# The Impact of Institutional Coup-Proofing on Coup Attempts and Coup Outcomes

TOBIAS BÖHMELT
*University of Essex and ETH Zurich*

ULRICH PILSTER
*University of Essex*

*Coup-proofing pertains to political leaders' strategies that will prevent groups inside or outside the state apparatus from seizing power via a coup d'état. One particular form of these strategies divides a country's military into rivaling organizations, thereby creating an artificial balance between and structural obstacles for the armed forces. Despite the general claim that this institutional coup-proofing is indeed effective, a recent empirical study does not obtain evidence for a negative impact on the risk of coup attempts or coup outcomes. The authors take this finding as a motivation for their re-evaluation of the effect of institutional coup-proofing on coup risk and outcomes. By developing an argument that rests on the concepts of collective action and polarization, it is contended that institutional coup-proofing and coups are characterized by a U-shaped relationship: Institutional coup-proofing is likely to lower the likelihood of coup onsets and successful outcomes, yet only until a tipping point of about two equally strong military organizations. After this turning point, the risk of coup onset as well as coup success may increase again. Using time-series cross-section data for 1975–1999, the authors find strong and robust support for their claims in terms of coup onset, but not coup outcomes.*

*KEYWORDS   collective action, counterbalancing, coup-proofing, polarization*

Address correspondence to Tobias Böhmelt, University of Essex, Department of Government, Wivenhoe Park, Colchester CO4 3SQ, United Kingdom. E-mail: tbohmelt@essex.ac.uk

In his pioneering study *Coup d'État: A Practical Handbook*, Luttwak (1969:27) defines a *coup* as "the infiltration of a small, but critical, segment of the state apparatus, which is then used to displace the government from its control of the remainder." Coups are commonly seen as rare events, but the past has witnessed numerous such attempts to overthrow the government (Powell and Thyne 2011). Most recently, the developments in Mali and Egypt have underlined the importance of coups d'état, and they remain a phenomenon that attracts both scholarly and decision makers' attention: not only with regard to the factors leading to coups, but also in terms of their consequences, which may be extreme and potentially highly negative such as civil wars, permanent instability in a country, or—especially crucial from the perspective of state leaders—the death of the incumbent.

It is thus not surprising that political leaders frequently employ a variety of strategies for subordinating groups and potential rivalries inside or outside the state apparatus in order to prevent them from seizing political power via a coup d'état (Feaver 1992; Quinlivan 1999; see also Belkin 2005; Belkin and Schofer 2003, 2005; Pilster and Böhmelt 2011, 2012). While state leaders may substitute different techniques to a certain degree, coup-proofing of an *institutional* or *structural* form is likely to be the crucial element of any coup-proofing approach (see Pilster and Böhmelt 2011, 2012). Specifically, this "counterbalancing" divides a country's military manpower into potentially competing organizations, thereby creating an artificial balance between and structural obstacles for the armed forces (see Belkin and Schofer 2003, 2005; Pilster and Böhmelt 2011, 2012).[1] This technique therefore not only seeks to create rivalries between existing military units, but also establishes paramilitary organizations with command structures outside the regular army. As a result, any military unit that may intend to overthrow a current regime in power has to take into account a likely confrontation with independent capacities of other military and/or paramilitary forces (Quinlivan 1999:141f; Belkin 2005; see also Belkin and Schofer 2003, 2005; Pilster and Böhmelt 2011, 2012).

The essential claim behind the relationship of institutional coup-proofing on one hand and coup risk and coup outcomes on the other hand is, not surprisingly, that the former has a suppressing impact on the latter. In a recent study, however, Powell (2012) relies on thorough theoretical arguments and a rigorous research design, but he is not able to find a statistically significant relationship between the structural coup-proofing variable developed by Pilster and Böhmelt (2011, 2012) and coup attempts or outcomes. This finding seems somewhat puzzling: Why did previous studies, which

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[1]In the following, we use the terms *institutional coup-proofing, structural coup-proofing*, and *counterbalancing* interchangeably.

strongly relied on this argument both theoretically and empirically, nevertheless produced meaningful findings if institutional coup-proofing does not negatively influence the likelihood of coup attempts and their outcomes? From a somewhat policy perspective: Why do state leaders frequently employ measures of structural coup-proofing if they are ultimately ineffective in preventing or fighting coups? Our analysis takes Powell's (2012) finding and these corresponding questions as a motivation for the re-evaluation of the relationship between structural coup-proofing in the form of the effective number of military organizations (Pilster and Böhmelt 2011, 2012) and coup onsets as well as outcomes.

In the next section, we briefly review the relevant literature. Afterwards, we develop a new theoretical claim along the concepts of collective action (see, for example, Buchanan and Tullock 1962; Chamberlain 1974; Olson 1965) and polarization (see, for example, Esteban and Ray 1994, 1999, 2008; Esteban and Schneider 2008; Schneider and Wiesehomeier 2008) that argues for a U-shaped relationship between structural coup-proofing and coup onsets as well as outcomes. After our theoretical considerations, we describe the research design and summarize the results in the third and fourth sections respectively. We use time-series cross-section data for 1975–1999 and find strong support for our argument with regards to coup onsets, but less in terms of coup outcomes. We finish the article with a comprehensive discussion of our findings, the underlying policy implications, and avenues for further research.

## A BRIEF OVERVIEW OF THE LITERATURE

The primary advantage of structural coup-proofing over other strategies is that counterbalancing can check the ability of any military organization to conduct a coup, while manipulating the military's disposition to intervene (Belkin 2005:29ff). Empirical studies also support the omnipresence of counterbalancing in portfolios of coop-proofing strategies. For example, all Sub-Saharan African states that did not experience a military coup by 1980 created numerous rivaling military and paramilitary organizations (Goldsworthy 1980:73). Similarly, Janowitz (1977:3ff) identifies the division of a country's military into various (para-)military organizations as one of the central causes of regime stability in the 1960s and 1970s. Moreover, Makara (2013:335) examines civil–military relations in Arab Spring countries and highlights that coup-proofing strategies, including structural coup-proofing approaches, "have virtually eliminated coup attempts since 1980" in the Middle East. Finally, Pilster and Böhmelt (2012, see also 2011) operationalize institutional coup-proofing via the *effective number of military organizations* in a country and obtain evidence that autocracies tend to invest more in

counterbalancing than democracies.[2] Especially the former may be prone to coups d'état (see Belkin 2005; Belkin and Schofer 2003, 2005; Powell and Thyne 2011).

