Public Choice (2016) 169:293–313
DOI 10.1007/s11127-016-0365-0

When to expect a coup d'état? An extreme bounds analysis of coup determinants

Martin Gassebner[1,2,4] · **Jerg Gutmann**[3] · **Stefan Voigt**[3,4]

Received: 21 August 2016 / Accepted: 25 August 2016 / Published online: 27 September 2016

Abstract Over the last several decades, both economists and political scientists have shown interest in coups d'état. Numerous studies have been dedicated to understanding the causes of coups. However, model uncertainty still looms large. About one hundred potential determinants of coups have been proposed, but no consensus has emerged on an established baseline model for analyzing coups. We address this problem by testing the sensitivity of inferences to over three million model permutations in an extreme bounds analysis. Overall, we test the robustness of 66 factors proposed in the empirical literature based on a monthly sample of 164 countries that covers the years 1952–2011. We find that slow economic growth rates, previous coup experiences, and other forms of political violence to be particularly conducive to inciting coups.

Keywords Coups d'état · Military coups · Coup-proofing · Extreme bounds analysis

JEL Classification D74 · F52 · H56 · K10

Electronic supplementary material The online version of this article (doi:10.1007/s11127-016-0365-0) contains supplementary material, which is available to authorized users.

✉ Martin Gassebner
gassebner@mak.uni-hannover.de

Jerg Gutmann
jerg.gutmann@uni-hamburg.de

Stefan Voigt
stefan.voigt@uni-hamburg.de

[1] Institute of Macroeconomics, University of Hannover, Königsworther Platz 1, 30167 Hannover, Germany

[2] KOF Swiss Economic Institute, Zurich, Switzerland

[3] Institute of Law and Economics, University of Hamburg, Johnsallee 35, 20148 Hamburg, Germany

[4] CESifo, Munich, Germany

"I have often wondered why people with guns ever obey people without them. And I think we still do not know—at least I do not." (Przeworski 2011, p. 180)

1 Introduction

Few political events attract as much attention as coups d'état. Their occurrence is almost inevitably linked to fierce debates about their normative desirability and their consequences for future political development in the respective country. A recent example is the ouster of Egypt's first democratically elected president, Mohamed Morsi, in 2013. Some observers claim that this coup was staged as a power grab by traditional elites and members of the military (including General El-Sisi, who was later elected president) to regain political control over the country. Others saw the coup as an intervention by the military to address a national crisis caused by civil unrest and a creeping Islamization of what was hitherto a rather secular Muslim majority country (Baker 2013). Both sides, however, would certainly agree that this event fundamentally altered the trajectory of Egypt's political development. Given their seeming momentousness, it is not surprising that political scientists, and to a lesser extent economists, have been extremely interested in the causes, as well as the effects of coups and have studied them for decades.

Powell and Thyne (2011, p. 252) define coups as "*illegal and overt attempts by the military or other elites within the state apparatus to unseat the sitting executive*". Note that according to this definition, the mere attempt to unseat the sitting executive is considered to be a coup. The definition also allows for the possibility of coups not being led by the military (which could be referred to as a military coup), but undertaken by any elite that is part of the state apparatus.[1] Whether or not the perpetrators of a coup are able to hold on to power for at least 7 days is often used to distinguish successful from unsuccessful coups. Here, however, we are not interested in the successes or failures of coups, but only in their determinants.

Aside from the obvious political turmoil they create, coups have adverse consequences for economic growth and investment. This was first demonstrated empirically by Barro (1991). Levine and Renelt (1992) confirm coups' detrimental impacts on investment, while Sala-i-Martin (1997) corroborates their negative effects on economic growth. According to Alesina et al. (1996), coups not only diminish economic growth rates, but are themselves possibly caused by adverse economic conditions in a country. Recent research has shed more light on the particular channels through which coups cause economic downturns. Leon (2014) demonstrates that coups (successful ones in particular) result in increased military spending (see also Bove and Nisticò 2014). Meyersson (2016) shows that the negative growth effect of coups d'état is driven by successful coups against democratic regimes. Successful coups lead to both worse democratic institutions and greater violence. Given these harmful effects, identifying the determinants of coups d'état is of great importance.

Starting in the 1970s, myriad empirical studies contributed evidence in an effort to establish the key determinants of coups. This body of work has led to a long list of factors claimed to be conducive to the staging of coups. Yet, little effort has been made to identify which of these factors, and their underlying theories, are supported by robust empirical

[1] We use the terms "coup" and "coup d'état" interchangeably here. "Military coups" are based on a narrower definition, as the perpetrators would have to include the military.

evidence relative to the most important competing explanations for the occurrence of coups. This problem is spelled out very openly by Feaver (1999, p. 224): "One of the weaknesses in the civil-military relations literature is that there are relatively few efforts to systematically compare explanatory factors···. Even where different sets of factors are pitted against each other, it is rare for the analyst to do more than give rough comparable weights to one or the other." A more encompassing test of the determinants of coups is not only desirable for recording and summarizing the state of academic knowledge in this field, but it also serves to support researchers in their selection of control variables when a new theory is subjected to econometric testing. As it is, empirical studies have not converged on a homogenous set of standard explanatory variables. This fact might incentivize researchers to select model specifications that back their own theoretical priors with seemingly conclusive and robust empirical evidence.

In this paper, we assume that existing theories alone cannot provide sufficient guidance for researchers in specifying empirical models that describe the occurrence of coups most appropriately. To discover which candidate variables are the most likely explanations for coups, we propose to follow the recommendation of Leamer (1983, 1985) and apply extreme bounds analysis (EBA) to study the determinants of coups. Although Leamer's argument was broader and concerned all kinds of sensitivity analyses, we focus here on testing the sensitivity of regression results to permutations of the set of possible independent variables.[2] This approach was popularized in economics by Levine and Renelt (1992) and Sala-i-Martin (1997).

The idea behind EBA is not to estimate a small set of model specifications and hope that the true model of the data-generating process is among them, but to estimate millions of models and show that the assumed model specification is largely inconsequential for statistical inferences regarding some variables. If a variable does not pass the EBA test, this should not be interpreted as evidence that this factor is irrelevant for explaining the incidence of coups. If, however, a variable does pass this very rigorous test, the finding indicates that the respective variable may be a core determinant of coups and should be considered when alternative explanations are tested empirically.

Our contribution is to identify a set of "robust" determinants of coups that will inform both researchers and policy-makers regarding which predictors of coups receive the most systematic support from the data. Thus far, one article by Miller et al. (2016) has applied EBA to the determinants of coups. There, EBA is used to test for the robustness of spatial diffusion only when a number of alternative weighting matrices are employed. Their results indicate that coups are not spatially contagious, independent of which connections between countries are assumed to be most relevant. In contrast, democratization seems systematically to diffuse regionally; strikes and protests likewise appear to spread across countries. Here we go one step further and put to the test all determinants of coups that have been used in the empirical literature.

Our analysis of the determinants of coups is one of the first to use monthly data for at least some independent variables (as well as the dependent variable, of course).[3] This allows us not only to obtain more precise estimates regarding the effect of democracy on

[2] As Plümper and Neumayer (2015) point out, this standard approach does not deal systematically with model uncertainty regarding distributional assumptions, measurement error processes, and so on. Thus, the results of an EBA can be considered "robust" only in such a narrow sense.

[3] We are aware of three studies of coup determinants that use monthly data: Thyne (2010), Bell (2016), and Johnson and Thyne (2016). Johnson and Thyne report similar findings when using country-day and country-year data. Eventually, they opt for using country-month data to increase precision without unnecessarily reducing standard errors by inflating the number of observations.

the incidence of coups, but also to measure more precisely the effect of recent coups on coup risk in the following years. In total, we estimate over three million regressions with either region- or country-fixed effects to ascertain the robustness of 66 potential coup determinants. Our results are encouraging, since most of the tested variables turn out not to be robust. Consequently, the required complexity of a model specified to explain the occurrence of coups is much less than the combined empirical literature seems to suggest.

