# The Economic Effects of Executive Instability in Latin America*

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We investigate the relationship between political instability and economic performance in 18 Latin American Countries between 1985-2008. We use the increasingly common legislative attacks on chief executives as a specific measure of political instability and find that presidential attacks decrease economic growth up to 4%. The measure allows us to test mechanisms such as the partisan business cycles and executive uncertainty that could potentially relate attacks to economic performance. Our findings suggest that attacks against left president almost entirely drive the negative relationship between the two processes. This result remains even if we consider unsuccessful attacks. In addition, we find moderate evidence that the propensity for future attacks hinders current growth.

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## 1 The Political Economy of Executive Instability

Political instability impedes economic growth. Political scientists and economists continue to find support for this negative relationship (Svensson, 1998; Londregan and Poole, 1990; Alesina et al., 1996; Alesina and Perotti, 1996; Stasavage, 2002; Campos and Karanasos, 2008). However, the mechanism underlying this relationship is not necessarily clear. Indeed scholars have pointed to the investor uncertainty (e.g. Alesina et al., 1996), executive uncertainty (e.g. Cukierman and Tabellini, 1992), and political business cycles (e.g. Alesina, 1987), among other, as possible explanations, and the question still remains as to the conditions necessary for these mechanisms to operate.

A significant impediment to investigating instability's effect on growth resides in measurement. Often measures of instability group together events such as coups, cabinet reshuffles and government purges. While such an approach increases the number of country observations experiencing instability, it does not lend itself to uncovering *why* the relationship exists for at least two reasons. First, there is little reason to believe the same data generating process applies across disparate phenomena. For example, formal and informal types of instability affect growth through distinct mechanisms (Campos and Karanasos, 2008). Second, results regarding political instability are not robust to specification of instability's constituent terms (Ali, 2001). Thus, considering a specific type of instability may provide more tractability when investigating its relationship with economic performance.

In this paper we contribute to this endeavor by exploring the possibilities of several mechanisms on a very specific type of instability: the attempted removal of Latin American presidents. More than 30 percent of these presidents have faced some threat of early removal by their respective legislatures between 1985 and 2008. We refer to the threat of early removal, which can include the initiation of impeachment proceedings or a constitutional declaration of incapacity, as a presidential attack, a term used through out the paper. The rate of presidential attacks has motivated scholars have to investigate the minimal job security of presidents in the region (Hochstetler and Samuels, 2011; Perez-Linan, 2007; Hochstetler, 2006; Hochstetler and Edwards, 2009; Helmke, 2010; Valenzuela, 2004) and raises normative questions as to whether the attacks reflect the parliamentarization of presidentialism (Carey, 2005) or a "peril of presidentialism" (Linz, 1990). Yet most of these regional studies of presidential instability attempt to explain why the phenomenon occurs and how it varies

across countries. Scholars have not yet characterized how this "new instability" of shorten presidential terms affects the region. A notable exception is Hochstetler and Samuels (2011) who find extremely limited evidence of presidential instability's negative effects, a conclusion that does not necessarily fit well with the political economy literature mentioned above.

In this paper, we use data from 18 Latin American countries between 1985 and 2008 and find that, indeed, challenges against presidents impede economic performance. Two further results follow from this analysis presented here, and they emphasize the importance of time. First, we find that last year's instability reduces current growth, and this relationship is almost entirely driven by instability under left presidents. We could not find a consistent effect of attacks on more centrist presidents on growth. This result provides some evidence of possible business cycles originating from presidential attacks. However, the relationship does not change when we look at the differences between successful and unsuccessful attacks. Second, we limited support that the expectation of next year's instability hinders present performance This provides some evidence for theories of executive replacement and economic performance.

The paper is organized as follows. The next section reviews several hypotheses relating instability to growth while Section 3 introduces the data used in this study. Section 4 presents the results, and Section 5 concludes.

## 2 Attacks, Partisanship and Economic Performance

Interpreted broadly, political instability ranges from assassinations to civil war to executive turnover in regular elections, essentially, any combination of political variables in Banks and Wilson's (2012) data set, which includes measures of when and how executives are replaced.[1] The relationship between attacks and economic performance, however, is not necessarily clear. One body of literature asserts that instability leads to long term declines in economic performance (Alesina et al., 1996; Alesina and Perotti, 1996), providing evidence of a "poverty trap." Another argues that there exists a "coup trap" where declines in economic performance lead to cycles of instability (Londregan and Poole, 1990; Przeworski et al., 2000). In addition, some evidence suggests that political instability only impedes performance when it induces fluctuations in policy (Ali, 2001), and that previous results are driven by African countries

[1] Williams and Siddique (2008) provide a review of various indicators of political instability.

(Campos and Nugent, 2002). Finally, some research has demonstrated that instability drives down investment (Svensson, 1998; Stasavage, 2002), which can then affect growth. In this paper, we focus on how a particular type of instability, namely presidential attacks, affects growth. As we will see, this allows us to more rigorously examine possible mechanisms that connect instability to growth. Thus, we first want to know what the relationship is between presidential attacks and economic growth, and following the political economy literature, the first hypothesis we wish to investigate is as follows:

**H1** *Presidential attacks should decrease economic performance.*

If we do find support for the first hypothesis, this immediately begs the question, "Why?" Some researchers explain the relationship by arguing that in politically unstable countries, an investment or the rules under which the investment was made may no longer be there the next day (Alesina et al., 1996; Alesina and Perotti, 1996; Ali, 2001). Alesina et al. (1996) write "Political instability affects growth because it increases policy uncertainty, which has negative effects on productive economic decisions such as investment and saving" (p. 191). Yet this story is not clear about a more specific process that is driving the policy uncertainty.[2] In this paper, we consider theoretical work that proposes specific mechanisms connecting instability to declines in economic performance. This includes the partisan business cycle models of Hibbs (1977) and Alesina (1987) and models of executives shirking as the probability of removal increases. We identify several hypotheses that help distinguish between the three mechanisms, and throughout, we focus on the timing of the attack and the ideology of the president.

