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Leadership Change and Economic Growth in Politically Unstable Countries

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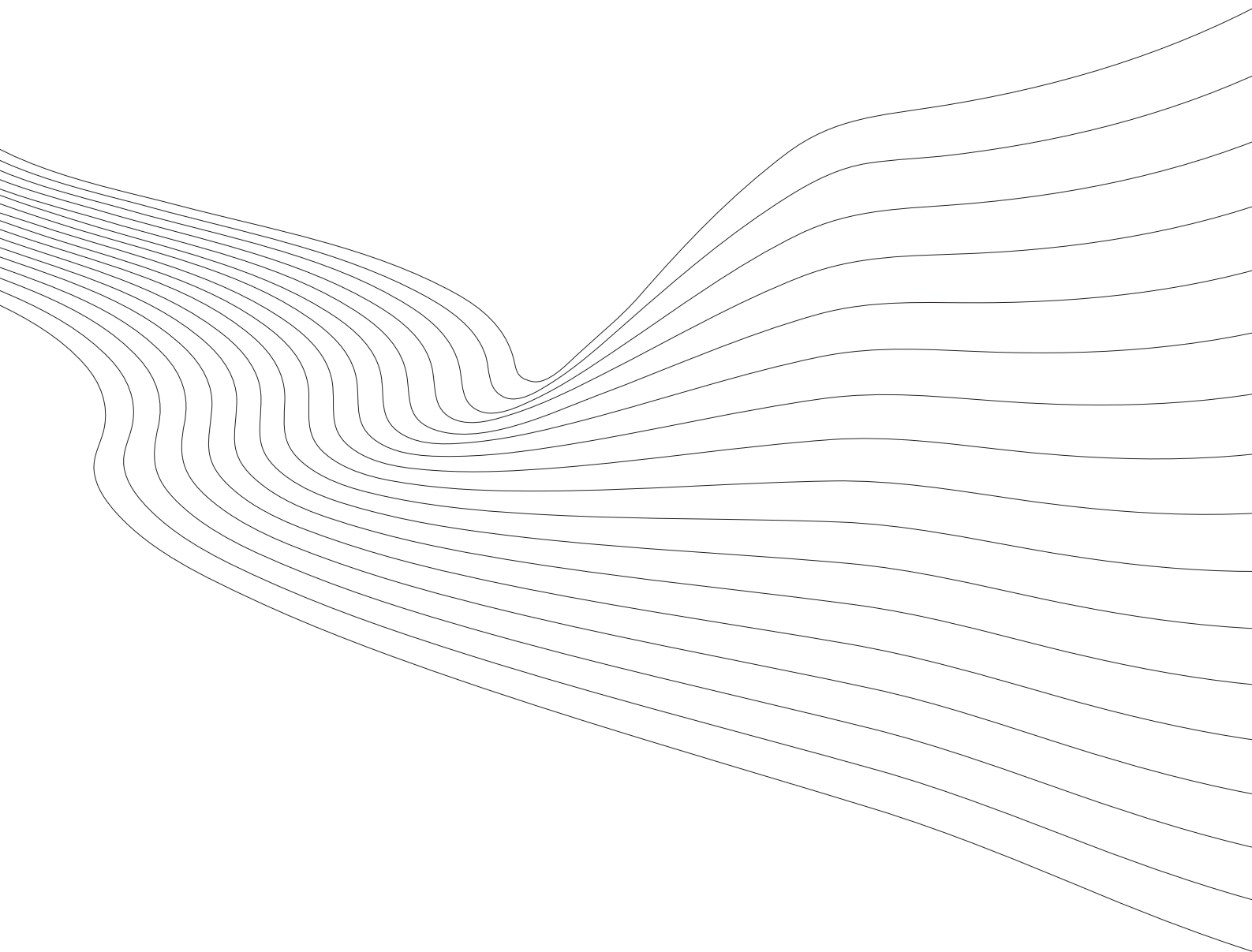
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Leadership change and economic growth in politically unstable countries

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Abstract

We examine the impact of leadership change after a coup d'état on economic growth. We consider successful coup attempts as our treatment group and use failed coup attempts as controls to condition on political instability. To take account of selection bias, we control for the determinants of coup success. Our main finding is that leadership changes after a coup d'état have a positive effect on economic growth in the least developed countries, but have a negative effect in other developing countries.

Keywords: economic growth, coup d'état, political instability

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1. Introduction

A coup d'état generally has far reaching consequences for a country. On the one hand, the unconstitutional replacement of a government can be accompanied by (or result in) domestic violence and political instability. On the other hand, the newly arrived leader can implement new policies and sometimes even set up a new institutional framework. Due to the apparent destabilizing aspect of a coup d'état, it is widely believed that leadership changes due to a coup d'état hamper economic development. Indeed, almost all empirical studies on the relation between political instability and economic growth provide evidence for a negative relation.¹

Yet, as Jong-A-Pin (2009) argues, a coup d'état is not equivalent to political instability. Political instability is a latent concept that cannot be directly measured, and therefore, variables like a coup d'état are used to proxy for political instability. Although a coup d'état certainly captures some aspects of a politically unstable environment, it also contains information that is unique to the event itself, most notably the change in political leadership. In this paper, we aim to disentangle the effect of leadership change after a coup d'état from political instability and answer the question whether coup leaders matter for economic growth.