Section 2 briefly summarizes the main theories of the determinants of coups. In Sect. 3, we introduce the dataset and the technical details of our EBA. Section 4 summarizes and interprets our findings. Section 5 concludes.

2 Theories of the determinants of coups

In this section, we introduce a framework to structure the theoretical arguments in the literature regarding the major causes of coups. Many explanations pointing to different factors that could facilitate coups and a number of alternative classifications of these factors have been proposed. Belkin and Schofer (2003), for example, distinguish structural from proximate causes of coups. Their classification, hence, focuses on the volatilities of these potential determinants. Our approach here is closer to the traditional view in the civil-military relations literature that separates motives from opportunities for staging coups. We start from the assumption that coup perpetrators act rationally and aspire to maximize their utility, as described in Becker's (1968) seminal contribution to the economics of crime. Thus, the decision to stage a coup against the executive branch of government depends on whether the expected utility of doing so

$$E(U) = p \times B + (1 - p) \times C \tag{1}$$

outweighs the level of utility of the *status quo*. Here, p is the probability of successfully removing the executive from office, B describes the payoff (i.e., the net benefit) of a successful coup for its perpetrators, and C is the negative payoff (i.e., their cost) in case the coup fails. In the following, we use this categorization to structure our theoretical arguments. Although some plausible determinants of coups are related to more than one element of this equation, we mention each factor only with respect to its seemingly most important incentivizing effect on coup perpetrators.

Starting with the benefit side of the equation formulated above, staging a coup would seem to be more attractive (and B should hence be larger) if one or more of the following three conditions are fulfilled. First, control over the state promises control over resources (which is, for instance, the case if property rights are not secure, natural resources are abundant, inequality is high and the state apparatus is large).[4] Second, the *status quo* of the elites or the military has been negatively affected by government policies that could be reversed easily in the aftermath of a coup (for instance, reduced military expenditure or liberalized economic sectors). In a similar vein, Tullock (2005) has argued that dictators maintain control by paying out benefits to those on whose loyalty they depend (see also Wintrobe 2012). If these payments are reduced by the incumbent regime, the net benefits of staging a coup may become positive for some actors. And third, the state does not depend financially on foreign governments being well-disposed toward it (e.g., low dependence on foreign aid, not being under programs of the IMF or the World Bank, limited foreign

[4] Given that resources can be used to protect the incumbent regime from threats, it is very plausible that coups frequently will be unsuccessful (Crespo Cuaresma et al. 2011).

trade). Coups are less likely if their failure would be very costly for the perpetrators, i.e., C is large. This is primarily the case when coups are directed against autocratic and repressive regimes because they are more likely to use harsh sanctions against perpetrators of a coup, such as exile, torture or outright executions.

In the literature, most of the predictors of coups are justified by their effect on the difficulty of organizing coups, which is reflected in the probability p of being successful. These factors can be sorted into four categories. First, countries are threatened by coups if their perpetrators can rise to power at low cost. This is, for example, the case when countries have an old, small, or predominantly rural population or when they are only sparsely inhabited. Since coups are likely carried out by professional soldiers, it could also make a difference if the military is large and financially well-endowed.

Second, countries may be more vulnerable to coups, if they have weak political institutions and lack informal institutions that could support resistance against a regime that itself came to power by staging a coup. This is the case for countries that are non-democratic or have a low income per capita, countries that recently gained independence or experienced regime change, as well as countries with low levels of education (Przeworski 2011).

Third, another important factor is whether the collective action that is necessary to prepare a coup can be organized effectively and with the required secrecy (see, for example, Kim 2016). This can be described as a coordination problem. Coup plotters not only need to exchange information, but also reassure each other about their willingness to participate in the coup. At the time of plotting the coup, they have to expect that the general population or significant parts of the political elites would accept a newly installed regime. Political instability and conflict, high population growth and inflation, as well as weak economic growth can help coup plotters to coordinate and form positive expectations about their chances of being successful. This is also the case if the country has experienced a coup already and particularly if this happened recently. A recent coup demonstrates that the collective action problem can be overcome. Fractionalization of a society (ethnic, linguistic or religious) may facilitate the organization of collective action within small homogenous groups against a political regime that is, e.g., not comprised of members of the same ethnicity. Of course, politicians also take measures to make the organization of collective action among members of the military more difficult. Such "coup-proofing" measures usually divide the military into many smaller entities, which makes it more difficult to coordinate their actions in secrecy against the political leadership (e.g., Powell 2012).

Fourth, the organization of coups may also be affected by what is happening outside the national borders (see, for example, Miller et al. 2016; Powell et al. 2016). Coups in nearby countries can create a focal point for moving against an unpopular domestic political regime. This is analogous to the formation of revolutionary movements throughout Central and Eastern Europe in 1989, or during the so-called Arab Spring that started with the Tunisian revolution in 2010. In contrast, a large share of neighboring democratic countries might make coups less attractive, because democratic governments have an incentive not to support insurgent political regimes in their neighborhood and some of them are even legally bound to do so.

We have presented the theoretical arguments regarding coup determinants with reference to their positive or negative association with the expected utility of the involved actors. If one tries to quantify these costs and benefits, disagreement among contributors to the debate looms large. Here, we mention three such contentious issues.

The first issue deals with the relevance of the regime type for coup-proneness. One standard argument (see, for example, Lindberg and Clark 2008) is that democracies are less susceptible to coups because on average they enjoy more legitimacy than autocracies.

Critics would reply that this may be the case, but autocrats can spend more resources on preventing coups (see, for example, Svolik 2009). It remains theoretically unclear which argument is more important. Bell (2016) argues and provides evidence that democracy matters for coup success, rather than for the occurrence of coups.

A second contentious issue revolves around the relevance of economic variables. Londregan and Poole (1990) argue that being less economically developed is almost a necessary condition for coups. This position is echoed by many researchers, sometimes formulated in a more precise fashion. Others object that the effect of income should be at most ambiguous, but economic growth plays an important role (Galetovic and Sanhueza 2000). Kim (2016), for example, asserts that short-run economic shocks increase the risk of a coup. And others again argue that economic conditions are rather unimportant as coup predictors. Powell (2012) insists that the characteristics of the military are more important than economic factors. Slater et al. (2014) propose an argument that refers to democratic breakdowns only. In their opinion, these breakdowns have political, not economic origins. As a political origin, they refer explicitly to weak states. Casper (2015) makes an argument that seems to refer to economic conditions, but he insists that they do not trigger coups. He conjectures instead that a country under IMF conditionality is subject to a significantly greater coup risk because the government's capacity to redistribute wealth is curtailed seriously under conditionality. The trigger of the coup is, hence, not the economic crisis itself but the reduced capacity of the government to hand out benefits to the elite.

The third contentious issue is the relevance of coup-proofing, i.e., the steps taken by the current regime to prevent coups. Early on, Belkin and Schofer (2003) proposed to separate coup-proofing from proximate coup triggers (such as recessions) and structural causes of coups (like democracy and income). Ever since, a debate has emerged about various aspects of coup-proofing that spans from its effectiveness, through its implementation, to its measurement. Different policy instruments have been proposed to reduce the risk of a coup. The size of the military in terms of personnel or budget may be important, but also whether the head of the executive branch is a military officer and the degree to which the military is split into multiple independent operational units. Of course, sudden reductions in the armed forces' budget might provoke a coup by the military intent on restoring its financial position. It is unclear theoretically which of these factors are most important and the empirical evidence is mixed.

These three issues are just examples of theoretically contested arguments. The extreme bounds analysis performed in this paper helps to separate the wheat from the chaff.

