Stability through constraints
the impact of fiscal rules on autocratic survival
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Stability through Constraints:
The Impact of Fiscal Rules on Autocratic Survival

Abstract
A growing literature has investigated the role that formal and informal economic institutions play for autocratic survival. However, this literature has, so far, ignored a type of formal economic institution that has grown in importance among both democracies and non-democracies in recent decades, namely, national fiscal rules. In this article, we argue that fiscal rules can affect autocratic survival but that the effect is time-dependent. The introduction of a stricter fiscal rules framework causes short-term fiscal retrenchment and might increase the uncertainty among regime supporters about the provision of future patronage and spoils. However, stricter fiscal rules also improve long-term fiscal management and, thus, increase investor confidence and economic performance in the long run. Consequently, fiscal rules stabilize autocratic regimes in the long run but not in the short run. Fixed-effect estimations on a panel of autocracies from 1987 to 2016 provide substantial evidence in favour of this argument.

Keywords: autocratic breakdown, autocratic survival, economic institutions, fiscal policy, fiscal rules, political constraints.
Introduction

How do economic institutions and constraints impact autocratic survival? A growing number of dictatorships around the world are implementing national fiscal rules that limit the fiscal discretion of the government (see Figure 1 below). What explains this tendency? At first glance, implementing such rules—which, at least de jure, impose fiscal constraints on the government—seems to be at odds with the dictator’s self-interest as it limits his ability to divert public funds toward co-optation and repression, both of which are essential for autocratic stability.\(^1\)

However, we know from the literature on nominally democratic institutions in dictatorships that limiting the discretion of dictators can enable successful autocratic power sharing and, thereby, have a stabilizing effect on autocratic regimes.\(^2\) We also know that binding institutions that limit the dictator’s discretion can have positive impacts on outcomes such as economic growth, which helps stabilize regimes of any kind.\(^3\) However, constraining economic institutions may also limit short-term fiscal spending and, thus, limit an autocrat’s ability to provide short-term patronage, which in turn may have a destabilizing effect on the autocrat’s regime.\(^4\)

In this article, we argue that fiscal rules in autocracies serve a purpose similar to nominally democratic institutions, namely, constraining dictators. By limiting, at least de jure, the fiscal discretion of the dictator, such rules improve fiscal management and foster a stable economic environment, which in turn promotes domestic and international investor confidence and, thus, both economic growth and foreign investment. Additionally, fiscal rules help assure regime elites that their access to economic spoils will be upheld, which promotes stable autocratic power sharing. Both effects of fiscal rules in turn help stabilize autocratic regimes. We argue that these benefits in terms of regime stability more than outweigh the negative effects in terms of the dictator’s loss of financial discretion, which explains why autocratic leaders increasingly adopt national fiscal rules.

However, the regime-stabilizing effects of fiscal rules are not expected to materialize immediately. Quite to the contrary, in the short run, the adoption of national fiscal rules is usually associated with fiscal austerity measures that give rise to grievances among the population and parts of the elite, and it also limits the ability of the regime to respond to unforeseen challenges with increased public spending. However, once the period of short-term fiscal retrenchment is over and the fiscal rules legislation has had a few years to take effect, the long-term gains with respect
to regime stability will begin to materialize. These differential short-term and long-term effects mirror insights from the literature on autocratic elections.⁵

We test our theoretical arguments using a panel of autocracies from 1987 to 2016. The results show substantial evidence in favour of the theoretical argument. The enactment of a stricter national fiscal rules framework decreases the probability of autocratic breakdown, but only in the long run. This has substantial implications for the future of autocratic regimes globally as the use of these rules in autocracies is on the rise.

Fiscal Rules in Autocracies
Fiscal rules can be understood as some sort of formal rules, legislation, or procedures that put numerical limits on fiscal policy aggregates such as government spending, revenue, deficits, and/or debt.⁶ Examples include laws stipulating that the country’s public budget has to be in balance, laws stating that public debt levels cannot exceed a certain percentage of the national GDP, rules prohibiting the use of government debt to finance current as opposed to capital spending, laws governing how revenue windfalls can be spent, and the existence of numerical spending ceilings.

The number of countries with fiscal rules in place has increased dramatically in the past years—even when we focus on purely national fiscal rules and exclude supranational fiscal rules, such as the European Union’s Stability and Growth Pact. While these types of governance institutions were largely unknown—except in a few democratic countries⁷—just three decades ago, almost a third of the world’s countries had one or more of these fiscal rules in place in 2015, cf. Figure 1. Fiscal rules are also increasingly being promoted by international organizations, particularly the International Monetary Fund (IMF) and especially so after the global financial crisis in 2008. In accordance with this increased focus on numerical fiscal rules, a 2012 IMF working paper bore the title ‘Fiscal Rules in Response to the Crisis’.⁸
While fiscal rules are much more prevalent in democratic countries than in autocratic countries, autocracies are increasingly implementing one or more national fiscal rules and generally following the trend of recent decades toward the implementation of more fiscal rules, cf. Figure 1. One example is Nigeria. After the IMF had specifically recommended the use of fiscal rules in Nigeria for some years, the country implemented a balanced budget rule by law in 2007 as part of the wider economic reforms program during President Obasanjo’s second term. This fiscal rule has stayed in place even after Obasanjo’s departure from the presidency, which suggests that such rules may be sticky in the long run and, accordingly, that they are not just temporary measures that autocratic leaders take in order to satisfy international donors.

Fiscal rules in non-democratic states also seem to emerge as part of internal bureaucratic struggles within the governing elite, especially between proponents of increased fiscal spending and proponents of fiscal discipline, such as national finance
ministers. One example is Russia, which implemented a balanced budget rule by law in 2007 during the tenure of Russia’s (internationally) highly regarded and powerful Finance Minister Aleksei Kudrin. Following the onset of the global financial crisis in 2008, the rule was suspended in 2009 and eventually abandoned in 2012, the year after Kudrin resigned. However, the same year, a new statutory expenditure rule was instituted. This rule was to take effect from 2013 and tie public spending growth to a ‘baseline’ oil price and delegate oil revenue windfall spending to a ‘reserve fund’. This may also be a testament to the influence of Kudrin’s successor Anton Siluanov, who stayed on as finance minister from 2011 until the general cabinet resignation in Russia in early 2020. These internal struggles between the parts of an autocratic regime that favour increased short-term spending and those parts that favour discipline might also explain why not all, and indeed most, autocracies do not implement stringent fiscal rules frameworks despite, as we shall argue, the potential long-term stability benefits of these rules. Consequently, there is a substantial level of variation, and some degree of randomness, with regards to the implementation and specific timing of fiscal rules between and within autocratic countries.