While the uncertainty due to political instability may be bad for economic growth, political leadership changes can have a positive effect on economic growth (Jones and Olken, 2005). This holds especially for autocratic countries, where the constraints on the chief executive are generally limited. The importance of political leaders is supported by other studies that relate political leaders to policy outcomes. Dreher et al. (2009), for instance, show that political leaders influence market-liberalizing reforms, while there is ample empirical evidence that market-liberalizing reforms contribute to economic growth (see e.g. De Haan et

¹ Examples are Londregan and Poole (1990), Barro (1991), Alesina et al. (1996), and Jong-A-Pin (2009). Campos and Nugent (2002) is one of the few studies that finds no robust relation between political instability and economic growth, although they do find evidence for Sub-Saharan African countries.

al, 2007). The case of Indonesia illustrates that this argument may equally well hold for leaders that came into power after a coup d'état. In the case of Indonesia, for instance, the policies of Suharto proved to be a turning point in the economic history of Indonesia, where market oriented policies have led to economic growth in the years after the coup. However, the importance of leaders is not restricted to economic reform. Göhlmann and Vaubel (2007) show that the background of leaders also influences inflation rates, while Jones and Olken (2009) report that assassination of political leaders is likely to be followed by institutional change.

To answer our research question, we propose a novel way to disentangle the effect of leadership change from political instability. Unlike other studies that focus on the relation between coups d'état and economic growth, we examine the relation conditional on the political unstable environment. Fosu (2002) rightfully argues that failed coup attempts reflect political instability as much as successful coups do. Therefore, we restrict our sample to those cases where there actually was a coup attempt and compare economic growth after successful coup attempts with economic growth after failed coup attempts. Hence, conditional on the attempt, the difference between success and failure reflects the change in leadership.²

When coup success would be randomly assigned to coup attempts, the impact of leadership change would be easily identified. Kebschull (1994) provides anecdotal evidence that good (and bad) luck plays an important role in the outcome of a coup attempt. However, Powell (2009) and Singh (2009) argue that coup success is not fully random. To account for selection bias, we therefore control for those variables that turn out to be significant after a re-examination of the determinants of coup success.

Previewing our results, coup leaders do matter for economic growth. We find evidence that the influence of coup leaders is positive in poor countries, while it is negative in richer countries. This may indicate a convergence effect. However, further analysis shows that

² A similar methodology is used by Jones and Olken (2009), who study the impact of political assassinations on changes in democracy and civil war.

countries with above median income per capita have lower investment levels and lower trade levels relative to the leaders that remain in office after a failed coup attempt, while at the same time coup leaders in countries with income per capita below the median increase their human capital level.

This paper continues as follows. In the next section we discuss how we aim to identify the impact of leadership change on economic growth using data on coup attempts. In section 3, we discuss the problem of selection bias and examine the determinants of coup success. In section 4, we present our estimation results, while in section 5 we provide some further analysis. Finally, section 6 concludes the paper.

2. Empirical strategy

We aim to identify the impact of leadership change after a coup d'état on economic growth conditional on the effect of political instability. To that end, we compare the average 10-year economic growth rate of two groups of countries. Both groups have faced a period of political instability in the form of a coup attempt.³ The first group contains those countries that received a treatment, i.e., a successful coup. The second group was not treated with success, i.e., these coup attempts failed. Hence, our sample consists only of cases where there actually was a coup attempt and, as such, we interpret the difference in economic growth between the two groups as the impact of leadership change after a coup d'état conditional on political instability (and other control variables).

Countries that have experienced one or more coup attempts vary widely in their level of economic development. For example, when Liberia experienced a coup attempt in 1994, income per capita was more than a factor 100 lower than income per capita at the time of the coup attempt in Qatar in 1995. The economic growth literature has stressed the importance of (conditional) convergence effects (Barro and Sala-i-Martin, 1992). Poor countries are

³ Data on economic growth rates are taken from the Penn World table 6.3 (source: Heston et al., 2009)

expected to grow faster (conditional on some set of variables) than rich countries. In the context of our approach this not only implies that economic growth is higher the poorer a country is, it also implies that poor countries have more scope to grow after a successful coup attempt. Therefore, we include GDP per capita in our model to control for a convergence effect, but also include an interaction term of GDP per capita with coup success to capture the fact that leadership changes in poor countries provide more opportunity for acceleration in economic growth than in richer countries.⁴

In all, our approach amount to regressions of the following form:

$$g_{it,it+10} = \beta_0 + \beta_1 \text{Coupsucce}s_{it} + \beta_2 \ln(\text{GDPCAP}_{it}) + \beta_3 \text{Coupsucce}s_{it} * \ln(\text{GDPCAP}_{it}) + \sum_{j=4}^n \beta_j X_{it} + \varepsilon_{it}$$

where $g_{it, it+10}$ represents the average economic growth rate of country i in the 10 years after the coup attempt in year t , Coupsuccess_{it} is the dummy indicating whether the coup attempt in country i in year t was successful, GDPCAP_{it} is real GDP per capita in the year of the coup attempt, X_{it} is a vector of control variables, and ε_{it} is an error term.

When coup success would be randomly assigned to coup attempts, the impact of leadership change would be easily identified. However, selection bias with respect to endogenous selection on the treatment might trouble the identification of the leadership change effect. That is, it is possible that variables exist that both affect coup success and economic growth. In that case, there is correlation between coup success and the error term of the regression model, which prevents unbiased estimation of the leadership change effect. To ensure that we identify the right control variables for our growth regression, we investigate the determinants of coup success (X_{it}) in the next section.

⁴ Technically, including GDP per capita as a control variable in the model allows for different levels (intercepts) of economic growth for each country in the sample. Including the interaction term between GDP per capita and coup success allows for a different slope with respect to the size of the leadership change effect.

Provided that the allocation of observations over successful coups and failed coups is exogenous conditional on the control variables (i.e., $E(\varepsilon | X, Coupsuccess) = 0$), the marginal effect of a leadership change on economic growth is:

$$\frac{\partial g}{\partial Coupsuccess} = \beta_1 + \beta_3 * \ln(GDPCAP)$$

The corresponding estimated standard error is:

$$\hat{\sigma} = \sqrt{\text{var}(\beta_1) + \text{var}(\beta_3) + 2 * \text{cov}(\beta_1, \beta_2) * \ln(GDPCAP)}$$

One other issue that needs to be addressed is that in some cases a coup attempt is immediately followed by another coup attempt. Therefore, we restrict our sample to those cases which are not followed by another coup attempt in the ten years after the attempt. This conservative approach reduces the number of available observations. However, to ensure that our results are not driven by this decision, we vary the length of the economic growth period under consideration from one up till twelve years as a robustness check. We will also provide results where we limit the sample to those cases where the political leader was in power the entire decade after the coup attempt. As we will show below, our main results are not driven by these restrictions.