The first partisan business cycle model by Hibbs (1977) considers how two party competition induces economic cycles in inflation and unemployment. The model has two parties who have diverging preferences over macroeconomic policies; the liberal one prefers low unemployment and the conservative prefers low inflation. When the parties rotate in and out of office, macroeconomic policies correspondingly change, which induces tradeoffs between unemployment and inflation. Empirical work has focused on different growth rates under the two types of regimes, where liberal parties produce higher growth rates than conservative ones due to monetary policies aimed at lowering unemployment, thereby increasing aggre-

[2]For example, it could be unpredictable fluctuations in economic policy (Ali, 2001), the existence of the regime itself (Przeworski et al., 2000; Jong-a-Pin, 2009), and the lack or property rights (Acemoglu, Johnson and Robinson, 2001). Further complications arise because investment may actually be a strategy used to protect more easily extractable resources (Przeworski et al., 2000).

gate demand at the expense of rising inflation. (Alesina and Rosenthal, 1995; Alesina et al., 1996; Faust and Irons, 1999; Drazen, 2000).[3] Therefore, if presidential challenges concern battles of policy (Perez-Linan, 2007; Helmke, 2010, 2012), then we expect policy change after an attack. This is especially the case when the legislature bypasses the vice president in the line of succession and appoints an executive from another political party or faction, which appears to be common in Latin America (Helmke, 2012). Our second hypothesis then follows:

**H2** *The relationship between presidential attacks and economic performance is conditional on the ideology of the president.*

More precisely, we expect attacks on left presidents to dampen economic performance to a greater extent than attacks on more moderate or conservative presidents.

The driving force behind the Hibbs business cycle is that different parties enact different policies. Thus, we should not expect to see economic cycles when presidential attacks fail to replace the executive, giving us a null third hypothesis.

**H3** *Presidential attacks should effect growth only when a left executive is successfully replaced.*

Alesina (1987) offers a neo-Keynesian interpretation of Hibbs' model in which policy uncertainty is necessary to induce business cycles. More specifically, economic actors must form expectations about future unemployment and inflation policies when there exists uncertainty over the left and the right holding political power. These expectations represent weighted averages between the platforms offered by the two parties, where the weights reflect predictions about the upcoming election's outcome. When the left takes office and implements its now "unexpected" high inflation policies, the economy temporarily expands, but when the right takes office and implements its unexpected low inflation policies, the economy temporarily contracts. Although this model also supports Hypothesis H2, the departure from the previous work occurs because uncertainty over the future, not changing economic policy per se, induces cycles. Therefore, if presidential attacks create general uncertainty about future policy due to the possibility of success, economic actors will update their expectations given

[3]Due to the structure of party systems in Latin America, we could also compare left, center and right presidencies. This departs from the literature that focuses on cycles in the United States, where parties better fit the dichotomy between left and right.

the uncertainty during any removal proceedings. When the proceedings conclude, these expectations will ultimately be incorrect depending on which ideological policies are realized. This then leads to possible short term expansion or contraction of economic performance without successful removals.[4] Thus *failed* attacks of left presidents should increase growth because the uncertainty over removal creates expectations consistent with less inflationary policies, but the more inflationary policies are actually implemented. With this in mind, our fourth hypotheses is as follows:

**H4** *Presidential attacks should increase growth when the current executive is from the ideological left and is unsuccessfully replaced.*

There is an important point to make about the type of uncertainty arising from presidential attacks versus the uncertainty arising from regular electoral competition. A major criticism of Alesina's model arises from the possibility that contracts can be coordinated around election dates, and Alesina (1995) calls this "Achilles' heel" of the model. There is some evidence that contract signings in the US do occur more frequently during November or later months in election years (Garfinkel and Glazer, 1994). Nonetheless, research investigating business cycles should find presidential challenges useful precisely because they are not mandated by law. In addition, the successfulness of a presidential attack allows us to test another observable difference between the two models (Hypothesis H4). Past research has often focused on whether the changes in growth last throughout an executive's term, but even this is not conclusive evidence (Drazen, 2000). Thus, Hypothesis H4 contributes to a broader literature by possibly distinguishing between these two models.

The third and final mechanism we consider focuses on how executives shirk in the face of declining career prospects. For instance, governments decide to change public policy (e.g. the tax collection mechanism or level of public investment) and incur some cost during this period of reform. With a certain probability, the government will remain in office to reap the rewards of the reform or will be removed from office having paid or having to pay some cost (policy or economic) in the out-of-office period. This class of models (Cukierman and Tabellini, 1992; Svensson, 1998; Persson and Tabellini, 2000; Devereux and Wen, 1998) explicitly examines this trade off as a function of some exogenous probability of removal and

[4]If the length of proceedings increases with uncertainty, the difference between policy expectations and actual policies implement will increase. This increases the differences in economic performance. See Drazen (2000) for a discussion.

illustrates that, as instability increases, governments will choose sub-optimal policies that discourage investment. Therefore our fifth hypothesis is as follows:

**H5** *The expectation of future presidential attacks decreases growth.*

Note that the logic used to develop Hypothesis H5 differs from the logic underlying the uncertainty of investors in business cycles. In the investor-centered mechanism, the divergence of policy expectations and the policies actually implement impedes economic activity. In the executive-centered mechanism, the executive's uncertainty about the future dampens current economic activity. However, if conservative or liberal presidents are more likely to be attacked, then the economy should preform worse on average when these presidents are in office. Our sixth and final hypothesis is

**H6** *If left or right presidents are more likely to be attacked, then growth should decrease during their terms in office.*

In sum, we have identified six hypotheses from the political economy literature. Hypothesis H1 is a general statement about the relationship between political instability and growth usually associated with the investor uncertainty literature. Hypothesis H2 originates from the partisan business cycle literature. Furthermore, H3 is developed in the traditional Hibbs' partisan business cycle model, and H4 comes from Alesina's model. Finally, the executive uncertainty literature produces Hypotheses H5 and H6.

## 3 Data

This section describes the data used in the project. Along the way, we discuss the past findings and hypotheses in the literature that relate other variables to growth.

The unit of observation is a country-year in Latin America. The data are unbalanced panel of 18 countries between the years of 1985 and 2008.[5] The panel is unbalanced in the sense that not all countries enter in 1985. Some enter later after they removed military leaders (Panama) or demonstrated competitive elections (Mexico). Helmke (2010) and Perez-Linan (2007) contain discussions of case selection in these types of analysis, and Appendix A lists the countries and their entry year into the data set.

[5] Quarterly growth data are available for most countries in the sample starting in 1990. Moving from yearly data to quarterly data would increase the total number of observations; however, it would not necessarily increase the number

The economic dependent variable is growth measured by change in real GDP. This variable was calculated from Heston, Summers and Aten (2011). It varies from 29% in Venezuela 2004 and -24% in Nicaragua 1988. Average growth in the sample is 6.2% In addition, we use a variable called average world growth, which is the average growth from G8 countries. Alesina et al. (1996) use this variable to control for random shocks in the economy when year fixed effects are computationally expensive, and they expect that this lagged variable will positively relate to growth. The year 1993 was a particularly bad for the world economy with an average growth rate of -0.37%, while 1988 has the sample high at 8.6%. Appendix B contains descriptive statistics for growth and the other variables discussed in this section.

The political variable of interest is *attempted* presidential attack in a given country year. It is coded as a nominal variable at the onset of a legislative challenge to the executive. The variable includes 15 successful attacks and 19 unsuccessful ones and comes from Helmke (2012). Ecuador has the most attempted attacks with seven, and countries like Costa Rica and Chile have the least with zero.