A wide variety of autocratic states are thus increasingly relying, at least de jure, on fiscal rules as part of their fiscal management. Table 1 contains an overview of autocratic countries that have had at least one national fiscal rule in place in the period 1985–2015. It is clear that fiscal rules exist or have existed in many types of autocratic regimes and that their usage is not limited to a certain geographical cluster. Furthermore, autocratic regimes that introduce fiscal rules tend to survive for lengthy periods after their introduction.
Table 1. Autocracies with national fiscal rules, 1985–2015

<table>
<thead>
<tr>
<th>Country</th>
<th>Period with at least one national fiscal rule in place</th>
<th>Regime fate after fiscal rule(s) introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>2008–2015</td>
<td>Survival at end of period</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1985–1998</td>
<td>Breakdown after 14 years</td>
</tr>
<tr>
<td>Iran</td>
<td>2010–2015</td>
<td>Survival at end of period</td>
</tr>
<tr>
<td>Kenya</td>
<td>1997–2002</td>
<td>Breakdown after 6 years</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1985–2015</td>
<td>Survival at end of period</td>
</tr>
<tr>
<td>Maldives</td>
<td>2013–2015</td>
<td>Survival at end of period</td>
</tr>
<tr>
<td>Namibia</td>
<td>2001–2015</td>
<td>Survival at end of period</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2007–2015</td>
<td>Survival at end of period</td>
</tr>
<tr>
<td>Pakistan</td>
<td>2005–2008</td>
<td>Breakdown after 4 years</td>
</tr>
<tr>
<td>Peru</td>
<td>2000–2001</td>
<td>Breakdown after 2 years</td>
</tr>
<tr>
<td>Singapore</td>
<td>1985–2015</td>
<td>Survival at end of period</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>2010–2015</td>
<td>Survival at end of period</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2015</td>
<td>Survival at end of period</td>
</tr>
</tbody>
</table>

Note: Data source is IMF’s fiscal rules database. Autocracy definition is based on the updated Boix et al. dataset. Regime breakdowns are identified using data from Djuve et al.

While previous research on fiscal rules has generally found fiscal rules to decrease public deficits and debt accumulation, so far, the literature on the role of fiscal rules has tended not to engage with the potentially different roles that fiscal rules might play in autocracies as opposed to democracies—although Asatryan et al. find that balanced budget rules might be more effective in limiting public deficits in democracies. However, from the literature on governance institutions in autocracies, we know that institutions sometimes serve different purposes in autocracies as opposed to democracies, and that economic institutions usually associated with democratic countries, including independent central banks, can have
a substantial impact in autocratic countries. In the next section, we describe our theoretical argument about how fiscal rules affect the stability of autocratic regimes.

Theory: Fiscal Rules and Autocratic Survival

Our core theoretical prediction is that a stricter national fiscal rules framework can be a tool for autocratic regime survival. The reasoning behind this prediction is that a stricter fiscal rules framework can increase the quality of fiscal management, lead to more investor confidence, and improve economic performance, which should be beneficial for autocratic survival. However, these effects take time to materialize. Therefore, stricter fiscal rules improve the likelihood of autocratic survival, but only in the long run. These arguments are developed further below.

The core assumption behind our argument is that introducing a stricter national fiscal rules framework—by introducing new numerical fiscal rules, making current fiscal rules more de jure legally binding, or by expanding the scope of national fiscal rules’ coverage from central to general government—will improve fiscal discipline (e.g., limit fiscal deficits) and limit the growth of government spending. As shown by previous research on the effect of fiscal rules, fiscal rules seem to decrease public deficits, presumably by decreasing or moderating growth in public expenditures. Additionally, a stricter national fiscal rules framework should decrease the procyclicality of public spending, improve overall fiscal management, and thus, lead to more stable macroeconomic outcomes.

One might argue that fiscal rules may not actually be de facto binding for the government, especially in an autocracy. However, we would argue that fiscal rules should have an impact on government fiscal policy in autocracies, even if the autocrat is not de facto bound by these rules. As previously argued, fiscal rules can induce fiscal discipline even if there are no formal sanctions for rule breach, since they provide a focal point for bond market investors to coordinate against a government engaging in unsustainable fiscal policies. This effect could be thought to be even stronger in autocracies, where bond investors lack other ways (including litigation in an independent court system) to influence national governments. Consequently, an autocrat choosing to implement fiscal rules may still feel compelled to, at least partly, live up to these fiscal rules in order to make them credible and reap their long-term benefits—including lower sovereign interest rates. As a result, we should expect fiscal rules to improve fiscal discipline in
autocracies, even if the autocrat is technically not de facto bound to follow these rules. Additionally, fiscal rules draw attention to government fiscal policy stances and increase the (perceived) fiscal competence and power of the finance ministry as well as the transparency of the government budget process. This should work both to increase fiscal discipline in itself and to draw bond market actors’ attention to government fiscal policy, which in turn should also have a fiscally disciplining effect.\textsuperscript{35} As such (strict) fiscal rules in autocracies can serve as a form of substitute for democratic institutions and processes thereby lowering autocracies’ well-known penalties in accessing financial markets on favourable terms.\textsuperscript{36}

Consequently, a stricter national fiscal rules framework should increase both domestic and international investor confidence\textsuperscript{37} and lead to more favourable government credit ratings and general financing options as well as a general increased willingness for both international and domestic investors to invest in the country. This is the case because concerns about future tax increases and revenue-motivated expropriations should be smaller if the country is considered to be better fiscally managed and has a smaller size of government both in terms of spending and taxation. Additionally, within the government finance area, concerns about government repayment ability should be smaller under better fiscal management. (See also Arias et al. for the role of formal institutions for investor confidence in autocracies and DiGuiseppe and Shea for the effects of sovereign credit ratings on autocratic survival as well as Aaskoven for evidence of relatively better credit market access for autocracies with fiscal rules.)\textsuperscript{38}

In sum, because of the above-mentioned channels, stricter fiscal rules in autocracies should improve government access to credit, increase economic growth and employment opportunities, and limit the risks of severe economic crises, all of which should stabilize the autocratic regime.\textsuperscript{39}

