WIAS Discussion Paper No.2016-001

The Choice of Electoral Systems in Dictatorships

May 12, 2016

Masaaki HIGASHIJIMA
Waseda Institute for Advanced Study, Waseda University

WIAS 早稲田大学高等研究所 Waseda Institute for Advanced Study

1-6-1 Nishiwaseda, Shinjuku-ku, Tokyo 169-8050, Japan
Tel: 03-5286-2460 ; Fax: 03-5286-2470

The Choice of Electoral Systems in Dictatorships

Masaaki Higashijima[1]
Waseda University
higashij@aoni.waseda.jp

Eric C. C. Chang[2]
Michigan State University
echang@msu.edu

April 2016

Abstract

This paper develops a theoretical framework to account for the variation in electoral systems of dictatorships. We argue that "strong" dictators who have capacity to induce greater compliance from their opponents are incentivized to employ proportional representation systems to divide and conquer the opposition, while "weak" dictators lacking in such capacity tend to rely on the seat premium associated with majoritarian systems to co-opt ruling elites in the legislature. Using newly collected cross-national data in electoral authoritarian regimes, we find strong empirical evidence supporting our theory. We also explicitly test the causal mechanisms, finding that majoritarian systems bias seat distributions in favor of ruling parties, foster a unified opposition, and lower voter turnout more so than PR systems in electoral autocracies.

[1] Assistant Professor of Political Science in the Institute for Advanced Study at Waseda University and Post-Doctoral Max Weber Fellow at European University Institute
[2] Associate Professor of Political Science at Michigan State University

Previous versions were presented at the 2016 Annual Conference of the Southern Political Science Association, the 2015 American Political Science Association, the 2015 Midwest Political Science Association, and Keio University. We thank the participants for their helpful comments. We are also grateful to Jeff Conroy-Krutz, Erica Frantz, Christian Houle, Ani Sarkissian, and Jakana Thomas for their helpful comments on an earlier draft and to Marty Jordan for indispensable research assistance. We also thank John Ora Reuter for sharing his data on pre-electoral opposition coalitions with us.

Introduction

Over the last decade, a burgeoning literature on authoritarian politics has documented how elections help autocrats hold onto power (Gandhi and Lust-Okar 2009). According to this perspective, authoritarian elections enable dictators to co-opt ruling elites and opposition groups within society. Specifically, elections serve as a competitive auction to allow dictators to efficiently distribute the spoils of office to ruling elites (Blaydes 2011). Additionally, by manufacturing an overwhelming victory at elections, authoritarian leaders can use elections to demonstrate their regime's invincibility and deter challengers (Magaloni 2006; Simpser 2013). Elections also enable dictators to divide and conquer the opposition since moderate opposition parties tend to participate in regime-sponsored elections, while radical opposition parties often boycott them (Lust-Okar 2004). Finally, election results may also inform dictators about key bases of support and opposition strongholds (Malesky and Schuler 2010; Reuter and Robertson 2011).

Far less explored, however, is the variation in electoral systems that authoritarian regimes institutionalize. In particular, the literature on electoral system selection has almost exclusively focused on democracies. Meanwhile, we know little about the conditions under which authoritarian rulers prefer one type of electoral system over another.

Failing to consider the origins of electoral systems in authoritarian regimes is consequential. Theoretically, since electoral rules shape politicians' strategizing and behavior during elections (Cox 1997), our knowledge about electoral politics in authoritarian regimes remains incomplete without a deeper understanding of the origins of electoral institutions. Empirically, as our cross-national data reveal below, there is wide variation in electoral systems among authoritarian regimes across time and space. Also, unlike democracies where electoral rules tend to remain fixed over time, autocratic electoral institutions appear to change quite often at dictators' own will.[3]

Finally, we are intrigued by the following puzzle: Much like in advanced democracies, single-member district (SMD) systems in electoral autocracies also bring a large seat premium to large parties. Therefore, high seats-votes disproportionalities under SMD systems generate an efficient, pro-regime electoral bias for ruling parties under autocratic governments and, therefore, should be the natural choice of self-serving dictators. Yet, proportional representation (PR) systems—a seemingly sub-optimal institutional choice—are still used in many electoral authoritarian regimes. The wide variation in electoral systems and the intriguing observation that some dictators prefer PR systems over SMD systems provokes the question: How do we explain dictators' optimal choice of electoral systems? Specifically, under what conditions do autocrats decide to adopt PR systems despite the fact that SMD systems generate a pro-regime seat premium?

[3] For instance, Putin's Russia shifted from a mixed electoral system to a pure PR system with a nationwide district in 2005. Nazarbaev's Kazakhstan changed to a pure PR system prior to the 2007 parliamentary election. In contrast, Belarus, although quite similar to Russia and Kazakhstan, has retained the SMD system since its independence.

Building upon the literature regarding authoritarian institutions, this paper develops a theoretical framework to answer these questions. We first argue that different electoral systems are associated with different political and economic effects pertinent to the survival of authoritarian regimes. For instance, by lowering the barrier for entry, PR systems encourage potential challengers to participate in politics through the existing institutional structure rather than taking an anti-regime, confrontational approach, and hence make dictators' co-optation strategy more effective. Also, after co-opting potential challengers into the exisiting institutional arrangments, PR systems further keep the opposition fragmented by discouraging the opposition to form a unified electoral coalition. Therefore, PR systems serve as an institutional device for autocrats to divide and conquer the opposition without having to use coercion or violence, Finally, by boosting voters' turnout, PR systems help dictators demonstrate their popularity and invincibility of the regime, thus deterring potential challengers. In contrast, SMD systems provide a seat premium to ruling parties that allow dictators to incorporate larger segments of ruling elites as legislators. In other words, SMD systems help dictators co-opt ruling elites with institutionalized rent-seeking opportunities.

Given these diverse political and economic effects associated with different electoral systems, we argue that dictators strategically choose electoral systems that address their political needs. Specifically, we argue that dictators' strengths crucially determine their optimal choice of electoral systems. We charge that "strong dictators"—those with resources and capacity to induce compliance from ruling elites and society—are more likely to adopt PR systems. In contrast, "weak dictators"—those who lack the necessary resources to induce cooperation from potential opponents—have greater incentive to boost their seat share through SMD systems.

To test our theoretical expectations, we use a newly collected cross-national data set of electoral systems and election results in electoral authoritarian states covering 92 countries from 1946-2007. Using resource wealth as a proxy to capture dictators' strength to induce compliance, we find that dictators with abundant natural resources are more likely to adopt PR systems. The result is robust to a battery of sensitivity analyses including instrumental variables (IV) estimations, different model specifications, alternative estimation strategies, different measures for the dependent and independent variables, and potential outliers. We also explicitly provide cross-national evidence on the divergent effects of different electoral systems.

This paper makes four key contributions to the literature. First, by exploring the origins of electoral institutions in dictatorships, we add to the ongoing debate about the role of elections in authoritarian politics. As discussed, scholars have identified various beneficial functions of authoritarian elections for authoritarian leaders. On the flip side, recent studies have begun to question the consolidating effects of elections. Reuter (2012), for instance, shows that in order to win elections, dictators need to prioritize ruling elites' loyalty over their competence when making subnational personnel appointments. As a result, elections can undermine authoritarian regimes' policy performance and long-term

stability. Other scholars also highlight the potential destabilizing effect of elections, suggesting that elections in authoritarian regimes eventually lead to democratization (Baturo 2007; Lindberg 2009; Bunce and Wolchik 2011). By taking into account the origins of electoral systems, this paper offers theoretical insight into the principal features of autocratic elections. Importantly, by considering dictators' rationale in selecting electoral institutions, this paper enhances our understanding of the political dynamics in authoritarian politics.

Second, we contribute to parallel scholarship on electoral manipulation (Simpser 2013) by highlighting an under-explored, yet important, aspect of electoral fraud in dictatorships. In addition to electoral chicanery, we suggest that dictators can bias election results in their favor by manipulating the electoral formula. Third, this paper contributes to the electoral system choice literature. While acknowledging the importance of opposition threats (Boix 1999), partisan bias (Calvo 2009), and economic interests (Rogowski 1987; Cusack, Iversen and Soskice 2007), we posit a new theory for the choice of electoral system in autocracies, emphasizing dictators' capacity to derive compliance from their opponents. Finally, our paper contributes to the emerging literature rethinking the oil curse (Haber and Menaldo 2011; Paler 2013). Our empirical finding suggests that electoral autocrats rich in natural resources may not necessarily alienate themselves from the citizens. Rather, these strong dictators tend to adopt PR systems, thereby lowering the barrier of entry and encourage citizens' political participation.

In the next section, we review the literature on electoral system choice, suggesting theoretical gaps that should be addressed when considering dictators' calculus in selecting an electoral system. The third section provides a theory of electoral system design in electoral autocracies and derives observable implications. The penultimate section offers cross-national evidence for our theoretical expectations. Finally, conclusions follow.

Literature Review

Scholars have advanced three explanations for the selection of electoral systems: (1) political, (2) economic, and (3) historical factors, mostly focusing on democratic countries. However, we suggest that crucial differences in scope conditions between democracies and autocracies make it difficult to directly apply the pre-existing theories derived from democracies to the authoritarian context.

Elevating the political explanation, Rokkan (1970) put forward two influential hypotheses to account for the adoption of proportional representation in Europe during the early twentieth century.[4] Rokkan's first hypothesis argues that incumbents implement

[4] For criticism of Boix (1999), see Cusack, Iversen and Soskice (2007) and Calvo (2009). Using qualitative sources on electoral system reforms in advanced democracies, Kreuzer (2010) argues that Boix's (1999) explanation is more valid than Cusack, Iversen and

PR systems to avoid a devastating electoral defeat in the face of socialist mobilization. Boix (1999) advances this hypothesis and contends that ruling parties adopt PR systems when the rightwing parties are seriously divided between conservative and liberal camps under the socialist threat. Rokkan's second hypothesis, furthered by Calvo (2009), suggests the adoption of PR is also driven by the extent to which established parties want to avoid "partisan bias" induced by majoritarian electoral systems. In the face of severe party competition, parties with a geographically concentrated distribution of votes enjoy more seats than those parties with geographically dispersed votes under SMD. Therefore, the old parties with geographically dispersed votes prefer to shift to PR systems to attenuate partisan bias.

Other scholars have advanced economic explanations. Cusack, Iversen, and Soskice (2007) reason that rightist parties' adoption of PR systems depends on the extent to which businesses and unions forge cooperative relationships at the national level. If parties on the right are embedded in the cross-class, consensus-based decision-making process (through skill formation and well-established collective bargaining), then they can enjoy benefits from regulatory politics rather than incur costs induced by distributional conflict under PR systems. Therefore, they charge that domestic cross-class alliances encourage governments to choose PR systems. Rogowski (1987) instead focuses on an external economic factor. He argues open economies encourage governments to resist protectionist pressures, maintain high efficiency, and ensure stable policies to remain competitive on the international market. Under such circumstances, PR systems become the preferred choice for trade-dependent countries since PR systems allow incumbents to better contain regional and sectorial pressures.

Lastly, many scholars suggest the choice of electoral system is highly influenced by historical factors. A dominant view emphasizes the path-dependent nature of electoral systems, arguing that they are surprisingly stable because the choice is strongly influenced by preexisting parties (Cox 1998). Tsebelis (1990) argues that electoral systems affect legislators' interests within a given party. Hence, it is difficult to change electoral systems, even if an alternative electoral system is rational for the party as a whole. Meanwhile, recent studies highlight the importance of uncertainty in transitioning countries, showing that strategic institutional design does not necessarily allow reformers to reap the benefits they anticipated because of the uncertainty in new democracies (Moser 2001; Andrews and Jackman 2005). For instance, after examining the cases of Central and Eastern Europe, Ishiyama (1997) concludes that substantial changes in electoral systems would have occurred if communist parties and oppositional forces had thought of their organizations as seat-maximizing political parties rather than as mass movements when they selected the electoral system. [5]

Soskice's (2007). For Cusack and his colleagues' response to Kreuzer (2010), see Cusack, Iversen and Soskice (2010).

