td>
<td>(1.17)</td>
<td>(1.19)</td>
<td>(2.11)</td>
<td>(2.60)</td>
</tr>
<tr>
<td>ΔMilitary Spending</td>
<td>8.998</td>
<td>-3.731</td>
<td>13.269**</td>
<td>13.091*</td>
</tr>
<tr>
<td>× Non-Petrostate</td>
<td>(1.24)</td>
<td>(-0.23)</td>
<td>(2.68)</td>
<td>(2.31)</td>
</tr>
<tr>
<td>× Petrostate</td>
<td>(1.43)</td>
<td>(1.44)</td>
<td>(2.68)</td>
<td>(2.31)</td>
</tr>
<tr>
<td>Military Spending</td>
<td>1.459***</td>
<td>1.467***</td>
<td>1.454***</td>
<td>1.470***</td>
</tr>
<tr>
<td></td>
<td>(7.12)</td>
<td>(6.63)</td>
<td>(7.15)</td>
<td>(8.89)</td>
</tr>
<tr>
<td>Legislative Turnover</td>
<td>-2.018</td>
<td>-2.229</td>
<td>-2.172</td>
<td>-2.233</td>
</tr>
<tr>
<td></td>
<td>(-1.12)</td>
<td>(-1.22)</td>
<td>(-1.18)</td>
<td>(-1.76)</td>
</tr>
<tr>
<td>ΔMIDs</td>
<td>-1.002</td>
<td>-1.066</td>
<td>-1.161</td>
<td>-1.381</td>
</tr>
<tr>
<td></td>
<td>(-0.99)</td>
<td>(-1.01)</td>
<td>(-1.08)</td>
<td>(-0.92)</td>
</tr>
<tr>
<td>MIDs</td>
<td>-0.010</td>
<td>0.038</td>
<td>0.083</td>
<td>-0.741</td>
</tr>
<tr>
<td></td>
<td>(-0.01)</td>
<td>(0.05)</td>
<td>(0.11)</td>
<td>(-0.55)</td>
</tr>
<tr>
<td></td>
<td>(1.18)</td>
<td>(1.16)</td>
<td>(1.19)</td>
<td>(4.71)</td>
</tr>
<tr>
<td>Military Leader</td>
<td>-3.560</td>
<td>-3.674</td>
<td>-2.603</td>
<td>-5.677*</td>
</tr>
<tr>
<td></td>
<td>(-0.96)</td>
<td>(-0.99)</td>
<td>(-0.77)</td>
<td>(-2.47)</td>
</tr>
<tr>
<td>ΔGDP/capita (ln)</td>
<td>4.462</td>
<td>2.769</td>
<td>4.299</td>
<td>5.365</td>
</tr>
<tr>
<td></td>
<td>(1.17)</td>
<td>(0.75)</td>
<td>(1.17)</td>
<td>(0.94)</td>
</tr>
<tr>
<td>GDP/capita (ln)</td>
<td>-1.500</td>
<td>-1.449</td>
<td>-1.105</td>
<td>-1.299</td>
</tr>
<tr>
<td></td>
<td>(-0.57)</td>
<td>(-0.58)</td>
<td>(-0.43)</td>
<td>(-0.35)</td>
</tr>
<tr>
<td>ΔPetrolestate</td>
<td>-1.845</td>
<td>-1.612</td>
<td>-1.789</td>
<td>-1.845</td>
</tr>
<tr>
<td></td>
<td>(-1.89)</td>
<td>(-1.37)</td>
<td>(-1.82)</td>
<td>(-1.94)</td>
</tr>
<tr>
<td></td>
<td>(-1.70)</td>
<td>(-1.71)</td>
<td>(-1.45)</td>
<td>(-1.75)</td>
</tr>
<tr>
<td>ΔPolity</td>
<td>-0.117</td>
<td>-0.117</td>
<td>-0.117</td>
<td>-0.117</td>
</tr>
<tr>
<td></td>
<td>(1.14)</td>
<td>(1.14)</td>
<td>(1.14)</td>
<td>(1.14)</td>
</tr>
<tr>
<td>Polity</td>
<td>0.151</td>
<td>0.151</td>
<td>0.151</td>
<td>0.151</td>
</tr>
<tr>
<td></td>
<td>(0.99)</td>
<td>(0.99)</td>
<td>(0.99)</td>
<td>(0.99)</td>
</tr>
<tr>
<td></td>
<td>(-1.49)</td>
<td>(-1.74)</td>
<td>(-1.46)</td>
<td>(-0.72)</td>
</tr>
<tr>
<td>Year²</td>
<td>0.008</td>
<td>0.010</td>
<td>0.008</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>(1.49)</td>
<td>(1.73)</td>
<td>(1.46)</td>
<td>(0.72)</td>
</tr>
<tr>
<td>Fixed Effects?</td>
<td>Y Y Y Y Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>263</td>
<td>263</td>
<td>262</td>
<td>263</td>
</tr>
<tr>
<td>Countries</td>
<td>84</td>
<td>84</td>
<td>83</td>
<td>72</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.310</td>
<td>0.319</td>
<td>0.308</td>
<td>0.310</td>
</tr>
</tbody>
</table>

