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* Views expressed are those of the authors and do not necessarily reflect official positions of De Nederlandsche Bank.

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Do fiscal rules constrain political budget cycles?

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Abstract

We examine whether fiscal rules constrain incumbent governments to use fiscal policy for re-election purposes. Using data on fiscal rules provided by the IMF for a sample of 77 (advanced and developing) countries over the 1984-2015 period, we find that after the Global Financial Crisis political budget cycles occur only in countries with weak fiscal rules. This conclusion is robust for the inclusion of other conditioning factors for political budget cycles identified in the literature (such as media freedom, the presence of checks and balances, and the maturity of democracy) and for controlling for the potential endogeneity of fiscal rules.

JEL-code: E62; H62
Key words: political budget cycles; fiscal policy; fiscal rules

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1. Introduction

The political budget cycle (PBC) literature focuses on election cycles in government spending, taxation and budget deficits. Early PBC models were based on the premise that incumbents manipulate fiscal policy in order to secure re-election and predicted that all governments, regardless of their ideological orientation, adopt expansionary fiscal policies before elections (Nordhaus 1975). More recent PBC models emphasize the role of temporary information asymmetries regarding politicians' competence levels in explaining electoral cycles in fiscal policy. In these models, signaling competence is the driving force behind the PBC (see, for example, Shi and Svensson 2006). Although the evidence is mixed, several studies report evidence for the occurrence of election effects in fiscal policy.[1]

Recent research does no longer assume that all governments will behave the same, but asks under what circumstances a PBC is more likely to occur (de Haan and Klomp 2013). It is likely that the incentives of the incumbent and the constraints it faces to use fiscal policy to enhance its re-election prospects will be affected by various factors.[2] Recently, Veiga et al. (2017) examined circumstances under which fiscal manipulations may occur, differentiating between several factors affecting the incentives of the incumbent to behave opportunistically, factors affecting the capacity of the opportunistic policies to yield additional votes[3], and characteristics of political institutions, such as proportional versus majoritarian electoral rules. They find that the degree of media freedom is the most important conditioning factor for PBCs. When media freedom is low, the electoral effect on budget deficits is large.

However, Veiga et al. (2017) do not consider whether fiscal rules, i.e. long-lasting constraints on fiscal policy through numerical limits on budgetary aggregates (Schaechter et al. 2012), restrain the incumbent to increase spending or cutting taxes before elections. Fiscal rules, notably those that limit or prohibit deficits, may reduce the government's fiscal room

[1] See Dubois (2016) for a recent review of the literature and Mandon and Cazals (2018) and Phillips (2016) for meta-analyses of the PBC literature.

[2] Conditioning factors discussed in the literature include the transparency of budget institutions (Alt and Lassen 2006a; 2006b), the age of democracy (Brender and Drazen 2005; 2013), political checks and balances (Streb and Torrens 2009) and media freedom/quality (Shi and Svensson 2006; Veiga et al. 2017; Repetto 2018). Recently, Janků and Libich (2019) found that PBCs are mainly driven by the extent to which voters are informed about fiscal policy in their sample of 34 OECD countries.

[3] As to the capacity, contrary to the standard assumption in PBC models that expansionary fiscal policies will increase electoral support of the incumbent, Pelzman (1992) argues that in the U.S. voters punish politicians who let government spending increase, no matter whether this increase is financed by taxes or borrowing. Brender and Drazen (2008) report similar findings for a sample of 74 countries. However, focusing on the support for political parties in government instead of the party of the prime minister, Klomp and de Haan (2013) report that expansionary fiscal policies increase electoral support for incumbent parties.

for maneuver, thereby limiting the incumbent's capacity to behave opportunistically (Alt and Rose 2007).

On the other hand, strict fiscal rules may stimulate incumbents to circumvent the rules, making use of creative accounting practices (Milesi-Ferretti 2004). There is some evidence in support of this view. For instance, focusing on member states of the European Economic and Monetary Union, Alt et al. (2014) report that governments facing excessive deficits resort to 'gimmickry' instead of abiding to the rules of the Stability and Growth Pact (SGP), thereby (at least temporarily) avoiding policies that may be electorally unpopular.[4]

There is an extensive literature on fiscal rules, both covering factors driving their adoption and their consequences. For instance, using a large cross-section of countries, Altunbas and Thornton (2017) examine which economic, institutional and political characteristics of countries affect the likelihood that a numerical rule will be adopted as part of a fiscal strategy to limit the level of public debt. As to their consequences, fiscal rules have been found to: reduce macroeconomic volatility (Fatas and Mihov 2006), to diminish the procyclicality of fiscal policy (Bergman and Hutchison 2015), lower public debt (Azzimonti et al. 2016), lower budget deficits (Caselli and Reynaud 2019) and reduce the probability of experiencing a sovereign debt crisis (Asatryan et al. 2018).[5]

So far, the question of whether fiscal rules affect the occurrence of election cycles in fiscal policy has received only scant attention in a cross-country context.[6] The only study that we are aware of is by Ademmer and Dreher (2016) who conclude that fiscal institutions only

[4] Gimmicks "are a variety of (more or less deliberate) attempts by governments to improve the appearance of their public finance statistics (like budget balance and debt) through actions that have no substantive effect on their real underlying fiscal position" (Alt et al. 2014, p. 709). Several studies report evidence that the SGP has not prevented election-motivated fiscal policy manipulations (cf. Mink and de Haan 2006 and Efthyvoulou 2012).