[5] For systematic comparisons regarding the impacts of electoral systems on party systems between advanced and new democracies, see Moser and Scheiner (2012).

Although these three explanations are insightful in understanding the selection of electoral systems in democracies, it is difficult to directly apply these theories to the authoritarian context since most of their core assumptions are unlikely to be met. For example, the Rokkan-Boix hypothesis treats strong socialist threats as the driving force to adopting PR systems, yet most contemporary authoritarian countries are not necessarily exposed to such imminent opposition threats.[6] Similarly, while the Rokkan-Calvo hypothesis and Rogowski's international economy perspective address why incumbents adopt PR systems even in the absence of strong socialist mobilization, their theories rely on the assumption that strong political competition either leads to partisan bias or distributional conflict between economic classes which produces different electoral systems. However, opposition parties in authoritarian states are generally too weak to be viable alternatives. Although opposition parties are allowed to participate in authoritarian elections, they have limited organizational capacities and monetary resources, making electoral alternation a remote possibility (Lust-Okar and Jamal 2002; Schedler 2013). Finally, based on the theory of varieties of capitalism (Hall and Soskice 2001), Cusack, Iversen and Soskice (2007) focus on two types of capitalism—liberal market and coordinated market economies—to explain the choice of electoral systems in pre-war Europe. Yet neither of these two types of capitalism is systematically present in authoritarian regimes.

Lastly, regarding the historical, path-dependence explanation, we argue that the choice of electoral systems in authoritarian regimes is much more fluid and counters the highly stable nature of electoral systems in advanced democracies. In autocracies, political leaders may have more discretion in designing pliable electoral systems. Meanwhile, the utility of electoral institutions is more predictable in authoritarian regimes than in new democracies. For instance, examining electoral systems in the Middle East, Lust-Okar and Jamal (2002) note "both sides [incumbents and opponents] know their preferences over the electoral rule … majoritarian systems and single-member districts tend to limit the participation of smaller parties … Elites hold firm preferences over electoral laws when they negotiate with each other" (345-346).

The Divergent Effects of SMD and PR under Authoritarian Regimes

Politicians strive to hold onto power. This is particularity true for authoritarian leaders who may face dire consequences after losing office. To stay in power, dictators employ a variety of means, such as violent repression and distribution of patronage. Recent scholarship has begun to highlight how dictators use political institutions, such as elections, parties and legislatures, to consolidate their rule. When authoritarian rulers use elections, the literature suggests that dictators employ various techniques to ensure an

[6] Indeed, Boix recognized his theoretical expectation is only applicable in democracies satisfying certain presumptions (Boix 1999, 622).

overwhelming electoral victory to demonstrate their invincible strengths to potential challengers (Geddes 2006; Magaloni 2006).

To manufacture a landslide victory, recent studies emphasize the use of electoral fraud —defined as a series of illegal measures that bias election results in favor of the incumbent (Lehoucq 2003)—in the context of authoritarian regimes (Simpser 2013). Electoral violence, tampering with the ballot box, media bias, packing election management bodies, vote-buying, and highly restrictive electoral laws are all examples of blatant electoral manipulation (Kelly 2012; Hafner-Burton *et al*. 2014).

One important, yet less explored, strategy of electioneering by dictators is the choice of electoral system. Similar to democratic countries, authoritarian leaders are able to bias the electoral results by employing different electoral rules that affect voting procedures, district size, and other features of election systems. In addition to their impact on electoral results, electoral systems also yield various political and economic effects (Cox 1997; Lihphart 1999; Persson and Tabellini 2000). For instance, PR systems are more likely to lead to a higher turnout, less strategic voting, greater government instability, higher government spending and deficits, greater income equality, and higher consumer prices.[7] Given these diverse political and economic effects associated with different electoral systems, we argue that dictators strategically choose electoral systems to meet their political needs. Parallel to what Franzese (2002) refers to as the "electioneering Ramsey Rule," this paper suggests that dictators will use all available institutional tools for political gains inversely proportional to their marginal cost.

Importantly, we argue that the adoption of SMD systems enables dictators to incorporate large portions of ruling elites into the legislature as an institutionalized rent-seeking mechanism. Sharing rents or other economic privileges has been the most conventional way to co-opt ruling elites in authoritarian regimes. Yet, distributing patronage spoils to ruling elites may not be enough to deter their coup d'état threat because it is uncertain that the dictator will continue to give such favors in the future. As a way of making a credible commitment to elites, many studies suggest that a dictator can utilize the authoritarian legislature, credibly guaranteeing a long-lasting opportunity to enjoy rents from the regime (Magaloni 2008; Lust-Okar 2009; Blaydes 2011).

We add to this literature by emphasizing the advantages derived from electoral systems. Specifically, SMD systems allow dictators to retain a large pool of legislative seats for ruling elites due to high seats-votes disproportionalities. In other words, Duverger (1956)'s well-known mechanical and psychological effects from majoritarian systems yield a significant seat bias to the governing authoritarian party by default. SMD systems can also allow authoritarian leaders to gerrymander single member districts in favor of the ruling party, furthering them to produce an even larger seat bias. Ahmed (2013) finds that, in mid-nineteenth century Europe when electoral competition was minimal and socialist threats were still very weak, ruling parties tended to resort to redistricting in order to enjoy a seat

[7] See Rogowski and Kayser (2002) for a thorough review.

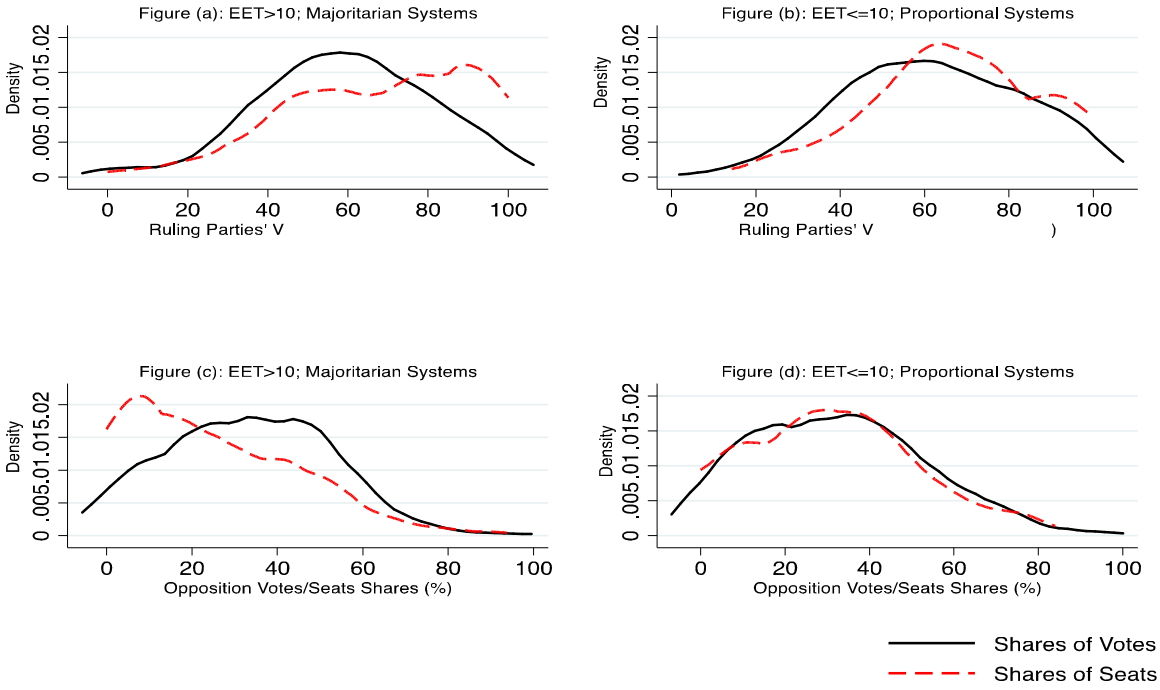
bias to maintain electoral dominance. Taken together, SMD systems bias election results in favor of the ruling party in authoritarian regimes, an advantage we term "the SMD seat premium."

The SMD seat premium is nicely illustrated by the cases of Singapore and Malaysia, two well-known electoral authoritarian regimes in Asia. Both countries have held parliamentary elections since independence and used majoritarian electoral systems with single-member districts. On average, the countries' ruling parties (People's Action Party in Singapore and Barisan Nasional in Malaysia) obtained 87% of the total seats with only 63% of the total votes between 1959-2008, suggesting they have received very large seat premiums (24%).[8]

Figure 1 further illustrates how majoritarian systems tend to underrepresent opposition parties and bias seats in favor of ruling parties in electoral authoritarian regimes.[9] Under PR systems, shares of votes and seats tend to coincide for both ruling and opposition parties (Figures 3 [b] [d]). Under majoritarian systems, however, seat shares are highly skewed toward the 100% for ruling parties and toward the 0% for opposition parties, suggesting the strong presence of the SMD seat premium in authoritarian regimes (Figures 3 [a] [c]).

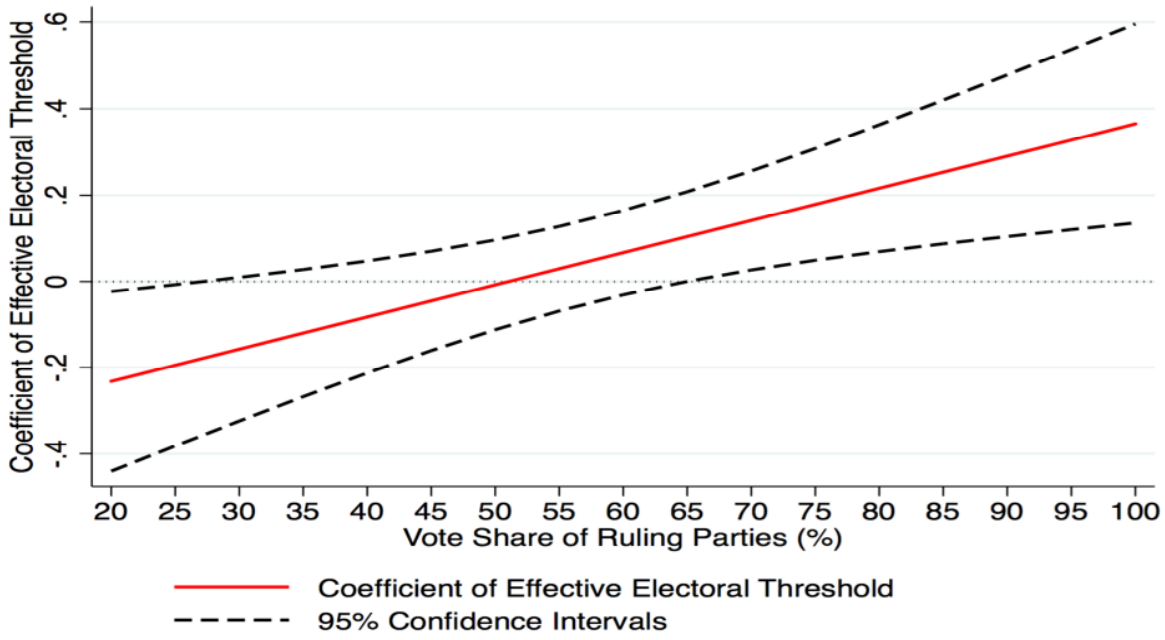
Figure 1: Kernel Density on Shares of Seats and Votes under Different Electoral Systems

[8] For other anecdotal evidence for the pro-dictator bias from some Middle Eastern countries (Yemen, Palestine, Tunisia, and Egypt), see Pripstein Posusney (2002).
[9] For the purpose of illustration, we consider an electoral system majoritarian if its EET is greater than 10%.