Several studies rely on the argument that the coup-proofing has a suppressing impact on coup risk and successful coup outcomes. For example, Belkin and Schofer (2003, 2005) examine the impact of coup risk on coup-proofing in the form of counterbalancing. The authors find that a higher likelihood of coups does increase political leaders' structural coup-proofing efforts. Pilster and Böhmelt (2011), additionally, show that increases in counterbalancing have detrimentally affected states' battlefield outcomes between 1967 and 1999. In a related fashion, Powell (Forthcoming) argues that the impact of coup vulnerability on the initiation of militarized interstate disputes decreases with a higher number of military organizations. By using Pilster and Böhmelt's (2011, 2012) institutional coup-proofing measure, he obtains empirical evidence for his claim. Finally, Pilster, Böhmelt, and Tago (2014) demonstrate that institutional coup-proofing significantly reduces the likelihood of genocides during state-failure years. In conclusion, however, a shortcoming of all those studies is that their theories and empirical results merely take the negative impact of structural coup-proofing on coup risk and coup outcomes as granted—without actually testing for it.

In light of this, we develop a new theoretical argument in the next section that builds on the concepts of collective action (see, for example, Buchanan and Tullock 1962; Chamberlain 1974; Olson 1965) and polarization (see, for example, Esteban and Ray 1994, 1999, 2008; Esteban and Schneider 2008; Schneider and Wiesehomeier 2008). On one hand, and consistent with the argument summarized previously, we indeed claim that we should observe a lower likelihood of coup onsets and successful coup outcomes in those countries that invest more in institutional coup-proofing than other states. More precisely, we argue that if a country invests more in structural coup-proofing to the extent that its organizational military structure is highly polarized, that is, if about two equally strong military organizations exist, the potential costs of a coup are extremely high, and this cost may serve as the guarantor of the status quo (Esteban and Ray 2008, see also 1994). On the other hand, however, the risk of a coup as such and the likelihood of its being successful should increase again in those states that have a highly diverse or fractionalized military structure in the form of numerous, that is, more than two military organizations. Under those circumstances, the different sections of the armed forces essentially face a collective action problem, which could make it increasingly difficult in turn that effective counterbalancing is signaled or does actually occur (Buchanan and Tullock

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[2]We refer the reader to Pilster and Böhmelt (2011, 2012) for a comprehensive overview of the term *effective military organizations*. That said, we describe the operationalization of this variable in the research design.

1962; Chamberlain 1974; Olson 1965). Ultimately, we therefore contend that a U-shaped relationship characterizes institutional coup-proofing on the one hand and coup risk as well as outcomes on the other hand: Coup-proofing strategies can lower the likelihood of coups and their chances of success until a tipping point of two equally strong military organizations. After this turning point, however, this likelihood increases again.

## INSTITUTIONAL COUP-PROOFING, COLLECTIVE ACTION, AND POLARIZATION: A THEORETICAL REVISION

From a rationalist perspective, a military organization could challenge the status quo and try overthrowing the government via a coup whenever the payoffs associated with such a turnover exceed the benefits stemming from the status quo. The main purpose of institutional coup-proofing, against this background, is the division of a country's military into different organizations, leading to an artificial balance between the distinctive sections of the armed forces and creating structural obstacles for them. Any military unit that intends to overthrow a current regime in power, thus, has to take into account a likely confrontation with other military and/or paramilitary organizations (Belkin 2005; Quinlivan 1999:141f).

Hence, a state leader more strongly engaged in structural coup-proofing could increase her leverage to suppress a coup. For example, Gabon's former president Omar Bongo established a presidential guard under his direct personal control to suppress any potential coup. This elite unit was also bigger and much better equipped than the regular army (Decalo 1989:562). Similarly, following a mutiny of soldiers in 1980, the Maltese government transferred major units of its armed forces into a newly established "Task Force" and additionally created a new paramilitary corps, the "Id-Dejma," which was roughly equal to the army in terms of size and equipment (Warrington 1998:189f). In the end, a highly fractionalized military force structure, that is, that is characterized by multiple military and paramilitary organizations, should *in theory* decrease the payoffs linked to a military coup because of the higher costs caused by more potentially rivaling military units that principally have the ability to confront a coup attempt.

However, we contend that it is likely that there are decreasing returns arising from more counterbalancing. Generally, coup-proofing has been found to have a number of negative consequences. As indicated previously, Pilster and Böhmelt (2011) show that higher coup-proofing leads to reduced military effectiveness in interstate wars. Moreover, Roessler (2011) emphasizes that coup-proofing may serve the purpose of reducing coups but increases the likelihood of rebellion. In our particular case, however, we claim that decreasing returns are in fact given with respect to coup risks

and outcomes as such, since we claim that multiple, diverse, and competing military organizations in a country are only to a certain extent more effective in containing any potential coup attempt stemming from other military organizations. Anecdotal evidence points in this direction as well. For example, Idi Amin's coup against Milton Obote in 1971 faced little resistance despite not being widely supported in the armed forces. The reason for success is that Obote's "factional fragmentation" of the armed forces kept it from being able to organize resistance (Decalo 1990).[3]

More formally, the larger the number of military organizations in a country, the higher the likelihood of unanticipated problems hindering coordination, which ultimately may cause a sufficiently large number of military organizations not to balance another unit attempting a coup significantly more than a smaller set of military organizations would have done. In more detail, public choice theorists argue that the complexity or organizational costs for providing a good—in our case the prevention of a coup or the balancing of other military organizations—rise with a larger number of actors (Buchanan and Tullock 1962; Chamberlain 1974; Olson 1965).

In light of the actual number of actors in our data that we analyze in this article, it seems worth noting here that it is not the absolute size of a group that matters, but the relative size. For instance, Olson (1965:32) emphasizes that "there is a tendency for even the smallest groups to provide suboptimal amounts of a collective good." Hence, although we will in fact be dealing with (absolutely speaking) rather small groups of a maximum size of about four effective military organizations (as discussed in the following research design section), the point is that the collective action problem is larger, for example, for a group of four actors than a group of three actors. Olson (1965:36) states accordingly that "[t]he larger a group is, the farther it will fall short of obtaining an optimal supply of any collective good, and the less likely that it will act to obtain even a minimal amount of such a good. In short, the larger the group, the less it will further its common interests." Similarly, Esteban and Ray (2001:663) highlight that "the larger the group, the smaller is the perceived effect of an individual defection." Finally, "the prospects of cooperation diminish as the number of players increases" (Oye 1986:18). Put differently, the (marginal) impact of adding one additional actor to a group of *any* size is likely to worsen the problem of collective action at least to some degree. In the words of Isaac, Walker, and Williams (1994:4f): "[a] logical response is that as the size of the group increases, the marginal return from the group good declines." Hence, increases in group size, regardless of the absolute size, lead to smaller marginal benefits from the good in question.