However, as is the case with many types of stabilization reforms, including fiscal reforms and consolidations,\textsuperscript{40} the economic gains from a stricter national fiscal rules framework take some time to materialize, whereas the fiscal stabilization programs associated with the introduction of a stricter national fiscal rules framework could produce short-term economic and social costs, especially for the beneficiaries of public spending. As a result, the introduction of a stricter national fiscal rules framework only produces better and more stable economic outcomes after some time. Thus, in the short run, the austerity associated with the introduction
of a stricter national fiscal rules framework may even entail direct economic and
total costs and/or increase uncertainty about future patronage and spoils provisions
among the general population as well as the elites in the dictator’s ruling coalition.
This could produce riots and/or elite defections and may thus even increase the
likelihood of an autocratic breakdown in the short run.  As shown by recent
research, constraints by economic institutions can severely limit an autocratic
government’s ability to provide patronage, which in turn may have positive effects
on the likelihood of regime breakdown. Consequently, we expect the introduction
of a stricter national fiscal rules framework to stabilize autocratic regimes in the long
run but not in the short run. These theoretical arguments lead to our central
hypothesis:

\textit{Hypothesis 1: A stricter national fiscal rules framework
decreases the likelihood of an autocratic regime breakdown
in the long run.}

\textbf{Data and Estimation}

\textbf{Data Sample}

We test our hypothesis using a large-N time-series cross-sectional design. The
analysis employs a global sample of autocratic country-years spanning the period
1987–2016 covering 105 countries in the main estimation. We identify autocratic
country-years using the updated version of the regime dataset by Boix et al.,
commonly referred to as the ‘BMR’ dataset. The authors employ a dichotomous
conception of democracy where democracy is defined in a minimalist manner as a
political regime in which political leaders are popularly elected (either directly or
indirectly) through free and fair elections in which at least a majority of adult males
has the right to vote. Conversely, autocracy is defined as a political regime that does
not meet the requirements for democracy. The dataset identifies the regime status of
a country-year as of December 31, so we employ a one-year lag of the democracy
measure to identify observations that entered the year of analysis as non-democracies
(i.e., autocracies), thereby ensuring that a potential regime breakdown follows, rather
than being the cause of, a country-year’s status as autocratic.
**Dependent Variable**

In order to measure regime breakdown, we rely on the newly developed ‘Historical Regime Data’ (HRD) by Djuve et al.\(^4^4\) This dataset codes all political regimes in the world from 1789 to 2016, including start and end dates of the regimes. The authors define a political regime as ‘the set of formal and informal rules that are essential for selecting political leaders and maintaining them in power.’ In other words, a regime ends and is replaced by a new regime if these rules are changed substantially. We utilize the regime end dates from the dataset to construct a dichotomous indicator of regime breakdown at the country-year level, which takes on the value ‘1’ if one or more regimes ended in a given country-year and ‘0’ otherwise. However, the HRD dataset does not classify regimes based on ‘types,’ including whether the regimes are democratic or not. Accordingly, the regime breakdown variable captures both autocratic and democratic breakdowns. Nonetheless, as we limit our sample to country-years coded as autocratic by the BMR dataset at the beginning of the year in which the HRD breakdown variable is measured, we thereby limit our analysis to autocratic breakdowns.

To probe the robustness of our results to an alternative measure of the dependent variable, we also rerun all models where we exchange the HRD breakdown variable with the regime breakdown variable from the ‘Autocratic Regimes’ dataset by Geddes et al.\(^4^5\) This alternative measure, which we will refer to as the GWF breakdown variable, is similar to the HRD breakdown variable in many respects. The two datasets employ very similar definitions of a political regime and, consequently, very similar conceptions of when a regime ends, although the HRD dataset employs a slightly lower threshold for coding a regime breakdown.\(^4^6\) However, as the HRD dataset has far superior empirical coverage compared to the GWF dataset, we employ the HRD measure in the main analyses and report the robustness tests using the GWF measure in Appendix C.\(^4^7\) The results when we use the GWF measure are very similar to the results when we use the HRD measure.

As our theoretical argument concerns regime-wide dynamics rather than just individual leader dynamics, we have chosen to focus on regime breakdown rather than just autocratic leader removal. However, if we replace the dependent variable with a dummy for irregular leader exit (from the Archigos dataset), we do find that a stronger fiscal rules framework also reduces the likelihood of an irregular leader exit. This analysis can also be found in Appendix C.
Independent Variable

The central independent variable is the strength or strictness of the national fiscal rules framework. To measure the strictness of the national fiscal rules framework, we use an index of fiscal rules strength. The index, whose construction is described in more detail in Aaskoven, is constructed by adding up four sub-indexes; each deals with one of the four main types of fiscal rules, that is, expenditure rule, revenue rule, balanced budget rule, and debt rule. Each sub-index can (theoretically) run from 0 to 7, except for revenue rules, which can run from 0 to 6. A higher score is assigned to each sub-index if the fiscal rule in question has the following attributes: 1) higher legal status (from political commitment to constitutional basis), 2) a larger coverage (from central to general government), and 3) formal enforcement procedures (do these exist or not?). The indexes (and, thus, the final fiscal rules strength index) also take into account whether auxiliary rules exist, such as expenditure ceilings and a fiscal responsibility law, and whether independent bodies, such as fiscal councils, monitor the compliance and set budget assumptions. As mentioned, the final national fiscal rules index is made by simply adding the four sub-indexes into one index and then normalizing it to (theoretically) run from 0 to 5. Thus, the final national fiscal rules strength index takes into account both the total number of fiscal rules and the relative strictness of these rules, as well as the existence of auxiliary rules and institutions in which the fiscal rules are embedded. In Appendix B, the scores on the index for the countries with autocratic periods and fiscal rules in place over the analyzed period can be seen.

Data for the fiscal rules and their characteristics are taken from the International Monetary Fund’s Fiscal Rules Dataset. Countries with no fiscal rules in this database are assigned the score 0 on the fiscal rules index. In Appendix D, the core results are re-estimated with an alternative version of the fiscal rules index that excludes the expenditure ceilings and fiscal responsibility law from the calculation of the individual indexes. Appendix D also contains the results using a third version of the fiscal rules index, which only takes legal status, coverage, and formal enforcement procedures into account when constructing the fiscal rules index. However, these results are largely similar to the results from the main analysis.