Our analysis further corroborates this observation (Web Appendix E). Using the difference between the seat-share and vote-share for the ruling parties as the dependent variable, we find that the effective electoral threshold (EET, see our operationalization below) variable is positive and significant even after taking into account a battery of controls. Specifically, our results show that ruling parties are more likely to obtain 3.05% more seats under SMD systems (EET is 37.5%) than PR systems (EET is 5%). We further estimate an interaction model to examine how the SMD seat premium enlarges when the vote share for the ruling party increases. As we can see from Figure 2 below, our results find a positive, self-reinforcing characteristic for the SMD seat premium: As the ruling parties strengthen, the SMD seat premium also increases. For instance, when the ruling party obtains 65% of the vote share, a SMD system can provide the dictator an additional 3.4% more seats than a PR system. Yet this seat premium increases to 8.25% when the ruling party obtains 85% of the total vote. Altogether, these results conform to our theoretical proposition that SMD systems produce a substantially greater seat bonus than PR systems in electoral authoritarian regimes.

Figure 2: The Magnitude of the SMD Seat Premium Conditional upon Regime Strength (Vote Shares of Ruling Parties)



Although PR systems do not generate an extra seat premium for the incumbent, PR systems do possess several important characteristics imperative for the political survival of authoritarian regimes. First, since the opposition in authoritarian regimes can win seats with smaller vote shares under PR systems, they are more willing to participate in politics within the existing institutional framework rather than taking an extremist or anti-system approach. In other words, PR systems make dictators' institutional cooptation strategies, such as the use of elections and legislatures, even more effective. Importantly, once deciding to participate in elections and politics, the opposition groups are less likely to coordinate their electoral campaigns and candidates to build a pre-electoral opposition coalition because of the seat-vote proportionality under PR systems. Barbera (2013) echoes our proposition and shows that PR systems tend to increase the number of opposition parties in authoritarian countries with multi-party elections. Under SMD systems, however, opposition parties have stronger incentives to coordinate their election efforts to remain electorally viable since these systems produce high disproportionality and underrepresentation (Strom *et al*. 1994; Golder 2006). Therefore, while SMD systems encourage the opposition to unite and build a pre-electoral coalition, PR systems serve as an institutional device for autocrats to divide and conquer opposition parties electorally without even resorting to coercion or violence.

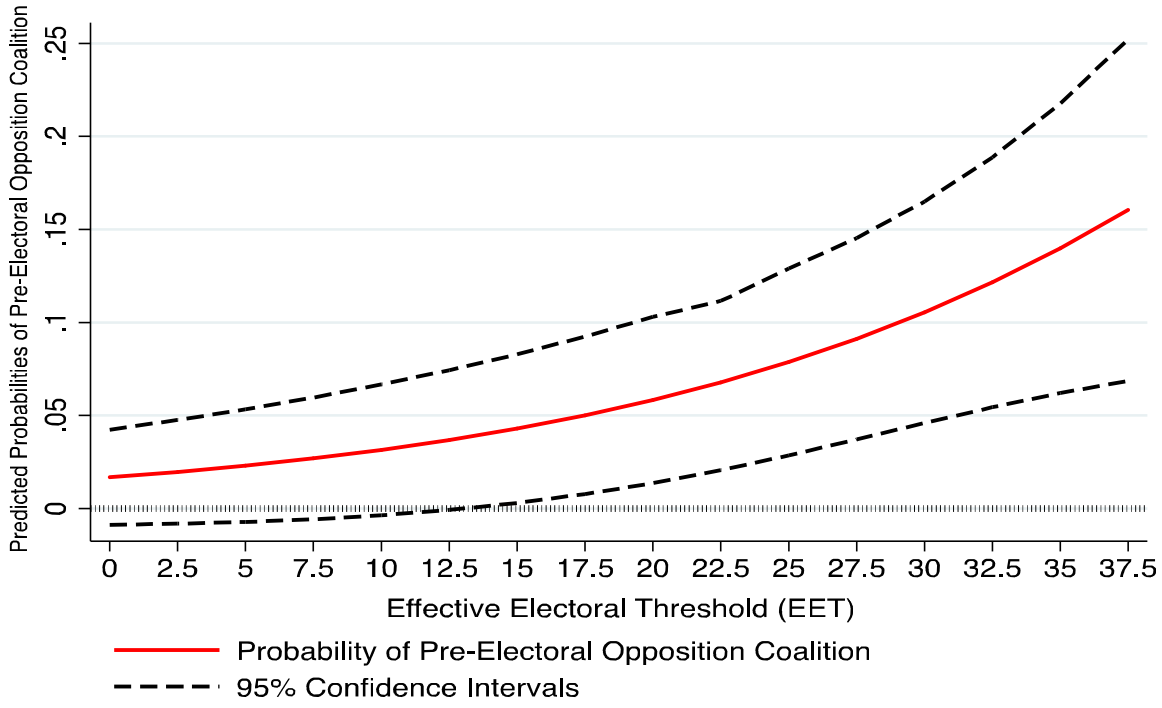
We explicitly test the validity of this causal mechanism and see whether PR systems prevent opposition parties from uniting to challenge the authoritarian ruler. We build on Gandhi and Reuter (2013)'s comprehensive analysis of pre-electoral coalition formation in

non-democracies, and we examine whether pre-electoral opposition coalitions[10] are less likely to emerge under PR systems.

Our empirical analysis supports this assertion (Web Appendix F). As we can see from Figure 3, the probability of pre-electoral coalition is less likely to occur as electoral systems become more proportional. When an authoritarian regime adopts a pure SMD system (EET = 37.5%), the probability of opposition party coalition is roughly 16.8%. But this probability drops to only 2.5% under PR systems (EET = 10%). Indeed, in our sample, several electoral authoritarian countries with PR systems do not witness an opposition coalition (Guyana, Paraguay, Equatorial Guinea, Rwanda, Tunisia, Turkey (authoritarian rule, 1945-1961; 1971-1973), and Suharto's Indonesia), whereas ruling parties in SMD countries, such as Georgia (2003), Azerbaijan (2005), Zimbabwe (2000), and Malaysia (1990-2004) had to compete with a unified opposition.

Figure 3: Predicted Probabilities of Pre-Electoral Opposition Coalition

Note: Dashed lines indicate 95% confidence intervals.



Second, PR systems are associated with higher turnout (Jackman 1987; Blais 2006). This strong empirical regularity can be attributed to the lower barrier of entry to politics (Norris 2004). Since fewer votes are wasted under PR systems, voters, especially supporters of minor and opposition parties, have greater incentive to vote in elections.

[10] A dichotomous variable coded 1 "if there was a significant pre-electoral coalition among opposition parties, and 0 otherwise." (Gandhi and Reuter 2013: 143)

Importantly, high turnout is crucial for dictators, since winning an election with high mobilization and participation reinforces the regime's popularity and invincibility (Magaloni 2006). For instance, De Miguel, Jamal, and Tessler (2015) note that in the recent Egyptian elections, the election "had to be extended for an additional day to bolster turnout because, according to news reports, may voters 'stayed home due to political apathy, opposition to another military man becoming president, discontent at suppression of freedoms among liberal youth, and calls for a boycott by Islamists" (1363). By promoting higher turnout, PR systems secure the authoritarian regime greater legitimacy, and hence deter not only mass counter-mobilizations but also political divisions within ruling coalitions.

Using our data on turnout in authoritarian elections, we find that a 1% increase in EET lowers turnout by 0.2% (Web Appendix G). Substantively, this implies that turnout under SMD systems is 6.8% lower than that under PR systems. In line with robust findings from democracies (Jackman 1987), we find supportive evidence that PR systems also boost voter turnout in electoral autocracies. In countries adopting PR systems like Guyana (84.42%), Paraguay (78.88%), Equatorial Guinea (86.3%), Rwanda (97.25%), Tunisia (86.59%), Turkey under authoritarian rule (80.54%), and Suharto's Indonesia (91.01%), more voters turn out than countries with the pure SMD systems such as Haiti (45.64%), Georgia (64.63%), Azerbaijan (61. 17%), Uganda (65.5%), Zimbabwe (57.27%), and Pakistan (48.9% under authoritarian rule, 1985-1988; 2002-2010).

On the flip side, SMD systems can encourage the formation of a unified opposition and suppress turnout. In turn, unified coalitions can increase the opposition's ability to challenge the dictator and low turnout can breed citizens' apathy and discontent toward the authoritarian regime. Unified opposition and low turnout may also signal to ruling elites that the regime is weak, encouraging their defections. For instance, in the 2003 Georgian election held under a pure SMD system, the two main opposition parties formed a coalition prior to the election. In the midst of political apathy and discontent, the pre-electoral coalition played an important role in successfully mobilizing protests against President Shevardnadze, paving the way to the "Rose Revolution" (Welt 2006).

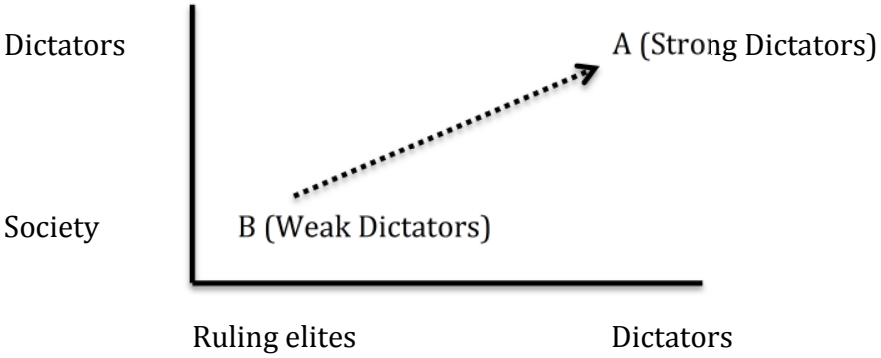
The Dictator's Strength and the Choice of Electoral Systems

Given these divergent effects of electoral systems, we argue that dictators' optimal choice of electoral systems crucially depends on dictators' strengths. Our central argument is that only "strong" dictators are incentivized to use PR systems, while "weak" dictators tend to rely on SMD systems.

We conceptualize dictators' strengths as their capacity to induce (either voluntary or involuntary) compliance from ruling elites within the regime and citizens in the society. We consider a dictator "strong" ("weak") if he has (in)sufficient resources and capacity to exercise his influence and control over ruling elites and citizens. Therefore, a strong (weak) dictator is more (less) capable of securing submission from ruling elites and the citizenry to his authority. A more generalizable way to understand dictators' strengths is to examine

the distribution of power in inducing political compliance along two important dimensions: one between the dictator and the ruling elites, and the other between the dictator and the society. Point A on the upper-right corner in Figure 4 represents a strong dictator who holds control over the elites and the society. Point B on the lower-left corner in Figure 4 indicates a weak dictator as his ability to gather political support is low. Using contemporary China as an illustrative example, Mao Zedong and Deng Xiaoping represent the ideal type of strong dictators, whereas Jiang Zemin and Hu Jintao are examples of weak dictators.

Figure 4: Dictators' Strengths



On a broader level, we argue that the distribution of power along these two dimensions fundamentally shapes the political landscape of authoritarian regimes. Specifically, the two most important threats for any authoritarian regime—coups and mass mobilization—are determined by dictators' position along these two dimensions. Obviously, for those dictators who fully monopolize the power vis-à-vis the ruling elites, the odds they will be forced out of office by a coup are relatively small. Similarly, for those dictators who secure compliance from the society, the chance they will be overthrown by a revolution is also quite low. Our conceptualization of strong dictator parallels what Svolik (2012) refers to as the "established autocrats" which "… have acquired so much power that they can no longer be credibly threatened by their allies (p.6)." On the other hand, a weak dictator is similar to what Svolik refers to as the "contested autocracy" where "…politics is one of balancing between the dictator and the allies."