3 Data and extreme bounds analysis

We employ variants of EBA to tackle the problem of model uncertainty that arises because of the many alternative explanations for the incidence of coups summarized above. The EBA approach enables us to examine whether the variables proposed in the extant literature are indeed robust determinants of coups d'état, independent of the combination of variables included in the regression model. In the EBA, we estimate linear probability models of the determinants of coups.[5] Standard errors are clustered at the country level,

[5] In the literature, linear probability models, logit, and probit models are roughly equally common. Calculation speed, the absence of convergence problems, the ability to include country-fixed effects as well as the possibility of interpreting the resulting coefficients directly strongly favors the linear probability model in our EBA.

which is particularly important here as we use monthly data. Owing to limited data availability for some of the independent variables, the final dataset employed in this analysis includes monthly data from 1952 to 2011 for 164 countries. We use two alternative empirical approaches. We estimate pooled cross-sectional models with region-fixed effects (which comprise time-invariant variables), as well as specifications with country-fixed effects (controlling for all unobserved time-invariant heterogeneity between countries).

To conduct an EBA, models of the form described by the following equation are estimated:

$$Coups_{it} = \beta_M M_{it} + \beta_F F_{it} + \beta_Z Z_{it} + \upsilon_{it}, \quad (2)$$

where *Coups* is the occurrence of an attempt to overthrow the sitting chief executive, M is a vector of "commonly accepted" explanatory variables, which we include in all models, and F is a vector containing the variable of interest. The vector Z contains, as in Levine and Renelt (1992), up to three possible explanatory variables, in addition to those in M. According to the broader literature, all indicators in M, F, and Z are related to our dependent variable. The error term is υ. The indices i and t denote countries and months, respectively.

The original EBA test uses a single criterion to determine whether a variable in F is to be considered robustly related to coups. This criterion implies that the relationship is not robust if the lower extreme bound for β_F (i.e., the lowest estimated value for β_F minus two standard deviations) is negative and the upper extreme bound for β_F (i.e., the highest estimated value for β_F plus two standard deviations) is positive. Sala-i-Martin (1997) argues that this criterion is far too strong for any variable to pass. If the distribution of the parameter of interest has both positive and negative support and enough regressions are run, then a researcher is bound to find at least one regression model for which the estimated upper and lower bounds have opposing signs. In what follows, we report the percentage of the regressions in which the coefficient of the variable F is statistically different from zero at the 5 % level.

Rather than analyzing the extreme bounds of the coefficient estimates for a particular variable only, we follow Sala-i-Martin's (1997) recommended procedure and analyze the entire distribution of point estimates. Accordingly, we report the unweighted parameter estimate of β_F and its standard error as well as the unweighted cumulative distribution function (CDF). The CDF indicates the area under the density function that is either above or below zero, whichever is larger. Thus, the CDF can take values between 0.5 and 1.[6]

In order to fill our vectors with variables we have indexed 42 empirical studies of the determinants of coups d'état. The very large variation in the selection of independent variables is noteworthy. Many variables are tested in just one study. Even the most frequently used indicator, income per capita, was included in less than 80 % of all studies. These studies and their findings are summarized in Online Appendix 1. In our selection of variables for the M-vector, we follow the bulk of the literature. Given the absence of an encompassing theoretical model, we rely on a count of the number of times a variable was used in this literature and choose only those variables that appeared in at least a dozen studies. The seven variables fulfilling this criterion are (in descending order of frequency of use): the natural log of real GDP per capita (33), the lagged growth rate of real GDP per

[6] Sala-i-Martin (1997) proposes using the integrated likelihood to construct a weighted CDF. However, missing observations for some variables pose a problem. Moreover, Sturm and de Haan (2002) show that the goodness-of-fit measure may not be a good indicator of the probability that a model is the true model and that weights constructed as in Sala-i-Martin (1997) are not invariant to linear transformations of the dependent variable. Hence, changing scales can result in different estimates and conclusions. We therefore employ the unweighted version of the CDF.

capita (21), a dummy for democracy (17), a dummy indicating whether the country has experienced at least one previous coup (12), and the number of months since the last coup occurred in that country in linear, squared, and cubic form (12). Except for income and its growth rate, all variables in *M*, i.e., the variables included in every model specification of our EBA, are based on monthly data. We also include a set of dummy variables for decades and months, and either region- or country-fixed effects.

We have collected another 59 variables that may influence the incidence of coups for inclusion in our *Z*-vector. Of these, 51 are measured annually and 8 are time invariant. All of these variables have been tested in previous studies and are listed in Appendix 1, along with their exact operationalization and data source. Some variables from the literature could not be considered because of limited data availability or inability to test them in a general cross-country setting. We test all variables in either linear or logarithmic form, even if some of them also have been tested for a nonlinear effect. Online Appendix 1 shows all variables that have been used in previous studies and their estimated effects.

The EBA works as follows. First, we evaluate simultaneously the robustness of the variables in the baseline specification (*M*) by adding all possible combinations of up to three variables from the *Z*-vector. In the second step, we evaluate the robustness of one variable that we take from *Z* (this variable now represents the *F*-vector) and, again, we use all possible combinations of up to three of the remaining 58 (or 50 when fixed effects are included) variables in the *Z*-vector to evaluate the robustness of the one variable in *F*. At the end, the variable in the *F*-vector is returned to *Z* and this procedure is repeated for every variable in *Z*. The first part of the analysis evaluates whether the variables in the base model are robustly related to coups, whereas the second part determines whether the relationship with any other variable is robust.

The criterion for a variable to be considered robust is a CDF of greater than 0.9, according to Sala-i-Martin (1997), or greater than 0.95, according to Sturm and de Haan (2005). The latter argue that the testing criterion needs to be stricter because the EBA is a two-sided test. As we report the results according to Sala-i-Martin's criterion, the reader can choose which threshold to apply in evaluating robustness. Before we present the robust determinants in the next section, some of the indicators used in the EBA should be explained in more detail.

We construct our dependent variable from a dataset by Powell and Thyne (2011), which consolidates 14 existing datasets on coups that have been used in the empirical literature. An important value added by Powell and Thyne, beyond merging the information contained in those different sources, is to evaluate the resulting candidate events based on a consistent and clear definition of coups (see Sect. 1). Moreover, Powell and Thyne add information on the precise date of each event. The authors report that the original data sources omit many events, or code false positives by conflating wars, assassinations or protests with coups. Finally, Powell and Thyne compare the coups in their consolidated dataset to all coups mentioned in major media sources. This leads to the addition of seven completely new events to the dataset.

Based on these data, we generate a binary indicator for our country-month panel dataset. It comprises 465 coups in total, about half of which were successful. These represent all coups worldwide since 1950, or the respective country's year of independence. We ignore seven coups, which took place in a month during which a coup already had occurred.[7] Thus, we take into account only the first coup in a given country in each month. Our use of

[7] This criterion eliminates coups in Argentina (12/1975), Bolivia (05/1981), Congo (08/1968), Haiti (04/1989), Sierra Leone (03/1967), Sudan (12/1966) and Togo (10/1991).

monthly data significantly reduces the incidence of multiple coups within a single observation, as 14 % of all coups happen in a year that has seen at least one coup already.

We also use this monthly coup data to generate a set of indicators that have been used in the literature to explain the incidence of coups. First, we create a dummy that takes the value 1 if a country in our dataset experienced any previous coups (i.e., since the year 1950 or the country's independence). It is argued in the literature that prior experience with coups lowers the cost of organizing another coup. Another important argument is that coups are even more likely if a country experienced one recently (see Londregan and Poole 1990). We thus measure the number of months since the most recent coup. We follow common practice in recent articles and include the third polynomial of that indicator into our regressions.

Another indicator created specifically for this study is our democracy dummy. It is based on a binary indicator by Cheibub et al. (2010), which reflects whether key government offices are filled through contested elections and incumbents relinquish power if they lose the election. Since its introduction, this indicator has become popular in empirical research because of its conceptually clear distinction between democracies and autocracies. Using this minimalist procedural definition of democracy has the advantage of maintaining a discernable causal mechanism linking democracy to coups, while not confusing democracy with other concepts, such as the rule of law (Gutmann and Voigt 2016).