This variable most greatly differs from past instability research. Alesina et al. (1996) examine major political changes, which include coups *and* regular transfers of power between parties or different legislative coalitions. Alesina and Perotti (1996) take an even broader approach and consider a weighted sum between the average number of assassinations, deaths in domestic disturbances, successful and unsuccessful coups, and a democracy dummy variable. Ali (2001) and Przeworski et al. (2000) use a more limited construction and consider the variance in economic policies and the instability of the regime itself, respectively. Blanco and Grier (2009) use nine variables from the Banks and Wilson data set. Finally, Jong-a-Pin (2009) considers 25 variables from guerilla warfare to cabinet changes to government purges, but attempts to separate the dimensions of instability with a factor analysis.

The other political variable of interest is executive ideology. We use Stokes' (2009) coding of relative left, which identifies the most redistributive presidential candidate among the three with the largest vote share, and more current values are filled in using Debs and Helmke (2010). Thus, the variable is coded as 1 in country-years in which this relative left candidate is serving as president. With this coding, 51% of observations have left leaning presidents.

We also use average years in schooling from Barro and Lee (2010). This data is only produced every five years, so we construct a linear approximation to fill in the the remaining observations. Other imputation methods could have been used, but they often assume the

data are missing at random. Several macroeconomic analyses find that education leads to an increase in growth rates (Barro and Sala-i-Martin, 2004). We also use data from the World Bank on inflation, life expectancy, fertility rates and terms of trade as control variable in some model specifications (Barro and Sala-i-Martin, 2004). In addition, a measure of anti-government demonstration from the Banks and Wilson (2012) data set is used as a control variable.

Finally, several institutional variables capture the political context of the presidential attacks. We use Perez-Linan (2007) as a reference to code the number of veto players involved in removing the president. For example, Ecuador only requires 50% of the lower house to declare the president incapacitated, but the Domincan Republic requires 75% of both houses, and Venezuela (later than 1998) also requires the consent of the courts. This variable is mostly constant throughout a country's time in the data set. When there exist multiple pathways through which the president can be removed, we use the one with the smallest number of veto players. Perez-Linan (2007) uses these constitutional measures and legislative seat share to determine when a president's party can veto a possible challenge to the executive. and finds an expected negative relationship to presidential challenges. To the best of our knowledge, this variable has not been included in previous analyses.

Helmke (2012) uses three other variables to specify a model of presidential attacks, which includes a measure similar to that of Shugart and Carey (1992) who propose different types of legislative presidential powers (e.g. budget or referendum proposal power). In addition, the data contain a measure of divided government, i.e. when the president's political party control less that 50% of the legislature. Throughout, we call this a minority president. The sample contains 63% of observations with minority presidents. Helmke (2012) argues that presidents are challenged when they are minority presidents *and* possess the necessary institutional resources to create policy without the approval of the legislative coalition.[6]

[6]There is some debate about the effect of minority presidents on the probability of presidential attacks. Negretto (2006) contends that a pivot model that identifies the median and veto pivots better explains presidential impeachments. Furthermore, Hochstetler and Edwards (2009) find that minority presidents are more likely to have "street challenges" launched against them, but this relationship is not present in a full sample of legislative- and street-based challenges.

# 4 Results

The results are organized around the six hypotheses discussed earlier. We first consider the effect of an presidential attack on current levels of growth. However, there are several reasons why economic performance should also affect executive instability. On the one hand, several authors contend that poor economic performance intensifies social conflict over resources leading to disapproval of the president (Perez-Linan, 2007; Hochstetler, 2006) or lowering the legislative coalition's cost to proceed with removing the executive (Helmke, 2010, 2012). To work around this problem, our second set of results use past instability as a way around the endogeneity problem.[7] These two sets of results attempt to test Hypothesis H1. Third, we look at the interaction between attacks and executive ideology and the differences between successful and unsuccessful attempts in order to test Hypotheses H2-H4. Fourth, we consider the relationship between future expectations of instability and growth, which attempts to test hypotheses H5-H6.

## 4.1 Growth and Presidential Attacks

We first investigate Hypothesis 1 and consider whether lower levels of growth are associated with current attacks on the president and in what direction the relationship moves. We follow the lead of Hochstetler and Samuels (2011) who regress a considerable number of variables from the political section of the International Country Risk Guide dataset on presidential challenges. In their models, they control for growth, the log inflation rate, the dependent variable lagged by one and two periods and country and time effects. Likewise, we also model presentational attacks as a function of growth, growth lagged one year, attacks lagged one and two years, and the log of the inflation rate.[8] The first model includes country and year effects, but these were dropped in the second due to separation issues.

Figure 1 illustrates the results of two analyses. The figure on the left originates from the regression of growth on attempted presidential removals. We held all other control variables at their means or medians and calculated average expected growth under country-years with and without attacks and corresponding 90% confidence intervals. The figure demonstrates

[7] We also consider simultaneous equations that account dichotomous independent variables like those derived in Heckman (1977) and Maddala (1983). Lacking better exogenous variation, our instruments only included past instability and political institutional characteristics of the countries. In these models, we did not find a relationship between growth

[8] The authors also control for growth.

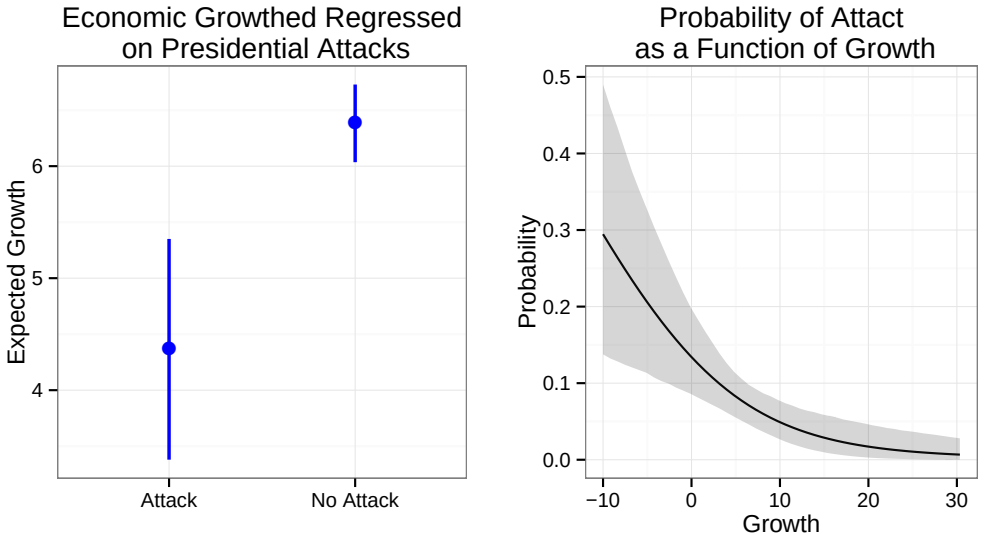


Figure 1: Figure on the left is derived form a linear regression model of growth on presidential attacks, and the one on the right from a logistic model of attacks on growth. Both models include country and year fixed effects fixed effects, one year lag of the independent variable, two year lags of dependent variable of interest and a control for logged rate of inflation. The independent variable of interest, current attacks and current growth, respectively, was significant in both models ($p < .05$).