Viewing authoritarian politics from this standpoint, we argue that strong dictators are more likely to choose PR systems. With their strong capacity to induce compliance from ruling elites and citizens, strong dictators can reasonably expect to win the election with a large vote share. Under such circumstances, strong dictators are less dependent on the seat-premium produced by SMD systems. To put it differently, strong dictators who can manage a landslide victory without the seat bonus from the SMD can "afford" to employ PR systems. Importantly, we argue that strong dictators can trade the SMD seat bonus for the beneficial effects of PR systems. First, as we previously discussed, since PR systems increase turnout, PR systems help dictators demonstrate their strengths. Since PR systems encourage more voters to go to the polling stations due to the low barrier of entry, the ruling party's overwhelming electoral victory is more likely to legitimize the incumbent

regime. Second, and perhaps more importantly, political power and strength are transitory in nature (Acemoglu and Robinson 2005). In other words, the distribution of power between the dictators, the ruling elites, and the society is fluid and not permanent. Therefore, while dictators are strong today, it is reasonable for them to question themselves whether they will have similar strength in the future. Under such circumstances, strong dictators are incentivized to lock in their political strengths today by choosing PR systems. Specifically, by capitalizing on the fact that PR systems divide the opposition parties, PR systems preempt the emergence of strong and unified opposition and hence serve as a lock-in device to preserve the strength of dictators into the future.

Choosing PR systems, however, can be politically risky for weak dictators. Since PR systems do not yield the additional seat dividend like SMD systems, dictators need to collect a sufficient amount of votes to win a landslide victory. However, when dictators lack the necessary resources and capacity to induce political compliance and electoral support from voters, PR systems may in fact backfire and reveal regime weakness instead. To be sure, weak dictators can "cheat" with electoral fraud and still manage to secure a majority in legislature. Yet, these measures are also costly because electoral fraud and malfeasance can also backfire on authoritarian governments and undermine regime legitimacy (Tucker 2007;Hufner-Burton, Hyde and Jablonski. 2014; Norris 2014). Instead of selecting PR systems, we argue that weak dictators are more likely to choose SMD systems. Specifically, when dictators are weak, they are mostly concerned with challenges from ruling elites. As Svolik (2012) persuasively demonstrates, more than two-thirds of dictators are forced out of power by ruling elites.[11] Under such circumstances, weak dictators have greater incentive to boost their seat share by using SMD systems. Importantly, those extra seat shares give weak dictators extra bargaining chips to co-opt their potential challengers. In so doing, autocrats ensure ruling elites, the most imminent threat to autocrats, remain loyal to the regime as much as possible. Taken together, we propose the following hypothesis:

H_1: dictators with greater capacities to induce compliance are more likely to choose PR over SMD systems.

Evidence

Sample: Electoral Authoritarianism

We focus on electoral authoritarian regimes for the period of 1946-2007. Following Schedler (2002), we consider electoral authoritarianism as those autocratic states where multi-party elections are held, certain degrees of pluralism and competition are allowed, but minimal democratic norms are severely violated. Based on previous work on electoral authoritarian regimes, we use two data sources to identify electoral authoritarian regimes. The first source is *National Elections in Democracy and Autocracy* (NELDA). Hyde and

[11] Svolik goes so far as to argue "…the predominant political conflict in dictatorships appears to be not between the ruling elite and the masses but rather among regime insiders (p.5)."

Marinov (2012) regard elections as minimally competitive if there is *ex ante* uncertainty over election results. More specifically, elections are minimally competitive if (1) multiple parties are legal, (2) more than two candidates are allowed to stand in electoral districts, and (3) the opposition is allowed to participate in the election. We use these criteria to identify electoral authoritarianism from the sample of non-democracies defined by Cheibub, Gandhi and Vreeland's (2009).

NELDA's operationalization is useful because it provides us with a large number of countries over an extensive time period. Yet, it does not include countries where political parties are *de jure* illegal but relevant political groups function as *de facto* political parties (e.g. Jordan, Kuwait, Swaziland, and Uganda). Therefore, we compliment NELDA with a second source: Svolik's (2012) dataset on the concentration of legislative power in authoritarianism. Using Svolik's data, we regard autocratic countries as electoral authoritarian if multiple political actors, including both partisan and non-partisan opposition groups, compete in a legislative election.[12] Taken together, we employ both NELDA and Svolik (2012) to specify electoral authoritarian countries. If a country satisfies the necessary conditions in either one of the two datasets, we regard the country as an electoral authoritarian regime. Web Appendix A contains the corresponding list of regimes.

Dependent Variable: Effective Electoral Threshold

The core dependent variable, electoral system type, is measured using the Effective Electoral Threshold (EET) index originally proposed by Lijphart (1994). Since Boix (1999)'s seminal study,[13] scholars have adopted this measure to explore the determinants of electoral systems. Conceptually, EET measures "the proportion of votes that, for each electoral system, secures parliamentary representation to any party with a probability of at least 50 percent" (Boix 1999: 614). Operationally,

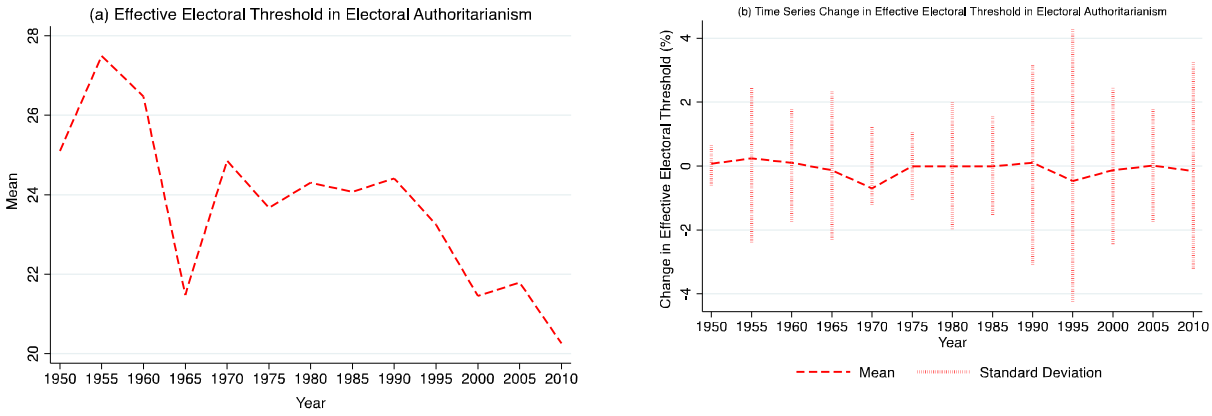
$$EET = \frac{75\%}{(M+1)}$$

[12] Brownlee's (2009: 524) defines electoral authoritarianism as "a system in which elections are held but incumbents systematically manipulate the voting."

[13] As Boix (1999: 614) suggests, dichotomous variables measuring electoral system types (i.e. dummy variables indicating SMD and PR systems) are unable to take into account significant differences in electoral threshold brought by different district magnitudes within each system as well as legal thresholds adopted in PR systems. In addition, using the binary dependent variable makes it very difficult to adopt a country-fixed effects model because it drops countries that do not experience any change in electoral systems over time. Given that electoral system choice should be driven by a number of unobserved country-level heterogeneities, a country fixed-effects model is an appropriate modeling strategy.

where *M* represents average district magnitude in a country-year. In our sample, EET ranges from 0.27 to 37.5. When EET takes on the value of 37.5, it indicates the country adopts the pure SMD system. As the country's electoral system becomes more proportional, the value of EET becomes smaller. When EET is lower than the legal threshold that often exists in PR systems, we use the legal threshold as the Effective Electoral Threshold in the country.[14] Using various data sources, we collect data on district size and legal threshold for all countries in the world between 1945-2010.[15]

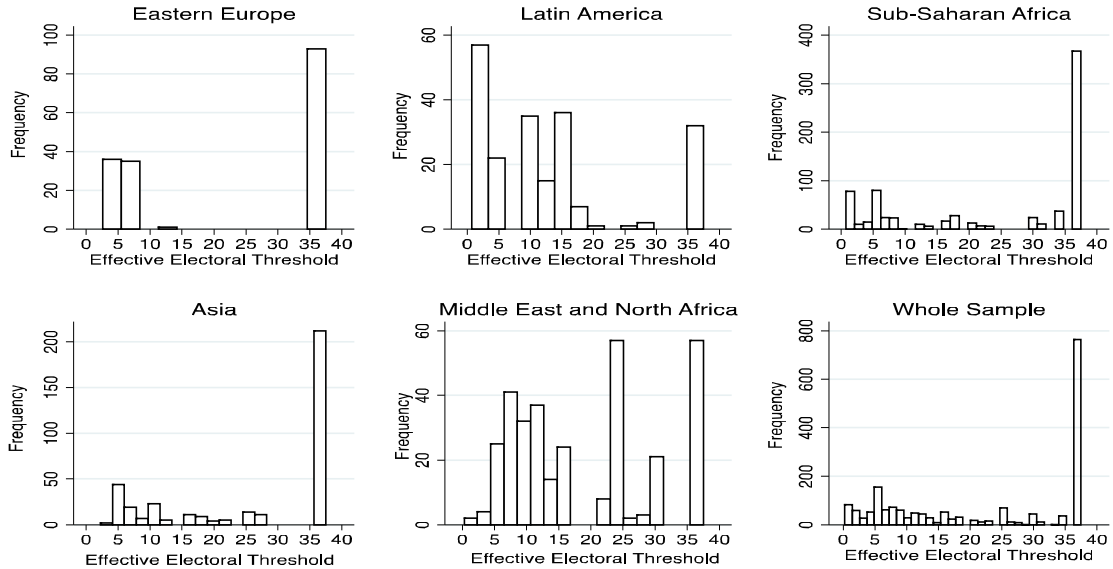
Figure 5: Effective Electoral Threshold in Electoral Authoritarian Regimes



Source: Authors' data

Figure 6: Regional Variations in Effective Electoral Threshold in Electoral Authoritarianism

[14] Even if we do not consider legal electoral threshold, the main results do not change.
[15] For data sources, see Appendix C.



Source: Authors' Data

In Figures 5 and 6, we show time-series variations (both level and change) as well as regional variations in EET in electoral authoritarianism. Interestingly, average EET has been declining over time, indicating that more countries have tended to adopt PR systems especially after the end of the Cold War. Yet still, the SMD system (EET = 37.5) is the predominant electoral system among electoral authoritarian countries. This suggests that SMD systems are the optimal choice for many electoral autocrats. Still, 32.5 percent of country-years adopt PR-based systems where EET is less than 10 percent.

Explanatory Variables

We use measures of natural resource wealth to operationalize the main independent variable: dictator's capacity to induce compliance. Conceptually, natural resource wealth closely taps into dictators' strength and thus dampens rebellious attempts by potential opponents. Specifically, it provides dictators with resources to strengthen the security apparatus, give patronage spoils to ruling elites, and increase social spending. Allocating a large amount of natural resources to the military and police, authoritarian leaders can improve their capabilities of repressing opponents and rewarding military elites (Ross 2001). In the face of a powerful dictator armed with a strong military, potential opponents will find it difficult to rebel and have no choice but to remain loyal to the current regime. In fact, a large literature finds that high military spending tends to disincentivize coup attempts (Collier and Hoeffler 2005), and prevent rebel leaders from taking up arms (e.g. Hegre and Sambanis 2006). These pacifying effects of military spending are particularly strong in oil-rich countries (Bodea, Higashijima, and Singh 2016). Oil resources also improve dictators' capability of distributing public goods to society. Since natural resource wealth, particularly non-lootable natural resources such as oil and gas, has been mostly dominated by state or state-owned companies (Morrison 2009; Andersen and Ross 2014),

it contributes to magnifying the dictator's ability to exploit patronage distribution in deriving political support from constituencies. Placating citizens' grievances through social spending, natural resources enable autocrats to gain voluntary support from the citizenry. Indeed, numerous studies demonstrate that natural resource wealth tends to strengthen dictators' distribution capability (Jensen and Wantchekon 2004; Morrison 2009) and thus makes autocratic regimes resilient to collapse (Smith 2004; Desai, Olofsgard, and Yousef 2009; Wright, Frantz, and Geddes 2013).[16]

Methodologically, natural resource wealth is also ideal because it is mostly determined by the international market and hence exogenous to electoral system types. Put differently, the use of natural resource wealth allows us to avoid endogeneity problems with respect to our dependent variable, the choice of electoral system. While there are other measures for financial recourses of the dictators (e.g., general fiscal revenues, government expenditure), these alternative measures invite the unwanted possibility of reverse causality. Indeed, several studies strongly suggest that PR systems lead to higher tax rates, higher welfare spending, and larger government deficits (Austin-Smith 2000; Persson and Tabellini 2004; Bawn and Rosenbluth 2006; Iversen and Soskice 2006).