Notes: The error correction models predict changes in military spending surrounding elections, based on changes in ruling party support. The sample includes all electoral authoritarian regimes from 1975–2004. Electoral gains lead to inconsistently significant (but substantively large) increases in military spending. t statistics (based on standard errors clustered by country) are shown in parentheses. Model 4 uses a seemingly unrelated regression setup. Model 5 uses panel-corrected standard errors with an AR(1) correction. * = p < 0.05, ** = p < 0.01, *** = p < 0.001
Table 3 Error Correction Models Predicting Social Welfare Spending

<table>
<thead>
<tr>
<th>Error Correction Models (OLS)</th>
<th>PCSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) (\Delta Social) Spending &amp; (2) (\Delta Social) Spending &amp; (3) (\Delta Social) Spending &amp; (4) (\Delta Social) Spending</td>
<td></td>
</tr>
<tr>
<td><strong>Electoral Change</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-1.490^{<strong>}) &amp; (-1.480^{</strong>}) &amp; (-1.757)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-3.34)) &amp; ((-3.43)) &amp; ((-1.79))</td>
<td></td>
</tr>
<tr>
<td><strong>Electoral Change × Non-Petrostate</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-1.490^{<strong>}) &amp; (-1.480^{</strong>}) &amp; (-1.757)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-3.43)) &amp; ((-3.43)) &amp; ((-1.79))</td>
<td></td>
</tr>
<tr>
<td><strong>Electoral Change × Petrostate</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-0.920) &amp; (-0.920) &amp; (-0.920)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-0.46)) &amp; ((-0.46)) &amp; ((-0.46))</td>
<td></td>
</tr>
<tr>
<td><strong>Electoral Control</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-1.381) &amp; (-1.324) &amp; (-1.524^{*}) &amp; (-1.569)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-1.86)) &amp; ((-1.67)) &amp; ((-2.25)) &amp; ((-1.24))</td>
<td></td>
</tr>
<tr>
<td><strong>Social Spending</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-0.012) &amp; (-0.010) &amp; (-0.006) &amp; (-0.082)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-0.08)) &amp; ((-0.07)) &amp; ((-0.04)) &amp; ((-0.47))</td>
<td></td>
</tr>
<tr>
<td><strong>Legislative Turnover</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; 0.470 &amp; 0.481 &amp; 0.476 &amp; 0.257</td>
<td></td>
</tr>
<tr>
<td>&amp; (0.83) &amp; (0.79) &amp; (0.97) &amp; (0.70)</td>
<td></td>
</tr>
<tr>
<td><strong>(\Delta Dependents %)</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-0.019) &amp; (-0.022) &amp; (-0.151) &amp; (0.019)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-0.13)) &amp; ((-0.14)) &amp; ((-0.70)) &amp; ((0.09))</td>
<td></td>
</tr>
<tr>
<td><strong>Dependents %</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-0.044) &amp; (-0.039) &amp; (0.014) &amp; (-0.067)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-0.61)) &amp; ((-0.47)) &amp; ((0.24)) &amp; ((-0.95))</td>
<td></td>
</tr>
<tr>
<td><strong>(\Delta GDP/capita (ln))</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; 0.437 &amp; 0.554 &amp; 0.520 &amp; (-0.059)</td>
<td></td>
</tr>
<tr>
<td>&amp; (0.26) &amp; (0.28) &amp; (0.27) &amp; ((-0.04))</td>
<td></td>
</tr>
<tr>
<td><strong>GDP/capita (ln)</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-1.728) &amp; (-1.784) &amp; (-0.629) &amp; (-1.771)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-1.86)) &amp; ((-1.92)) &amp; ((-0.54)) &amp; ((-1.24))</td>
<td></td>
</tr>
<tr>
<td><strong>(\Delta Petrostate)</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-0.252) &amp; (-0.239) &amp; (-0.223) &amp; (-0.157)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-0.96)) &amp; ((-0.96)) &amp; ((-1.09)) &amp; ((-0.33))</td>
<td></td>
</tr>
<tr>
<td><strong>Petrostate</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; 2.616 &amp; 2.614 &amp; 2.609 &amp; 3.019***</td>
<td></td>
</tr>
<tr>
<td>&amp; (1.84) &amp; (1.84) &amp; (1.99) &amp; (4.44)</td>
<td></td>
</tr>
<tr>
<td><strong>(\Delta Polity)</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-0.027) &amp; (-0.027) &amp; (-0.027)</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-0.30)) &amp; ((-0.30)) &amp; ((-0.30))</td>
<td></td>
</tr>
<tr>
<td><strong>Polity</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; 0.113 &amp; 0.113 &amp; 0.113</td>
<td></td>
</tr>
<tr>
<td>&amp; (1.59) &amp; (1.59) &amp; (1.59)</td>
<td></td>
</tr>
<tr>
<td><strong>Year</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; 10.701 &amp; 12.046 &amp; 16.929 &amp; (-0.055^{*})</td>
<td></td>
</tr>
<tr>
<td>&amp; (0.35) &amp; (0.35) &amp; (0.55) &amp; ((-2.25))</td>
<td></td>
</tr>
<tr>
<td><strong>Year²</strong> &amp;</td>
<td></td>
</tr>
<tr>
<td>&amp; (-0.003) &amp; (-0.003) &amp; (-0.004) &amp; (0.000^{**})</td>
<td></td>
</tr>
<tr>
<td>&amp; ((-0.35)) &amp; ((-0.34)) &amp; ((-0.55)) &amp; ((2.70))</td>
<td></td>
</tr>
<tr>
<td><strong>Fixed Effects?</strong> &amp; Y &amp; Y &amp; Y &amp; Y</td>
<td></td>
</tr>
<tr>
<td><strong>N</strong> &amp; 67 &amp; 67 &amp; 67 &amp; 67</td>
<td></td>
</tr>
<tr>
<td><strong>Countries</strong> &amp; 24 &amp; 24 &amp; 24 &amp; 24</td>
<td></td>
</tr>
<tr>
<td><strong>Adjusted (R^2)</strong> &amp; 0.245 &amp; 0.232 &amp; 0.246 &amp; 0.168</td>
<td></td>
</tr>
</tbody>
</table>