that the expected economic growth in country-years with no attacks is significantly higher than those with an attempted attack. Likewise, the figure on the right can be produced from a probit model when growth is a predictor of the probability of an attempted removal when all other variables are held at their means and medians and growth is varied from -10 to 30. It also illustrates that growth has a strong negative relationship with attacks although the standard errors are quite large for negative values of growth. The results indicate that under model specifications similar to those found in previous research, lower growth is indeed associated with a greater probability of presidential attacks. This provides preliminary evidence concerning Hypothesis H1. The remaining analysis aims at disentangling this relationship.

## 4.2 Past Instability

We now consider the effect of past instability on current growth as another strategy to investigative Hypothesis H1, in which we want to determine whether instability influences growth. Specifically, we regress growth on lagged attacks. Now the lag structure prevents simultaneity from biasing the regression estimates. Table 1 presents three different model specifications. In all three models, lagged attacks noticeably reduces levels of economic

Table 1: Growth and Previous Instability

| | Model 1 | Model 2 | Model 3, year effects |
|---|---|---|---|
| Constant | $4.49^{***}$ | $4.12^{***}$ | $7.14^{***}$ |
| | (0.32) | (0.56) | (1.64) |
| Attack, lag | $-1.07^{\dagger}$ | $-1.06^{\dagger}$ | $-1.67^{**}$ |
| | (0.62) | (0.61) | (0.63) |
| Growth, lag | $0.37^{***}$ | $0.36^{***}$ | $0.26^{***}$ |
| | (0.03) | (0.03) | (0.02) |
| Growth, lag 2x | $-0.07$ | $-0.06$ | $-0.10^{\dagger}$ |
| | (0.05) | (0.05) | (0.05) |
| World Growth, lag | | 0.07 | |
| | | (0.10) | |
| $N$ | 394 | 394 | 394 |
| $R^2$ | 0.13 | 0.13 | 0.31 |

Robust standard errors in parentheses

$^{\dagger}$ significant at $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

growth, and this relationship becomes clearer when we control for year effects. An attempted presidential challenge in the previous year lowers this year's growth by 1% or 2%. Producing a similar analysis in which current instability is a function of past growth reveals no detectable relationship between the two variables in any model specifications similar to those in Table 1.[9]

Hence, we find evidence supporting Hypothesis H1 when using past instability and current economic performance. These results are noteworthy when compared with previous findings. On the one hand, they echo those in Hochstetler and Samuels (2011) who find that challenged presidents lower next year's opinions of socioeconomic and investment conditions. On the other, they conflict with those of Londregan and Poole (1990) and Campos and Nugent (2002) who find no such relationship between growth and past coups.[10] These different conclusions could be reached for at least two reasons. First, there could be model specification differences. In Appendix C, we present the results of several growth models with more control variables. In all models, lagged attacks decreases growth, and the associated coefficient remains between $-1$ and $-2$, which suggests that the models in Table 1 are not influenced by omitted variables commonly found in growth models.[11] Second, coups and presidential impeachments could relate to economic performance through different data generating processes. This more

[9] Given these two results, one could say that impeachment "Granger causes" growth, but the converse does not hold (see Granger, 1969).

[10] Campos and Nugent (2002) do find a negative association only in Africa and the Middle East

[11] In addition, the estimation procedures also differ. The observations in Campos and Nugent (2002) are 5-year averages of the variables of interest, and the authors further take first differences of these variables.'

Table 2: The Modifying Effect of Ideology on the Relationship between Growth and Previous Instability

| | Model 1 | Model 2 | Model 3, year FE | Model 4, FE |
|---|---|---|---|---|
| Constant | 3.89*** | −4.37 | 2.86 | 126.25*** |
| | (0.28) | (3.08) | (4.36) | (16.28) |
| Impeach, lag | −0.11 | 0.19 | 0.01 | −0.37 |
| | (0.60) | (0.66) | (0.68) | (0.62) |
| Left, lag | 1.35** | 1.32** | 1.48*** | 0.80* |
| | (0.45) | (0.45) | (0.39) | (0.39) |
| growth, lag | 0.36*** | 0.34*** | 0.24*** | 0.22*** |
| | (0.03) | (0.03) | (0.03) | (0.04) |
| growth, lag 2x | −0.07 | −0.09† | −0.10* | −0.06 |
| | (0.05) | (0.05) | (0.05) | (0.04) |
| Attack*Left, lag | −2.03* | −2.18* | −3.57*** | −3.02** |
| | (1.02) | (1.04) | (1.01) | (0.94) |
| Log GDP p.c., lag | | 1.01** | 0.42 | −14.07*** |
| | | (0.38) | (0.45) | (1.93) |
| $N$ | 387 | 387 | 387 | 387 |
| $R^2$ | 0.15 | 0.16 | 0.34 | 0.45 |
| Resid. sd | 4.83 | 4.82 | 4.38 | 4.12 |

Robust standard errors in parentheses

† significant at $p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

evidence suggesting that a disaggregated approach to executive or political instability may be beneficial moving forward.

### 4.3 Partisan Business Cycles

We now turn our attention to Hypotheses H2-H4. Hypothesis H2 posits that attacking left presidents will decrease growth more than an attack on their right counterparts.. To test this, we interact lagged attacks and lagged ideology. Table 2 reports the results, where ideology is presented as a dichotomous variable indicating the presence of a left president. Here a significance test on the coefficient associated with the interaction term indicates that a challenge to a left president decreases growth more than a challenge to a president who is moderate or conservative. The results suggest that attacking left presidents lowers future economic growth between 2% and 4% while attacking right president does not necessarily hurt economic growth. Therefore, there is evidence supporting Hypothesis H2. In addition, this result does not disappear when we add further control variables (see Appendix D).

We next disaggregate our attack variable into successful and unsuccessful attempts. Doing so allows us to compare Hibb's (1977) model of partisan business cycles to that of Alesina

(1988) and to test Hypotheses H3 and H4. Recall that Hypothesis H3 expected that instability only influences growth when presidential attacks are successful. Therefore, we compare the previous results to ones in which we distinguish between successful and unsuccessful attacks. In addition, Hypothesis H4 predicted that unsuccessful attacks against left presidents should increase growth, so we also look at the substantive effect of unsuccessfully attacking left presidents .