In sum, natural resource wealth serves as a good surrogate for estimating the effect of dictator's strength on the choice of electoral system. It also helps us mitigate the possibility of reverse causality. To operationalize natural resource wealth, we use Ross' (2012) variable of oil-gas value per capita, which is calculated by taking the product between a country's total oil-gas production and the current oil-gas price, then divided by total population. The variable has the most extensive data coverage among similar natural resources variables, and it also focuses on the two most representative, non-lootable resources that greatly contribute to governments' revenue opportunities: oil and natural gas (Snyder and Bhavnani 2005).

We also control for several confounding factors that may also impact electoral system selection. First, according to Rokkan (1970) and Boix (1999), strong opposition threats encourage ruling parties to adopt PR systems. Yet, using seat and vote shares of opposition parties to measure opposition threats can be problematic since these indicators are directly affected by the dependent variable, the electoral system. They are also sensitive to other forms of electoral manipulation by dictators. Therefore, following Aksoy *et al.* (2015), we use the number of anti-government collective action events (riots, demonstration, and strikes) as a proxy for opposition threats. Anti-regime collective actions, once successfully mobilized, can be highly threatening to authoritarian regimes. Hence, they can effectively tap into the notion of opposition strength (Krichelli *et al*. 2011). Based on Banks' (2009)

[16] Haber and Menaldo (2011) argue that natural resource wealth does not have a negative impact on democratization. Although natural resources may not necessarily discourage a country to democratize, there is still rich evidence that natural resources allow dictators to survive longer and prevent authoritarian breakdown (Morrison 2009; Wright, Frantz and Geddes 2013).

data, we calculate a three-year moving average of the number of riots, strikes, and demonstrations.

The literature of democratic diffusion suggests that the spread of democracy has a significant impact on the propensity to move to PR systems (Blais *et al*. 2004). Following Li and Reuveny (2003), we use the proportion of democratic countries in a given region to operationalize the spread of democracy. In addition, as we discussed previously, scholars have emphasized the importance of uncertainty. For instance, Andrews and Jackman (2006) suggests that if uncertainty is high, ruling parties especially in new democracies are more likely to adopt PR systems. In order to control for this possibility, we add the number of years since a given country transitioned into an electoral authoritarian regime. We also consider colonial origins (former British, French or Spanish colonies) since former British colonies are more likely to adopt SMD systems (Blais and Massicote 1997). Finally, following Boix (1999), we add standard controls such as logged total population, logged territorial size, trade openness, and ethno-linguistic fractionalization.

Empirical Analysis

The unit of analysis is country-year.[17] In all models, we add a lagged dependent variable to control for time dependence, or path-dependent characteristics of electoral systems (Cox 1998). To deal with time-specific effects, we include half-decade dummies.

We first employ fixed-effects models to explain within-country variation in the EET while controlling for unobserved country-specific heterogeneity. As an obviously naïve first test, we regress the variable of EET on the variable of dictators' strength alone in Table 1 (Model 1). The result, confirming our theoretical hypothesis, suggests strong dictators tend to choose PR systems.

One naturally suspects that this simple bivariate result must be spurious, and reflects an association between dictators' strength and other confounding factors. Accordingly, we next incorporate all of the control variables discussed above into our model specification.[18] As we can see, the results in Model 2 corroborate our previous finding on the relationship between dictators' strength and their optimal choice of electoral systems.

[17] There are several reasons why we use a country-year data structure rather than country-election year. First, our data collection suggests that some electoral system reforms are implemented during non-election years (e.g. Mexico, Sri Lanka, and Russia). Country-election year data makes the analysis less accurate in capturing the timing of electoral system change. Second, the country-year data format enables us to control for country-fixed effects by expanding the time-series dimension.

[18] Since logged territorial size and ethno-linguistic fractionalization rarely change over time, and a country's colonial origins are time-invariant, we include these three variables only in GMM models.

One legitimate methodological concern regarding Model 2 is the "Nickell bias," which argues that in panel data with T time units, adding a lagged dependent variable in fixed-effects model will yield biased estimates of order 1/T (Nickell 1981). The potential Nickell bias is particularly concerning since the number of countries (95) is larger than the time-series (*65*) in our paper. Therefore, we also estimate system GMM models (Arelano and Bover 1995; Roodman 2007) to guard against this bias and to better capture the dynamic relationship between dictators' strength and electoral systems. Another advantage of the GMM model is that it allows us to further take into account several time-invariant factors such as colonial origin (British, French and Spanish colonies), ethnic heterogeneity, and country size that might influence electoral system choice. The coefficient estimate for the variable of dictators' strength remains negative and significant in Model 3.

Recently, a debate emerged regarding how to best measure the natural resource abundance for a country (Ross 2012, 15-17; Smith 2015). While reconciling this debate is beyond the scope of this paper, we ensure that our previous findings do not result from an arbitrary choice of the measurement. Therefore, we re-estimate both Model 2 and Model 3 with an alternative measure of total resource income per capita by Haber and Menald's (2011).

Finally, we employ an instrumental variables approach in Model 6. Although we believe natural resources are mostly exogenous to electoral systems, astute readers may still wonder whether autocrats adopting PR systems may pump more oil prior to elections to maintain a supermajority in elections. Following Haber and Menaldo (2011), we use three variables on proven oil reserves (1. proven oil reserve in billion dollars, 2. Proven oil reserve divided by country size, and 3. Proven oil reserve in regions) as instrumental variables. These instruments are ideal since they are highly correlated with oil-gas value per capita, yet not directly affect the choice of electoral systems by autocrats.[19] Again, the results in Model 4 -6 reassure the robustness of our previous results.

[19] The first stage model includes three instruments (proven oil reserve in billion dollars, proven oil reserve divided by country size, proven oil reserve in regions), country dummies, and the same set of variables introduced in the second stage model.

Table 1: Determinants of Electoral Systems in Electoral Authoritarianism

	Model 1 (FE)	Model 2 (FE)	Model 3 (GMM)	Model 4 (FE)	Model 5 (GMM)	Model 6 (IV)
DV	EET	EET	EET	EET	EET	EET
Natural Resource Variable	Ross (2012)	Ross (2012)	Ross (2012)	HM (2011)	HM (2011)	Instrumented Ross (2012)
lagged EET	0.9***	0.879***	0.752***	0.869***	0.726***	0.847***
	(0.02)	(0.03)	(0.15)	(0.03)	(0.18)	(0.04)
Lagged Natural Resource Wealth (100 dollars)	-0.0143***	-0.0225*	-0.0215*	-0.0330**	-0.0237*	-0.0314***
	(0.0035)	(0.0124)	(0.0115)	(0.0137)	(0.0001)	(0.0072)
Anti-Government Collective Action		0.170*	0.14	0.191*	0.16	0.243**
		(0.10)	(0.11)	(0.11)	(0.12)	(0.11)
Lagged Trade Openness		-0.0005	0.005	-0.127	0.007	-0.00186
		(0.01)	(0.01)	(0.984)	(0.008)	(0.007)
Logged Population		-0.142	0.373	8.18E-05	0.456	-0.3720
		(0.88)	(0.52)	(0.01)	(0.602)	(0.921)
Duration of EA Regimes		-0.011	-0.028	-0.013	-0.033	-0.015
		(0.02)	(0.03)	(0.02)	(0.037)	(0.026)
Regional Democracy		-0.0689	-0.022	-0.0635	-0.0348	0.0691
		(0.13)	(0.20)	(0.13)	(0.224)	(0.167)
Logged Land			-0.32		-0.37	
			(0.36)		(0.42)	
Ethno-Linguistic Fractionalization			0.41		0.52	
			(1.31)		(1.45)	
British Colony			3.16		3.67	
			(2.13)		(2.68)	
French Colony			0.57		0.77	
			(1.15)		(1.34)	
Spanish Colony			-0.58		-0.53	
			(1.55)		(1.72)	
Constant	1.891***	4.82	1.51		1.00	
	(0.56)	(14.46)	(5.33)		(5.85)	
F Value	380.09***	378.58***		298.4***		170.34***
Wald Chi^2			3019.96***		2571.65***	
Country Fixed Effect	Yes	Yes	No	Yes	No	Yes
Half-Decade Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Countries	92	86	86	85	85	86
Arellano-Bond Test for AR(2)	N/A	N/A	0.294	N/A	0.127	
Hansen Test	N/A	N/A	0.783	N/A	0.743	0.839
F Test on Instrument in First Stage						194.24***
Observations	1,658	1,435	1,431	1,288	1,284	1,343

Note: Robust standard errors are reported in parentheses. For fixed effects models and instrumental variables (IV) estimation, clustered robust standard errors by country are adopted. The oil reserve variables are taken from Haber and Menaldo (2011). GMM estimator is employed to run the IV estimation. F-values for the instruments are statistically significant at the .01 level, suggesting that the instruments are strong enough to explain variations in oil-gas value per capita. p***<0.01; p**<0.05; p*<0.1

From Table 1, we can see that the variables for dictators' strength are negatively associated with the electoral system variable in all models at conventional levels of statistical significance. These results clearly suggest that dictators with abundant natural resources are more likely to adopt PR systems by lowering EET. For example, Model 2 indicates that a $100 dollar increase in natural resource income per capita lowers EET by 0.0215. Given the fact that the average change in EET ranges from -0.46 to 0.24 (Figure 3-[b]) and the mean of natural resource wealth is $708 USD, the impact of natural resource wealth is considerably large.

On the other hand, when we examine the control variables, only the opposition threats variable is statistically significant. Yet, the sign of the coefficient is opposite to Boix's (1999) expectation. This result suggests that Boix's theoretical prediction might be applicable only in democracies and not in authoritarian regimes. Instead, strong and credible threats from the opposition may encourage dictators to select an SMD system in order to capitalize on the seat-premium.

Additional Tests and Robustness Checks

Our hypothesis about natural resources and electoral system design is based on an assumption that natural resources should encourage compliance among people and thus increase their political support for the regimes. In order to provide direct evidence on this, we empirically test whether natural resource wealth does contribute to mobilizing regime supporters in legislative elections (Web Appendix D). We find that a larger amount of resource wealth increases both vote shares and margins of victory for ruling parties (See Web Appendix D). Substantively, a 100 dollars increase in natural resource wealth boosts a ruling party's vote share by 0.4% and enlarge its margin of victory by 0.7%.

In order to ensure the robustness of the main findings, we run additional models. First, since it is possible that authoritarian leaders choose PR systems after severely limiting political competition prior to elections, we include Polity IV index (one-year lagged) as a control. Controlling for political competition, however, does not alter the key result. Second, we add regional dummies to system GMM models to consider the possibility that unobservable regional factors affect electoral system choice. Yet, including regional dummies has no effect on our prior results. Third, we use an alternative measure of Effective Electoral Threshold, in which we do not adjust its score by the legal threshold that is often adopted in PR systems; the main findings remain stable. Fourth, since the oil-gas variable is highly dispersed, it is possible that influential observations are driving the results. In order to deal with such possible outliers, we thus exclude each country one by one from the sample and check if the effect of the natural resource wealth variable on EET remains negative and statistically significant. The impact is robust to potential influential observations.

Finally, according to Ross and Andersen (2014: 4), "[u]ntil the 1960s, most of the rents generated by oil production in non-Western countries were captured by a handful of large, vertically-integrated international oil companies—sometimes called 'the Seven Sisters.' But in the 1970s, the industry was transformed by a wave of nationalizations and contract revisions that enabled the governments of host countries to seize control of these rents." In order to take into account the history of natural resource rents as a "resource curse," we limit the sample to the period of 1970-2010. Nonetheless, natural resource endowments remain negatively correlated with the EET.