Notes: The error correction models predict changes in social welfare spending surrounding elections, based on changes in ruling party support. The sample includes all electoral authoritarian regimes from 1975–2004. Electoral gains by the ruling party lead to decreases in social welfare spending. \(t\) statistics (based on standard errors clustered by country) are shown in parentheses. Model 4 uses panel-corrected standard errors with an AR(1) correction. \(* = p < 0.05, ** = p < 0.01, *** = p < 0.001\)
ing. The coefficient of -1.275 in Model 1 implies that a government loss of 10% of seats in
the legislature will lead to an increase in education spending of about 0.13% of GDP. Model 2 shows that Electoral Change is significant only in non-petrostates, indicating that policy responsiveness declines with greater resource wealth. The results are unchanged when controlling for Polity or using either a SUR setup or PCSEs. For all three robustness checks, it also remains true that Electoral Change is significant only in non-petrostates. In each model, Electoral Control has an insignificant negative coefficient, indicating a similar long-term effect of ruling party control.

Few other variables are consistently and significantly related to education spending change. Surprisingly, Youth % exerts a negative immediate effect, although a positive long-term effect, on education spending. Wealthier countries increase their spending on education, as indicated by the positive coefficient on GDP/capita. Petrostates appear to spend less on education, perhaps because they are less in need of skilled labor. The level of democracy, as indicated by Polity, has no effect. Finally, legislative turnover has a negative effect on education spending (of about 0.25% of GDP), but this is only significant in two models.

The results for military spending in Table 2 are more mixed. In each model, the coefficient on Electoral Change has the expected positive sign and is substantively quite large. However, the coefficient is significant in only two of the five models. For Model 1, the coefficient of 8.186 implies that a government gain of 10% of legislative seats will lead to an increase in military spending of about 0.82% of GDP. As shown in Model 2, the results are only positive within non-petrostates. Electoral Change is positive and significant for the SUR and PCSE models, as is Electoral Control.

Few other variables robustly predict changes in military spending. The average rate of MIDs and the presence of a military leader mostly appear to be unrelated. Legislative turnover has a negative effect (of about 2.0% of GDP), but this is only significant in one specification.