3. Coup success and selection bias

In our empirical analysis, we aim to exploit the exogenous variation in the outcome of coup attempts to identify the effect of leadership change on economic growth. Therefore, we have to take account of the variables that influence the successfulness of coups d'état.

Since about half of all coup attempts fail (Powell and Thyne, 2010) and failure often has fatal consequences for the coup plotters, it is hard to believe that coup success is fully deterministic. Good (and bad) luck play an important role in the outcome of a coup attempt. Even during the most carefully planned coup, events may happen that could lead to failure.

For instance, Kebschull (1994) argues that the coup attempt by Lieutenant Colonel Hugo Chavez in Venezuela in 1992 failed mainly due to bad weather. If the plane of President Perez would not have been delayed, it would have landed on a downtown airstrip where the followers of Chavez were waiting to assassinate the President. However, since it was not possible to land in the dark due to missing landing lights, the airplane was diverted to a different airport and the coup attempt lost momentum. Two more attacks to catch the President were in vain as the President was alarmed by the situation and loyal troops were mobilized to regain control over the capital (See also Gott, 2000).

Another example can be found in Dunlop (2003), who discusses the Russian 1991 coup. There, KGB special agents failed to capture President Yeltsin, because he left his holiday apartment just a few minutes before they arrived. Furthermore, during the second night of the coup attempt, the KGB failed again to capture Yeltsin, since bad weather prevented helicopters from landing on the roof of the Russian White House. Had the agents arrived only a few minutes earlier, or had the weather been more stable, the outcome of the coup might have been different.

It would be naïve to assume that coup outcomes are only determined by exogenous events. Singh (2009) and Powell (2009) have systematically examined the determinants of coup success. Singh (2009) argues that coup attempts can be analyzed from three different perspectives.

Firstly, coup success depends on the relative popularity of the coup plotters and the incumbent. From this point of view, coup success is merely an election between the coup plotters and the incumbent, especially within the military. Therefore, coup success is a function of variables that affect the “vote share” of each of the contestants. Variables that influence the popularity of the incumbent are, for example, income (per capita), economic growth, democracy, or the share of GDP devoted to the military.

Secondly, coup success is determined by the relative combat strength of the coup plotters and the incumbent. It is, for instance, important whether one of the parties received support by foreign countries. Singh (2009) argues that especially countries that had close ties to the United States or the former Soviet Union, or have been French Colonies, have experienced support from abroad. Furthermore, if the military is larger or better equipped, it is more likely that a coup attempt will fail. Hence, military size and military expenditures are potentially important variables to consider.

Apart from firepower, strength also comprises the strategic skills of (particularly) the coup leader. Luttwak (1968) stresses strategic skills in his textbook on coup d'états. He writes:

"Our strategy, therefore, must be guided by two principal considerations: the need for maximum speed in the transition phase, and the need to neutralize fully the forces which could oppose us both before and immediately after the coup. If, in the operational phase of the coup, we are at any stage delayed, then our essential weakness will emerge: we shall probably acquire a definite political coloration, and this in turn will lead to a concentration of those forces which oppose the tendency we represent (or are thought to represent)."

Skills are hard to measure. Powell (2009) uses military expenditure per soldier to proxy for combat skills. Below, we propose an alternative proxy, which, in our view, better captures strategic skills, i.e., the rank of the coup leader in the military.

Thirdly, coup success depends on the perceived relative popularity and strength of coup plotters and the incumbent. This point of view stresses that a coup d'état is a coordination game and that the outcome of a coup attempt can be self-fulfilling. If the coup-plotters are able to spread information that they are on the winning side, neutral civilians may decide to support the coup as this is in their best interest. If sufficient agents act like this, even

opponents of the coup may, in the end, turn to the side of the coup plotters to save themselves. An example variable that fits into this category is the number of previous failed coups. The more coup attempts have failed in the past, the more likely it is that people will believe that this attempt will also fail.

Both Singh (2009) and Powell (2009) suggest a number of variables related to the typology described above. However, the empirical support for these hypotheses is limited. Table 1 shows that not a single variable is found to be significant by both studies. There are some significant variables that are only examined by a single study. The number of past failed coups, whether the coup is attempted by a low or high ranked military officer, or whether the previous regime is an autocracy (or military regime) are variables that are significantly related to coup success.

Table 1. The determinants of coup success based on Powell (2009) and Singh (2009)

Variable:	Study:	
	Singh (2009)	Powell (2009)
Alignment with superpower	0	
Autocracy		-
Cold war dummy	0	
Coup by high ranked officers	+	
Coup by low ranked officers	-	
Democracy	0	0
Domestic Conflict	0	+
Economic growth		0
Former French colony	0	
GDP per capita	0	
International Conflict	0	
Military expenditures (growth*)	0	0*
Military size	0	-
Military regime		+
Past failed coups	-	
Past successful coups	0	
Population	0	
Presidential election	0	
Regional dummies	0	
Soldier quality (exp. per soldier)		-
# observations	317	264

Note: + = positive sign and significant, - = negative sign and significant, 0 = insignificant result.

In this paper, we re-examine the determinants of coup success. The re-examination serves the purpose to identify the determinants of coup success so that we can identify the impact of leadership change after a successful coup d'état on economic growth.

Our dependent variable is a binary variable equal to one if a coup attempt succeeded and zero otherwise. We rely on a novel data set that is provided by Powell and Thyne (2010) and covers all coup attempts from 1950 to 2007.⁵ In all, we study 452 cases from 189 countries of which the unconditional probability of coup success is 49.3 percent.