Given that most research on the topic has found that the nature of fiscal rules matters more than just their existence—at least for investors—the strength of the national fiscal rules framework (measured through the index) is arguably a much
better measure of fiscal rules than just whether the country has a fiscal rule in place. This is supported further by an analysis in Appendix D. Here, we re-run the main analysis, but instead of the fiscal rules strength index, we use a simple dummy for whether the country has a national fiscal rule of any kind in place. This analysis shows no statistically significant effects of the fiscal rule dummy.54

**Control Variables**

The models also include a number of time-varying variables as control variables in order to further mitigate the risk of bias in the estimated effects of fiscal rules. All control variables are obtained from the World Bank World Development Indicators.55

First, the models control for the GDP per capita of the countries (in constant 2010 US dollars) as this may plausibly be linked with the likelihood of implementing national fiscal rules as well as being a well-established predictor of regime stability.56 We employ a log-transformed version of the variable in order to reduce its skewness and to reduce the influence of outliers.

Second, the models control for the countries’ levels of oil rents (as a percentage of GDP). Here, oil rents are defined as the difference between the value of crude oil production at world prices and total costs of production (World Bank, 2019). Oil rents, too, may plausibly be linked with the likelihood of implementing national fiscal rules, and oil wealth has consistently been associated with autocratic regime durability.57

Finally, the models control for the annual GDP per capita growth rate (in percent) of the countries. Economic growth—especially negative economic growth—is likely to be associated with the likelihood of implementing national fiscal rules, and it is a well-established predictor of regime stability as well.58

Descriptive statistics for all variables are reported in Table 2 below.
Table 2. Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autocratic failure</td>
<td>0.08</td>
<td>0.27</td>
<td>0</td>
<td>1</td>
<td>2450</td>
</tr>
<tr>
<td>National fiscal rules strength index</td>
<td>0.04</td>
<td>0.19</td>
<td>0</td>
<td>2.40</td>
<td>2450</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>7.49</td>
<td>1.31</td>
<td>4.75</td>
<td>11.28</td>
<td>2142</td>
</tr>
<tr>
<td>Oil rents</td>
<td>7.04</td>
<td>12.70</td>
<td>0</td>
<td>64.01</td>
<td>2214</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>1.64</td>
<td>7.83</td>
<td>-65.00</td>
<td>123.00</td>
<td>2169</td>
</tr>
</tbody>
</table>

**Estimation Technique**

We estimate all models using country-fixed effects in order to control for unobservable, time-invariant factors that would bias the results if between-country variation was employed. Given that the adoption of fiscal rules and other fiscal institutions could be endogenous to various time-invariant country-level factors such as legal origins, regional dynamics, and various other factors which could also affect regime stability, country-fixed effects are potentially vital for correct identification.

As the outcome of interest (one or more regime breakdowns in a country-year) is dichotomous, we employ linear probability models (LPMs) in the analysis. Such models have been shown to be suitable as substitutes for generalized linear models (GLMs), such as logit or probit, and they have the important benefit of not dropping country-panels with constant values on the dependent variable from the analysis, which GLMs do when fixed effects are employed. Thus, LMPs allow us to retain the full sample of autocratic countries in the analysis.

In addition to the country-fixed effects, year dummies are included in all models in order to guard against potential time trends as well as various yearly ‘shocks’ in the variables. Moreover, all models include cubic polynomials of the number of years since the country last experienced the outcome (i.e., since the last country-year with one or more regime breakdowns) to account for potential time
dependence in the data. Last, all models are estimated by use of robust standard errors clustered by country to account for dependence between observations from the same country.

To make sure that our analysis is robust to alternative ways of estimating autocratic breakdown risk, in Appendix E, we re-estimate our main model as an error correction model following the method of Hanson. However, the results remain the same with this estimation method. Additionally, we also re-estimate our main models as survival models (these results are reported in Appendix F). We estimate two different sets of survival models: 1) a set of parametric models based on a Weibull survival time distribution—which is the distribution most commonly used in applied work—and 2) a set of semi-parametric Cox proportional hazards models that make no assumptions about the baseline survivor function. Like the main models, all survival models are estimated with year-fixed effects and robust standard errors clustered on countries. However, the survival models do not employ country-fixed effects as models stratified on countries (as well as models with country-shared frailties) failed to converge in both the Weibull and the Cox specifications. Unlike the main models, these models therefore utilize a mix of within- and between-country variation. Nonetheless, the substantive pattern in the results from the LPM specifications is robust to employing the survival model specifications instead, although the statistical uncertainty of these results is slightly higher in the survival specifications.

As we argue above, implementing fiscal rules in autocracies should have different effects in the short and the long run. To test this, we employ a series of different lags of the fiscal rules index to test how its effect changes over time. Similar lags are employed on the control variables (aside from the cubic duration polynomials) in order to ensure that these are measured in the same year as the country’s level of fiscal rules rather than being measured after the implementation of the rules, which would lead to post-treatment bias in the estimated effects of fiscal rules. To guard against potential arbitrary lag choices, we estimate nine models with different lag lengths. We begin with a model with no lag on the fiscal rules measure (and control variables). Hereafter, we introduce a model with one-year lags on the independent variables. Like this, we continue to increase the lag length by an additional year until the final model, which employs an eight-year lag of the
independent variables. In this way, we test both the short-term and the long-term effects of fiscal rules in autocracies.

Importantly, however, as we are interested in the effects of autocratic governments’ implementation of fiscal rules on autocratic regime survival, we limit our sample to country-years that were autocratic in both the year that we measure the level of fiscal rules and the year that we measure autocratic survival/breakdown. In practice, this means that we only include country-years coded as autocratic by the BMR dataset at the beginning of year $t$ (when the breakdown variable is measured) and at the beginning of year $t-n$ (when the level of fiscal rules is measured), with ‘$n$’ being the lag length for the independent variables (ranging from 0 to 8).

Results

Main Results

The main results from the empirical tests of our hypothesis can be found in Figure 2, which contains the coefficients for the national fiscal rules strength index in nine regressions. In accordance with the theoretical argument, we see a clear pattern in this figure. In the first two years after an increase in the strictness of the national fiscal rules framework, there is a higher, but not statistically significant, probability of autocratic breakdown. However, this effect quickly reverses, and the stricter national fiscal rules framework now decreases the probability of an autocratic breakdown. This effect grows in size and becomes statistically significant about six years after the increase in national fiscal rules strictness. The substantive effect is sizeable: After seven years, an increase in the fiscal rules strength index of about three standard deviations leads to a more than 10 percent lower probability of an autocratic breakdown.