Conclusion

This paper has explored the logic of electoral system choice in electoral autocracies. In electoral authoritarian regimes where opposition parties are weak, dictators gain a seat premium under SMD systems which help them secure an overwhelming parliamentary majority. However, strong dictators, who are capable of mobilizing regime supporters, are incentivized to shift electoral systems from SMD to PR systems since PR systems help dictators divide and conquer the opposition and increase voter turnout, thus fostering an image of regime invincibility. Using original datasets of electoral authoritarianism, our cross-national analyses render strong empirical evidence endorsing our theoretical expectations: (1) natural resource endowments have a negative effect on Effective Electoral Threshold; (2) SMD systems produce larger seat premiums exclusively for the ruling parties; and (3) PR systems discourage opposition party cohesion while simultaneously encouraging voter turnout.

The analyses presented in this paper suggest multiple policy implications and further research agendas on authoritarian politics. First, we show that authoritarian leaders strategically choose an electoral system depending on their mobilization power. By doing so, dictators use electoral institutions to their advantage. Without closely investigating a dictator's capability of garnering political support, the international community may not be able to implement effective measures to reform electoral systems, thereby pushing the country to achieve further democratization.

Second, the present study proposes a greater need for research on indirect manipulation techniques like electoral system change, gerrymandering, and malapportionment as useful tools in a dictator's toolbox. Since direct, blatant electoral fraud often hurts authoritarian leaders by sparking popular protests and other dissent (Tucker 2007; Hafner-Burton et al. 2014; Higashijima 2015), indirect election manipulation becomes a more secure strategy for authoritarian rulers. One possible research agenda may be to explore relationships between direct and indirect manipulation techniques by systematically theorizing when authoritarian rulers are tempted to use blatant measures over indirect ones and vice versa.

Third, the theory proposed here makes another prediction about the economic consequences of electoral system in authoritarian regimes: as dictators need to mobilize a larger number of regime supporters, they should adopt expansionary fiscal and monetary policies to maintain electoral dominance under PR systems. Studying the various aspects of economic outcomes under different authoritarian electoral systems would be another promising research topic.

Finally, this paper also suggests the possibility that natural resources significantly affect institutional design in authoritarian regimes. Scholars of electoral authoritarianism have examined how political institutions change the prospect of dictator survival. However, as Pepinsky (2014) rightly points out, political institutions in authoritarian regimes should be endogenous to power relations and the distribution of economic resources in the country.

If natural resource wealth influences the origins of political institutions in dictatorships, then we will have to elaborate on an endogenous theory of authoritarian politics, which enables us to take into account both causes and consequences of political institutions in dictatorships, and test the theory with a well-planned research design.

References

Ahmed, Amel. 2013. *Democracy and the Politics of Electoral System Choice: Engineering Electoral Dominance*. New York, NY: Cambridge University Press.

Aksoy, Deniz, David Carter, and Joseph Wright. 2015. "Terrorism and the Fate of Dictators." *World Politics*, 67 (3): 423-468.

Andersen, Jørgen Juel and Michael Ross. 2014. "The Big Oil Change: A Closer Look at the Haber-Menaldo Analysis." *Comparative Political Studies*, 47(7): 993-1021.

Andrews, Josephine and Robert Jackman. 2005. "Strategic Fools: Electoral Rule Choice under Extreme Uncertainty." *Electoral Studies*, 24(1): 65-84.

Arellano, Manuel and Olympia Bover. 1995. "Another Look at the Instrumental Variables Estimation of Error Components Models." *Journal of Econometrics*, 68(1): 29-51.

Austin-Smith, David. 2000. "Redistributing Income under Proportional Representation." *The Journal of Political Economy*, 108(6): 1235-1269.

Barbera, Pablo. 2013. "When Duverger Becomes Autocratic: Electoral Systems and Opposition Fragmentation in Non-Democratic Regimes." Working Paper.

Bawn, Kathleen and Frances Rosenbluth. 2006. "Short versus Long Coalitions: Electoral Accountability and the Size of the Public Sector." *American Journal of Political Science*, 50(2): 251-265.

Bielasiak, Jack. 2006. "Regime Diversity, Electoral Systems in Post-Communism." *Journal of Communist Studies and Transition Politics*, 22(4): 407-430.

Blais, Andre and Louis Massicotte. 1997. "Electoral Formulas: A Microscopic Perspective." *European Journal of Political Research*, 32: 107-129.

Blais, Andre. 2006. "What Affects Voter Turnout?" *Annual Review of Political Science*, 9: 111-125.

Blaydes, Lisa. 2011. *Elections and Distributive Politics in Mubarak's Egypt*. New York, NY: Cambridge University Press.

Bodea, Cristina, Masaaki Higashijima, and Raju Jan Singh. 2016. "Oil and Civil Conflict: Can Public Spending Have a Mitigation Effect?" *World Development*, 78, 1-12.

Boix, Carles. 1999. "Setting the Rule of the Game: The Choice of Electoral Systems in Advanced Democracies." *American Political Science Review*, 93(3): 609-624.

Brownlee, Jason. 2009. "Portents of Pluralism: How Hybrid Regimes Affect Democratic Transitions." *American Journal of Political Science*, 53(3): 515-532.

Bunce, Valerie and Sharon Wolchik. 2010. *Defeating Authoritarian Leaders in Post-Communist Countries*. New York, NY: Cambridge University Press.

Calvo, Ernesto. 2009. "The Competitive Road to Proportional Representation: Partisan Bias and Electoral Regime Change under Increasing Party Competition." *World Politics*, 61(2): 254-295.

Cheibub, Antonio, Jeniffer Gandhi, and James Vreeland. 2009. "Democracy and Dictatorship Revisited." *Public Choice*, 143(2): 67-101.

Collier, Paul and Anke Hoeffler. 2005. "Resource Rents, Governance, and Conflict." *Journal of Conflict Resolution*, 49-4: 625-633.

Cox, Gary. 1998. *Making Votes Count: Strategic Coordination in the World's Electoral Systems*. Cambridge: Cambridge University Press.

Cusack, Thomas, Torben Iversen and David Soskice. 2007. "Economic Interests and the Origins of Electoral Systems." *American Political Science Review*, 101(3): 373-391.

Cusack, Thomas, Torben Iversen, and David Soskice. 2010. "Coevolution of Capitalism and Political Representation: The Choice of Electoral Systems." *American Political Science Review*, 104(2): 393-403.

De Miguel, Carolina, Amaney Jamal, and Mark Tessler. 2015. "Elections in the Arab World: Why Do Citizens Turn Out?" *Comparative Political Studies*, 48 (11): 1355-1388.

Desai, Raj, Anders Olofsgard, and Tarik Yousef. 2009. "The Logic of Authoritarian Bargains." *Economics and Politics* 21: 93-125.

Duverger, Mourice. 1954. *Political Parties: Their Organizations and Activity in the Modern State*. London: Methuen & CO. LTD.

Gandhi, Jennifer and Adam Przeworski. 2007. "Authoritarian Institutions and the Survival of Autocrats." *Comparative Political Studies*, 40(11): 1279-1301.

Gandhi, Jennifer. 2008. *Political Institutions under Dictatorship*. New York, NY: Cambridge University Press.

Gandhi, Jennifer and Lust-Okar, Ellen. 2009. "Elections under Authoritarianism." *Annual Review of Political Science*, 12: 403-422.

Geddes, Barbara. 2006. "Why Parties and Elections in Authoritarian Regimes." Working

Paper.

Golder, Sona. 2006. *The Logic of Pre-Electoral Coalition Formation*. Columbus, OH: The Ohio State University Press.

Haber, Stephen and Victor Menaldo. 2011. "Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse." *American Political Science Review*, 105(1): 1-26.

Hafner-Burton, Emilie, Susan Hyde and Ryan Jablonski. 2014. "When Do Governments Resort to Election Violence?" *British Journal of Political Science*, 44(1): 149-179 .

Hall, Peter and David Soskice eds. 2001. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford: Oxford University Press.

Hegre, Havard and Nicholas Sambanis. 2006. "Sensitivity Analysis of Empirical Results on Civil War Onset." *Journal of Conflict Resolution*, 37-3: 275-299.

Hyde, Susan and Nichorai Marinov. 2012. "Which Elections Can be Lost?" *Political Analysis*, 20(2): 191-210.

Ishiyama, John. 1997. "Transitional Electoral Systems in Post-Communist Eastern Europe." *Political Science Quarterly*, 112(1): 95-115.

Iversen, Torben and David Soskice. 2006. "Electoral Systems and the Politics of Coalitions: Why Some Democracies Redistribute More Than Others." *American Political Science Review*, 100(2): 165-181.

Jackman, Robert. 1987. "Political Institutions and Voter Turnout in the Industrial Democracies." *American Political Science Review*, 81(2): 405-424.

Jensen, Nathan and Leonard Wantchekon. 2004. "Resource Wealth and Political Regimes in Africa." *Comparative Political Studies*, 37(7): 816-841.

Kinne, Brandon and Nikolay Marinov. 2013. "Electoral Authoritarianism and Credible Signaling in International Crisis." *Journal of Conflict Resolution*, 57(3): 359-386.

Kreuzer, Marcus. 2010. "Historical Knowledge and Quantitative Analysis: The Case of the Origins of Proportional Representation." *American Political Science Review*, 104(2): 369-392.

Lehoucq, Fabrice. 2003. "Electoral Fraud: Causes, Types, and Consequences." *Annual Review of Political Science*, 6: 233-256.

Levitsky, Steven, and Lucan Way. 2010. *Competitive Authoritarianism: Hybrid Regimes after the Cold War*. New York, NY: Cambridge University Press.

Lindberg, Staffan. 2006. *Democracy and Elections in Africa*. Baltimore, MD: The Johns Hopkins University Press.

Lijphart, Arend. 1994. *Electoral Systems and Party Systems: A Study of Twenty-Seven Democracies, 1945-1990*. Oxford: Oxford University Press.

Lust-Okar, Ellen. 2004. *Structuring Conflict in the Arab World: Incumbents, Opponents, and Institutions*. New York, NY: Cambridge University Press.

Lust-Okar, Ellen and Amaney Ahmad Jamal. 2002. "Rulers and Rules: Reassessing the Influence of Regime Type and Electoral Law Formation." *Comparative Political Studies*, 35(3): 337-366.

Magaloni, Beatriz. 2006. *Voting for Autocracy: Hegemonic Party Survival and Its Demise in Mexico*. New York, NY: Cambridge University Press.

Magaloni, Beatritz. 2008. "Credible Power-Sharing and the Longevity of Authoritarian Rule." *Comparative Political Studies*, 41(10): 715-41.

Malesky, Edmund and Paul Schuler. 2010. "Nodding or Needling: Analyzing Delegate Responsiveness in an Authoritarian Parliament." *American Political Science Review*, 103(3): 482-502.

Morrison, Kevin. 2009. "Oil, Nontax Revenue, and the Redistributional Foundations of Regime Stability." *International Organization*, 63(1): 107-138.

Moser, Robert. 2001. *Unexpected Outcomes: Electoral Systems, Political Parties, and Representation in Russia*. Pittsburgh, PA: University of Pittsburgh Press.

Moser, Robert and Ethan Scheiner. 2012. *Electoral Systems and Political Context: How the Effects of Rules Vary across New and Established Democracies*. New York, NY: Cambridge University Press.

Paler, Laura. 2013. "Keeping the Public Purse: An Experiment in Windfalls, Taxes, and the Incentives to Restrain Government." *American Political Science Review*, 107 (4): 706-725.

Pepinsky, Thomas. 2014. "The Institutional Turn in Competitive Authoritarianism." *British Journal of Political Science*, 44(3): 631-653.

Persson, Torsten and Guido Tabellini. 2004. *The Economic Effects of Constitutions*. Cambridge, MA: MIT Press.

Pripstein Posusney, Marsha. 2002. "Multi-Party Elections in the Arab World: Institutional Engineering and Oppositional Strategies." *Studies in Comparative International*

Development, 36(4): 34-62.