[5] However, some studies reach less optimistic conclusions. For instance, Eliason and Lutz (2018) do not find evidence that one of the most stringent set of fiscal rules in the U.S., i.e. Colorado's Taxpayer Bill of Rights, affected the level of taxes or spending in Colorado. Likewise, based on answers from 639 politicians who provided their expectations concerning compliance with Germany's debt brake for 16 states, Heinemann et al. (2016) report that the debt brake's credibility among policy makers is far from perfect.

[6] There is some evidence of the effect of fiscal rules on fiscal manipulation at the sub-national level. Using data for U.S. states, Rose (2006) finds that PBCs are almost absent in states with prohibitions on deficit carry-overs in combination with borrowing restrictions. Similar results are reported by Alt and Rose (2007), who conclude that the inclusion of fiscal rules "remains the biggest single contextual difference we find in the estimated magnitudes of political budget cycles" (p. 862). Likewise, based on data for Italian municipalities, Bonfatti and Forni (2017) conclude that fiscal rules moderate the political budget cycle. However, for a sample of Spanish municipalities Benito et al. (2013) report that the balanced budget rule has not dampened the political budget cycle.

help to limit the size of PBCs in weak media environments. Their study is, however, confined to European Union countries.

Using data for 77 (advanced and developing) democracies over the 1984-2015 period and the IMF database of fiscal rules (Schaechter et al. 2012), we examine whether fiscal rules constrain incumbent governments to use fiscal policy for re-election purposes by interacting the strength of fiscal rules with the behavior of governments during elections. Our results suggest that after the Global Financial Crisis (GFC) PBCs only occur in countries with weak fiscal rules. Prior to the GFC, fiscal rules do not seem to dampen political budget cycles. Presumably, a strengthening of the fiscal frameworks in place after the GFC and the fact that fiscal rules then started to bite more often lowered the room for fiscal maneuver for electoral purposes. Our main result that fiscal rules reduce PBCs is robust for the inclusion of other conditioning factors identified in the literature, such as media freedom, the presence of political checks and balances, and the maturity of democracy.

The paper is structured as follows. Section 2 describes the data used, while section 3 outlines our methodology and section 4 presents the main results. Section 5 offers a robustness analysis and section 6 concludes.

2. Data

Our dataset consists of an unbalanced panel of 77 democracies over the 1984-2015 period.[7] As the PBC theory presumes that a country is democratic, we include only countries with a score higher than six in the *Polity IV* database and for which we have enough observations (i.e. at least ten, preferably, consecutive observations). In addition, countries are only included if the period under consideration includes at least two observed (competitive) elections. Finally, we checked for very unusual observations, which led to the exclusion of two more countries (Niger and Mali).[8]

Data on the primary government budget balance as percentage of GDP (our dependent variable) come from the World Economic Outlook Database of the IMF.[9] We use the primary balance as interest payments on outstanding government debt, which are included in the government budget balance, do not reflect government policies in the current period. All

[7] See Table A.1 in the appendix for a list of all countries and Table A.2 for the summary statistics.
[8] Our main results are not driven by the inclusion of these two countries, which had extreme outliers in the primary budget balance (budget surplus of 28.2% and 40.6% in 2006, respectively, due to a sharp increase in government revenues). Results including Mali and Niger are available on request.
[9] Results using the overall budget balance are similar and available upon request.

democratic countries for which the IMF provides data on the primary balance have been included in our sample. Data on elections have been taken from several editions of the Political Handbook of the World and information of the PARLINE database of the Inter-Parliamentary Union. To assess the effect of elections on fiscal policy, it is important that the incumbent has control over the government budget. Therefore, we follow de Haan and Klomp (2016) to decide which elections had to be chosen: If the president has no legislative powers in the realm of fiscal policy and is accountable to parliament through confidence requirement, we classify the country concerned as a parliamentary regime and only use elections for parliament. Following Shi and Svensson (2006), we only consider elections if: (i) the election is held on the fixed date (year) specified by the constitution; or (ii) the election occurs in the last year of a constitutionally fixed term for the legislature; or (iii) the election is announced at least a year in advance.