Of the control variables, only the log of GDP seems to have a statistically significant effect on the long-term probability of autocratic breakdown (cf. Appendix G). This might be due to an increased likelihood of democratization when leader departures occur after periods of high economic growth. In accordance with our theoretical argument, there does indeed seem to be a regime-stabilizing effect of a stricter national fiscal rules framework in autocracies in the long run.
Figure 2. Effect of fiscal rules index on autocratic breakdown likelihood over time

Note: All estimations include full set of control variables. Outer lines represent 90% confidence intervals.

Robustness

While the previous estimation included central control variables and accounted for country characteristics, one could still be worried about endogeneity. Especially, one might worry that only certain types of autocracies and only autocracies under certain levels of economic or external pressure would implement fiscal rules and that these omitted factors are the real cause of autocratic stability. Even though this concern is mitigated to some extent by the fact that there is a certain degree of randomness in the adoption and timing of fiscal rules in autocracies (as discussed above), this does not resolve the issue altogether. We therefore try to limit this concern further by controlling for different potential sources of endogeneity, including controlling for various potential confounders of fiscal rule strength.\textsuperscript{70}

First, the above results are largely robust to controlling for government gross debt to GDP and whether the country is under an IMF program,\textsuperscript{71} which could be endogenous determinants of the strictness of national fiscal rules.\textsuperscript{72}
Then we run models where we control for autocratic regime types in order to make sure that the results are not driven by the somewhat higher (although not statistically significant) average level of national fiscal rule strictness in party regimes (see Appendix A). We do this both by including indicators for all types of autocracies and by only including a dummy for ‘pure’ party regimes (i.e., mixed types and oligarchies are not regarded as party regimes). Although the inclusion of the regime type controls does affect the statistical significance of the estimated effects to some extent, the general pattern in the coefficients remains. This suggests that the confounding effect of autocratic regime type is limited.

Third, the results are robust to including a control for the presence of a banking crisis and only considering negative growth rates when controlling for GDP growth, which further mitigates concerns about endogeneity due to differences in the financial conditions of autocracies.

Fourth, the results are robust to controlling for national elections, which could be more prevalent in autocracies with fiscal rules and which may also have time-dependent effects on autocratic stability.

Fifth, as noted by Shea and Poast, leaders who come into power through irregular means might be more likely to default on debt obligations, making this change in preferences potentially endogenous to both regime stability and fiscal rules. As a consequence, we add a control, based on data from the Archigos dataset, for the time since the last irregular leader exit. However, the results remain.

Finally, it may be argued that the adoption of fiscal rules could be part of a large “policy package” consisting of general market-oriented policies (e.g. labour market, product market, and taxation) and that it is those policies rather than fiscal rules which are driving the results. To test for this, we add another control measuring the “economic freedom” of the country based on an index compiled by the Canadian think tank the Fraser Institute, which measures the market orientation of the country’s institutions and policies. The results of all these robustness tests are reported in Appendix H.

Last, the results are also largely robust to removing Singapore or Malaysia from the sample, two very stable (as well as party-based) autocratic regimes with a long history of fiscal rules (cf. Table 1). These results can be seen in Appendix I.
Consequently, there is considerable evidence that the relationship between fiscal rules and autocratic stability is not endogenous to central omitted variables or driven by the experiences of a few extraordinary autocracies.

**Discussion and Conclusions**

National fiscal rules are increasingly being implemented in both democratic and autocratic countries. In this article, we have theorized and empirically tested the role that fiscal rules play for autocratic breakdown by using a panel of autocracies from 1987 to 2016. The results show that strengthening the national fiscal rules framework substantially increases autocratic regime survival in the long run but not in the short run. Implementing stricter national fiscal rules seems to play a role similar to elections for autocratic leaders, that is, potentially risky in the short term but with a long-term stabilizing effect. Apparently, de jure tying themselves fiscally can be a survival strategy for autocrats.

These results have important implications for the stability of contemporary autocratic regimes and the future of autocratic rule globally. As we showed in Figure 1, more and more autocratic governments are adopting such fiscal rules. Furthermore, as shown in Table 1, a number of autocracies have had such rules in place for several years, which indicates that many regimes have managed to survive in power past the short-term period of increased instability following the implementation of the rules. Consequently, these regimes should now be in a position to reap the long-term regime-stabilizing benefits of the fiscal rules. Taken together, these developments may be indicative of an increased durability of autocratic regimes in the future, which in turn may contribute to perpetuating the slowdown in the global rate of democratization that we have witnessed since the turn of the century. However, given the comparatively limited experience with fiscal rules in autocracies (cf. Figure 1), how these types of rules affect autocratic persistence in the very long run (20+ years) remains to be seen. Given the potential growth-enhancing effects of fiscal rules in autocracies, they might be beneficial for democratic transitions, but only in the very long run.

This also raises the more normative question of whether stricter fiscal rules are welfare-enhancing for citizens in autocratic regimes. While a strong national fiscal rules framework might provide citizens of autocratic countries with more stable
macroeconomic conditions, better fiscal management, and perhaps even generally better economic performance, the existence of such a framework may also entrench the autocratic regime, leaving citizens of these countries to endure longer periods with few, if any, political rights. Accordingly, this raises the normative question of whether these types of governance institutions should be promoted in autocratic countries as many international donors and organizations, such as the IMF, do today.

Bibliography


Knutsen Carl Henrik, Håvard Mokleiv Nygård, and Tore Wig. “Autocratic Elections: Stabilizing Tool or Force for Change?” *World Politics* 69, no. 1 (2017): 98–143. doi: http://dx.doi.org/10.1017/S0043887116000149


5 Knutson et al. “Autocratic Elections;” see also Bernhard et al., “Institutionalising Electoral Uncertainty.”
6 Schaechter et al., “Fiscal Rules in Response.”
7 Most famously, Germany, which has had a constitutional balanced budget rule in place since 1969; see Lledó et al., Fiscal Rules at a Glance.
Schaechter et al., “Fiscal Rules in Response”.

Boix et al. “A Complete Data Set of Political Regimes, 1800-2007.”

The regime classification of Nigeria is somewhat contested, as some datasets code a democratic transition in the country in 1999. However, the updated Boix et al. dataset codes the country as an autocracy throughout our period of analysis. For this reason, we treat Nigeria as an autocracy in the theoretical discussion as well as in the empirical models using the Boix et al. dataset (Boix et al. “A Complete Data Set.”)

Baunsgaard, “Fiscal Policy in Nigeria.”

This was also backed by the IMF; see (Ushie, “Implementing the Fiscal Responsibility Act”, 18).