The indicator by Cheibub et al. is coded to reflect whether a country is a democracy at the end of a given year according to a number of clearly specified criteria. In a country-year panel analysis, one would thus estimate whether the fact that a country was democratic (or not) at the end of the previous year influences the likelihood that a coup occurs in the current year. This test ignores the possibility that the political regime might have changed between the beginning of the year and the incidence of a coup. It is quite plausible, however, as we expect newly installed political regimes to be more vulnerable to coups and coups might be reactions to a legal or illegal assumption of executive office. For example, Fiji experienced two coups in May and October 1987, after parliamentary elections in April 1987 resulted in the replacement of a government led by indigenous politicians.

Because the question whether democracies or autocracies are more resilient to coups is an important one, and democracy indicators are used frequently in the literature, we recoded the democracy dummy by Cheibub et al. (2010) to prevent biased estimates. To save on coding costs, we recoded only those years in which a coup took place. The precise timing of regime changes in all other years should be inconsequential to our analysis. We used version 4 of the Archigos dataset by Goemans et al. (2009) to determine whether the executive changed in the respective year. If not, we could rely on the data by Cheibub et al. from the previous year. In some cases, we could infer the regime type of a new government from the Cheibub et al. data, if Archigos showed that it survived until the end of the year. This is, of course, possible only if coups were unsuccessful or the new government was able to resume office after the coup (i.e., after losing political power for at least 7 days). In the few dozen cases wherein new governments were removed permanently from office within the calendar year in which they took office, we coded their regime type manually, following the coding rules spelled out in Cheibub et al. (2010).[8] All coding was done by at least two trained research assistants. The fact that this task was reasonably straightforward is reflected in the high inter-coder reliability; less than one percent of the codings differed between research assistants. The variables discussed here are those contained in the *M*-vector only. Appendix 1 describes all indicators and their data sources.

[8] We followed a very similar procedure for the years after 2008, which are not covered by Cheibub et al. (2010). In many cases, we were able to rely on codings by Bormann and Golder (2013).

4 Results

Our results are summarized in Tables 1 and 2. They display the mean coefficient estimate over all regressions, as well as the corresponding mean standard error. The share of all regressions in which the coefficient is statistically different from zero at the 5 % level also is reported. CDF refers to the cumulative distribution function, which is the area under the density function on one side of zero (either above or below zero, whichever is larger). Finally, we list the number of regressions estimated to determine the robustness of a variable of interest (which is either in the *M*-vector or in the *F*-vector), as well as the average number of observations in these regressions.

The robust determinants of coups displayed in Table 1 are estimated with region-, decade- and month-fixed effects.[9] Only 8 of the 59 variables in the *Z*-vector of the EBA can be considered robust according to our criterion, i.e., the (respectively larger) proportion of the CDF to one side of zero exceeds 0.9. If we apply the stricter threshold of CDF >0.95, only one variable passes the test. Most of the commonly used predictors of coups in our *M*-vector fulfill this criterion. However, income per capita and our democracy dummy clearly are below both CDF-thresholds. Poor countries and democracies seem to be somewhat more susceptible to coups, but these relationships are not robust according to our EBA. The other commonly used indicators show the expected signs. Low growth rates and experience with coups robustly increase the incidences of coups.

The additional indicators that turn out to have robust relationships with coups can easily be summarized. Unstable countries (e.g., owing to government crises, purges and strikes) and governments that repress their citizens are more vulnerable to coups. The positive effect of repression contradicts our simple deterrence argument in the theory section. This result is, however, consistent with the political economy model of Acemoglu and Robinson (2006), which allows for equilibrium coups against non-democracies that have capabilities to repress. Acemoglu and Robinson (2006) predict that repression is used by the elites as means of holding onto power, either when redistribution and the transfer of political power would be insufficient to content the citizens, or when repression is simply cheaper than alternative policy instruments. Yet, it is assumed that repression may backfire (with a certain probability), which leads to the removal of the government. In this model coups may occur even in situations where it would have been possible to buy the loyalty of the citizens, but the elites prefer to run a calculated risk of being overthrown.

The result that population growth reduces coup risk is completely unexpected. Wells (1974) is the only study in the literature to test the effect of population growth on coup incidence. He expected that population growth would put pressure on a country's resources and, hence, contribute to a higher coup risk. In Wells's study, population growth turns out to be one of the strongest predictors of coups in Africa. It is curious that this variable has not been used in later studies of the determinants of coups, and our unexpected negative result indicates need for further inquiry.

Finally, institutions seem to play an important role in coup incidence as well. Countries with secure property rights and those surrounded by democracies are less likely to experience coups. This is in line with our theoretical predictions. In countries where the state does not have to respect property rights, incentives to gain political control by staging a coup against the government become stronger. Moreover, as argued by Acemoglu and Robinson

[9] We run F-tests for the joint significance of the fixed effects. To summarize these tests, we calculate the average p-value of the tests for all regressions run. The results are: 0.218 (regions), 0.170 (decades), 0.544 (months).

Table 1 Results EBA, robust variables, linear probability models

Variable	Avg. β	Avg. SE	% Sign.	CDF	Combi	Avg. N
Base variables						
Log-income per capita	−0.0002	0.0005	22.35	0.7041	34,276	48,183
Growth rate of real GDP per capita, t−1	−0.0148	0.0073	78.88	0.9557	34,276	48,183
Previous coup, dummy	0.0132	0.0027	98.99	0.9969	34,276	48,183
Months since last coup	−0.0016	0.0019	90.60	0.9796	34,276	48,183
Months since last coup^2	0.0003	0.0004	86.30	0.9580	34,276	48,183
Months since last coup^3	−1.2E−05	2.2E−05	80.34	0.9400	34,276	48,183
Democracy, dummy	0.0004	0.0012	1.09	0.6156	34,276	48,183
Additional variables						
Government crises	0.0057	0.0014	97.86	0.9907	32,564	47,446
Political stability and absence of violence	−0.0011	0.0006	66.48	0.9416	32,399	15,336
Purges	0.0045	0.0023	76.48	0.9352	32,564	47,446
Political terror scale	0.0012	0.0005	82.39	0.9325	32,564	37,163
General strikes	0.0014	0.0008	63.90	0.9308	32,564	47,446
Population growth	−0.0592	0.0368	55.46	0.9286	32,564	47,721
Legal structure and security of property rights	−0.0008	0.0005	68.17	0.9148	32,564	14,760
Share of democratic countries in the same region, t−1	−0.0069	0.0051	43.51	0.9005	32,563	46,923

''Avg. β'' and ''Avg. SE'' give the mean over all regressions of the coefficient and the standard error, respectively. '' % Sign.'' denotes the share of regressions in which the respective coefficient is statistically significant at the five-percent level. ''CDF'' is the proportion of the area under all density functions to one side of zero. The cutoff value for a variable to be considered robustly linked to our dependent variable, and hence to be reported, is CDF >0.9. Finally, ''Combi'' and ''Avg. N'' report the total number of regressions analyzed to test each variable and the average number of observations in each regression. All regressions include region-, month-, and decade-fixed effects. Standard errors are clustered at the country level

(2006), economic elites may support the removal of a government that does not respect their property rights. In contrast, neighboring (regional) democracies deter coups, possibly because those countries deny cooperation to insurgent regimes. Wobig (2015) suggests that this is due to "democracy clauses" enforced by regional international organizations.

Table 2 presents the robust determinants of coups estimated with country fixed effects (as opposed to regional fixed effects, as displayed in Table 1) plus month- and decade-fixed effects.[10] The results for the baseline variables appear to be similar to those reported in Table 1. Two exceptions are the coefficient on the previous coup indicator and the individual coefficient estimates for the time since the last coup, which no longer exceed the CDF threshold. The former result can easily be explained by the limited time variability of the variable, while the latter remain jointly significant.[11] Our results for income per capita and democracy are again not robust.