In our context of military organizations and coups, organizational costs increase with group size in two different ways. First, the larger a group

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[3]We thank an anonymous reviewer for highlighting this crucial example.

of military organizations trying to balance each other, the more likely it is that those units are characterized by a greater heterogeneity of interests in total (Snidal 1994). Second, military organizations may participate in balancing efforts without contributing much or anything at all. Under these circumstances, enforcement through monitoring and/or sanctioning is essential in order to prevent military organizations from free-riding on other units' balancing efforts (Fearon 1998). Monitoring procedures ensure that contributions become perceptible for all actors involved. In addition, only the prospect of detecting noncontributions to an effort of counterbalancing allows military organizations—and even the political leaders—to sanction defectors accordingly (Axelrod and Keohane 1985:235; North 1990:57; Olson 1965:45f). However, with an increasing number of military organizations, it is more costly to organize monitoring devices that provide perceptibility of individual contributions, and therefore enforcing actors' compliance becomes less likely to succeed (Axelrod and Keohane 1985:234ff; Frohlich and Oppenheimer 1970; North 1990:57; Olson 1965:36; see also Esteban and Schneider 2008:136). Ultimately, this may not only signal that counterbalancing is unlikely to work effectively, which could increase the risk of a coup d'état, but also that the (para-) military forces are ineffective in fighting a coup once it broke out, that is, the likelihood of government overthrows increases when there are in fact multiple military and paramilitary organizations.

If subscribing to these opposing arguments, that is, higher investments in structural coup-proofing generally increase state leaders' and military organizations' leverage in preventing coups and fighting them, but these investments also increase organizational costs that hamper their counterbalancing and coup-fighting capacities, we expect to find a curvilinear U-shaped relationship between institutional coup-proofing on the one hand and the likelihood of a coup attempts and coup outcomes on the other hand.[4] Still, we are left with the question where exactly we might find the turning point in this curvilinear relationship. While this might be answered by the following empirical analysis of our data, we believe that there are strong theoretical grounds *ex ante* to argue that the decisive tipping point should be at *two* equally strong military organizations.

The underlying rationale for this claim is taken from the polarization literature (for example, Esteban and Ray 1994, 1999, 2008; Esteban and Schneider 2008; Schneider and Wiesehomeier 2008). *Polarization* refers to "the extent to which a group of actors is clustered around a small number of distant poles" (Esteban and Schneider 2008:133), and it results from the interaction of within-group identity and cross-group alienation (Esteban

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[4]This argument is somewhat similar to Ellingsen (2000) and Collier and Hoeffler (1998; 2004), who argue that the relationship between the number of groups within a society and the risk of civil war is of a curvilinear nature (see also Schneider and Wiesehomeier 2010:1099).

and Ray 1994). Essentially, this setup can be applied to a country's level of counterbalancing.[5] Some military organizations are characterized by a homogeneous within-group identity and, due to cross-group alienation, they compete with other military organizations for leverage, influence, and so forth. The highest level of polarization of the military forces in a country is then given with a bimodal distribution of the military organizations over opposing goals (Esteban and Schneider 2008:132f), that is, if there are two equally strong military organizations balancing each other (see also Esteban and Ray 1994, 2008).

The relation of this concept to our interest in the impact of structural coup-proofing on the risk of coup onsets and their outcomes can now be easily established (Esteban and Ray 1994, 1999, 2008; Esteban and Schneider 2008:134). As stated previously, if a military organization intends to or actually does attempt to overthrow the government, it must take into account the potential balancing efforts of any other existing military organization. This is the core of structural coup-proofing. Balancing efforts of other organizations lead to conflict between military organizations, inducing "losses competing groups impose on each other to reach their preferred option" (Esteban and Schneider 2008:134). Esteban and Ray (1999, 2008:165; see also Esteban and Schneider 2008) then conclude that the costs imposed on military organizations, as in our context, are highest when there are exactly two equally strong such organizations. Ultimately, due to the high costs at stake for a coup that are partly caused by fewer coordination problems (Schneider and Wiesehomeier 2010:1101) in this situation, it becomes increasingly unlikely that any of the two military organizations will break the status quo, inducing the outcome that "bipolar situations, as they create a huge cost in the case of open conflict, easily sustain status quo agreements" (Esteban and Schneider 2008:135; see also Schneider and Wiesehomeier 2010:1100; Waltz 1964; Zagare and Kilgour 2000). Moreover, the implication follows that in a bimodal distribution of the military organizations, that is, when there are two equally strong such organizations, the likelihood of a successful coup should also be lowest.

From a different perspective, due to the collective action problems outlined previously, the potential costs associated with a coup should be substantially lower in countries with a highly fractionalized military organizational structure (see also Esteban and Ray 2008:165). This is likely to increase the likelihood that a military organization will initiate a coup and, in turn, is also successful. However, if a country's military force structure is highly polarized, that is, if two equally strong rivaling military organizations do exist, this signals that the potential costs of a coup are extremely

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[5]Also note that Esteban and Ray (1994:820) already state that "the phenomenon of polarization is closely linked to the generation of tensions, to the possibilities of articulated rebellion and revolt, and to the existence of social unrest in general." Coups d'état and coup-proofing clearly belong to this cluster.

high, because it may be approximately certain that the second military unit will intervene and counterbalance the coup attempt by the first organization (see Esteban and Ray 2008). Eventually, in highly polarized military structures, the occurrence of a coup should be rare, and the rate of success is likely to be low. Anecdotal evidence also points to how rivalries between two equally strong military organizations can prevent them from engaging in a coup. Philippine dictator Ferdinand Marcos, for instance, maximized the competition between the Philippine Army and the Constabulary to politically neutralize both armed organizations (Lee 2008:495).

To recapitulate, our argument on the relationship between institutional coup-proofing on the one hand and coup risk as well as outcomes on the other hand starts with the leverage for balancing other organizations, before focusing on problems of collective action and the polarization of the armed forces. In short, we state the following expectations: (1) institutional coup-proofing and the likelihood of a coup attempt as well as its outcome are characterized by a U-shaped relationship, since both a small and a very large number of rivaling military organizations in a country are less likely than two equally strong military organizations to engage in counterbalancing effectively; (2) the risk of a coup and its likelihood of success should consequently be high in countries with either low or high institutional coup-proofing, but lowest in countries with a polarized level of institutional coup-proofing.

Although descriptive in nature and arguably being selective, the following recent examples provide further anecdotal evidence for our theory. Despite institutional coup-proofing measures, Tunisia, Egypt, and Syria have seen very different outcomes in the context of the Arab Spring (Makara 2013): While the military defected to the opposition movement and was itself highly active in overthrowing the regimes in Tunisia and Egypt, the military remained largely loyal to the ruling government under Assad in Syria. Interestingly, the distribution of military organizations mirrors our previous rationale: Syria had 1,840 effective military organizations in 2011 according to our data described in the following, while Tunisia and Egypt could rely on 1,742 and 2,414 organizations respectively in that year. Hence, according to our framework, the *ex ante* risk of a coup and the likelihood of a successful outcome were relatively higher in Tunisia and Egypt as compared to Syria—and, in fact, coups involving the military did successfully overthrow the government in the former two states, while the military remained loyal in Syria (Makara 2013:343).