Lledó et al., Fiscal Rules at a Glance, 57; Ushie, Implementing the Fiscal Responsibility Act, 4). Further evidence against this concern is provided in Appendix A, where we show that autocracies under IMF programs are actually less (rather than more) likely to have fiscal rules in place.

Formal models of government spending decisions often assume a central role for the finance minister as a champion of fiscal restraint. See Alexiadou, “Ideologies, Partisans and Loyalists”, 1056-1062; Hallerberg et al., Fiscal Governance in Europe, 24-31). Analyses of the adoption of fiscal rules in democratic states suggest that the finance ministry often plays a pivotal role in initiating fiscal rules reforms (See Suenson, et al., “Why Lash Yourself”; and Wehner, “Budget Reform”). There is little reason to believe that this institutional drive should not exist in non-democratic states.

Hanson, “Managing the Economy”, 180–182; Lledó et al., Fiscal Rules at a Glance, 65.


Additionally, as raised by one of the reviewers, some autocratic regimes might not want to risk the potential short-term upheaval of these fiscal rules. See also the ‘Theory’ section for an elaboration of the potential short-term costs of fiscal rules in autocracies.

See also Appendix A for an overview of the distribution of fiscal rules across different types of autocracies.

Boix et al. “A Complete Data Set of Political Regimes.”

Djuve et al., ”Patterns of Regime Breakdown.”


Gandhi and Lust-Okar, “Elections under Authoritarianism.”

Bodea et al., “Monetary Institutions and Autocratic Breakdown.”


Asatryan et al., “Balanced Budget Rules”.


Although this also seems to be the case in democracies; see Reuter, “National Numerical Fiscal Rules”.

Kelemen and Teo, “Law, Focal Points and Fiscal Discipline.”
This transparency- and coordination-enhancing mechanism through which fiscal rules discipline dictators’ fiscal policy is similar to the mechanism by which nominally democratic institutions induce dictators to respect power-sharing agreements. See Boix and Svolik, “The Foundations;” Svolik, The Politics of Authoritarian Rule.

Aaskoven, “Institutionalizing the Autocratic Penalty Away.”

Badinger and Reuter, “The Case for Fiscal Rules”.

Aaskoven, “Institutionalizing the Autocratic Penalty Away.”

Ibid.


Bodea et al., “Monetary Institutions and Autocratic Breakdown.” At least in democracies, fiscal rules seem to drive down the occurrence of election-year public spending increases (Rose, “Do Fiscal Rules”), a strategy that is also frequently used by autocratic governments (see Blaydes, Elections and Distributive Politics in Mubarak’s Egypt). See also Aaskoven’s “Oil, Elections and Fiscal Transparency” which shows how fiscal institutions can decrease the occurrence of oil-induced election-year spending increases, especially in electoral autocracies.

Boix et al., “A Complete Data Set.”

Djuve et al. ’Patterns of Regime Breakdown.”

Geddes et al., How Dictatorships Work.

Djuve et al., ”Patterns of Regime Breakdown.”

In the models using the GWF measure, the dependent variable is lead rather than the independent variables being lagged.

Aaskoven, “Signalling to Creditors and Voters.”

Some of these rules and institutions are common for all types of fiscal rules, and the final index thus gives relatively high weight to these factors.

Since the later empirical analysis relies on country-fixed effects, the variation exposed in this graph is very informative with regards to the cases driving the results.

Lledó et al., Fiscal Rules at a Glance.

The dataset does not record rule breach. However, if the fiscal rules are de facto suspended, the country can be coded as having no fiscal rules in place, which was the case for Argentina after 2008; see Lledó et al, Fiscal Rules at a Glance.
Kelemen and Teo, “Law, Focal Points and Fiscal Discipline.”

Although the direction of the effects is the same as in the main analysis.

World Bank, *World Development Indicators*.

Djuve et al., “Patterns of Regime Breakdown;” Kennedy, “The Contradiction of Modernization.”

Ulfelder, “Natural-resource Wealth”; Wright et al., “Do Authoritarian Institutions Constrain?”.

Djuve et al., “Patterns of Regime Breakdown;” Geddes, “What Do We Know.” One could argue that the inclusion of GDP related variables would be potentially ‘post treatment’ if a stricter fiscal rules framework would improve economic performance. However, the results remain fairly stable if the two GDP related variables are excluded from the estimation; see Appendix E. Additionally, to take into account that it might be economic crises rather than low growth rates that drive regime instability in autocracies, Appendix F contains a version of the main analysis in which a ‘banking crisis’ dummy is added to the estimation (using data from Laeven and Valencia ) as well as a version in which all positive growth rates are coded as ‘0,’ and the estimation thereby only takes negative growth rates into account. (See Laeven and Valencia, “Systematic Banking Crises Revisited.”) The results are robust to these alternative specifications.

Green et al., “Dirty Pool.”


Hellevik, Linear versus Logistic Regression.”

Beck and Katz, “Throwing Out the Baby.”.

Recent research (Kropko and Kubinec, “Interpretation and Identification”) has cast some doubt about the usefulness of two-way fixed effects estimation. However, as shown in Appendix E, the results are substantially similar if the year-fixed effects are replaced with a linear time trend or if the year-fixed effects are removed altogether.

Carter and Signorino, “Back to the Future”.

Hanson, “Democracy and State Capacity,” 315-316. Additionally, in Appendix E, we also include an error correction model using Stata’s xtpmg function, which allows us, in an alternative way, to parse out short and long run effects (see Blackburne and Frank, “Estimation of Nonstationary Heterogeneous Panels”).


The full regression results, both with and without control variables, can be found in Appendix G.

Since fiscal rules could potentially have both positive and negative effects on our dependent variable, we rely on a two-tailed test of statistical significance. Due to the limited number of observations, and the fact that there is limited within-country variation, we use 90-percent confidence intervals.

Treisman, “Income, Democracy and Leader Turnover.”

These additional control variables are all measured in the same year as the fiscal rules index and thus follow the same lag structure.

Data for gross debt are from the IMF’s World Economic Outlook Database, whereas the IMF webpage is used as the source for current and previous IMF lending programs.

Aaskoven, “Signaling to Creditors and Voters.”
Data are from the ‘Autocratic Regimes’ dataset by Geddes et al., (“Autocratic Breakdown and Regime Transitions: A New Data Set”).

A dummy that takes the value ‘1’ in case of national elections (executive and/or legislative) in a country-year. Data are from version 5 of the NELDA dataset (see Hyde and Marinov, “Which Elections Can Be Lost?”).