Tables 3 and 4 replicate the above analysis and account for successful and unsuccessful attacks, respectively. First consider Table 3. The dependent variable in these models is successful presidential attacks, so country-year observations with unsuccessful attacks are lumped together with those without any attack. Here the sign of the interaction term on successful attacks and left ideology is negative and significant in three of the five models. This is as expected from Hypothesis H2. Now, consider Table 4. In these models, the dependent variable is unsuccessful attack, so successful attack observations are included with observations with no attacks.[12] Even in unsuccessful cases, attacks against left presidents have a significantly different affect on growth than attacks against right presidents. Thus, we do not find evidence consistent with Hypothesis H3. One reason for such a result could be that the legislative coalition further attempts to remove the executive after failed presidential attacks (e.g. Borja in Ecuador). Also, the effect of unsuccessfully challenging a left president is more negative (smaller) than the affect of unsuccessfully challenging a right president, so we do not find evidence in support of Hypothesis H4.

In sum, we initially find moderate evidence that business cycles could explain the relationship between instability and growth. The results indicate that attacking left presidents significantly lowers future growth rates, while attacking center or right presidents has no consistent effects on growth rates. This evidence is consistent with Hypothesis H2. Upon probing deeper, it appears that neither business cycle theory can adequately explain the empirical patters. We cannot explain the relationship between unsuccessful challenges and growth as there is no substantive difference between the effects of unsuccessful and successful attacks on economic growth. This evidence is not consistent with Hypotheses H3 and H4.

[12]This may seem unintuitive. As a robustness check, we replicated the analysis in Table 4 but dropped observations with successful attacks. No substantive results change. In addition, there is very little change in the coefficient estimates as well.

Table 3: Growth, Previous Instability, Ideology and Successful Attacks

| | Model 1 | Model 2 | Model 3, year FE | Model 4, FE | Model 5, FE |
|---|---|---|---|---|---|
| Constant | 3.83*** | −4.85† | 2.12 | 130.23*** | 125.16*** |
| | (0.28) | (2.94) | (4.45) | (15.01) | (14.56) |
| Suc. Attack, lag | −0.68 | −0.58 | 0.05 | −0.14 | −0.28 |
| | (1.11) | (1.14) | (0.64) | (0.70) | (0.67) |
| Left, lag | 1.26** | 1.20** | 1.37*** | 0.61 | 0.71 |
| | (0.45) | (0.46) | (0.38) | (0.40) | (0.49) |
| Growth, lag | 0.36*** | 0.34*** | 0.24*** | 0.23*** | |
| | (0.03) | (0.03) | (0.03) | (0.04) | |
| Growth, lag 2x | −0.07 | −0.09† | −0.10† | −0.06 | |
| | (0.05) | (0.05) | (0.05) | (0.04) | |
| Suc. Attack*Left, lag | −1.61 | −1.68 | −3.23* | −2.81* | −3.10* |
| | (1.67) | (1.69) | (1.42) | (1.27) | (1.33) |
| Log GDP p.c., lag | | 1.06** | 0.45 | −14.57*** | −13.92*** |
| | | (0.37) | (0.45) | (1.78) | (1.73) |
| $N$ | 381 | 381 | 381 | 381 | 381 |
| $R^2$ | 0.15 | 0.16 | 0.34 | 0.44 | 0.41 |
| Resid. sd | 4.85 | 4.83 | 4.42 | 4.15 | 4.27 |

Robust standard errors in parentheses

† significant at $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 4: Growth, Previous Instability, Ideology and Unsuccessful Attacks

| | Model 1 | Model 2 | Model 3, year FE | Model 4, FE | Model 5, FE |
|---|---|---|---|---|---|
| Constant | 3.76*** | −5.15† | 2.47 | 132.14*** | 126.97*** |
| | (0.29) | (3.00) | (4.63) | (14.32) | (14.21) |
| Unsuc. Attack, lag | 0.29 | 0.71 | 0.08 | −0.38 | −0.47 |
| | (0.53) | (0.59) | (0.79) | (0.78) | (0.62) |
| Left, lag | 1.26** | 1.21** | 1.35*** | 0.66 | 0.77 |
| | (0.46) | (0.46) | (0.40) | (0.45) | (0.52) |
| Growth, lag | 0.37*** | 0.35*** | 0.24*** | 0.23*** | |
| | (0.03) | (0.03) | (0.03) | (0.04) | |
| Growth, lag 2x | −0.07 | −0.09† | −0.09† | −0.06 | |
| | (0.05) | (0.05) | (0.05) | (0.04) | |
| Unsuc. Attack*Left, lag | −1.91* | −2.01* | −3.78*** | −3.19** | −3.58** |
| | (0.92) | (0.92) | (0.96) | (1.15) | (1.35) |
| Log GDP p.c., lag | | 1.08** | 0.37 | −14.86*** | −14.20*** |
| | | (0.38) | (0.45) | (1.69) | (1.67) |
| $N$ | 381 | 381 | 381 | 381 | 381 |
| $R^2$ | 0.15 | 0.16 | 0.34 | 0.44 | 0.41 |
| Resid. sd | 4.86 | 4.84 | 4.42 | 4.15 | 4.27 |

Robust standard errors in parentheses

† significant at $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

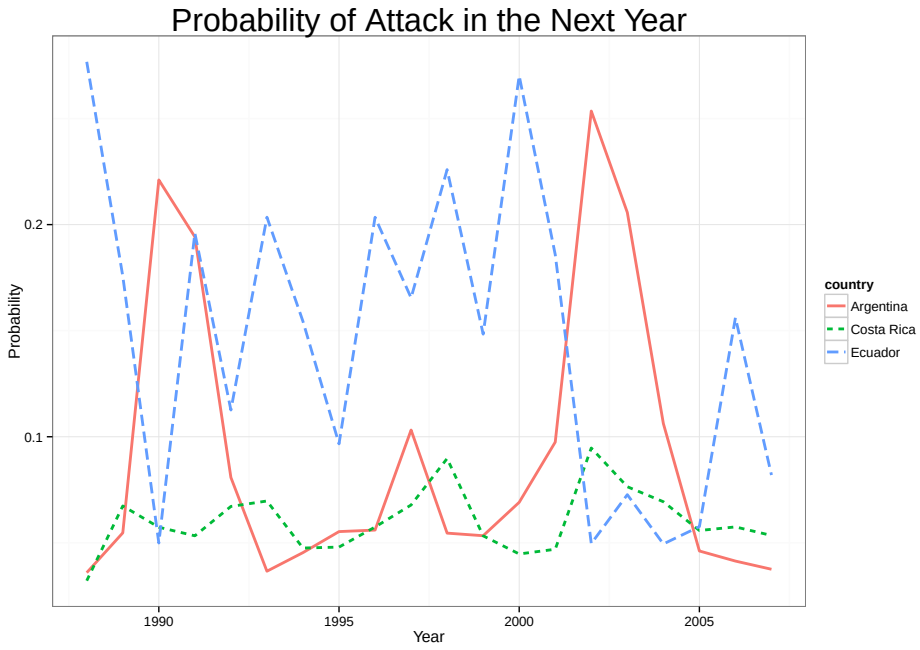


Figure 2: The predicted probabilities for three countries were generated using the panel specification and a probit model.