As a starting point, we consider the same set of variables as suggested by Powell (2009) and Singh (2009). However, unlike these studies we collected more precise data on the characteristics of the coup leader as well as the coup attempt. To proxy strategic skills of the coup leader, we collected data about the qualifications of the coup leader at the time of the coup attempts.⁶ That is, we know whether the coup leader was a civilian, from a royal family, or part of the military (or airforce, or navy). If he was part of the military, we also know his rank within the military. Figure 1 shows the fraction of successful coup attempt (as well as the frequency) by different types of coup leaders. It shows that coup attempts are more successful when attempted by someone from the military and, moreover, that higher ranked officers are more successful than lower ranked officers.⁷⁸ Based on the clusters that can be identified in the table, we divide all military ranks into three categories and include them as dummy variables in our analysis. That is, we differentiate between a “General dummy”, which ranges from Brigadier-General to Admiral; a “Mid-range officer dummy”, ranging from Second

⁵ Powell and Thyne (2010) define a coup attempt as: “attempts by the military or other elites within the state apparatus to unseat the head of government using unconstitutional means.” Furthermore, they define success as: “events in which the sitting head of government is removed for at least one week.”

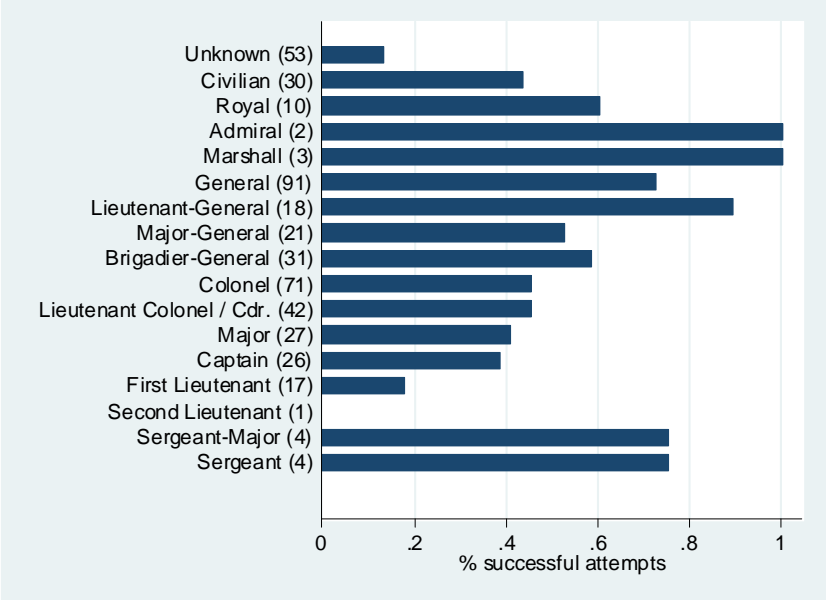
⁶ Sources: www.keesings.com, Marshall and Marshall (2007), The New York Times, and www.wikipedia.org.

⁷ Attempts by Sergeants and Sergeants-Majors are exceptions to this regularity. However, attempts by these officers are rare as there were only 8 such attempts.

⁸ Our data set also includes a number of cases, where the leader of the coup could not be identified. It is not surprising to see that most of these coups have failed. There are few cases in which a coup succeeded, but the leader is not identified. In these cases, our sources refer to groups of individuals for which there was no apparent leader, such as the police (Panama, 1951), a group of officers (Cyprus, 1974), or the armed forces (Uruguay, 1976).

Lieutenant up till Colonel; and a “Sergeant dummy”, which includes Sergeant-Major and Sergeant.

Figure 1. Coup leaders and coup success rates



Note: the figure shows the fraction of successful coup attempts for different groups of coup leaders. The numbers within brackets refer to the number of attempts by the respective group.

We also collected data on reported casualties during the attempt. Although, it is unclear whether this reflects the power of the incumbent or the coup plotters, it does signal to which extent the attempt was smooth. We conjecture that reported casualties indicate “loss of momentum” during the attempt and, hence, make coup success less likely. That is, it is more likely that well planned and well timed coup attempts need fewer casualties to succeed than badly planned coups. If a coup attempt is badly timed (or planned), the incumbent is able, or has the opportunity, to resist the attempt. This view is supported by the data. A chi square test testing the hypothesis that successful coups are as often accompanied with bloodshed as unsuccessful coups rejects the null at the one percent significance level. Successful coups are

more often without casualties than unsuccessful coups.⁹ Summary statistics and data sources of all variables can be found in Appendix A.

We estimate a Logit model including all variables reported in Table 1. The results are reported in Table 2, column 1. Due to the large number of control variables, this model consumes relatively a lot of degrees of freedom. Therefore, the statistical results should be interpreted with care. Nevertheless, we find that alignment with a Cold war superpower, GDP per capita, and the type of coup leader are highly significant determinants of coup success.

To improve upon the model, we show in column 2 the result of a model that is the result of a general-to-specific model selection procedure. That is, we start with the specification reported in column 1 and drop the least significant variable from the specification and estimate the model again. We repeat this procedure until only significant variables remain. We find that exactly the same variables are significant. To check the robustness of our results, we add all insignificant variables to the model, but now one at the time. These results are shown in columns 3-22. Finally, in column 23, we estimate a model including all significant variables of columns 3-22. Relative to the unrestricted model in column 1, the results of the more restricted model specifications are largely similar.

Table 3 tests how well the different model specifications predict the right outcome of a coup attempt. Not surprisingly, specification 1 predicts the outcome of a coup attempt best, but specifications 2 and 23 perform hardly less. In all, the different models predict about twenty percentage points better than the (naïve) unconditional probability of coup success. However, a relatively large part of the variance contained in the outcome of a coup attempt remains unexplained. We use this “exogenous” variation to identify the impact of a leadership change after a coup d’etat on economic growth.