Knutsen et al., “Autocratic Elections.”

Shea and Poast, “Leaders and Default.”


Bernhard et al., ”Institutionalising Electoral Uncertainty;”; Knutsen et al., ”Autocratic Elections”.

Lührmann and Lindberg, “A Third Wave of Autocratization is Here”.

Treisman, “Income, Democracy and Leader Turnover.”

These effects echo the effects of foreign capital inflows in autocracies (see Ahmed, The Perils of International Capital).

See also Meyerrose, “The Unintended Consequences of Democracy Promotion”, for an argument about the role of international organizations in (unintentionally) promoting autocracy.
Appendix A: Investigating Potential Determinants of Fiscal Rules

**Figure A1.** Mean level of national fiscal rules strength for autocratic countries with and without an active IMF program

Note: Means with 95% confidence intervals. Confidence intervals are calculated using robust standard errors clustered on country.
Figure A2. Proportion of country-years with one or more national fiscal rule(s) in place for autocratic countries with and without an active IMF program

Note: Proportions with 95% confidence intervals. Confidence intervals are calculated using robust standard errors clustered on country.
**Figure A3.** Mean level of national fiscal rules strength for different types of autocratic regimes

Note: Means with 95% confidence intervals. Confidence intervals are calculated using robust standard errors clustered on country. Classification of regimes is based on the “Autocratic Regimes” dataset by Geddes et al. (2014).
Figure A4. Proportion of country-years with one or more national fiscal rule(s) in place for different types of autocratic regimes

Note: Proportions with 95% confidence intervals. Confidence intervals are calculated using robust standard errors clustered on country. Classification of regimes is based on the “Autocratic Regimes” dataset by Geddes et al. (2014).
Appendix B: National fiscal rules strength index for the autocratic countries with fiscal rules

Figure B1. The national fiscal rules strength index for countries with autocratic time periods and at least one fiscal rules in place, 1985-2015

Graphs by Country Name
Appendix C: Alternative Measure of Autocratic Regime Breakdown

Table C1. Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autocratic failure</td>
<td>0.05</td>
<td>0.22</td>
<td>0</td>
<td>1</td>
<td>1822</td>
</tr>
<tr>
<td>Irregular leader exit</td>
<td>0.03</td>
<td>0.17</td>
<td>0</td>
<td>1</td>
<td>2665</td>
</tr>
<tr>
<td>National fiscal rules strength index</td>
<td>0.03</td>
<td>0.13</td>
<td>0</td>
<td>1.32</td>
<td>1822</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>7.36</td>
<td>1.28</td>
<td>4.88</td>
<td>11.28</td>
<td>1639</td>
</tr>
<tr>
<td>Oil rents</td>
<td>6.87</td>
<td>12.30</td>
<td>0</td>
<td>62.43</td>
<td>1648</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>1.55</td>
<td>7.01</td>
<td>-65.00</td>
<td>53.94</td>
<td>1667</td>
</tr>
</tbody>
</table>
**Figure C1.** Effect of fiscal rules index on autocratic breakdown likelihood over time

Note: All estimations include the full set of controls. Outer lines represent 90% confidence intervals.
Figure C2. Effect of fiscal rules index on irregular leader exit over time

Note: All estimations include the full set of controls as well as cubic polynomials for time since last irregular leader exit. Outer lines represent 90% confidence intervals.
Appendix D: Alternative Measures of Fiscal Rules

Figure D1. Use of alternative fiscal rules index (no expenditure ceilings and fiscal responsibility law)

Note: All estimations include the full set of controls. Outer lines represent 90% confidence intervals.
**Figure D2.** Third fiscal rules index (only legal status, coverage, and formal enforcement procedures)

Note: All estimations include the full set of controls. Outer lines represent 90% confidence intervals.
Figure D3. Use of fiscal rules dummy

Note: All estimations include the full set of controls. Outer lines represent 90% confidence intervals.
Appendix E: Results from alternative estimation choices

**Figure E1.** Time trend instead of year-fixed effects

Note: Outer lines represent 90% confidence intervals.
**Figure E2.** No year-fixed effects

Note: Outer lines represent 90% confidence intervals.

**Figure E3.** No GDP related control variables

Note: Outer lines represent 90% confidence intervals.
**Figure E4.** Error correction model

Note: Outer lines represent 90% confidence intervals.
Table E1: Error correction model xtpmg method

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. Error</th>
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</thead>
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<tr>
<td><strong>Long run</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National fiscal rules strength index</td>
<td>-0.0139</td>
<td>(0.0064)**</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>-0.0841</td>
<td>(0.0269)**</td>
</tr>
<tr>
<td>Oil rents</td>
<td>0.0001</td>
<td>(0.0018)</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>-0.0035</td>
<td>(0.0010)**</td>
</tr>
<tr>
<td><strong>Short run</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normalized cointegrating vector</td>
<td>-0.9244</td>
<td>(0.0291)**</td>
</tr>
<tr>
<td>National fiscal rules strength index</td>
<td>-0.0128</td>
<td>(0.0059)**</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>-0.0777</td>
<td>(0.0243)**</td>
</tr>
<tr>
<td>Oil rents</td>
<td>0.0001</td>
<td>(0.0017)</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>-0.0033</td>
<td>(0.0009)**</td>
</tr>
</tbody>
</table>

Country-fixed effects: Yes
Year-fixed effects: Yes

Note: Country-clustered standard errors in parentheses. *, p<0.10; **, p<0.05; ***, p<0.01.
Appendix F: Survival Analysis

Figure F1. Effect of fiscal rules index on autocratic breakdown likelihood over time (Weibull)

Note: Estimations are based on the models in Table F1. Outer lines represent 90% confidence intervals.
Table F1. Strength of national fiscal rules and autocratic breakdown. Weibull survival models