Reuter, Ora John and Graeme Robertson. 2011. "Sub-National Appointments in Authoritarian Regimes: Evidence from Russian Gubernatorial Appointment." *The Journal of Politics*, 74(4): 1023-1037.

Roodman, David. 2007. "How to Do xtaband2: An Introduction to Difference and System GMM in Stata." Center for Global Development, Working Paper No. 103.

Rogowski, Ronald. 1987. "Trade and the Variety of Democratic Institutions." *International Organization*, 41: 203-223.

Ross, Michael, 2001. "Does Oil Hinder Democracy?" *World Politics*, 53: 325-61.

Ross, Michael. 2012. *The Oil Curse*. Princeton, NJ: Princeton University Press.

Schedler, Andreas. 2013. *The Politics of Uncertainty: Sustaining and Subverting Electoral Authoritarianism*. Oxford: Oxford University Press.

Simpser, Alberto. 2013. *Why Governments and Parties Manipulate Elections: Theory, Practice and Implications*. New York, NY: Cambridge University Press.

Smith, Benjamin. 2004. "Oil Wealth and Regime Survival in the Developing World, 1960-1999." *American Journal of Political Science*, 48(2): 232-246.

Strom, Kaare, Ian Budge, and Michael Laver. 1994. "Constraints on Cabinet Formation in Parliamentary Democracies." *American Journal of Political Science*, 38(2): 303-335.

Tsebelis, George. 1990. *Nested Games*. Berkeley, CA: University of California Press.

Smith, Benjamin. 2015. "Resource Wealth as Rent Leverage: Rethinking the Oil-Stability Nexus." *Conflict Management and Peace Science*.

Svolik, Milan. 2012. *The Politics of Authoritarian Rule*. New York, NY: Cambridge University Press.

Rae, Douglass. 1971. *The Political Consequences of Electoral Law*. New Haven, CT: Yale University Press.

Rokkan, Stein. 1970[2009]. *Citizens, Elections, Parties: Approaches to the Comparative Study of the Processes of Development*. Colchester: The ECPR Press.

Welt, Cory. 2006. "Georgia's Rose Revolution: From Regime Weakness to Regime Collapse." The "Waves and Troughs of Post-Communist Transitions" Workshop at Center on Democracy, Development, and the Rule of Law, Stanford University.

Wooldridge, Jeffrey. 2002. *Econometric Analysis of Cross-Section and Panel Data*. Cambridge, MA: The MIT Press.

Wright, Joseph. 2008. "Do Authoritarian Institutions Constrain? How Legislatures Affect Growth and Investment." *American Journal of Political Science*, 52(2): 322-343.

Wright, Joseph, Erica Frantz and Barbara Geddes. 2015. "Oil and Autocratic Regime Survival." *British Journal of Political Science*, 45(2): 287-306.

Appendix A: List of Electoral Authoritarian Countries

Electoral Authoritarianism	Time Period	Electoral Authoritarianism	Time Period
Afghanistan	2004-2007	Kyrgyzstan	1995-2005
Albania	1990-1992	Laos	1960, 1965-1974
Algeria	1997-2007	Lebanon	1993-2007
Angola	1992-2007	Lesotho	1967-1970, 1993, 1998-2007
Argentina	1962	Liberia	1985-2002, 2005
Azerbaijan	1993-2007	Libya	1952-1955
Bahrain	1999-2007	Madagascar	1961-1974, 1992
Bangladesh	1973-1974, 1978-1982, 1986-1990, 2007	Malaysia	1958-1967, 1973-2007
Belarus	1994-2007	Mauritania	1961-1963, 1992-2007
Benin	1961-1962	Mexico	1967-2000
Bolivia	1979	Moldova	1993-1997
Bosnia	1996-2007	Morocco	1970-2007
Botswana	1969-2007	Mozambique	1994-2007
Burkina Faso	1970-1973, 1978-1979, 1992-2007	Namibia	1994-2007
Burundi	1965, 1996-2007	Nepal	1959, 2002-2005
Cambodia	1954-1970, 1972-1974, 1993-2007	Nicaragua	1946-1950, 1971-1978
Cameroon	1964-1969, 1992-2007	Niger	1996-1999
Central African Republic	1961, 1992, 2005-2007	Pakistan	1977, 1985-1988, 2003-2007
Chad	1961-1962, 1996-2007	Panama	1952, 1989-1990
Chile	1989	Paraguay	1968-2007
Comoros	1989-1994, 1996-1998	Peru	1990-2000
Congo Brazzaville	2002-2007	Philippines	1965-1985
Congo Kinshasa	1963-1964, 2006-2007	Russia	1994-2007
Cyprus	1961-1965, 1968-1977	Rwanda	2003-2007
Czechslovakia	1946-1947	Senegal	1963-1967, 1977, 1982-2000
Djibouti	1992-2004	Serbia	1993-2006
Ecuador	2000-2003	Sierra Leone	1967-1981
Egypt	1976-2007	Singapore	1968-2007
El Salvador	1963-1979, 1982-1984	Somalia	1969-1975
Equatorial Guinea	1969-1978, 1991-2007	South Africa	1951-2007
Fiji	1972-1986, 1993-2005	South Korea	1949-1959, 1963-1988
Gabon	1961-1966, 1990-2007	Sri Lanka	1977-1989
Gambia	1969-2007	Swaziland	1972-1977, 1993-2002
Georgia	1995-2004	Sudan	1964, 2000-2004
Ghana	1961-1965, 1992-2007	Syria	2007
Guatemala	1955-1957, 1963-1966, 1985	Taiwan	1991-2002
Guinea	1995-2007	Tajikistan	1994-2007
Guinea-Bissau	1994-2000, 2004-2005	Tanzania	1962-1968, 1995-2007
Guyana	1968-2007	Thailand	1955-1957, 1969-1970, 1975, 1980-1983, 2006-2007
Haiti	1987-2007	Tunisia	1960-1963, 1979-1986, 1989-2007
Honduras	1954-1956	Turkey	1946-1961, 1971-1973, 1983
Indonesia	1955-1965, 1971-1998	Uganda	1966-1968, 1986-2007
Iran	1990-2007	Uzbekistan	1993-2002
Iraq	1953-1957, 2005-2007	Venezuela	1947
Ivory Coast	1991-2007	Yemen	1993-2007
Jordan	1947-1970, 1989-2007	Yugoslavia	1991
Kazakhstan	1994-2007	Zambia	1965-2007
Kenya	1964-2002	Zimbabwe	1980-2007
Kuwait	1964-1975, 1982-1985, 1992-2007		

Note: Electoral authoritarian countries are identified by using Hyde and Marinov (2012), Svolik (2012) and Kinne and Marinov (2013). Countries shown here are based on Model 1.

Appendix B: Descriptive Statistics

Variables	Number of Observations	Mean	SD	Minimum	Maximum
Country-Year Data					
Effective Electoral Threshold (EET)	1826	22.64	14.45	0.27	37.5
Resource Income per capita	2005	502.99	2360.071	0	48201.64
Oil-Gas Value per capita	2032	464.56	2310.312	0	41109.66
Logged Population Size	1928	15.74	1.54	12.28	19.15
Trade Openness	1987	75.04	56.43	2.6	440.43
Logged Country Size	1924	12.1	1.9	6.5	16.6
Ethno-Linguistic Fractionalization	2241	0.5188	0.26	0.003	0.922
Country-Election Year Data					
Disproportionality	359	14.86	12.42	0	69.93
Ruling Party's Seats-Votes Gap	363	8.81	11.88	-31.7	46.64
Opposition Party's Seats-Votes Gap	360	-5.02	11.6	-61.03	31.7
Ruling Party's Vote Shares	366	60.31	20.94	0	100
Margins of Victory	362	27.2	37.97	0	100
Opposition Coalition	318	0.15	0.36	0	1
Turnout	404	69.41	17.11	3.9	103.6
Resource Income per capita	471	609.73	3082.046	0	48201.64
Effective Electoral Threshold (EET)	447	22.16	14.26	0.27	37.5
Proportion of Independents	349	6.28	12.93	0	100
Ethno-Linguistic Fractionalization	527	0.503	0.269	0.003	0.922
Election Boycott	518	0.25	0.43	0	1
Election Violence	519	0.28	0.45	0	1
Electoral Fraud	514	0.55	0.49	0	1
Polity IV	503	-1.73	5.44	-10	10
Parliamentarism	505	0.32	0.468	0	1
Logged GDP per capita	463	7.88	0.99	5.17	10.84
Economic Growth	456	1.48	8.4	-102.51	42.57
Logged Total Seats	477	4.84	0.74	2.99	6.4
Age of the Largest Opposition Party	311	1.9	2.93	0	18
Number of Opposition Parties	354	4.35	3.82	0	23
Logged Population Size	440	15.88	1.5	12.89	19.12

Appendix C: Data Sources

African Elections Database. http://africanelections.tripod.com/

Banks, Arthur and Thomas Muller (Eds.) *Political Handbook of the World* (1993-2008, various volumes). CSA Publications.

Inter-Parliamentary Union. http://www.ipu.org/parline-e/parlinesearch.asp

Keefer, Philip. *Database of Political Institutions*.

Nohlen, Dieter, Michael Krennerich, and Bernard Thibaut (Eds.) *Elections in Africa: A Data Handbook*. Oxford: Oxford University Press.

Nohlen, Dieter, Florian Grotz, and Christof Hartmann (Eds.) 2001a. *Elections in Asia and the Pacific: A Data Handbook, Volume I: The Middle East, Central Asia and South Asia*. Oxford: Oxford University Press.

Nohlen, Dieter, Florian Grotz, and Christof Hartmann (Eds.) 2001b. *Elections in Asia and the Pacific: A Data Handbook, Volume II: South East Asia, East Asia and the South Pacific.* Oxford University Press.

Nohlen, Dieter ed. 2005a. *Elections in the Americas, Volume I: North America, Central America, and the Caribbean*. Oxford: Oxford University Press.

Nohlen, Dieter ed. 2005b. *Elections in the Americas, Volume II: South America*. Oxford: Oxford University Press.

Nohlen, Dieter and Philip Stoever eds. 2010. *Elections in Europe: A Data Handbook*. Nomos.

Roeder, Philip. Ethno-Linguistic Fractionalization Indices for 1961 and 1985. http://pages.ucsd.edu/~proeder/data.htm

Appendix D: Natural Resource Wealth and Dictator's Mobilization Power

	Model D1	Model D2	Model D3	Model D4	Model D5	Model D6
DV: Ruling Party's Electoral Performance	Share of Votes (%)	Margin of Victory (%)	Share of Votes (%)	Margin of Victory (%)	Share of Votes (%)	Margin of Victory (%)
Natural Resource Variable	Ross (2012)	Ross (2012)	Ross (2012)	Ross (2012)	HM (2011)	HM (2011)
Lagged Natural Resource Wealth	0.00359**	0.00791**	0.00408**	0.00730**	0.00380***	0.00644***
	(0.0018)	(0.0036)	(0.0019)	(0.0033)	(0.0014)	(0.0025)
Ethno-Linguistic Fractionalization			-1.799	-6.117	-3.956	-9.846
			(4.78)	(8.20)	(4.92)	(8.95)
Opposition Boycott			5.942***	14.54***	6.584***	15.43***
			(2.02)	(4.01)	(1.84)	(4.48)
Electoral Fraud			-1.508	-5.113**	-1.345	-5.348
			(1.18)	(2.45)	(1.64)	(3.26)
Election Violence			-8.544***	-14.45***	-8.432***	-14.66***
			(1.91)	(3.61)	(2.08)	(3.67)
Lagged Polity IV			-0.40	-1.057***	-0.464*	-1.130***
			(0.25)	(0.39)	(0.26)	(0.41)
Parliamentarism			4.095*	3.91	4.705**	5.07
			(2.33)	(4.25)	(2.17)	(4.21)
Lagged GDP per capita (logged)			-1.185	-1.074	-1.743	-2.95
			(1.84)	(3.41)	(2.04)	(3.63)
Lagged GDP Growth			0.514***	1.111***	0.501***	1.051***
			(0.130)	(0.277)	(0.138)	(0.289)
Constant	59.59***	21.99***	68.75***	69.61***	88.21***	75.72**
	(4.52)	(8.39)	(16.590)	(26.35)	(17.16)	(30.47)
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
Half-decade dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Countries	83	83	73	73	72	72
Observations	331	327	285	282	274	271
R-squared	0.341	0.097	0.446	0.271	0.464	0.272
Wald Chi2	202.64***	64.07***	636.73***	135.44***	324.23***	621.00***

To test whether natural resource wealth contributes to boosting regime support at elections, we use two dependent variables. The first measure is total percentage of votes cast for ruling parties. This is a straightforward measure because we can directly estimate what determines ruling party's popularity at the ballot box. Yet, authoritarian leaders may care more about to what extent they win big relative to opposition parties (Simpser 2013). Thus, we use the second measure, margins of victory, operationalized as the gap in percentages of vote shares between ruling parties and opposition parties.