26 For comparison, after controlling for country fixed effects, the standard deviation of Education Spending in the sample is 0.71% of GDP.
27 A Breusch-Pagan test does not indicate that the residuals of the two models are correlated ($\chi^2 = .003, p = .959$).
28 Further, three cases exert a high amount of leverage on the results: Nicaragua in 1984 and 1990 and Angola in 1992. If these cases are removed, none of the models are significant.
29 For comparison, after controlling for country fixed effects, the standard deviation of Military Spending in the sample is 2.22% of GDP.
Table 3 presents results for social welfare spending. Despite a sample limited to 67 cases, the results are significant and fairly robust. As with education, *Electoral Change* has a strong negative effect on changes in social welfare spending. Model 1 implies that a government loss of 10% of the legislature will result in an increase in social welfare spending of 0.15% of GDP. As before, this effect is limited to non-petrostates, as shown by Model 2. No SUR test is included due to the sample size, but the significant result is robust to controlling for *Polity*. When using PCSEs, the coefficient on *Electoral Change* increases in magnitude, but is no longer significant. *Electoral Control* is also negative for social welfare spending, indicating a long-term negative effect of ruling party strength.

For the other variables, two contrasts with education spending are worth drawing attention to. First, petrostates appear to spend slightly more on social welfare (at least in the long-term effect), which is consistent with Desai et al. (2008) and Morrison (2009). Second, legislative turnover has a positive (although insignificant) effect on social welfare spending (of about 0.47% of GDP). This may indicate that new legislative majorities use their leverage to shift spending toward social welfare programs at the expense of education and defense.

In total, the empirical results provide strong support for this paper’s hypotheses. Across the 14 models, all 14 coefficients on *Electoral Change* (or *Electoral Change* × *Non-Petrostate*) are in the predicted direction, 10 are significant at the 0.05 level, and 8 are significant at the 0.01 level. This indicates a fairly robust relationship between *Electoral Change* and spending behavior.

As for other variables, *Electoral Control* has the same sign as *Electoral Change* in all 14 tests, suggesting that ruling party dominance exerts both a short- and long-term effect on policy. Average income has a long-term positive effect on education spending and an insignificantly negative effect on military and social welfare spending. Income growth is positive for spending in all but one model, but only significantly so in one. Surprisingly, variation in *Polity* has no effect on spending change.

An alternative interpretation of the results is that electoral gain by the opposition garners actual decision-making power, which is then used to force the regime to shift its spending. However, the literature generally concurs that legislative oppositions are very weak in EA regimes, serving mainly as sources of bargaining and rhetoric rather than as constraints on

---

30 For comparison, after controlling for country fixed effects, the standard deviation of *Social Spending* in the sample is 0.84% of GDP.
the executive (Lust-Okar 2006; Malesky and Schuler 2010; Blaydes 2011). To the extent that
the opposition’s power consists in speaking for popular interests, this mechanism is consistent
with my informational story. If the opposition’s substantive political power is instead driving
the results, we should expect a particularly strong effect if it gains control of the legislature.
However, Legislative Turnover yields mixed and mostly null results.

Pre- and Post-Election Tests

Although the preceding tests show that electoral results and spending are related in hybrid
regimes, they do not establish that the elections themselves play a causal role. An alternative
hypothesis is that regimes track their popularity through other means and elections merely
register information the regimes already know. Spending changes may then occur at the same
time as electoral shifts, but with both independently caused by variation in popular support.
To show that the elections themselves play a critical role in revealing information, I now turn
to predictions of policy change over the two years prior to elections. If regimes gauge shifts in
popular support independently of elections, then we should find evidence of policy shifts that
anticipate electoral shocks. If, however, the effect is only found for the period surrounding the
election, this is evidence that elections are playing a causal role. I also look at post-election
policy shifts.

For each spending category, the three model types predict policy shifts pre-election, sur-
rounding the election, and post-election. To be precise, suppose an election occurs in Year
t − 1, so that the first budget under the elected government is in Year t. The Pre-election mod-
els predict spending changes from t − 3 to t − 1, the Election models (the main models discussed
above) from t − 1 to t + 1, and the Post-election models from t + 1 to t + 3. The models are all
ECMs equivalent to Model 1 in Tables 1–3, with the years for all variables except Electoral
Change adjusted appropriately.

Figure 3 visually summarizes the nine models, showing the coefficients and 95% confidence
intervals for Electoral Change. The coefficients for the Military Spending tests are divided by
10 for ease of comparison. Recapitulating the results from above, Electoral Change is sig-
nificantly negative for education and social welfare spending and insignificantly positive for
military spending in the two years immediately following the election. However, no effect is
found for any spending category in the Pre-election tests. Hence, citizen disaffection leads
The figure displays the coefficients on *Electoral Change* (with 95% confidence intervals) for nine ECM regressions predicting changes in spending patterns. For each category of spending (education, military, and social welfare), the regressions test the effect of *Electoral Change* on two-year changes in spending prior to the election, surrounding the election, and after the election. The results show that higher *Electoral Change* (shifts toward the ruling party) significantly predicts lower education and social welfare spending, but only surrounding the election. This implies that the electoral shocks have a causal effect on spending patterns.