⁹ Out of 223 successful attempts 129 (58%) were bloodless, while out of 229 unsuccessful attempts 98 (43%) were bloodless.

Table 3. Predictive power of coup success models.

Probability of observing:	Conditional on:	Model 1	Model 2	Model 23
predicted success	success	67.57	66.48	64.37
predicted failure	Failure	78.41	71.57	76.02
Success	predicted success	72.46	68.00	70.44
Failure	predicted failure	74.19	70.15	70.62
Correctly classified:		73.46	69.15	70.54
Pseudo R-squared:		0.22	0.17	0.19

Note: The numbers in the table are percentages.

Table 2. Re-examination of the determinants of coup success

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	
Dependent variable: Coup success	-1.305	-1.484	-1.454	-1.290	-1.460	-1.396	-1.412	-1.540	-1.453	-1.421	-1.434	-1.526	-1.446	-1.484	-1.499	-1.475	-1.484	-1.457	-1.455	-1.469	-1.490	-1.530	-1.240	
Affinity with Cold war superpower	(3.25)***	(4.62)***	(4.54)***	(3.79)***	(4.58)***	(4.25)***	(4.30)***	(4.78)***	(4.49)***	(4.37)***	(4.45)***	(4.71)***	(4.41)***	(4.53)***	(4.67)***	(4.60)***	(4.62)***	(4.52)***	(4.51)***	(4.52)***	(4.63)***	(4.71)***	(3.60)***	
Real GDP per capita (logged)	-0.924	-0.649	-0.681	-0.692	-0.648	-0.638	-0.710	-0.652	-0.595	-0.659	-0.650	-0.697	-0.668	-0.689	-0.669	-0.633	-0.663	-0.556	-0.653	-0.788	-0.636	-0.648	-0.590	
	(3.08)***	(3.84)***	(4.12)***	(4.14)***	(3.78)***	(3.61)***	(4.15)***	(3.87)***	(3.55)***	(3.81)***	(3.91)***	(4.01)***	(3.78)***	(3.97)***	(3.84)***	(3.72)***	(3.80)***	(3.15)***	(3.83)***	(3.25)***	(3.57)***	(3.84)***	(3.51)***	
General dummy	3.156	2.426	2.357	2.387	2.842	2.555	2.470	2.561	2.456	2.607	2.438	2.452	2.507	2.619	2.427	2.438	2.430	2.524	2.489	2.455	2.428	2.430	2.445	
	(5.04)***	(6.04)***	(5.79)***	(5.92)***	(5.38)***	(6.05)***	(5.99)***	(6.26)***	(6.16)***	(6.08)***	(5.97)***	(6.09)***	(5.99)***	(6.16)***	(6.04)***	(6.03)***	(6.07)***	(6.19)***	(6.17)***	(5.93)***	(6.06)***	(6.13)***	(5.91)***	
Mid-range officer dummy	1.418	0.912	0.934	0.862	1.329	1.032	0.896	0.910	0.889	0.980	0.973	0.961	0.977	1.117	0.922	0.905	0.917	0.921	0.917	0.937	0.907	0.947	0.876	
	(2.57)**	(2.78)***	(2.76)***	(2.57)**	(2.84)***	(2.97)***	(2.57)**	(2.73)***	(2.75)***	(2.98)***	(2.87)***	(2.89)***	(2.89)***	(3.15)***	(2.83)***	(2.74)***	(2.80)***	(2.82)***	(2.80)***	(2.88)***	(2.76)***	(2.88)***	(2.60)***	
Sergeant dummy	2.880	2.383	2.536	2.257	2.801	2.501	1.664	2.326	2.334	2.324	2.397	2.476	3.295	1.849	2.326	2.390	2.399	2.255	2.393	2.341	2.371	2.424	2.255	
	(2.50)**	(2.45)**	(2.62)***	(2.30)**	(2.71)***	(2.46)**	(1.63)	(2.37)**	(2.45)**	(2.47)**	(2.39)**	(2.54)**	(3.01)***	(1.80)*	(2.39)**	(2.46)**	(2.46)**	(2.35)**	(2.45)**	(2.43)**	(2.44)**	(2.49)**	(2.38)**	
Royal family dummy	4.316	3.003	2.908	3.213	3.418	3.160	3.672	3.402	2.831	2.774	3.031	3.162	3.108	3.244	3.082	2.916	3.060	2.677	2.949	3.495	2.993	3.048	2.652	
	(2.25)**	(2.78)***	(2.74)***	(2.78)***	(2.99)***	(2.90)***	(2.41)**	(2.77)***	(2.79)***	(2.77)***	(2.77)***	(2.58)***	(2.83)***	(2.92)***	(2.77)***	(2.84)***	(2.84)***	(2.61)***	(2.75)***	(2.74)***	(2.79)***	(2.82)***	(2.60)***	
Reported deaths at attempt (dummy)	-0.428		-0.440																				-0.429	
	(1.55)		(1.83)*																				(1.74)*	
Cold war dummy	0.420			0.632																			0.543	
	(0.93)			(1.76)*																			(1.47)	
Civilian dummy	0.613				0.951																			
	(0.83)				(1.60)																			
Military dictatorship dummy	0.418					0.346																		
	(1.20)					(1.28)																		
Military expenditures (% of GDP)	0.001						-0.030																	
	(0.06)						(1.61)																	
Military size (% of pop)	-16.507							-33.312																
	(0.39)							(1.20)																
Election dummy	-0.491								-0.516														-0.525	
	(1.46)								(1.84)*														(1.79)*	
Population (logged)	0.013									-0.159														
	(0.08)									(1.60)														
Economic growth	0.012										0.016													
	(0.69)										(1.05)													
Ethnic fractionalization	-0.924											-0.563												
	(1.39)											(1.23)												
Civil war dummy	-0.703												-0.409											
	(1.09)												(0.89)											
Regime duration	0.007													0.009										
	(0.73)													(1.04)										
Democracy dummy	0.377														0.229									
	(0.88)														(0.77)									
Autocracy dummy	0.319															0.211								
	(0.90)															(0.88)								
Fraction successful coup attempts	0.070																-0.119							
	(0.13)																(0.36)							
Number of previous failed coup attempts	-0.019																	-0.089					-0.083	
	(0.23)																	(1.85)*					(1.65)*	
Number of previous successful coup attempts	-0.045																		-0.076					
	(0.42)																		(1.42)					
Former French Colony	-0.212																				0.084			
	(0.54)																				(0.29)			
International conflict dummy	1.491																						1.314	
	(1.35)																						(1.29)	
Observations	324	376	376	376	376	366	353	370	370	376	372	375	366	367	376	376	376	376	376	376	376	376	376	370
Pseudo R-sq	0.22	0.17	0.17	0.18	0.17	0.17	0.17	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.19	
Region fixed effects	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO

notes: Robust z statistics in parentheses, all regressions include a constant (not reported)

* significant at 10%; ** significant at 5%; *** significant at 1%

4. Estimation results

Having identified the determinants of coup success, we now turn to estimation of the coup leader effect. Table 4 shows the estimation results of different variants of our main model (as discussed in section 2).

Table 4. The impact of leadership change after a coup d'état on economic growth

Dependent variable: 10-year economic growth rate	(1)	(2)	(3)	(4)	(5)
Coup success	0.763 (2.37)*	1.122 (4.00)***	0.758 (3.93)**	1.376 (2.74)**	1.226 (2.39)**
Real GDP per capita (log)	0.026 (0.97)	0.055 (2.67)**	0.103 (6.05)***	-0.074 (1.78)	-0.080 (1.76)*
Real GDP per capita (log) * Coup success	-0.092 (2.15)*	-0.145 (3.75)***	-0.091 (3.27)**	-0.181 (2.70)**	-0.152 (2.43)**
Affinity with Cold war superpower		-0.104 (3.34)**	-0.009 (0.28)	-0.097 (3.18)**	
General dummy		0.038 (0.33)	0.070 (0.80)	-0.036 (0.33)	
Mid-range officer dummy		-0.066 (0.66)	-0.095 (0.78)	-0.061 (0.85)	
Sergeant dummy		-0.114 (1.02)	-0.735 (5.83)***	0.000 (.)	
Royal leader dummy		-0.040 (0.28)	-0.430 (2.97)**	-0.205 (1.00)	
Investment (% of GDP)				0.011 (2.31)*	0.010 (2.74)***
Population (log)				0.000 (0.00)	-0.007 (0.30)
Secondary school enrolment (% of pop)				0.013 (2.48)**	0.013 (3.19)***
Constant	-0.054 (0.24)	-0.182 (1.40)	-0.659 (7.49)***	0.513 (2.41)*	0.495 (1.29)
Observations	118	112	82	86	86
R-squared	0.03	0.08	0.17	0.23	

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

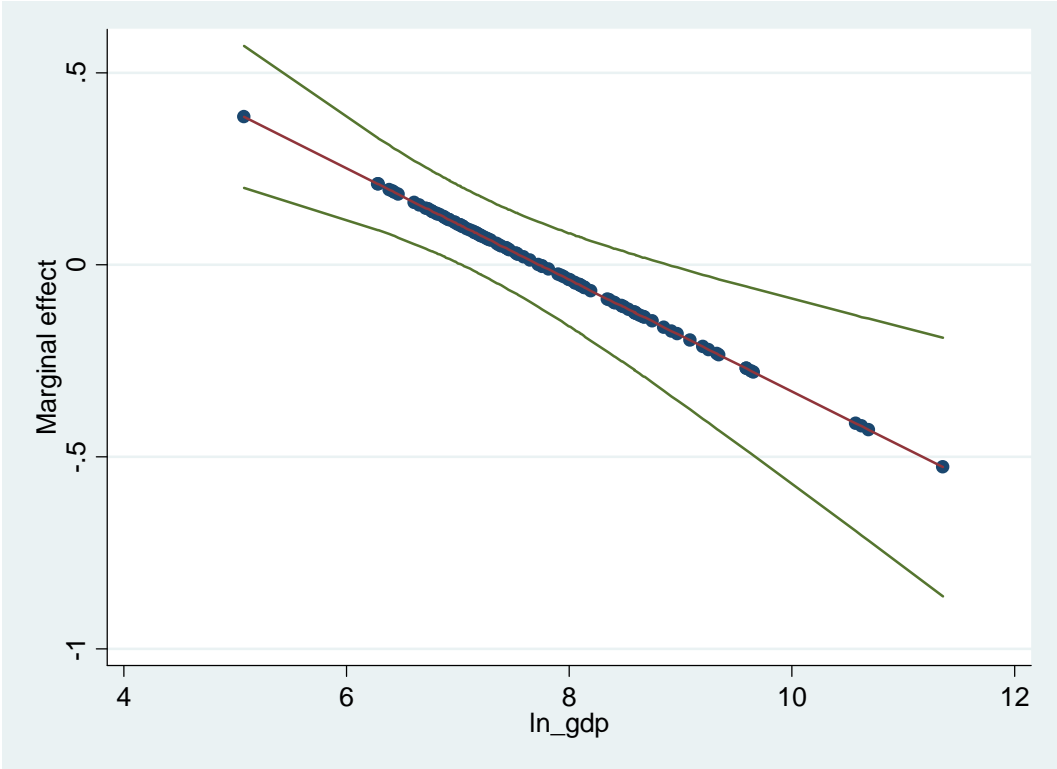
In column 1, the results are shown of a (naïve) model without any control variables. We find that the effect of leadership change on economic growth after a successful coup is positive and significant (for $\ln(\text{GDPCAP})=0$) and that the interaction term is negative and significant. This suggests that successful coup attempts have a positive effect on economic growth in poor