## 4.4 Not So Great Expectations

In this section we investigate Hypotheses H5 and H6. Starting with the fifth hypothesis, we expect the future propensity of instability to hurt current growth. In order to assess this, we proceed in two stages. First, we estimate a forecasting type model where data from the current period are used to predict presidential challenges in the future.[13] That is, in a probit regression,

$$\Pr(\text{attack}_{t+1}) = \Phi(X_t\beta))$$

where $X_t$ includes predictors of future attacks.

To specify the expectations model, we follow the lead of Alesina et al. (1996) and Alesina and Perotti (1996) and attacks lagged one and two years, growth lagged two year, and past world growth. We call this first model the Panel Model. In addition, we consider a model that speaks to the political context of presidential attacks (Helmke, 2012) by including the interaction of minority president and presidential strength, its constituent terms, and the number of veto players required to remove a president, and we label it the Institutional Model. The first stage models are reported in Appendix E.

[13]Such a procedure is found in Przeworski et al. (2000) and Cukierman and Tabellini (1992).

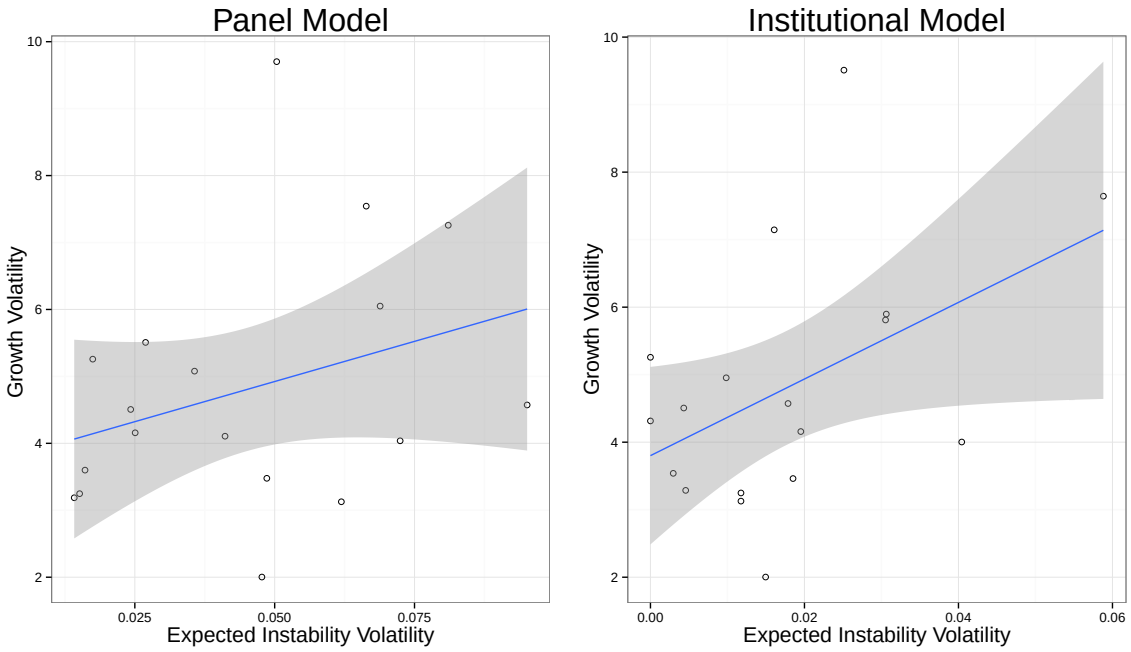


Figure 3: Two scatter plots illustrating the positive relationship between variability in expected instability and variability in growth. Volatility measures are created from the standard deviations of growth and expected instability in every country. The shaded regions denote 95% confidence intervals.

Next, we use the fitted models to estimate the predicted probabilities in the equation above. These vary from .009 in Venezuela 2006 to .35 in Paraguay 2003. Figure 2 displays the predicted probabilities from Argentina, Ecuador and Costa Rica created from the Panel Model. The predictions for Argentina spike in 1991 and 2002, years in which economic growth was 2.8% and -2.8%, respectively. Both of these observations were below Argentina's sample mean and median growth levels (5.9 and 8.1, respectively.) Next, Ecuador's prediction show significant year-to-year fluctuations, where the peaks accurately predict attacks in the subsequent year (impeachment attempts occurred in 1995, 1997 and 1999). The years in which these predictions are above 20% have an average growth rate of 4.3% while the years below 20% have an average of 6.7%. Finally, Costa Rica is a country that has never experienced a presidential challenge, and the figure illustrates that the simple forecasting model predicts relatively lower expectations of instability. Furthermore, the variance in Costa Rica's growth rate is smaller than the other two countries.

Both of these observations generalize to the rest of the sample. Observations with probabilities of future attacks greater than .2 have an average growth rate of 4.1, while their less stable counterparts have an average of 6.2. A difference-in-means test between these

two samples is significant at conventional levels ($p < .05$). In addition, we calculate the standard deviation of each country's growth rate and future propensity for attacks under both forecasting models throughout the entire data set. These values respectively represent the underlying volatility in growth and the expected instability across countries. Figure 3 displays two scatter plots in which the horizontal axis denotes the volatility in expected instability and the vertical axis denotes the volatility in growth. Each data point represents a country. The graphs indicate that a higher volatility in the expectations of instability is associated with a higher volatility in growth. Large fluctuations in expected executive changes are associated with large fluctuations in growth, which is consistent with the expectations hypothesis. There are two notable outliers in the graph. Venezuela's growth has a standard deviation of 10, which could be explained by the increase in oil prices later in the sample. Guatemala, in contrast, has a fairly stable growth rate throughout the years in the sample with a standard deviation of 2.[14] In sum, these results provide confidence that the forecasts of future instability described above are capturing an important aspect of a country's political and economic context.

Finally, we include these fitted values as predictors to model growth in the current year. Table 5 reports the results with standard errors clustered by country. The results from the two models reveal a strong negative relationship between the future probability of attacks and growth. If we were to compare an observation with a president who is certainly safe from an attack (future probability close to 0) with one who is almost certainly facing an impending attack (probability close to 1) we would see that growth decreases by 7%. Therefore, we find moderate evidence in support of Hypothesis H5.