An interesting finding is that the Post-election effects are all opposite in sign to the Election effects, although smaller and insignificant. This suggests that some of the policy concessions stemming from elections are gradually seized back.

### 6 Conclusion

This paper argues that authoritarian elections serve as information-gathering mechanisms for ruling parties, in which the proper combination of patronage and policy concessions ensures the credible revelation of citizen preferences. In support of this model, it was shown that reduced vote support for dominant parties in hybrid regimes correlates with greater education and social welfare spending and less military spending, but only in the immediate aftermath of elections. As predicted, this policy responsiveness is limited to hybrid regimes.
without large oil wealth. This is the first set of results showing that the outcomes of autocratic elections have a substantive effect on policy.

Given the importance of EA regimes to modern democratization and the developing world, researchers should continue to investigate how election outcomes influence policy choice. The next step in testing the model is to precisely measure the adjustment of patronage and policy in a particular EA regime, akin to the analysis in Magaloni et al. (2007). If dissenting groups receive targeted policy concessions combined with reduced patronage, the model will be validated.

Although it is not being claimed that every EA regime employs this mechanism, nor that it is the only role being played by elections, this paper reinterprets electoral and policy behavior in the majority of the world’s autocracies. This has obvious implications for a range of literatures concerning hybrid regimes, including the impact of democratic elements on regime stability and civil conflict. The results also speak to the literature on the political effects of natural resource dependence (e.g., Ross 2001; Greene 2007), as they show a deleterious relationship between oil wealth and policy responsiveness.

An interesting question is what this paper suggests about the desirability of encouraging elections in autocratic regimes, which has been a major plank of democracy promotion strategies (Carothers 1999; Levitsky and Way 2010; Hyde 2011). Lust-Okar’s (2006: 468) findings on elections and patronage lead her to a negative assessment: “Indeed, the logic of authoritarian elections should lead us to question the value of pressing for, and applauding, the introduction of elections in authoritarian regimes…Such elections are more likely to help sustain the authoritarian regime than they are to promote democracy.” This paper’s results point in two directions. On one hand, elections help to facilitate policy concessions on matters of public interest. On the other hand, consistent with Lust-Okar’s perspective, elections serve as tools of autocratic control and resilience. How these effects balance out, and what they imply for democratization, are open questions for both scholars and democracy promoters.
Appendix

Proof of Proposition 1

A final detail that requires explanation is how the \( \{C_i\} \) are chosen. The \( \{C_i\} \) must meet two requirements: (1) They must be adjusted so that \( f'(U) = \alpha \) with certainty, and (2) Each \( C_i \) must be independent of \( i \)'s signal.

I now show how both can be satisfied, using a logic similar to the Groves-Clarke mechanism. Suppose that \( U = U^* \) satisfies \( f'(U) = \alpha \). A unique such value must exist given that \( f \) is strictly concave and not everywhere above or below \( \alpha \). Hence, the first requirement is the following:

\[
U^* = \sum_i u_i = \sum_i \left( C_i - \frac{\alpha}{N(1+\alpha)} \tilde{d}_l(i)^2 - \frac{1}{N} \tilde{d}_p(i)^2 - d(X - X_i)^2 \right)
= \sum_i \left[ C_i - \frac{\alpha}{N(1+\alpha)} \tilde{d}_l(i)^2 - \frac{1}{N} \tilde{d}_p(i)^2 - \tilde{d}_l(i)^2 - \tilde{d}_p(i)^2 \right]
\Rightarrow \sum_i C_i = U^* + \sum_i \left( \frac{\alpha + N(1+\alpha)}{N(1+\alpha)} \tilde{d}_l(i)^2 + \frac{N + 1}{N} \tilde{d}_p(i)^2 \right)
\]

To satisfy this so that \( C_i \) is independent of \( \tilde{d}_l(i) \) and \( \tilde{d}_p(i) \), let

\[
C_i = \frac{U^*}{N} + \frac{1}{N-1} \sum_{j \neq i} \left( \frac{\alpha + N(1+\alpha)}{N(1+\alpha)} \tilde{d}_l(j)^2 + \frac{N + 1}{N} \tilde{d}_p(j)^2 \right)
\]

\[\blacksquare\]
References