<table>
<thead>
<tr>
<th>Measurement time of covariates</th>
<th>t</th>
<th>t-1</th>
<th>t-2</th>
<th>t-3</th>
<th>t-4</th>
<th>t-5</th>
<th>t-6</th>
<th>t-7</th>
<th>t-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>National fiscal rules strength index</td>
<td>0.0651</td>
<td>-0.124</td>
<td>-0.551</td>
<td>-0.301</td>
<td>-2.098</td>
<td>-1.816</td>
<td>-3.583</td>
<td>-3.014</td>
<td>-2.399</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>-0.244***</td>
<td>-0.226**</td>
<td>-0.227**</td>
<td>-0.226**</td>
<td>-0.210**</td>
<td>-0.243**</td>
<td>-0.222**</td>
<td>-0.243*</td>
<td>-0.247*</td>
</tr>
<tr>
<td>Oil rents</td>
<td>-0.00491</td>
<td>-0.00698</td>
<td>-0.00789</td>
<td>-0.00786</td>
<td>-0.00658</td>
<td>-0.00192</td>
<td>-0.00120</td>
<td>-0.00255</td>
<td>-0.00577</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>-0.0298***</td>
<td>-0.0237**</td>
<td>-0.0126*</td>
<td>-0.0260***</td>
<td>-0.0298***</td>
<td>-0.00441</td>
<td>0.0134</td>
<td>-0.000161</td>
<td>-0.00735</td>
</tr>
<tr>
<td>Constant</td>
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<td>-1.706</td>
<td>-1.578</td>
<td>-1.618</td>
<td>-1.554</td>
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<td>-1.554</td>
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<td>-1.187</td>
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<tr>
<td>ln(p)</td>
<td>-0.235***</td>
<td>-0.216***</td>
<td>-0.220***</td>
<td>-0.230***</td>
<td>-0.228***</td>
<td>-0.250***</td>
<td>-0.285***</td>
<td>-0.295***</td>
<td>-0.327***</td>
</tr>
<tr>
<td>Year-fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
</tr>
<tr>
<td>Number of countries</td>
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<td>99</td>
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<td>97</td>
<td>97</td>
<td>93</td>
<td>87</td>
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<tr>
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<td>1917</td>
<td>1811</td>
<td>1710</td>
<td>1616</td>
<td>1519</td>
<td>1426</td>
<td>1339</td>
</tr>
</tbody>
</table>

Note: Dependent variable is survival time of autocratic regimes. Coefficients based on hazard metric. Country-clustered standard errors in parentheses. *, p<0.10, **: p<0.05, ***: p<0.01.
Figure F2. Effect of fiscal rules index on autocratic breakdown likelihood over time (Cox)

Note: Estimations are based on the models in Table F2. Outer lines represent 90% confidence intervals.
Table F2. Strength of national fiscal rules and autocratic breakdown. Cox proportional hazards survival models

<table>
<thead>
<tr>
<th>Measurement time of covariates</th>
<th>t</th>
<th>t-1</th>
<th>t-2</th>
<th>t-3</th>
<th>t-4</th>
<th>t-5</th>
<th>t-6</th>
<th>t-7</th>
<th>t-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>National fiscal rules strength index</td>
<td>0.312 (0.601)</td>
<td>0.115 (0.605)</td>
<td>-0.144 (0.936)</td>
<td>0.141 (1.056)</td>
<td>-1.461 (1.431)</td>
<td>-0.939 (1.616)</td>
<td>-2.387 (2.136)</td>
<td>-2.088 (1.996)</td>
<td>-1.521 (2.008)</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>-0.214** (0.0909)</td>
<td>-0.202** (0.0922)</td>
<td>-0.223** (0.102)</td>
<td>-0.231** (0.0977)</td>
<td>-0.216** (0.106)</td>
<td>-0.255** (0.113)</td>
<td>-0.237** (0.117)</td>
<td>-0.246* (0.134)</td>
<td>-0.266* (0.140)</td>
</tr>
<tr>
<td>Oil rents</td>
<td>-0.00535 (0.0127)</td>
<td>-0.00755 (0.0105)</td>
<td>-0.00788 (0.00730)</td>
<td>-0.00724 (0.00861)</td>
<td>-0.00420 (0.00925)</td>
<td>-0.000367 (0.0107)</td>
<td>0.00000236 (0.0104)</td>
<td>0.00276 (0.00997)</td>
<td>-0.00170 (0.0112)</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>-0.0336*** (0.0123)</td>
<td>-0.0202** (0.0102)</td>
<td>-0.00593 (0.00735)</td>
<td>-0.0197** (0.00949)</td>
<td>-0.0254*** (0.00923)</td>
<td>-0.00498 (0.0105)</td>
<td>0.0133 (0.0142)</td>
<td>0.00883 (0.0112)</td>
<td>-0.00382 (0.00916)</td>
</tr>
<tr>
<td>Year-fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>1811</td>
<td>1710</td>
<td>1616</td>
<td>1519</td>
<td>1426</td>
<td>1339</td>
</tr>
</tbody>
</table>

Note: Dependent variable is survival time of autocratic regimes. Efron method for tied failures. Coefficients based on hazard metric. Country-clustered standard errors in parentheses. *, p<0.10, **: p<0.05, ***: p<0.01.
## Appendix G: Full Regression Results

### Table G1. Strength of national fiscal rules and autocratic breakdown

<table>
<thead>
<tr>
<th>Measurement time of covariates</th>
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<th>t-1</th>
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<th>t-3</th>
<th>t-4</th>
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<th>t-6</th>
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</tr>
</thead>
<tbody>
<tr>
<td>National fiscal rules strength index</td>
<td>0.02</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.00</td>
<td>-0.06</td>
<td>-0.04</td>
<td>-0.07</td>
<td>-0.10</td>
<td>-0.10</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.04)*</td>
<td>(0.03)***</td>
<td>(0.03)**</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>-0.08</td>
<td>-0.04</td>
<td>-0.02</td>
<td>0.00</td>
<td>0.03</td>
<td>0.06</td>
<td>0.05</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.03)***</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
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<td>(0.02)*</td>
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Note: Dependent variable is autocratic breakdown. Country-clustered standard errors in parentheses. *: p<0.10, **: p<0.05, ***: p<0.01.
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Note: Dependent variable is autocratic breakdown. Country-clustered standard errors in parentheses. *: p<0.10, **: p<0.05, ***: p<0.01.
Appendix H: Controlling for Additional Variables

Figure H1. Controlling for additional variables

a. Controlling for gross government debt as percent of GDP

b. Controlling for being under an IMF program

c. Controlling for type of autocracy (all regime types)

d. Controlling for type of autocracy (party regimes)
e. Controlling for banking crisis

f. Only controlling for negative growth rates

g. Controlling for elections

h. Controlling for time since irregular leader exit
i. Controlling for Economic Freedom Index

Note: Outer lines show 90% confidence intervals.
Appendix I: Removing Singapore and Malaysia

Figure I1. Removing autocracies with long histories of fiscal rules

a. Removing Singapore

b. Removing Malaysia

Note: Outer lines show 90% confidence intervals.