## RESEARCH DESIGN

### Data, Dependent Variables, and Methodology

For empirically testing our theory, we employ Powell's (2012) data structure that relies on Powell and Thyne's (2011) data on coups between

1950 and 2010. A *coup attempt* is defined as an "attempt by the military or other elites within the state apparatus to unseat the sitting head of government using unconstitutional means" (Powell and Thyne 2011:249ff). Powell (2012:1026) recoded the data from a count in a country-year to "a dichotomous measure that considers whether or not at least one attempt was made in that year." Thus, one of our dependent variables takes the value of 1 if at least one coup attempt occurred in a specific country-year and 0 otherwise. Having said that, we also use coup success as a second dependent variable, which receives the value of 1 if a "sitting head of government is removed from office for at least one week" (Powell 2012:1026). In line with Pilster and Böhmelt (2012), we restrict our analysis to a post-1975 sample.[6] Ultimately, we have monadic time-series cross-section data that, after accounting for missing values, cover the period 1975–1999. Out of the 3,519 country-years in this data set, 147 receive the value of 1 on our coup attempt dependent variable; in turn, 73 attempts out of the 147 have been successful.

We consider both coup onset and success in one model at the same time at least due to two reasons. First, Powell (2012) contends that the factors leading to coups may also influence their outcomes. Both stages are intertwined, and ignoring one of them might bias the results of the other by either over- or underestimating the findings. Second, and somewhat similar to the first reason, especially Esteban and Ray (2008) argue that a high degree of polarization may not only influence the risk of conflict onset, but also its intensity. In more detail, while polarization is likely to foster the status quo, it could also lead to more intense fighting once a conflict has broken out. Against this background, we use a Heckman-type probit setup (Van de Ven and Van Praag 1981; see also Heckman 1979), which mirrors Powell's (2012) research design. After assessing the selection process there, however, we move to logistic regression models to test our expectation on coup onsets.

Finally, because of the potential temporal dependencies, we include a coup-years variable and different sets of cubic splines (Beck, Katz, and Tucker 1998) in each of our models, while we report robust standard errors to correct for the bias due to nonconstant variances.

## Explanatory Variables

The central logic for the deterrence of coups, which is the central element behind structural coup-proofing, "is to prevent troops from moving on the centers of the regime, a task best accomplished by a ground-based (parallel) military" (Quinlivan 1999:142). Based on this, Pilster and Böhmelt (2011,

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[6]In 1975, the share of states in the international system covered by the Military Balance (1975–1999), from which Pilster and Böhmelt (2011, 2012) derived the data for the structural coup-proofing variable, increased to about 80% for the first time.

2012) developed a measure of counterbalancing that seeks to improve and extend the work of Belkin and Schofer (2003, 2005) by focusing on ground-based forces, as these are the only forces whose independent coercive capacities can be used to balance any military unit considering or trying to overthrow a regime.

This variable, also used by Powell (2012) although found to have no impact when introduced linearly into his models, incorporates information on both the number of rivaling military organizations and their respective strengths to capture the degree to which a state divides its military into rivaling organizations.[7] For that purpose, Pilster and Böhmelt (2011, 2012), firstly, identified all ground-combat compatible military organizations of a country using data from the "Military Balance" statistics provided by the International Institute for Strategic Studies (1967–1999). Second, they gathered information on the personnel in each of these organizations, focusing on regulars and active reserves, but excluding standing reserve forces. Afterwards, the degree of a country's counterbalancing efforts is calculated via the effective number of ground-combat compatible military and paramilitary organizations (see Laakso and Taagepera 1979),

$$C_{it} = \frac{1}{\sum_{j} s^2_{jit}}$$

where $s_{jit}$ is the personnel share of the ground-combat compatible military or paramilitary organizations $j$ in country $i$ in year $t$. A value of 1 of $C_{it}$— or what we refer to in the following as *Coup-Proofing (Effective Orgs.)* in order to be consistent with Powell (2012)—consequently stands for only one effective ground-combat military organization, while higher values signify that various military and paramilitary organizations do exist.

This variable also fulfills the basic criteria that Esteban and Ray (1994:824) highlight for any polarization measure. More specifically, first, there must be a high degree of homogeneity within each group. Second, there must be a high degree of heterogeneity across groups. Finally, there must be a small number of significantly sized groups so that groups of insignificant size carry little weight. While the first two requirements are clearly given due to the focus on distinct military organizations that are yet coherent internally, the third feature is met by the weight that is allocated to each organization according to its strength, that is, military manpower (see Laakso and Taagepera 1979). In order to capture the curvilinear impact of *Coup-Proofing (Effective Orgs.)* on the dependent variable, we also include

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[7]Pilster and Böhmelt (2011, 2012) argue that both kinds of information should be incorporated: a country that has a presidential guard of, for example, 1,000 men, in addition to an army of 99,000 troops should not receive the same value as a country that possesses two equally sized military organizations of 50,000 men each.

its square term in most of our following models except for the replication of Powell's (2012) analysis.

Note, however, that the quality of data in the Military Balance is likely to be far from perfect, and it is in fact likely that inconsistencies do exist. Given that *Coup-Proofing (Effective Orgs.)* exclusively relies on the Military Balance, problems and inconsistencies might persist for this measure. Ultimately, in order to address these concerns, one should assess the degree of inconsistency and, most preferably, should demonstrate that it is actually not as severe as we might have originally anticipated. First, we would like to point to the pairwise correlation of a lagged version of *Coup-Proofing (Effective Orgs.)* and the variable in the actual year under study. Any trend over time in *Coup-Proofing (Effective Orgs.)* is modelled by the lagged variable. Given the fairly large size of the pairwise correlation (Pearson's *r* of .8920; *p* < .0000), we conclude that a substantial amount of variance in *Coup-Proofing (Effective Orgs.)* at point *t* is explained by its values in *t–1*. Note that if large inconsistencies would exist in the data, it would be unlikely that we obtained such a high value for the pairwise correlation. Moreover, secondly, note that Pilster and Böhmelt (2012:361f) have assessed the inconsistencies in the Military Balance more thoroughly, and we refer the interested reader to this study for a more comprehensive discussion than we can possibly offer here.