After removing the time-invariant variables for the fixed effects estimation, 11 of the 51 remaining variables in our Z-vector can be considered robust. The same determinants as before contribute to the occurrence of coups, plus three new ones: civil war, a smaller

[10] The average p-values for the F-tests of the fixed effects are: 0.616 (months) and 0.303 (decades).

[11] The average p-value for the test of joint significance of the three coefficients is 0.089 and the median is 3.4E-06.

Table 2 Results EBA, robust variables, country-fixed effects

Variable	Avg. β	Avg. SE	% Sign.	CDF	Combi	Avg. N
Base variables						
Log-income per capita	−0.0017	0.0017	37.70	0.7987	22,147	44,639
Growth rate of real GDP per capita, t−1	−0.0122	0.0067	68.55	0.9303	22,147	44,639
Previous coup, dummy	−0.0012	0.0029	73.19	0.6781	22,147	44,639
Months since last coup	−0.0010	0.0012	77.52	0.8792	22,147	44,639
Months since last coup^2	0.0002	0.0003	77.25	0.8878	22,147	44,639
Months since last coup^3	−1.0E−05	1.8E−05	71.45	0.8769	22,147	44,639
Democracy, dummy	0.0006	0.0015	19.53	0.5257	22,147	44,639
Additional variables						
Government crises	0.0058	0.0008	96.85	0.9869	20,871	43,852
Magnitude score of episode(s) of civil warfare	0.0014	0.0005	83.77	0.9619	20,871	42,931
Legal structure and security of property rights	−0.0018	0.0007	82.78	0.9523	20,871	14,130
Purges	0.0043	0.0011	83.04	0.9517	20,871	43,852
Population growth	−0.0906	0.0450	71.95	0.9491	20,871	44,079
Political stability and absence of violence	−0.0037	0.0014	76.46	0.9473	20,685	14,683
Political terror scale	0.0022	0.0006	83.38	0.9223	20,871	35,021
Log−population	−0.0068	0.0036	65.64	0.9176	20,871	44,079
Share of democratic countries in the same region, t−1	−0.0076	0.0048	68.42	0.9136	20,871	43,363
Riots	0.0006	0.0002	74.48	0.9101	20,871	43,845
Regime durability, t−1	0.0001	4.6E−5	57.86	0.9096	20,871	41,875

See note on Table 1. All regressions include country- rather than region-fixed effects

population size, and regime durability. The results for all non-robust variables are presented in Online Appendix 2.

5 Conclusion

We apply EBA to identify the robust determinants of coups d'état. Running regressions with month- and decade-fixed effects, and either region- or country-fixed effects, we find that most of the variables proposed in the existing literature are not robust predictors of coups by the standards of our EBA. It is particularly interesting to note that democracy and income do not affect countries' vulnerability to coups, despite being frequently included in empirical studies. Also, characteristics of the military (including instruments for coup-proofing) do not show up among the robust predictors of coups. Coups are, however, more likely to occur in countries that are politically unstable, economically weak, have small populations and slow population growth. It is also evident that institutions play a role in lowering coup risk. A country in a region with many democracies is less likely to experience coups, and improving the protection of property rights is an instrument to actively lower coup risk. Among the robust determinants of coups we have identified, the only one that by and large is under the control of the government is respecting and protecting

property rights. This result is in line with recent literature that found effects on coup activity from trade and investment, both of which are encouraged by effective property rights protection (see Bak and Moon 2016; Powell and Chacha 2016).

It has to be emphasized that an EBA is a very rigorous test and the fact that some variables do not pass it cannot be interpreted as evidence that they do not influence the occurrence of coups. However, variables that pass the EBA should be taken seriously as determinants of coups and might be considered standard control variables for empirical studies of the causes of coups. It is important to note that the approach taken herein allows us only to make statements about correlation and not about causation. Future work could compare the results of our EBA with alternative statistical approaches to identifying robust determinants of coups (see, e.g., Plümper and Neumayer 2015), or explore whether the robust associations presented here are indeed causal. Hendry and Krolzig's (2004) provocative claim that only one regression is really needed could be put to the test by applying general-to-specific model selection.

Acknowledgments The authors thank Johann Almeida, Maximilian Gercke, Enisa Halili, and Remon Magdy for excellent research assistance. Helpful comments and suggestions by Mulugeta Bogale, Nehal Brain, Safouene Ghannouchi, Omar Khadhraoui, Xenofon Kontargyris, Ekaterine Lomtatidze, Nada Maamoun, Asma Hadj Mabrouk, Maximillian Mantei, Stephan Michel, Konstantinos Pilpilidis, Todd Sandler, and participants of the 2016 Political Violence and Policy Conference are much appreciated.

Appendix 1

Variable (group)	Used by	Definition/operationalization	Data source
Democracy-dummy	Bell (2016), Bell and Sudduth (2015), Böhmelt and Pilster (2015), Casper (2015), Casper and Tyson (2014), Girod (2015), Henderson (1997), Hiroi and Omori (2013, 2014), Houle (2016), Johnson and Thyne (2016), Kim (2016), Miller et al. (2016), Piplani and Talmadge (2015), Powell (2012), Powell et al. (2016), Thyne (2010), Tusalem (2010), Wobig (2015)	Cheibub et al.-classification, recoded monthly for coup years, 1 = democracy	Cheibub et al. (2010), Bormann and Golder (2013) and own codings
Economic growth	Bell (2016), Böhmelt and Pilster (2015), Bove and Rivera (2015), Casper (2015), Casper and Tyson (2014), Hiroi and Omori (2013), Houle (2016), Jackman et al. (1986), Johnson et al. (1984), Kim (2016), Lehoucq and Pérez-Liñán (2014), Londregan and Poole (1990), Miller et al. (2016), Piplani and Talmadge (2015), Powell (2012), Powell et al. (2016), Slater et al. (2014), Thyne (2010), Wells (1974), Wig and Rod (2016), Wobig (2015)	Annual growth rate of real GDP per capita in the previous year	Own calculation based on Feenstra et al. (2015)

Variable (group)	Used by	Definition/operationalization	Data source
Income per capita	Arbatli and Arbatli (2016), Belkin and Schofer (2003), Bell (2016), Bell and Sudduth (2015), Böhmelt and Pilster (2015), Bove and Rivera (2015), Casper (2015), Casper and Tyson (2014), Galetovic and Sanhueza (2000), Girod (2015), Harkness (2016), Henderson (1997), Hiroi and Omori (2013, 2014), Houle (2016), Johnson and Thyne (2016), Kim (2016), Lehoucq and Pérez-Liñán (2014), Londregan and Poole (1990), Malul and Shoham (2006), Marcum and Brown (2016), Miller et al. (2016), O'Kane (1981, 1993), Piplani and Talmadge (2015), Powell (2012), Powell et al. (2016), Slater et al. (2014), Thyne (2010), Tusalem (2010), Wells (1974), Wig and Rod (2016), Wobig (2015)	Log-real GDP per capita	Feenstra et al. (2015)
Previous coup-dummy	Arbatli and Arbatli (2016), Bove and Rivera (2015), Galetovic and Sanhueza (2000), Henderson (1997), Kim (2016), Londregan and Poole (1990), Lunde (1991), O'Kane (1981, 1993), Rowe (1974), Tusalem (2010), Wang (1998)	Previous coup in this country since 1950 or independence, monthly data	Own calculation based on Powell and Thyne (2011)
Time since coup	Bell and Sudduth (2015), Casper (2015), Casper and Tyson (2014), Houle (2016), Johnson and Thyne (2016), Kim (2016), Lehoucq and Pérez-Liñán (2014), Londregan and Poole (1990), Lunde (1991), Powell (2012), Powell et al. (2016), Slater et al. (2014), Wig and Rod (2016), Wobig (2015)	Linear, quadratic and cubic time trend measured in years, monthly data	Own calculation based on Powell and Thyne (2011)
Absolute latitude	Arbatli and Arbatli (2016)	The absolute value of the latitude of the capital city, divided by 90	La Porta et al. (1999)
Age dependency ratio	Slater et al. (2014)	Ratio of the population older than 64 to the working age population	World Bank (2016)
Aid	Girod (2015), Hiroi and Omori (2014), Rowe (1974), Thyne (2010), Wells (1974)	Net ODA received (share of GNI)	World Bank (2016)
Chief executive military officer-dummy	Arbatli and Arbatli (2016), Belkin and Schofer (2003), Bell (2016), Böhmelt and Pilster (2015), Bove and Rivera (2015), Johnson and Thyne (2016), Hiroi and Omori (2013, 2014), Miller et al. (2016), Powell (2012), Thyne (2010), Wobig (2015)	Chief executive is a military officer, 1 = yes	Beck et al. (2001)