There is at least one technical criticism of this section's result that need to be addressed. The standard error estimates in Table 5 do not actually reflect the true underlying uncertainty in the predicted probability estimates. Furthermore, when we implement a bootstrapping procedure, the standard errors increase significantly regardless of the chosen resampling scheme. There are two considerations worth noting, however. First, the results *are robust* to various analytical specifications of the standard errors including non-clustered robust standard errors and those clustered around year. As King and Roberts (2012) note, this leads to greater confidence in the hypothesis tests in Table 5. Second, with less than 400 observations and only 34 presidential challenges included, the sample considered here may not

[14]Guatemala's instability is clustered around Serrano's tenure, 1991-1993.

Table 5: Future Expectations of Presidential Attacks and Growth with Year Effects

| | Panel Model | Institutional Model |
|---|---|---|
| Constant | 0.26 | 1.78 |
| | (6.62) | (4.34) |
| Pr. Future Attack | $-6.96^{\dagger}$ | $-8.90^{\dagger}$ |
| | (4.09) | (4.76) |
| Growth, lag | $0.27^{***}$ | $0.27^{***}$ |
| | (0.02) | (0.02) |
| Growth, lag 2x | $-0.13^{*}$ | $-0.11^{*}$ |
| | (0.06) | (0.05) |
| Log GDP p.c. | 0.33 | 0.62 |
| | (0.56) | (0.57) |
| $N$ | 348 | 359 |
| $R^2$ | 0.33 | 0.33 |

Robust standard errors in parentheses

$^{\dagger}$ significant at $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

actually approximate the population distribution, in which case any bootstrapping procedure will not reliably return consistent estimates.

Finally, because these results establish a relationship between the expectation of future instability and current growth, we may worry that previous results in Section 4.3 are not due to business cycles but are instead products of a potential relationship between ideology and impeachment. In other words, Hypothesis H6 suggests there is a relationship between presidential ideology affects the probability of presidential attacks. To investigate this hypothesis, we replicate two logistic regression models in Helmke (2012) but also control of the ideology of the president. In these models, the propensity of a presidential attack is a function of the interaction between minority presidents and presidential powers, along with other control variables such at GDP per capita, inflation and unemployment. The results are reported in Table 6, and we do not find evidence for Hypothesis H6.

## 5 Conclusion

We have investigated the relationship between political instability and economic performance using a very particular measure of instability, i.e., challenges to Latin American presidents over the last 25 years. Such an approach uncovers three important findings. First, challenges to Latin American presidents impede economic performance. While we did not uncover any simultaneous effects between the two phenomena, a presidential lowers next year's growth

Table 6: Ideology's effect on the Probability of a Presidential Attack

| | Model 1 | Model 2 |
|---|---|---|
| Constant | −1.16 | 9.41* |
| | (2.43) | (4.55) |
| Minority Pres | −3.93 | −3.38 |
| | (2.40) | (3.12) |
| Pres Power | −0.10 | −0.01 |
| | (0.10) | (0.11) |
| Protests | 0.24* | 0.15 |
| | (0.09) | (0.12) |
| Left | 0.05 | −0.55 |
| | (0.49) | (0.51) |
| Min*Power | 0.20* | 0.17 |
| | (0.10) | (0.11) |
| GDP pc | | −1.49* |
| | | (0.64) |
| Inflation | | 0.07 |
| | | (0.13) |
| Unemployment | | 0.01 |
| | | (0.02) |
| $N$ | 387 | 331 |
| AIC | 225.12 | 185.09 |
| BIC | 320.12 | 321.97 |
| $\log L$ | −88.56 | −56.55 |

Robust standard errors in parentheses

* indicates significance at $p < 0.05$

by 1% to 2%. Second, there is some evidence that challenges induce partisan business cycles. We find that challenging left presidents decreases growth by 2% to 4%, but challenging right presidents does not have a consistent effect on the economy. However, neither business cycle mechanisms could explain why unsuccessful attacks of left executives appear to have similar effects on growth as their successful counterparts. Third, the propensity of future executive instability undermines current economic performance.

In future work, we would like to investigate other potential other mechanisms, which include the effects of presidential removals on foreign direct investment and the reputation of left governments. On one hand, Schneider and Frey (1985) find that political instability reduces foreign direct investment, and Pinto and Pinto (2008) argue that partisan macroeconomic policies induce cycles in foreign direct investment, where investment is higher under left governments than right ones. If attacks induce changes in foreign direct investment regardless of their successfulness, we should expect that challenging left presidents to reduce growth under both types. On the other hand, Bagashka and Stone (2013) propose a model in which left governments are more sensitive about their reputation in implementing economic policies than right governments, which could explain why left governments are sensitive to even failed attacks. This logic suggests that we could see changes in government policies after challenges to the executive regardless of their success.

Even with this future work in mind, the current analysis has implications for the larger literature. It speaks to the long-run debate between the coup or poverty traps. Similar to both sides, the results here demonstrate that past instability relates to future instability. However, these results present more evidence for the poverty trap: previous instability reduces growth. Furthermore, even the expectation of future instability will impede growth. Therefore, the removal of the executive by the legislature may indeed be a peril of presidentialism in Latin America, and the parliamentarization of presidentialism comes with costs to economic performance.

## A Countries in the Study and Entry Year

| Country | Entry Year |
|---|---|
| Colombia | 1985 |
| Venezuela | 1985 |
| Ecuador | 1985 |
| Peru | 1985 |
| Brazil | 1985 |
| Bolivia | 1985 |
| Paraguay | 1989 |
| Chile | 1990 |
| Argentina | 1985 |
| Uruguay | 1985 |
| Dominican Republic | 1985 |
| Mexico | 1995 |
| Guatemala | 1986 |
| Honduras | 1985 |
| El Salvador | 1985 |
| Nicaragua | 1985 |
| Costa Rica | 1986 |
| Panama | 1990 |