Table 1 gives an overview of the control covariates, which are essentially taken from Powell (2012). In more detail, first, we include two variables that capture the economic conditions in a country: Ch. GDP per capita and GDP per capita. The former pertains to the percent year-to-year change in

**TABLE 1** Operationalization of and Sources for Control Covariates

| Variable Name | Indicator | Source |
|---|---|---|
| Ch. GDP per capita | Percent year-to-year change in GDP per capita, held in real 1996 US dollars | Gleditsch (2002) |
| GDP per capita | GDP per capita held in real 1996 US dollars | Gleditsch (2002) |
| Instability | Presence of assassinations, purging of government officials, guerilla activity, protests, riots, and strikes | Banks (2001) |
| Democracy | States that score +5 or higher on the Polity IV index | Marshall and Jaggers (2004) |
| Authoritarian | States that score –5 or lower on the Polity IV index | Marshall and Jaggers (2004) |
| Ch. Mil. Exp. | Percent year-to-year change in a country's military expenditure | Singer, Bremer, and Stuckey (1972) |
| Exp. per Soldier | A country's military expenditure per soldier according to the Correlates of War project | Singer et al. (1972) |
| Mil. Personnel | Composition of the armed forces in raw numbers | Singer et al. (1972) |
| Mil. Regime | Dichotomous indicator for whether a country has a military regime or not | Banks (2001) |

GDP per capita, while the latter is the actual income level per year. Both variables are held in real 1996 US dollars. From a theoretical point of view, Powell (2012:1028) states that the better the economic performance, the less likely it is that a coup breaks out. The underlying mechanism is that good economic conditions induce regime legitimacy, which in turn makes it less likely that there is demand for regime change. Arguably, this also affects coup outcomes.

Second, regime legitimacy may not only be affected by economic factors, but also shaped by political influences. Powell (2012:1028) considers regime type variables and an item on antiregime activities for this. On one hand, there is *Instability*, which captures the presence of assassinations, purging of governmental officials, guerrilla activity, protests, riots, and strikes as coded by Banks (2001). The more of those activities exist, the more strongly a loss of regime legitimacy is being signaled. On the other hand, we include *Authoritarian* and *Democracy*. These two variables capture autocratic and democratic forms of government respectively; anocracies constitute the baseline category as a result. In general, democracies are less likely than authoritarian regimes to see the onset of coups as they are perceived as more legitimate (see also Lindberg and Clark 2008). Finally, we also follow Powell (2012:1028) by including a dichotomous variable on whether a country has a military regime or not. These types of regimes are frequently associated with a high risk of coups (Belkin and Schofer 2003; Thyne 2010).

Finally, we consider three variables that pertain to the strength of the military: the composition of the armed forces and military grievances as well as professionalism.[8] To this end, *Mil. Personnel* captures the size of a country's armed forces as coded by the Correlates of War Project. As argued by Powell (2012), the larger the military of a country, the less likely a coup will break out; however, the chances of successful coup outcomes increase with the size of the military. Moreover, a state's expenditure level per soldier and annual changes therein capture two factors: The higher the spending per soldier, the more content and professional is the military. Ultimately, this makes it more likely that the armed forces either respect the status quo (professionalism) or are content with current circumstances (lack of grievances).

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[8]In this context, an anonymous reviewer suggested the possibility that both counterbalancing and coups are driven by the political strength of the military in relation to civilian leaders. The relationship between military strength and coups is likely to be curvilinear: At low levels of military strength, the military is too weak to intervene in politics, while at high levels, it can secure its preferred policies without needing to intervene. Similarly, at low levels of military strength, leaders have no need to counterbalance. At high levels, it may be too risky a strategy. This suggests that the relationship between counterbalancing and coups may be spurious. Given the concerns about a spurious relationship between counterbalancing and coup onset, we now consider and discuss a set of models with fixed effects in the online appendix. Moreover, using data from the Archigos data set (Goemans, Gleditsch, and Chiozza 2009), we created a variable that counts the years since the last leadership change and, in turn, included this variable in our core models as well. Both robustness checks are summarized in the online appendix.

**TABLE 2** Descriptive Statistics of Main Variables

| Variable | N | Mean | Std. Dv. | Min | Max |
|---|---|---|---|---|---|
| Coup Success | 5973 | 0.015 | 0.123 | 0.000 | 1.000 |
| Coup Attempt | 5973 | 0.032 | 0.176 | 0.000 | 1.000 |
| Coup-Proofing (Effective Orgs.) | 3519 | 1.661 | 0.631 | 1.000 | 4.366 |
| Coup-Proofing (Effective Orgs.)$^2$ | 3519 | 3.156 | 2.509 | 1.000 | 19.065 |
| Ch. GDP per capita | 4450 | 0.013 | 0.066 | −0.590 | 0.777 |
| GDP per capita | 4501 | 8.269 | 1.085 | 5.639 | 10.738 |
| Instability | 3506 | 1.510 | 3.574 | 0.000 | 53.000 |
| Democracy | 4390 | 0.346 | 0.476 | 0.000 | 1.000 |
| Authoritarian | 4390 | 0.349 | 0.477 | 0.000 | 1.000 |
| Ch. Mil. Exp. | 4024 | 0.614 | 30.983 | −1.000 | 1965.292 |
| Exp. per Soldier | 4024 | 9.132 | 1.295 | 0.933 | 14.698 |
| Mil. Personnel | 4237 | 3.572 | 1.838 | 0.000 | 8.466 |
| Mil. Regime | 3674 | 0.144 | 0.351 | 0.000 | 1.000 |

Coup-years variable and splines for temporal correction omitted from presentation.

While this then decreases the likelihood of coups, the likelihood of a successful coup outcome should be higher due to better training, equipment, etc. (Powell 2012:1027).

Table 2 gives an overview of the descriptive statistics of the main variables we discussed.

## EMPIRICAL FINDINGS

We start our empirical analysis with the Heckman-type probit model (Van de Ven and Van Praag 1981; see also Heckman 1979). The results are summarized in Table 3 and highlight three conclusions. First, sample selection is unlikely to matter, and the two stages of coup onsets and coup outcomes are hardly associated with each other in our setup. The insignificant estimate of the $\rho$ parameter, that is, the estimate of the correlation of the error terms in the two stages, indicates that the selection model might not fit the data better than independent estimates of the selection and outcome equations (*Prob >* $\chi^2 = 0.1364$).

Secondly, the curvilinear specification in the first equation of the model, that is, that equation that explains the onset of coups d'état, reveals a U-shaped relationship between coup-proofing and coup onset. The turning point associated with *Coup-Proofing (Effective Orgs.)* lies at around two effective military organizations. Third and contrary to our additional theoretical expectations, we do not obtain a statistically significant impact of *Coup-Proofing (Effective Orgs.)* in a nonlinear setup at the second stage that focuses on the determinants of coup success. This last conclusion mirrors Powell (2012:1030). Ultimately, we conclude that our theoretical argument seems to work for coup attempts but is less likely to apply to coup outcomes.