Variable (group)	Used by	Definition/operationalization	Data source
Colonial history	Tusalem (2010), Wang (1998)	Dummies for British, French, and no colonial origin	Hadenius and Teorell (2007) via Teorell et al. (2016)
Coup spillover	Lehoucq and Pérez-Liñán (2014), Miller et al. (2016)	Number of coups per country in the same region in the previous year (regions: Eastern Europe and post-Soviet Union, Latin America, MENA, SSA, Western Europe and North America, Asia, and other regions)	Own calculation based on Hadenius and Teorell (2007), Powell and Thyne (2011)
Coup-proofing	Bell and Sudduth (2015), Böhmelt and Pilster (2015), Houle (2016), Powell (2012)	Effective number of military organizations	Pilster and Böhmelt (2012)
Democracy spillover	Lehoucq and Pérez-Liñán (2014), Miller et al. (2016), Powell et al. (2016), Slater et al. (2014), Wobig (2015)	Share of democratic countries in the same region at the end of the previous year (regions: Eastern Europe and post-Soviet Union, Latin America, MENA, SSA, Western Europe and North America, Asia, and others)	Own calculation based on Hadenius and Teorell (2007), Cheibub et al. (2010)
Economic reform	Casper (2015)	Average level of reform in six economic sectors	Giuliano et al. (2013)
Education	Wells (1974)	Average years of secondary schooling among the population aged 15 and older	Barro and Lee (2013)
Fractionalization	Arbatli and Arbatli (2016), Bell (2016), Girod (2015), Harkness (2016), Henderson (1997), Houle (2016), Jackman (1978), Johnson et al. (1984), Jenkins and Kposowa (1992), Kposowa and Jenkins (1993), Lunde (1991), Piplani and Talmadge (2015), Tusalem (2010)	Ethnic, linguistic, and religious fractionalization	Alesina et al. (2003)
Government consumption	Slater et al. (2014)	Share of government consumption at current PPPs	Feenstra et al. (2015)
IMF program	Casper (2015)	Dummies for IMF program, and World Bank adjustment-project (respectively in effect for over 4 months)	Dreher (2006), Boockmann and Dreher (2003)
Income inequality	Hiroi and Omori (2014), Miller et al. (2016)	Gini index	Solt (2009)
Inflation	Casper (2015)	Inflation as measured by the annual growth rate of the GDP implicit deflator	World Bank (2016)

Variable (group)	Used by	Definition/operationalization	Data source
Island-dummy	Arbatli and Arbatli (2016)	Country is a small island	Spolaore and Wacziarg (2013)
Military expenditure	Kim (2016), Powell et al. (2016), Wang (1998), Wells (1974)	Log-military expenditure	Singer (1988)
Military expenditure growth	Böhmelt and Pilster (2015), Bove and Rivera (2015), Powell (2012)	Annual growth rate of military expenditure in the previous year	Own calculation based on Singer (1988)
Military expenditure per personnel	Bell (2016), Bell and Sudduth (2015), Böhmelt and Pilster (2015), Bove and Rivera (2015), Marcum and Brown (2016), and Powell (2012)	Military expenditure per personnel	Own calculation based on Singer (1988)
Military personnel	Bell and Sudduth (2015), Böhmelt and Pilster (2015), Bove and Rivera (2015), Kim (2016), Marcum and Brown (2016), Miller et al. (2016), Piplani and Talmadge (2015), Powell (2012), Wells (1974)	Log-military personnel	Singer (1988)
Mineral rents	Slater et al. (2014)	Mineral rents (share of GDP)	World Bank (2016)
Natural resources	Girod (2015), Slater et al. (2014)	Total natural resource rents (share of GDP)	World Bank (2016)
Negative growth-dummy	Galetovic and Sanhueza (2000), and Marcum and Brown (2016)	Negative annual growth rate of real GDP per capita	Own calculation based on Feenstra et al. (2015)
Oil exports	Harkness (2016)	Net oil exports value per capita, constant prices	Ross and Mahdavi (2015)
Oil production	Houle (2016), Miller et al. (2016)	Oil production value, constant prices	Ross and Mahdavi (2015)
Political stability (various indicators)	Arbatli and Arbatli (2016), Bove and Rivera (2015), Casper (2015), Galetovic and Sanhueza (2000), Kim (2016), Maniruzzaman (1992)	Indicators for assassinations, anti-government demonstrations, government crises, guerrilla warfare, purges, riots, and general strikes	Banks and Wilson (2012)
Political stability and absence of violence	Belkin and Schofer (2003), Böhmelt and Pilster (2015), Hiroi and Omori (2013), Houle (2016), Maniruzzaman (1992), Powell (2012), and Thyne (2010)	Worldwide Governance Indicator: Perceptions of the likelihood of political instability and politically-motivated violence	Kaufmann et al. (2011)
Repression	Bove and Rivera (2015)	Political Terror Scale based on US State Department reports	Gibney et al. (2015)
Population density	Girod (2015), and Malul and Shoham (2006)	Population divided by land area	World Bank (2016)

Variable (group)	Used by	Definition/operationalization	Data source
Population growth	Wells (1974)	Annual growth rate of the population size	Own calculation based on Feenstra et al. (2015)
Population size	Arbatli and Arbatli (2016), Casper (2015), Casper and Tyson (2014), Piplani and Talmadge (2015), Slater et al. (2014), Wells (1974)	Log-population size	Feenstra et al. (2015)
Recent independence	O'Kane (1981)	Country became independent in this or one of the previous five years	Own calculation based on Gleditsch and Ward (1999)
Recent war	Belkin and Schofer (2003)	No war in this year or the previous ten years	Own calculation based on Marshall (2015)
Regime duration	Piplani and Talmadge (2015)	Number of years since the most recent regime change	Marshall et al. (2014)
Security of property Rights	Tusalem (2010)	Index of legal structure and security of property rights	Gwartney et al. (2015)
Size of government	Slater et al. (2014)	Index of size of government (expenditures, taxes and enterprises)	Gwartney et al. (2015)
Trade	Houle (2016), Slater et al. (2014)	Sum of exports and imports of goods and services (share of GDP)	World Bank (2016)
Urbanization	Henderson (1997), Hiroi and Omori (2013), Wells (1974)	Urban population (share of total population)	World Bank (2016)
Violence, conflict, and War	Arbatli and Arbatli (2016), Bell and Sudduth (2015), Casper (2015), Casper and Tyson (2014), Girod (2015), Johnson and Thyne (2016), Kim (2016), Piplani and Talmadge (2015), Thyne (2010), and Wobig (2015)	Magnitude scores for civil violence, civil warfare, ethnic violence, ethnic warfare, international violence, and international warfare; number of interstate armed conflicts, internal armed conflicts, and internationalized internal armed conflict	Marshall (2015), Themnér and Wallensteen (2013)
War spillover	Belkin and Schofer (2003), Miller et al. (2016)	Avg. magnitude of civil, ethnic, and international warfare in the same region in the previous year (regions: Eastern Europe and post-Soviet Union, Latin America, MENA, SSA, Western Europe and North America, Asia, and others)	Own calculation based on Hadenius and Teorell (2007), Marshall (2015)

References

Acemoglu, D., & Robinson, J. A. (2006). *Economic origins of dictatorship and democracy*. New York: Cambridge University Press.