## B Descriptive Statistics

| | Mean | Median | St. Dev. | Min | Max | Missing |
|---|---|---|---|---|---|---|
| Growth | 6.157 | 6.238 | 5.190 | -24.14 | 29.34 | 0 |
| World Growth | 4.964 | 4.882 | 2.180 | -0.38 | 8.65 | 0 |
| Pres Attack | 0.084 | 0.000 | 0.278 | 0.00 | 1.00 | 0 |
| Left | 0.519 | 1.000 | 0.500 | 0.00 | 1.00 | 0 |
| GDP per capita | 5213.722 | 4680.076 | 2595.969 | 1463.17 | 14145.76 | 0 |
| Schl. Years | 6.861 | 7.060 | 1.523 | 3.28 | 9.99 | 0 |
| Inflation | 0.185 | 0.010 | 1.092 | -0.02 | 13.61 | 0 |
| Fertility | 3.257 | 2.993 | 0.915 | 1.89 | 5.84 | 0 |
| Life Expectancy | 70.372 | 70.922 | 4.458 | 55.69 | 78.95 | 0 |
| Trade Terms | -267.511 | -0.019 | 1772.051 | -9187.28 | 15270.20 | 0 |
| Veto Players | 1.552 | 2.000 | 0.550 | 1.00 | 3.00 | 5 |
| Demonstrations | 1.088 | 0.000 | 1.540 | 0.00 | 9.00 | 18 |
| Pres. Powers. | 24.748 | 24.000 | 3.666 | 18.00 | 33.00 | 0 |
| Minority Pres. | 0.640 | 1.000 | 0.481 | 0.00 | 1.00 | 0 |

## C Past Instability and Current Growth with More Controls

| | Model 1 | Model 2, year FE | Model 3, FE | Model 4, FE |
|---|---|---|---|---|
| Constant | 0.64 | 5.03*** | 105.85* | 82.78 |
| | (9.03) | (0.56) | (46.64) | (50.87) |
| Attack, lag | −1.19† | −1.70** | −1.59** | −1.91** |
| | (0.66) | (0.61) | (0.61) | (0.63) |
| Growth, lag | 0.32*** | 0.23*** | 0.23*** | |
| | (0.03) | (0.03) | (0.04) | |
| Log GDP p.c., lag | −0.98 | −1.17*** | −18.58*** | −16.81*** |
| | (0.97) | (0.05) | (2.54) | (2.01) |
| Yrs. Schl. | 0.27† | 0.18† | 0.16 | 0.10 |
| | (0.15) | (0.10) | (0.98) | (1.03) |
| Fertility | −0.23 | −0.17 | 5.19** | 4.77** |
| | (0.50) | (0.56) | (1.62) | (1.72) |
| Life Expect | 0.16** | 0.16 | 0.58 | 0.73 |
| | (0.05) | (0.61) | (0.44) | (0.53) |
| Trade Terms | 0.02*** | 0.00 | 0.02* | 0.02* |
| | (0.01) | (0.03) | (0.01) | (0.01) |
| $N$ | 393 | 393 | 393 | 393 |
| $R^2$ | 0.15 | 0.32 | 0.43 | 0.40 |

Robust standard errors in parentheses

† significant at $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

## D Past Instability Interacted with Ideology and Current Growth with More Controls

| | Model 1 | Model 2 | Model 3, year FE | Model 4, FE | Model 5, FE |
|---|---|---|---|---|---|
| Constant | 6.37 | 6.48 | 9.28 | 93.37$^{\dagger}$ | 90.17$^{\dagger}$ |
| | (7.60) | (8.26) | (7.67) | (48.49) | (47.21) |
| Attack, lag | −0.31 | −0.32 | −0.40 | −0.46 | −0.57 |
| | (0.74) | (0.75) | (0.59) | (0.62) | (0.51) |
| Left, lag | 1.63$^{***}$ | 1.55$^{***}$ | 1.39$^{***}$ | 0.63 | 0.80 |
| | (0.38) | (0.38) | (0.38) | (0.50) | (0.52) |
| Growth, lag | 0.28$^{***}$ | 0.28$^{***}$ | 0.17$^{***}$ | 0.18$^{**}$ | |
| | (0.04) | (0.04) | (0.05) | (0.06) | |
| Growth, lag 2x | −0.11$^{*}$ | −0.12$^{*}$ | −0.15$^{**}$ | −0.11$^{*}$ | |
| | (0.05) | (0.06) | (0.05) | (0.04) | |
| log GDP p.c., lag | −0.80 | −0.91 | −0.88 | −14.66$^{***}$ | −14.39$^{***}$ |
| | (0.84) | (0.91) | (0.90) | (3.44) | (2.58) |
| Inflation | −1.52$^{***}$ | −1.52$^{***}$ | −1.60$^{***}$ | −1.16$^{***}$ | −1.24$^{***}$ |
| | (0.30) | (0.29) | (0.27) | (0.30) | (0.17) |
| Yrs. Schl. | 0.15 | 0.14 | 0.09 | 0.17 | 0.09 |
| | (0.13) | (0.15) | (0.14) | (1.14) | (1.16) |
| Life Expect | 0.08 | 0.10 | 0.09 | 0.33 | 0.36 |
| | (0.06) | (0.07) | (0.07) | (0.46) | (0.48) |
| Fertility Rate | −0.50 | −0.48 | −0.41 | 4.25$^{**}$ | 4.00$^{*}$ |
| | (0.44) | (0.47) | (0.42) | (1.55) | (1.60) |
| Trade Terms | 0.00$^{***}$ | 0.00$^{**}$ | 0.00 | 0.00$^{***}$ | 0.00$^{***}$ |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Impeach*Left, lag | −2.19$^{*}$ | −1.91$^{\dagger}$ | −3.05$^{**}$ | −2.23$^{*}$ | −2.57$^{*}$ |
| | (0.99) | (0.99) | (1.09) | (0.96) | (1.07) |
| Protest | | −0.13 | −0.17 | −0.24 | −0.20 |
| | | (0.20) | (0.17) | (0.19) | (0.18) |
| $N$ | 386 | 368 | 368 | 368 | 368 |
| $R^2$ | 0.25 | 0.24 | 0.42 | 0.50 | 0.47 |
| Resid. sd | 4.59 | 4.64 | 4.17 | 4.00 | 4.09 |

Robust standard errors in parentheses

$^{\dagger}$ significant at $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

## E First Stage of the Expectation Models

| | Panel Model | Institutional Model |
|---|---|---|
| Constant | $-1.25^{***}$ | $-1.57$ |
| | (0.25) | (2.92) |
| Growth, lag 2x | $-0.03^{*}$ | |
| | (0.02) | |
| Attack, lag | $0.73^{**}$ | |
| | (0.28) | |
| Attack, lag 2x | 0.41 | |
| | (0.28) | |
| World Growth, lag | $-0.02$ | |
| | (0.04) | |
| Minority Pres. | | $-1.34$ |
| | | (3.58) |
| Pres. Powers | | $-0.02$ |
| | | (0.12) |
| Number of Vetos | | 0.17 |
| | | (0.14) |
| Minority*Powers | | 0.07 |
| | | (2.92) |
| $N$ | 348 | 359 |
| AIC | 202.78 | 209.14 |
| BIC | 279.82 | 286.81 |
| $\log L$ | $-81.39$ | $-84.57$ |

Robust standard errors in parentheses

$^{\dagger}$ significant at $p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

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