countries and that the effect diminishes as countries grow richer. In column 2, we include the determinants of coup success into the model to take account of selection bias. Although our controls are largely insignificant, the significance of the parameters related to coup success becomes more pronounced. In column 3, we estimate the same model, but here we restrict our sample to leaders that have been in power the entire decade after their successful coup. We do this to check whether the results are affected by cases in which a coup leader is replaced for other reasons than another coup d'état. Although we lose some observations, the results are unaffected. In column 4, we also include a number of control variables that are often suggested in empirical models of economic growth. The inclusion of additional growth regressors improves the explanatory power of the model, but does not affect the coefficients related to leadership change. Finally, in column 5, we consider a Heckman two-step approach, where we treat the determinants of coup success as predictors (instruments) of the outcome of a coup attempt (results are suppressed) and use the predicted values in the second step to estimate the leadership change effect on economic growth.¹⁰ Whatever approach is taken, the results of the different specifications are highly similar.

Figure 2 shows the marginal effect of a leadership change after a coup d'état on economic growth for different values of economic development (based on specification 3). Apart from the marginal effect, the figure also shows the 95% confidence interval.

¹⁰ A Likelihood Ratio test on the independence of the two equations of the Heckman approach cannot be rejected at the conventional significance levels ($\chi^2(1)=0.41$, $p=0.52$). Hence, it can be concluded that the identification does not improve if the model is estimated as a two equation system.

Figure 2. Marginal effect of a leadership change after a coup d'etat on economic growth



Note: the figure shows the marginal effect of the impact of leadership change after a coup d'etat on economic growth for different values of GDP per capita. Furthermore, (in green) the 95% confidence interval is plotted. The dots refer to the observations indicate the level of GDP per capita for all observations included the sample.

The figure illustrates that, indeed, leadership changes after a successful coup have a positive effect when a country is (relatively) poor and that the effect diminishes (and becomes insignificant) as countries grow richer. Strikingly, for the richest countries in our sample, a leadership change after a coup d'etat has a negative and significant effect on economic growth.

Due to the restriction that we only include coup attempts in our sample that are not followed by another coup during the growth period under consideration, our sample size is relatively small. To examine whether our results are not driven by this sort of sample selection, we relax this restriction and estimate the model again for shorter (and also longer) growth periods. The qualitative results are shown in table 5.

Table 5. Robustness checks for varying growth periods

growth period after coup attempt	low GDP	high GDP	observations
1	+*	-	325
2	+**	-*	249
3	+*	-	214
4	+*	-	187
5	+*	-	168
6	+	-	150
7	+**	-	137
8	+**	-	125
9	+**	-**	116
10	+**	-**	112
11	+**	-**	103
12	+**	-**	96

Note: + indicates a positive marginal effect, - indicates a negative marginal effect. *=significant at the 10% level,

**= significant at the 5% level

Naturally, the shorter the economic growth period under consideration, the more observations we can include in the regression. For almost all specifications we find that a change in the political leader after a coup d'état has a positive effect on economic growth when GDP per capita is relatively low. However, the negative effect that is found for richer countries becomes consistently negative and significant for growth periods longer than eight years.

5. Further analysis

The reported results naturally raise the question why coup leaders in poor countries are able to trigger economic growth while coup leaders in other countries fail to do so. One reason could be the so-called convergence hypothesis that predicts that poor countries grow faster than richer countries. Here, we further examine whether there are other variables that can be responsible for the found effect. We examine the relevance of investment, trade, human capital, democratization, and civil conflict. More specifically, we estimate simple two-way regression models (i.e., two-way ANOVA), in which we examine the change of the different suggested variables (Y) over the 10 years after the coup attempt. Since, our results of the previous section suggest a difference between poor countries and richer countries, we interact

our coup success variable (*Coupsuccess*) with a dummy variable (*above_median*) that is equal to 1 if income per capita in the country under consideration is above the sample median and 0 otherwise.¹¹ The model is:

$$Y_{t+10} - Y_t = \beta_0 + \beta_1 \text{Coupsuccess}_t + \beta_2 \text{above_median}_t + \beta_3 \text{Coupsuccess}_t * \text{above_median}_t + \varepsilon_t$$

The results are reported in table 6. Apart from the regression results we also report the marginal effects for each group. Interestingly, all the variables under consideration partly explain why poor countries after a succeeded coup d'etat grow faster than richer countries. As columns 1-2 show, richer countries see their investment and trade levels decline after a successful coup, while there is no such an effect in poor countries. On the other hand, human capital is positively affected by a leadership change in poor countries, while there is no difference in richer countries. Surprisingly, we observe that richer countries tend to democratize in the decade after a successful coup, while poorer countries become more autocratic.

¹¹ We use a dummy variable for ease of interpretation. Interaction with GDP per capita gives similar results.

Table 6. Coup success and the changes in the determinants of economic growth

Dependent variable:	(1) Investment	(2) Trade	(3) Human Capital	(4) Democratization
Coup success	0.752 (0.69)	-0.193 (0.05)	1.495 (3.25)**	-1.489 (6.83)***
Above median GDP per capita	2.559 (1.49)	11.482 (1.34)	3.094 (2.20)*	0.063 (0.08)
Coup success * Above median GDP per capita	-7.606 (2.89)**	-15.165 (2.15)*	-0.584 (0.42)	6.159 (5.31)***
Constant	1.392 (3.57)**	7.184 (4.19)***	1.329 (3.71)***	0.846 (3.95)***
Marginal effect of coup success in countries with below median income	0.752 (0.69)	-0.193 (0.05)	1.495 (3.25)**	-1.489 (6.83)***
Marginal effect of coup success in countries with above median income	-6.853 (2.84)**	-15.358 (2.13)*	0.911 (0.70)	4.670 (4.69)***
Observations	118	118	71	106
R-squared	0.07	0.03	0.09	0.13

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Concluding remarks

Do coup leaders matter? Yes. Our results show that the coup leader is of crucial importance for the successfulness of a coup attempt. More importantly, leadership changes after a coup d'etat influence economic growth.