Alesina, A. F., Devleeschauwer, A., Easterly, W. R., Kurlat, S., & Wacziarg, R. (2003). Fractionalization. *Journal of Economic Growth, 8*(2), 155–194.

Alesina, A. F., Özler, S., Roubini, N., & Swagel, P. (1996). Political instability and economic growth. *Journal of Economic Growth, 1*(2), 189–211.

Arbatli, C. E., & Arbatli, E. (2016). External threats and political survival: can dispute involvement deter coup attempts? *Conflict Management and Peace Science, 33*(2), 115–152.

Bak, D., & Moon, C. (2016). Foreign direct investment and authoritarian stability. *Comparative Political Studies,*. doi:10.1177/0010414016655536.

Baker, P. (2013). *A coup? Or something else? $1.5 billion in U.S. aid is on the line*. Manhattan: New York Times.

Banks, A. S., & Wilson, K. A. (2012). *Cross-national time-series data archive*. Databanks International.

Barro, R. J. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics, 106*(2), 407–443.

Barro, R. J., & Lee, J. W. (2013). A new data set of educational attainment in the world, 1950–2010. *Journal of Development Economics, 104*, 184–198.

Beck, T., Clarke, G., Groff, A., Keefer, P., & Walsh, P. (2001). New tools in comparative political economy: the database of political institutions. *World Bank Economic Review, 15*(1), 165–176.

Becker, G. S. (1968). Crime and punishment: an economic approach. *Journal of Political Economy, 76*(2), 169–217.

Belkin, A., & Schofer, E. (2003). Toward a structural understanding of coup risk. *Journal of Conflict Resolution, 47*(5), 594–620.

Belkin, A., & Schofer, E. (2005). Coup risk, counterbalancing, and international conflict. *Security Studies, 14*(1), 140–177.

Bell, C. (2016). Coup d'état and democracy. *Comparative Political Studies, 49*(9), 1167–1200.

Bell, C., & Sudduth, J. K. (2015). The causes and outcomes of coup during civil war. *Journal of Conflict Resolution,*. doi:10.1177/0022002715603098.

Böhmelt, T., & Pilster, U. (2015). The impact of institutional coup-proofing on coup attempts and coup outcomes. *International Interactions: Empirical and Theoretical Research in International Relations, 41*(1), 152–182.

Boockmann, B., & Dreher, A. (2003). The contribution of the IMF and the World Bank to economic freedom. *European Journal of Political Economy, 19*(3), 633–649.

Bormann, N.-C., & Golder, M. (2013). Democratic electoral systems around the world, 1946–2011. *Electoral Studies, 32*(2), 360–369.

Bove, V., & Nisticò, R. (2014). Coups d'état and defense spending: a counterfactual analysis. *Public Choice, 161*(3), 321–344.

Bove, V., & Rivera, M. (2015). Elite co-optation, repression, and coups in autocracies. *International Interactions: Empirical and Theoretical Research in International Relations, 41*(3), 453–479.

Casper, B. A. (2015). IMF programs and the risk of a coup d'état. *Journal of Conflict Resolution,*. doi:10.1177/0022002715600759.

Casper, B. A., & Tyson, S. A. (2014). Popular protest and elite coordination in a coup d'état. *Journal of Politics, 76*(2), 548–564.

Cheibub, J. A., Gandhi, J., & Vreeland, J. R. (2010). Democracy and dictatorship revisited. *Public Choice, 143*(1), 67–101.

Crespo Cuaresma, J., Oberhofer, H., & Raschky, P. A. (2011). Oil and the duration of dictatorships. *Public Choice, 148*(3), 505–530.

Dreher, A. (2006). IMF and economic growth: the effects of programs, loans, and compliance with conditionality. *World Development, 34*(5), 769–788.

Feaver, P. D. (1999). Civil-military relations. *Annual Review of Political Science, 2*, 211–241.

Feenstra, R. C., Inklaar, R., & Timmer, M. P. (2015). The next generation of the Penn World Table. *American Economic Review, 105*(10), 3150–3182.

Galetovic, A., & Sanhueza, R. (2000). Citizens, autocrats, and plotters: a model and new evidence on coups d'état. *Economics and Politics, 12*(2), 183–204.

Gibney, M., Cornett, L., Wood, R., Haschke, P., & Arnon, D. (2015). The Political Terror Scale *1976–2015*. http://www.politicalterrorscale.org. Accessed 1 July 2016.

Girod, D. M. (2015). Reducing postconflict coup risk: the low windfall coup-proofing hypothesis. *Conflict Management and Peace Science, 32*(2), 153–174.

Giuliano, P., Mishra, P., & Spilimbergo, A. (2013). Democracy and reforms: evidence from a new dataset. *American Economic Journal: Macroeconomics, 5*(4), 179–204.
Gleditsch, K. S., & Ward, M. D. (1999). A revised list of independent states since the Congress of Vienna. *International Interactions: Empirical and Theoretical Research in International Relations, 25*(4), 393–413.
Goemans, H. E., Gleditsch, K. S., & Chiozza, G. (2009). Introducing archigos: a dataset of political leaders. *Journal of Peace Research, 46*(2), 269–283.
Gwartney, J., Lawson, R., & Hall, J. (2015). Economic freedom of the world 2015. http://www.freetheworld.com. Accessed 1 July 2016.
Hadenius, A., & Teorell, J. (2007). Pathways from authoritarianism. *Journal of Democracy, 18*(1), 143–157.
Harkness, K. A. (2016). The ethnic army and the state: explaining coup traps and the difficulties of democratization in Africa. *Journal of Conflict Resolution, 60*(4), 587–616.
Henderson, E. A. (1997). The impact of culture on African coups d'état, 1960–1997. *World Affairs, 161*(1), 10–21.
Hendry, D. F., & Krolzig, H.-M. (2004). We ran one regression. *Oxford Bulletin of Economics and Statistics, 66*(5), 799–810.
Hiroi, T., & Omori, S. (2013). Causes and triggers of coups d'état: an event history analysis. *Politics & Policy, 41*(1), 39–64.
Hiroi, T., & Omori, S. (2014). Policy change and coups: the role of income inequality and asset specificity. *International Political Science Review, 36*(4), 441–456.
Houle, C. (2016). Why class inequality breeds coups but not civil wars. *Journal of Peace Research,*. doi:10.1177/0022343316652187.
Jackman, R. W. (1978). The predictability of coups d'état: a model with African data. *American Political Science Review, 72*(4), 1262–1275.
Jackman, R. W., O'Kane, R. H. T., Johnson, T. H., McGowan, P., & Slater, R. O. (1986). Explaining African coups d'état. *American Political Science Review, 80*(1), 225–249.
Jenkins, J. C., & Kposowa, A. J. (1992). The political origins of African military coups: ethnic competition, military centrality, and the struggle over the postcolonial state. *International Studies Quarterly, 36*(3), 271–291.
Johnson, T. H., Slater, R. O., & McGowan, P. (1984). Explaining African military coups d'état, 1960–1982. *American Political Science Review, 78*(3), 622–640.
Johnson, J., & Thyne, C. L. (2016). Squeaky wheels and troop loyalty: How domestic protests influence coups d'état, 1951–2005. *Journal of Conflict Resolution,*. doi:10.1177/0022002716654742.
Kaufmann, D., Kraay, A., & Mastruzzi, M. (2011). The Worldwide Governance Indicators: methodology and analytical issues. *Hague Journal on the Rule of Law, 3*(2), 220–246.
Kim, N. K. (2016). Revisiting economic shocks and coups. *Journal of Conflict Resolution, 60*(1), 3–31.
Kposowa, A. J., & Jenkins, J. C. (1993). The structural sources of military coups in postcolonial Africa, 1957–1984. *American Journal of Sociology, 99*(1), 126–163.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1999). The quality of government. *Journal of Law Economics and Organization, 15*(1), 222–279.
Leamer, E. E. (1983). Let's take the con out of econometrics. *American Economic Review, 73*(1), 31–43.
Leamer, E. E. (1985). Sensitivity analyses would help. *American Economic Review, 75*(3), 308–313.
Lehoucq, F., & Pérez-Liñán, A. (2014). Breaking out of the coup trap: political competition and military coups in Latin America. *Comparative Political Studies, 47*(8), 1105–1129.
Leon, G. (2014). Loyalty for sale? Military spending and coups d'état. *Public Choice, 159*(3), 363–383.
Levine, R., & Renelt, D. (1992). A sensitivity analysis of cross-country growth regressions. *American Economic Review, 82*(4), 942–963.
Lindberg, S. I., & Clark, J. F. (2008). Does democratization reduce the risk of military interventions in politics in Africa? *Democratization, 15*(1), 86–105.
Londregan, J. B., & Poole, K. T. (1990). Poverty, the coup trap, and the seizure of executive power. *World Politics, 42*(2), 151–183.
Lunde, T. K. (1991). Modernization and political instability: coups d'état in Africa 1955–85. *Acta Sociologica, 34*(1), 13–32.
Malul, M., & Shoham, A. (2006). The role of culture and economic variables in wars and coups. *Peace Economics, Peace Science and Public Policy, 12*(1), 4.
Maniruzzaman, T. (1992). Arms transfers, military coups, and military rule in developing states. *Journal of Conflict Resolution, 36*(4), 733–755.
Marcum, A. S., & Brown, J. N. (2016). Overthrowing the "loyalty norm": the prevalence and success of coups in small-coalition systems, 1950 to 1999. *Journal of Conflict Resolution, 60*(2), 256–282.