**TABLE 3** The Determinants of Coup Outcomes and Attempts, 1975–1999

| Variable | Probit Model |
|---|---|
| *Outcome Variable: Coup Success* | |
| Ch. GDP per capita | −0.84 |
| | (1.45) |
| GDP per capita | −0.17 |
| | (0.17) |
| Instability | 0.06*** |
| | (0.02) |
| Democracy | 0.10 |
| | (0.30) |
| Authoritarian | −0.19 |
| | (0.24) |
| Ch. Mil. Exp. | −0.48* |
| | (0.25) |
| Exp. per Soldier | −0.02 |
| | (0.14) |
| Mil. Personnel | −0.18** |
| | (0.08) |
| Mil. Regime | 1.18*** |
| | (0.23) |
| Coup-Proofing (Effective Orgs.) | −0.12 |
| | (0.63) |
| Coup-Proofing (Effective Orgs.)$^2$ | 0.01 |
| | (0.15) |
| Constant Outcome Equation | 0.25 |
| | (1.35) |
| *Selection Variable: Coup Attempt* | |
| Ch. GDP per capita | −0.83 |
| | (0.64) |
| GDP per capita | −0.12 |
| | (0.07) |
| Instability | 0.05*** |
| | (0.01) |
| Democracy | −0.11 |
| | (0.15) |
| Authoritarian | −0.11 |
| | (0.15) |
| Ch. Mil. Exp. | −0.00 |
| | (0.00) |
| Exp. per Soldier | −0.06 |
| | (0.06) |
| Mil. Personnel | −0.07** |
| | (0.03) |
| Mil. Regime | 0.72*** |
| | (0.12) |
| Coup-Proofing (Effective Orgs.) | −0.66* |
| | (0.34) |
| Coup-Proofing (Effective Orgs.)$^2$ | 0.17** |
| | (0.08) |
| Constant Selection Equation | 0.85 |
| | (0.56) |

(*Continued*)

**TABLE 3** (Continued)

| Variable | Probit Model |
| --- | --- |
| Observations | 3060 |
| Log Pseudo Likelihood | −511.84 |
| $\rho$ | 0.64 |
| Wald $\chi^2$ | 59.41*** |

Robust standard errors in parentheses; coup-years variable and splines for temporal correction included but omitted from presentation.
*Significant at .1 level, **significant at .05 level, ***significant at .01 level (two-tailed).

A potential explanation for this, although of an ad hoc nature, is given by Fearon's (1994) general and immediate deterrence argument. Specifically, Fearon (1994:240) distinguishes between general and immediate deterrence. The former pertains to situations in which no threats are immediately issued, but the actors involved generally compete over some issue (or are in an adversarial relationship); the latter pertains to situations in which real threats have been issued or force has been used. Due to a self-selection mechanism into situations of immediate deterrence (see also Fearon 2002), which involves prior beliefs about adversaries' willingness to use force, the core implication of Fearon's (1994:245) work is that "hypotheses that are true for general deterrence may be exactly reversed for immediate deterrence." Consequently, "if general deterrence does fail, immediate deterrence will then be less likely to succeed" (Fearon 1994:245). This setup is related to our work in the following way: The concept of general deterrence can be applied to those domestic circumstances before a coup has been attempted, while immediate deterrence mirrors situations after we have observed the onset of a coup. If subscribing to this claim, structural coup-proofing has an effect on coup onset but is unrelated to what happens after we have seen the outbreak of a coup d'état.

Because of the insignificant estimate of the $\rho$ parameter, which suggests that selection may not be that much of a problem, and due to the insignificance of *Coup-Proofing (Effective Orgs.)* in its curvilinear specification in the outcome equation, we proceed with regular logit models that focus on the onset of coups only. The first model in Table 4 first mention replicates Powell's analysis (2012): This model contains the same variables as Powell's (2012) core model and, thus, we do not yet include the square term of *Coup-Proofing (Effective Orgs.)*. In line with Powell (2012), the results in Model 1 (Table 4) do not show a significant influence of the effective number of military organizations on coup attempts. Concerning the control variables, we find that all our results are virtually identical to those reported in Powell (2012). More specifically, the item on military personnel and the variable for temporal correction, that is, years since the last coup (not reported in the table, but included for calculation), are negatively related to coup

**TABLE 4** The Determinants of Coup Attempts, 1975–1999

|                                              | Model 1    | Model 2    | Model 3    | Model 4    |
| -------------------------------------------- | ---------- | ---------- | ---------- | ---------- |
| Ch. GDP per capita                           | −1.88      | −1.94      | −2.11*     |            |
|                                              | (1.28)     | (1.28)     | (1.25)     |            |
| GDP per capita                               | −0.24      | −0.24      | −0.41***   |            |
|                                              | (0.15)     | (0.16)     | (0.13)     |            |
| Instability                                  | 0.10***    | 0.09***    | 0.09***    |            |
|                                              | (0.02)     | (0.02)     | (0.02)     |            |
| Democracy                                    | −0.16      | −0.20      | −0.23      |            |
|                                              | (0.34)     | (0.34)     | (0.33)     |            |
| Authoritarian                                | −0.24      | −0.27      | −0.33      |            |
|                                              | (0.22)     | (0.23)     | (0.22)     |            |
| Ch. Mil. Exp.                                | −0.01      | −0.01      |            |            |
|                                              | (0.01)     | (0.01)     |            |            |
| Exp. per Soldier                             | −0.13      | −0.16      |            |            |
|                                              | (0.12)     | (0.12)     |            |            |
| Mil. Personnel                               | −0.16**    | −0.12*     |            |            |
|                                              | (0.07)     | (0.07)     |            |            |
| Mil. Regime                                  | 1.48***    | 1.49***    | 1.53***    |            |
|                                              | (0.27)     | (0.27)     | (0.26)     |            |
| Coup-Proofing (Effective Orgs.)              | 0.05       | −1.52**    | −2.13***   | −1.84***   |
|                                              | (0.18)     | (0.71)     | (0.63)     | (0.64)     |
| Coup-Proofing (Effective Orgs.)$^2$          |            | 0.39**     | 0.53***    | 0.46***    |
|                                              |            | (0.17)     | (0.14)     | (0.15)     |
| Observations                                 | 3060       | 3060       | 3209       | 3519       |
| Log Pseudo Likelihood                        | −438.39    | −435.92    | −454.76    | −527.19    |
| Wald $\chi^2$                                | 209.24***  | 209.56***  | 216.74***  | 132.33***  |

Robust standard errors in parentheses; coup-years variable and splines for temporal correction included, but omitted for presentation.

*Significant at .1 level, **significant at .05 level, ***significant at .01 level (two-tailed).

attempts and statistically significant. Moreover, the variables capturing instability and military regimes have positive and significant coefficient estimates. The exclusive difference to Powell (2012) is *Exp. per Soldier*, which does not achieve conventional levels of significance in our Model 1 (Table 4), although it is correctly signed. Note, however, that this variable is only marginally significant in Powell's (2012:1030) Model 2 with a one-tailed test.