For natural resource wealth, we use two measures. First, we use Ross' (2012) variable of oil-gas value per capita, which is calculated multiplying a country's total oil-gas production by the current oil-gas price and then divided by total population (Ross 2012). The variable has the most extensive data coverage among other similar natural resources variables and also focuses on two representative non-lootable resources that greatly contribute to the government's revenue opportunities: oil and natural gas (Snyder and Bhavnani 2005). Second, Haber and Menald's (2011) total resource income per capita is also used to check the robustness of the results. This variable includes coal and metal minerals, as well as oil and gas. Both measures are nearly collinear (r = 0.98).

Besides financial resources, to what extent authoritarian rulers can garner votes is determined by other covariates. To consider other relevant covariates, we introduce the following control variables. If there are many ethnic groups in society, it may be more difficult for ruling parties to garner political support. Given this, we include *Ethno-Linguistic Fractionalization*, constructed by Roeder (2002).

If opposition parties refuse to join elections, then ruling parties can win elections more easily with a large margin. A dummy variable for whether some opposition leaders boycott the election (*Opposition's Boycott*) is introduced using Hyde and Marinov's (2012) NELDA dataset (NELDA 14). Intuitively, if dictators stuff the ballot box, ruling parties should be able to increase their vote shares and win elections with larger margins. On the other hand, if electoral fraud is used more frequently by weak dictators, who cannot mobilize regime supporters, such a positive correlation may not be observed between the variables. A dummy variable for *Electoral Fraud* is taken from NELDA 11.[20] Previous work claims that pre-electoral violence, which is mainly exercised by ruling parties against opposition candidates and supporters, is conducive to ruling party's electoral victory (Straus and Taylor 2012; Hafner-Burton, Hyde, and Jablonski 2013). Similar to electoral fraud, if only weak dictators use election violence, its effect is not observed in the form of ruling party's vote share and margins of victory. We use NELDA 33 to introduce a dummy variable for *Electoral Violence*.[21] If strong *Political Competition* is guaranteed, it is harder for ruling parties to win elections overwhelmingly. For this, Polity IV score (one-year lagged) is also included in models. When a legislative election is held in a parliamentary system, authoritarian leaders may spend more efforts to win the election than a legislative election in a presidential system because election results directly decide who holds power. A dummy variable for *Executive-Legislative Relations* (0: presidentialism/semi-presidentialism; 1: parliamentarism) is introduced.

If the modernization theory is correct, ruling parties in rich countries find it difficult to collect votes because people become less dependent on government in terms of their economic well-being. Logged GDP per capita (one-year lagged) is taken from Penn World Table 7.1 to control for the level of *Economic Development*. Better economic performance should make dictators and their parties popular among citizens, leading to better electoral performance. GDP growth (one-year lagged) is measured to take into account *Economic Growth* by using World Development Indicators.

Table 2 presents the statistical results. In Models D1 and D2, we test the impact of natural resource wealth on regime support without control variables. The natural resources variable has positive impacts both on vote shares and margins of victory and the effects are statistically significant at the .05 level. In Models D3 through D6, where we include the controls with two different measures for natural resource wealth, the effects remain positive and statistically significant. Substantively, a 100 dollars increase in natural resources income per capita tends to increase ruling parties' share of votes by 0.4% and their margin of victory by 0.73% (based on Models D3 and D4). The results suggest that natural resource wealth is positively associated with popular support for the dictators. These findings support our idea that natural resource wealth is a good surrogate to measure dictators' mobilization power at the ballot box.[22]

[20] "Before elections, were there significant concerns that the elections would not be free and fair?"
[21] "Was there significant violence involving civilian deaths immediately before, during and after the election?" (NELDA 33)

[22] Looking at the control variables, economic growth and opposition boycott display the anticipated effects in statistically significant ways. Meanwhile, the lagged Polity IV score has a negative, statistically significant impact only on the margin of victory. And contrary to our theoretical expectation, election violence is negatively correlated with both ruling party's vote shares and the margin of victory. This may

Appendix E: The SMD Seat Premium

	Model 14	Model 15	Model 16	Model 17
DV	Disproportionality	Seats-Votes Gap of Opposition Parties (%)	Seats-Votes Gap of Ruling Parties (%)	Seats-Votes Gap of Ruling Parties (%)
Effective Electoral Threshold (EET)	0.0879	-0.0929*	0.0939*	-0.381**
	(0.0636)	(0.0514)	(0.0488)	(0.152)
Vote Share of Ruling Parties				-0.213***
				(0.06)
EET* Ruling Parties Vote Share				0.00747***
				(0.002)
Vote Share of Independents (Previous Elections)	0.00886	-0.0254	-0.039	-0.02
	(0.06)	(0.05)	(0.03)	(0.05)
Logged Assembly Size	-2.03	-0.321	-0.155	-0.90
	(1.38)	(1.26)	(0.93)	(1.24)
Parliamentarism	0.495	0.352	0.142	-0.318
	(1.89)	(1.37)	(1.44)	(1.39)
Constant	25.59***	-10.93	11.75*	29.18***
	(8.02)	(8.00)	(7.12)	(8.91)
Regional dummies	Yes	Yes	Yes	Yes
Half-decade dummies	Yes	Yes	Yes	Yes
Number of Countries	73	73	73	73
Observations	266	266	266	266
R-squared	0.096	0.131	0.146	0.188

Note: Prais-Winsten regressions with Panel Corrected Standard Errors (PCSEs) are employed. Disproportionality is measured by $\sqrt{\frac{\sum(Seats_{it} - Votes_{it})^2}{2}}$ in which both ruling and opposition parties are included to compute disproportionality. p***<0.01; p**<0.05; p*<0.1.

In order to offer evidence of the SMD seat bias, our regression analysis uses the following three dependent variables:

(i) *Seats-Votes Gap of Opposition Parties*. The first dependent variable is seats-votes gap for the opposition parties. Effective Electoral Threshold should have a negative effect on seat premiums for the opposition parties because, regardless of however large opposition parties might be, SMD systems only produce a seat premium for the ruling party.

(ii) *Seats-Votes Gap of Ruling Parties*. We use the seats-votes gap for the ruling parties. SMD systems should produce a seat bias in favor of the ruling party.

---

indicate an endogeneity problem between election violence and regime strength: weak dictators, those who are not popular among constituents, may be more inclined to resort to election violence. As NELDA 33 does not distinguish between pre- and post-election violence, this is a possibility. Yet, even if we exclude the election violence variable, the overall results do not change and natural resource wealth is still positively associated with the dependent variables.

(iii) *Disproportionality Index*. As a "placebo test," we also compute a conventional disproportionality index, which has been widely used in the literature. Disproportionality is measured by $\sqrt{\frac{\sum(Seats_{it} - Votes_{it})^2}{2}}$ in which both ruling and opposition parties are included to compute disproportionality.[23] Employing the disproportionality index, we test whether SMD systems produce a larger number of seats with higher seats-votes elasticity *regardless of whether the parties are the ruling or opposition groups*.

Regarding model specification, our models are based on Lijphart (1994), who includes *logged assembly size* (the natural logarithm of total number of seats in the lower house) and *government form* (presidentialism vs parliamentarism) as main independent variables. We also control for vote shares of independents in the previous elections to parse out the impact of independent politicians' strength.

[23] Disproportionality is calculated by using seats-votes gaps in the ruling party and opposition camps, without disaggregating them into each party's seats-votes gap.

Appendix F: Determinants of Pre-Electoral Opposition Coalitions in Electoral Authoritarianism

	Model 21	Model 22	Model 23
DV	Pre-Electoral Coalition	Pre-Electoral Coalition	Pre-Electoral Coalition
Effective Electoral Threshold	0.0382**	0.0644***	0.0783***
	(0.017)	(0.023)	(0.027)
Natural Resource Wealth (one year lagged, 100 dollars)		-0.00132*	-0.00210*
		(0.001)	(0.001)
Age of Largest Opposition Party		0.194**	0.325***
		(0.096)	(0.099)
Number of Opposition Parties		0.120**	0.0836
		(0.058)	(0.070)
Ruling Party's Seat Share in the Previous Election		0.0166	0.0450**
		(0.011)	(0.018)
Parliamentarism		-0.42	-1.634
		(0.673)	(1.056)
Ethno-Linguistic Fractionalization		2.856**	3.338*
		(1.129)	(1.897)
Economic Growth (one year lagged)		0.024	0.0107
		(0.042)	(0.064)
Logged Total Population (one year lagged)		-0.0611	0.0401
		(0.174)	(0.264)
Electoral Violence		-0.136	1.011
		(0.492)	(0.760)
Lagged Dependent Variable			2.862***
			(0.886)
Constant	-5.424***	-8.543**	-13.67**
	(1.056)	(3.9)	(5.417)
Regional dummies	Yes	Yes	Yes
Half Decade Dummies	Yes	Yes	Yes
Number of Countries	82	71	55
Observations	278	225	167
Log psedolikelihood	-101.11	-69.75	-42.03
Wald Chi Squared	54.73***	52.5***	48.9***

Note: Logistic regression is employed. Robust standard errors are reported in parentheses. p***<0.01; p**<0.05; p*<0.1

We employ logistic regression for the opposition coalition model. This model primarily follows Gandhi and Reuter (2013), which offers the most comprehensive analysis on pre-electoral coalition making in non-democracies. While their sample is comprised of only non-democracies (1946-2006), our sample is limited only to electoral authoritarian regimes.

Appendix G: Determinants of Turnout in Electoral Authoritarianism

	Model 18	Model 19	Model 20
DV	Turnout (Original)	Turnout (Original)	Turnout (IDEA)
Effective Electoral Threshold	-0.176***	-0.205***	-0.115*
	(0.040)	(0.056)	(0.063)
Parliamentarism		5.104***	4.475**
		(1.913)	(1.934)
Election Violence		-2.545	-0.681
		(1.935)	(1.684)
Ethno-Linguistic Fractionalization		-3.1	1.093
		(3.224)	(4.757)
Opposition Boycott		-4.043*	-1.253
		(2.205)	(1.683)
Electoral Fraud		-1.699	-0.145
		(1.605)	(1.987)
Logged GDP per capita		3.402***	4.884***
		(0.902)	(1.020)
Compulsory Voting System (IDEA)			-1.526
			(4.395)
Constant	81.20***	55.76***	23.13**
	(3.803)	(10.080)	(10.170)
Regional Dummies	Yes	Yes	Yes
Hal-Decade Dummies	Yes	Yes	Yes
Number of Countries	93	82	80
Observations	364	314	283
R-Squared	0.424	0.420	0.545
Wald Chi2	30.05***	318.80***	136.85***

Note: Prais-Winsten regression with PCSEs is employed. p***<0.01; p**<0.05; p*<0.1. "Turnout (Original)" indicates that the dependent variable is measured by our original data. "Turnout (IDEA)" indicates the dependent variable is measured using the voter turnout dataset complied by International IDEA (available at http://www.idea.int/vt/index.cfm).