Marshall, M. G. (2015). Major episodes of political violence, 1946–2014. http://www.systemicpeace.org. Accessed 1 July 2016.
Marshall, M. G., Gurr, T. R., & Jaggers, K. (2014). Polity IV project: Political regime characteristics and transitions, 1800–2013. http://www.systemicpeace.org. Accessed 1 July 2016.
Meyersson, E. (2016). *Political man on horseback: coups and development*. New york: Mimeo.
Miller, M. K., Joseph, M., & Ohl, D. (2016). Are coups really contagious? An extreme bounds analysis of political diffusion. *Journal of Conflict Resolution,*. doi:10.1177/0022002716649232.
O'Kane, R. H. T. (1981). A probabilistic approach to the causes of coups d'état. *British Journal of Political Science, 11*(3), 287–308.
O'Kane, R. H. T. (1993). Coups d'état in Africa: a political economy approach. *Journal of Peace Research, 30*(3), 251–270.
Pilster, U., & Böhmelt, T. (2012). Do democracies engage less in coup-proofing? On the relationship between regime type and civil-military relations. *Foreign Policy Analysis, 8*(4), 355–372.
Piplani, V., & Talmadge, C. (2015). When war helps civil–military relations: Prolonged interstate conflict and the reduced risk of coups. *Journal of Conflict Resolution,*. doi:10.1177/0022002714567950.
Plümper, T., & Neumayer, E. (2015). *Model uncertainty and robustness tests: Towards a new logic of statistical inference*. New york: Mimeo.
Powell, J. M. (2012). Determinants of the attempting and outcome of coups d'état. *Journal of Conflict Resolution, 56*(6), 1017–1040.
Powell, J. M., & Chacha, M. (2016). Investing in stability: economic interdependence, coups d'état, and the capitalist peace. *Journal of Peace Research, 53*(4), 525–538.
Powell, J. M., Lasey, T., & Schiel, R. (2016). Combating coups d'état in Africa, 1950–2014. *Studies in Comparative International Development,*. doi:10.1007/s12116-015-9210-6.
Powell, J. M., & Thyne, C. L. (2011). Global instances of coups from 1950 to 2010: a new dataset. *Journal of Peace Research, 48*(2), 249–259.
Przeworski, A. (2011). Divided we stand? Democracy as a method of processing conflicts. *Scandinavian Political Studies, 34*(2), 168–182.
Ross, M. L., & Mahdavi, P. (2015). Oil and gas data, 1932–2014. doi: 10.7910/DVN/ZTPW0Y.
Rowe, E. T. (1974). Aid and coups d'état: aspects of the impact of American military assistance programs in the less developed countries. *International Studies Quarterly, 18*(2), 239–255.
Sala-i-Martin, X. (1997). I Just ran two million regressions. *American Economic Review, 87*(2), 178–183.
Singer, D. A. (1988). Reconstructing the correlates of war dataset on material capabilities of states, 1816–1985. *International Interactions: Empirical and Theoretical Research in International Relations, 14*(2), 115–132.
Slater, D., Smith, B., & Nair, G. (2014). Economic origins of democratic breakdown? the redistributive model and the postcolonial state. *Perspectives on Politics, 12*(2), 353–374.
Solt, F. (2009). Standardizing the world income inequality database. *Social Science Quarterly, 90*(2), 231–242.
Spolaore, E., & Wacziarg, R. (2013). How deep are the roots of economic development? *Journal of Economic Literature, 51*(2), 325–369.
Sturm, J.-E., & de Haan, J. (2002). *How robust is Sala-i-Martin's robustness analysis?*. New york: Mimeo.
Sturm, J.-E., & de Haan, J. (2005). Determinants of long-term growth: new results applying robust estimation and extreme bounds analysis. *Empirical Economics, 30*(3), 597–617.
Svolik, M. W. (2009). Power sharing and leadership dynamics in authoritarian regimes. *American Journal of Political Science, 53*(2), 477–494.
Teorell, J., Dahlberg, S., Holmberg, S., Rothstein, B., Khomenko, A., & Svensson, R. (2016). *The quality of government standard dataset,*. doi:10.18157/QoGStdJan16.
Themnér, L., & Wallensteen, P. (2013). Armed conflicts, 1946–2012. *Journal of Peace Research, 50*(4), 509–521.
Thyne, C. L. (2010). Supporter of stability or agent of agitation? The effect of US foreign policy on coups in Latin America, 1960–99. *Journal of Peace Research, 47*(4), 449–461.
Tullock, G. (2005). *The social dilemma: Of autocracy, revolution, coup d'état, and war*. Indianapolis: Liberty Fund.
Tusalem, R. F. (2010). Determinants of coup d'état events 1970–90: the role of property rights protection. *International Political Science Review, 31*(3), 346–365.
Gutmann J. & Voigt, S. (2016). The rule of law: Measurement and deep roots. ILE Working Paper No. 1.
Wang, T.-Y. (1998). Arms transfers and coups d'état: a study on Sub-Saharan Africa. *Journal of Peace Research, 35*(6), 659–667.
Wells, A. (1974). The coup d'état in theory and practice: independent Black Africa in the 1960s. *American Journal of Sociology, 79*(4), 871–887.

Wig, T., & Rod, E. G. (2016). Cues to coup plotters: elections as coup triggers in dictatorships. *Journal of Conflict Resolution, 60*(5), 787–812.
Wintrobe, R. (2012). Autocracy and coups d'état. *Public Choice, 152*(1), 115–130.
Wobig, J. (2015). Defending democracy with international law: preventing coup attempts with democracy clauses. *Democratization, 22*(4), 631–654.
World Bank (2016). World Development Indicators. http://wdi.worldbank.org. Accessed 1 July 2016.