We then re-estimated this first model by using different specifications and, most importantly, by including the square term of *Coup-Proofing (Effective Orgs.)*. To this end, Model 2 (Table 4) mirrors Model 1 (Table 4) apart from the additional consideration of the square term. Model 3 (Table 4) then drops the variables for military personnel, the change in military expenditure, and military expenditure per soldier. This not only allows us to include 149 additional observations in our analysis, but also omits those three variables that may capture military organizational features, which are at least partially consequences of the structural coup-proofing measure (see King, Keohane, and Verba 1994:173). Model 4 (Table 4), finally, follows Clarke (2005, 2009) in dropping all control variables from the analysis (with the

exception of the variables for temporal correction), as he shows that control covariates may actually increase the bias instead of decreasing it.

The results summarized in Models 2–4 (Table 4) demonstrate that the coefficient estimates for both *Coup-Proofing (Effective Orgs.)* as well as its square term are statistically significant at least at the 5% level. Equally important, *Coup-Proofing (Effective Orgs.)* has a negative sign throughout Models 2–4 (Table 4), while its square term is constantly positively signed. Hence, the relationship between the effective number of military organizations and the probability of a coup attempt has indeed a U-formed shape. Based on Table 4, our calculations further show that the turning point associated with *Coup-Proofing (Effective Orgs.)* lies more or less exactly at two effective military organizations on average.[9] This result precisely mirrors the predictions we derived from the polarization literature (see, for example, Esteban and Ray 1994; 1999; 2008; Esteban and Schneider 2008; Schneider and Wiesehomeier 2008). In order to facilitate interpretation, we calculated the predicted probability to see a coup onset in a given country-year according to the values of *Coup-Proofing (Effective Orgs.),* its square term, and any control variables. After these calculations, we plotted the results against *Coup-Proofing (Effective Orgs.),* and the findings based on Models 2 and 4 are shown in Figure 1.

Either panel in this figure further supports our initial results. Starting with only one effective military organization, the probability of coup onset
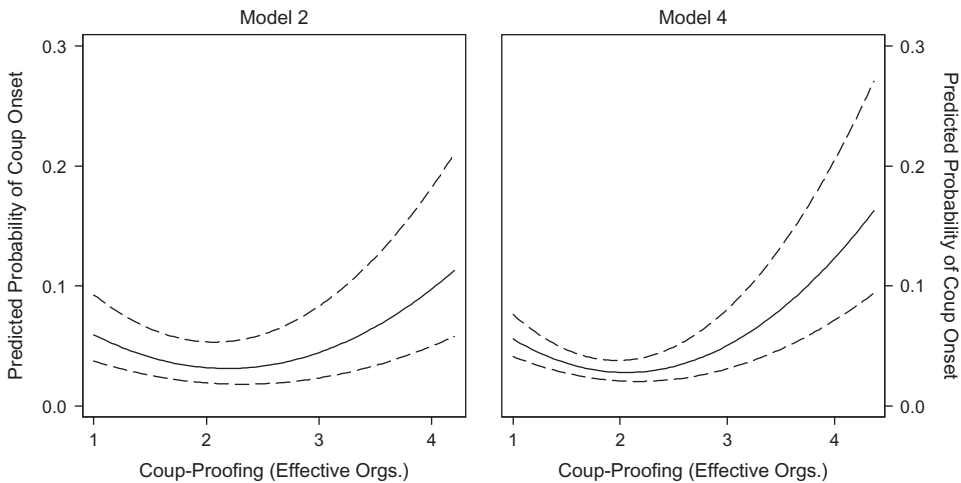


**FIGURE 1** Predicted probabilities of coup attempt onset. Dashed lines signify 90% confidence intervals. Left panel pertains to Model 2. Right panel pertains to Model 4. Predicted probabilities and corresponding confidence intervals are based on actual values of models' covariates.

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[9]Model 2: 1.94; Model 3: 2.01; Model 4: 2.00.

lies at around 5%. This probability then decreases and actually reaches its local minimum at around two effective rivaling military units. According to our models, the probability to see a coup under those circumstances, and especially under such a polarized military force structure, is at around 2.5%. In other words, increasing the effective number of military organizations from 1 to 2 reduces the predicted probability of a coup attempt by 50%—arguably, a very substantial effect. After this turning point, however, the probability of coup onset substantially increases again and reaches its maximum at about 10% (Model 2; Model 4: 15%). In combination with the distributive overview in Figure 2, note that these results demonstrate that for about 70% of the country-years between 1975 and 1999, an increase in *Coup-Proofing (Effective Orgs.)* decreases the probability of a coup attempt. However, a proliferation of structural coup-proofing raises the probability of a coup for a minority of less than 30% of the country-years in the period under study.

For further isolating the actual impact of *Coup-Proofing (Effective Orgs.)*, we then set all control variables to their respective median values and calculated the predicted probability for coup onset again. The left panel in Figure 3 summarizes our findings. While we obtain evidence for our proclaimed curvilinear relationship with a tipping point at two military organizations again, the more conservative calculations in this panel might indicate that the curve is largely flat at the beginning, with a substantial increase in the
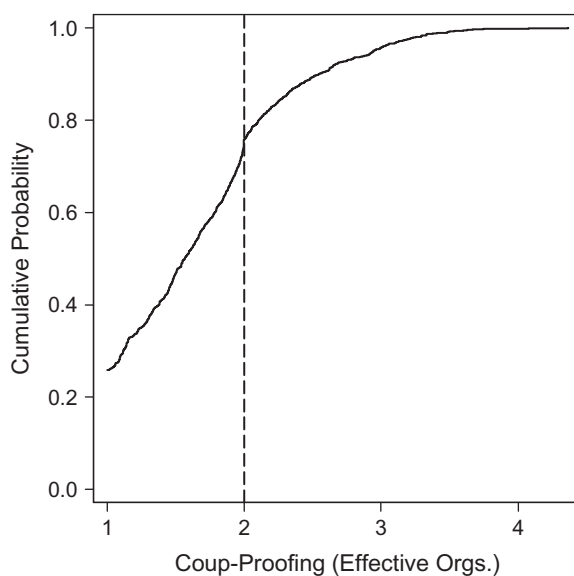