We have used a sample of successful and unsuccessful coup attempts to distinguish between the growth effects of political instability and leadership change. Although both successful and failed coups indicate political instability, only successful coups lead to leadership change. We find that leadership changes affect economic growth in politically unstable countries, but the effect is conditioned by the level of economic development. The poorest countries have higher growth rates in the decade after the leadership change caused by coups, while richer countries have lower growth rates in the decade after a successful coup than after a failed one. The results are in line with the convergence hypothesis that poor countries

grow faster than richer ones. This effect is robust to the inclusion of the determinants of coup success as well as standard explanatory variables of economic growth and holds also for shorter and longer periods of economic growth.

In further analyses, we have examined whether, apart from a convergence effect, other determinants of economic growth could be responsible for the found effect. We have considered four of the usual suspects, namely investments, trade, human capital, and democratization. Surprisingly, we find that each of them contributes to the explanation why coup leaders matter.

Whereas countries above median income per capita have lower investment levels and lower trade levels after a successful coup attempt, countries below median income see their human capital level increase. We also observe institutional change after successful coup attempts. That is, poor countries tend to become more autocratic, while richer countries become more democratic.

Our results are in line with the finding of Jones and Olken (2005) that leaders do matter. Our analysis, however, adds additional insight that political leaders also matter in political unstable countries. Furthermore, we show that in these countries the level of economic development is of importance for the size and sign of the effect.

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Appendix A Descriptive Statistics

Variable	Coup success sample					
	Obs	Mean	S.D.	Min	Max	Source:
Coup success	452	0.4934	0.5005	0	1	Powell et al. (2010)
Alighment with Cold War superpower	422	0.5671	0.3715	0	1.2791	Voeten and Merdzanovich (2009)
GDP per capita (log)	394	7.8133	0.8538	5.0816	11.3586	PWT 6.3
General dummy	452	0.2522	0.4348	0	1	see Note (1)
Mid-range officer dummy	452	0.5221	0.5001	0	1	see Note (1)
Sergeant dummy	452	0.0177	0.1320	0	1	see Note (1)
Reported deaths during attempt (dummy)	452	0.4978	0.5005	0	1	see Note (1)
Royal leader dummy	452	0.0221	0.1472	0	1	see Note (1)
Cold war dummy	452	0.8031	0.3981	0	1	
Civilian leader dummy	452	0.0664	0.2492	0	1	see Note (1)
Military regime	416	0.2668	0.4428	0	1	Cheibub and Gandhi (2004)
Military expenditures (% of GDP)	357	6.9811	18.1575	0	282.2372	COW dataset on National Material Capabilities v3.02
Military size (% of population)	424	0.0055	0.0062	0	0.0354	COW dataset on National Material Capabilities v3.02
Election dummy	418	0.2081	0.4065	0	1	Databanks international (2005)
Population (log)	439	8.7898	1.3557	4.1238	11.9070	PWT 6.3
Economic growth	389	-0.5451	8.5072	-65.0759	32.6997	PWT 6.3
Ethnic fractionalization	441	0.5358	0.2573	0	0.9302	Alesina et al. (2003)
Civil war dummy	428	0.0771	0.2671	0	1	Gleditsch et al. (2000)
French legal origin	443	0.7223	0.4483	0	1	Hadenius and Teorell (2005)
Duration of previous regime	434	9.2212	13.7068	0	100	Marshall and Jagers (2002)
Democracy dummy (Polity2>5)	452	0.2124	0.4095	0	1	Marshall and Jagers(2002)
Autocracy dummy (Polity2<5)	452	0.4624	0.4991	0	1	Marshall and Jagers (2002)
% of previous successful coup attempts	452	0.4420	0.3675	0	1	Powell et al.(2010)
Number of previous failed coup attempts	452	1.7810	2.4591	0	12	Powell et al. (2010)
Number of previous successful coup attempts	452	1.8650	2.0562	0	11	Powell et al. (2010)
Variable	10 year economic growth model					
	Obs	Mean	S.D.	Min	Max	Source:
Coup success	143	0.4685	0.5008	0	1	Powell et al. (2010)
Alighment with Cold War superpower	6398	0.6195	0.3769	0	1.7143	Voeten and Merdzanovich (2009)
GDP per capita (log)	8164	8.4766	1.1358	5.0376	11.6136	PWT 6.3
General dummy	10726	0.0044	0.0661	0	1	see Note (1)
Mid-range officer dummy	10726	0.0058	0.0758	0	1	see Note (1)
Sergeant dummy	10726	0.0001	0.0097	0	1	see Note (1)
Reported deaths during attempt (dummy)	143	0.4755	0.5012	0	1	see Note (1)
Royal leader dummy	143	0.0350	0.1843	0	1	see Note (1)
Cold war dummy	10726	0.6856	0.4643	0	1	Own calculations
Investment (% of GDP)	8164	21.5518	13.1453	-18.8682	105.6764	PWT 6.3
Population (log)	10726	8.1454	2.0824	1.9811	14.0945	PWT 6.3
Economic openness	8164	74.2894	51.2866	1.0860	622.6263	PWT 6.3
Secondary school enrolment	7461	25.3158	17.1928	1.0222	76.8000	Barro et al.(2000)

10-year economic growth rate (average)	6303	0.1774	0.3062	-2.2508	3.1787	PWT 6.3
Coup success * GDP per capita (log)	137	3.5538	3.9267	0	11.3586	Own calculations

Note: (1) the combined source includes www.keesings.com, Marshall and Marshall (2007), The New York Times, and www.wikipedia.org