**FIGURE 2** Cumulative distribution function for *Coup-Proofing (Effective Orgs.)*. Most polarized military force structure (see Esteban and Ray 1994) marked with vertical dashed line.
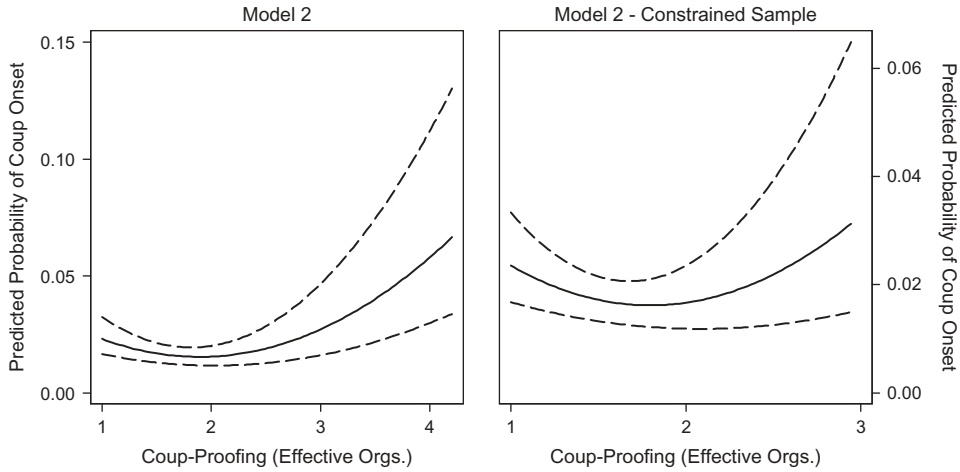
**FIGURE 3** Predicted probabilities of coup attempt onset—a closer examination. Dashed lines signify 90% confidence intervals. Predicted probabilities and corresponding confidence intervals are based on actual values of *Coup-Proofing (Effective Orgs.)* and its square term while all other variables are held at their median values. Left panel pertains to Model 2 and the full sample. Right panel pertains to Model 2 with a constrained sample that omits all values of *Coup-Proofing (Effective Orgs.)* higher than 2.94 (95% percentile).

predicted probability for countries with a very large number of effective military organizations, that is, more than 3.5 military organizations. After a closer examination of the data, however, this large increase is mainly driven by three coup attempts: the Philippines in 1986, the Philippines in 1987, and Afghanistan in 1990. Only 26 out of the 3,519 observations in our sample fall into this category, and this also explains the high uncertainty associated with the predicted probabilities, that is, the relatively large confidence intervals after 3.5 military organizations. In order to allow for a more meaningful interpretation, the right panel in Figure 3 only plots the predicted probabilities for observations that fall within the 95% percentile value of *Coup-Proofing (Effective Orgs.)*, that is, until about 2.94 military organizations (see also Figure 2). Nevertheless, the U-shaped relationship between the effective number of military organizations and the predicted probability of a coup attempt remains robust.

## CONCLUSION

Does institutional coup-proofing prevent coups from occurring? If coups occur, can institutional coup-proofing fight coup attempts effectively? The previous literature seems to argue so, without actually testing for this. The recent study of Powell (2012) departed from this by directly introducing

a variable on countries' effective number of military organizations in its models. Powell's (2012) findings, however, indicated that it is unlikely that a relationship between structural coup-proofing and coups exists, which appeared puzzling to us in light of several other analyses that strongly build on the stated claim. Our work thought of contributing to this by arguing for a curvilinear impact of counterbalancing on the likelihood of coups and their outcomes. By drawing on the collective action and polarization literatures, we claimed that some degree of coup-proofing helps in decreasing the risk of governmental overthrows and coup success, but only to a certain degree. After the turning point of about two effective military organizations, the likelihood to see a coup a well as its degree of success increases again.

Using time-series cross-section data for 1975–1999, we find strong and robust support for our claims in terms of coup onset, but not coup outcomes. In other words, our study does not contradict Powell (2012), but simply clarifies how an insignificant result has been obtained when introducing *Coup-Proofing (Effective Orgs.)* linearly into models on coup onsets. We furthermore showed that the argument of previous research that coup-proofing lowers the risk of coups d'état does not necessarily have to be wrong. In fact, this claim about a positive impact may essentially be very well given—it simply depends on the actual degree of fractionalization and polarization of a country's armed forces. Ultimately, we provide four related, albeit different, answers to the originally stated puzzle. First, the relationship between institutional coup-proofing and the likelihood of coup attempts is indeed curvilinear, with political leaders reducing the probability of a military coup most when they have about two equally strong (para-) military organizations at their disposal. Second, for about 70% of the country-years between 1975 and 1999, an increase in the effective number of military organizations decreases the probability of a coup attempt. However, thirdly, an increase in structural coup-proofing raises the probability of a coup for a minority of the country-years (less than 30%) in the period under study. Finally, structural coup-proofing has an effect on coup onset but is unrelated to what happens after we have seen the outbreak of a coup.

We see the identification of the true association between coup-proofing and the likelihood of coup onset as the main contribution of this article. In addition, our work may also help in furthering the debate on the role of polarization for inter- and intrastate conflict. Recall that Esteban and Ray (1994:820) emphasize that "the phenomenon of polarization is closely linked to the generation of tensions, to the possibilities of articulated rebellion and revolt, and to the existence of social unrest in general." After conducting our analyses and examining the findings, we are even more convinced that coups d'état and coup-proofing are not an exception in this context.

Apart from the academic contribution, our research may also have important policy implications. More specifically, in spite of other scholars' concerns that increasing polarization leads to more conflict (see Schneider

and Wiesehomeier 2010), polarization in a country's military organizational structure actually induces the most stable, that is, least coup-prone outcomes. While we certainly want to refrain from taking any normative positions in this regard, particularly since coup-proofing mainly occurs or is necessary in authoritarian states (Pilster and Böhmelt 2012), it does seem indeed that state leaders fearing coups may not have to invest that much for establishing a coup-proof state. Given the detrimental impact of high levels of fractionalization in a country's military force structure on military effectiveness (Pilster and Böhmelt 2011), this conclusion seems also important for countries that face external threats and, thus, may depend on the fighting capabilities of their military for survival.

The next steps in the research along our lines seem straightforward. We outline two of them. First, we found that structural coup-proofing has an effect on coup onset, but is unrelated to what happens after we have seen the outbreak of a coup. We offered a potential, yet ad hoc, explanation for this along the lines of Fearon's (1994, 2002) general and immediate deterrence argument. It is beyond the scope of this article to analyze in detail the forces behind the finding that structural coup-proofing is unrelated to coup outcomes or, in the words of Fearon (1994, 2002), situations of immediate deterrence. Future research might address this issue therefore more thoroughly than we could have possibly done here.

Second, and derived from the first point, if structural coup-proofing does not affect coup outcomes, does not prevent coup onsets after a certain point, and also negatively affects a country's military capability, why would political leaders ever want to create more than two military organizations? A possible answer is given by Janowitz (1977), who examines the creation of various paramilitary agencies for purposes other than coup-proofing, such as day-to-day policing and the exertion of state control. Using the case of India, Janowitz (1977:30f, 62f) points to "efforts to develop and expand the paramilitary units in order to relieve the armed forces of tactical involvement in coercive control." Is it thus possible that the very same reasons, that is, domestic political instability, that provoke political leaders to invest more in institutional coup-proofing (Belkin and Schofer 2003, 2005; Pilster and Böhmelt 2012) than is necessary also make coups more likely? The suggested two-stage model provided by Powell (2012) may contribute to clarifying this, but more research on the nexus of coup-proofing, coup onsets, and coup outcomes seems necessary.

## ACKNOWLEDGMENTS

materials necessary to replicate the empirical results of the paper are available in our online appendix at http://dvn.iq.harvard.edu/dvn/dv/internationalinteractions.

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