It is common practice in the literature to use an election dummy indicating whether or not there are elections in a particular year. However, this creates a measurement error, since it ignores the timing of elections (Franzese 2000). Our election variable is therefore calculated as $M/12$ in an election year and $(12 - M)/12$ in a pre-election year, where M is the month of the election. In all other years its value is set to zero.

Our fiscal rules measure is taken from the IMF Fiscal Rules Dataset (Schaechter et al. 2012). The dataset covers four types of fiscal rules (budget balance rules, debt rules, expenditure rules, and revenue rules) and provides information on key characteristics of these rules such as coverage, the legal basis, supporting procedures, and enforcement procedures (all explained below). Schaechter et al. (2012) suggest not to include flexibility in the aggregated fiscal rules index as flexible rules may not be equally suited for all countries and since flexibility creates new challenges for monitoring and effective implementation. However, in the literature on the design of optimal fiscal rules some considerations have been put forward why flexible fiscal rules may be desirable. Very stringent fiscal rules can tie the hands of policy makers too much during economic downturns and could promote ineffective (procyclical) fiscal policy. It appears that fiscal rules that consider the cyclical component to a greater extent and exclude public investment from the expenditure ceiling are more effective in promoting sound fiscal policy (Guerguil et al. 2017). Therefore, in line with Bergman and Hutchison (2015), we include flexibility and construct our fiscal rules index as follows:

$$Fiscal\ Rules\ Index = Coverage + Legal\ Basis + Supporting\ procedures + Enforcement + Flexibility \quad (1)$$

where *Coverage* captures which sector of the government (central or general) is covered by the rule; *Legal basis* considers the statutory basis of the rule, ranging from political agreements to constitutional rules; *Supporting procedures* is the weighted average of the presence (or lack thereof) of multi-year expenditure ceilings, a fiscal responsibility law and an independent fiscal body setting budget assumptions and monitoring the implementation of the budget; *Enforcement* is measured as the weighted sum of having a formal enforcement procedure and whether or not there is a monitoring mechanism in place outside the government; and *Flexibility* is the weighted average of whether there is a well-specified escape clause, whether a balanced budget target is cyclically-adjusted, and whether public investment is excluded from the expenditure ceiling.[10] This gives in total 11 characteristics, which we narrow down to the five abovementioned indicator terms.[11] All terms are normalized to unity so that the fiscal rules index has a value between 0 and 5.[12]

Figure 1 shows the average value of the fiscal rules index over the sample period and also provides an example of the development of the index for the Netherlands, Germany, and the United States. As shown in the figure, the index not only varies across countries, but also shows substantial variation over time. Similar results can be depicted for the fiscal rules index of other countries, suggesting that several countries have adopted more stringent fiscal rules. Still, there are also several countries where the index has declined over time, either because a country decided to drop a fiscal rule – e.g. in the United States – or because of a change in the design of the fiscal framework – e.g. in the Netherlands.

Apart from an aggregate index, we employ four disaggregated rule indexes, capturing rules referring to budget deficits, public debt, government expenditures and government revenues. As shown in Figure 2, several countries in our sample have multiple types of fiscal rules in place nowadays. Using sub-indexes, we can measure whether these different types of fiscal rules have a differential effect on the government budget balance and whether their

[10] As flexibility seems to play a role in the effectiveness of fiscal rules (Guerguil et al. 2017), we use the fiscal rules index including flexibility as our preferred fiscal rules index. However, results excluding flexibility from the fiscal index are similar and available upon request.

[11] All characteristics in the IMF fiscal rules database are 0-1 dummies except for coverage and legal basis of the fiscal rule. *Coverage* takes on three different values: No coverage = 0, Central government = 1, General government = 2. The number may be adjusted upward by 0.5 to account for similar rules applying to different levels. *Legal basis* takes on five different values: Political commitment = 1, Coalition agreement = 2, Statutory rule = 3, International treaty = 4, Constitutional rule = 5.

[12] We also considered to give equal weight to every characteristic of the fiscal rule. We prefer the abovementioned specification of the fiscal rules index, as this specification comes closest to the instructions of Schaechter et al. (2012). Results with equal weights, however, are similar and available upon request.

conditional effect on the impact of elections differs. The sub-indexes are constructed in a similar way as the second aggregated index described above.

[Insert Figures 1 and 2 about here]

3. Method

To investigate whether fiscal rules constrain the PBC, we estimate a dynamic panel data model. The model takes the following form:

$$Budget_{i,t} = \alpha + \gamma Budget_{i,t-1} + \beta Elections_{i,t} + \delta FRI_{i,t} + \theta\left(Elections_{i,t} * FRI_{i,t}\right) + \varphi X_{i,t} + \mu_i + \tau_t + \varepsilon_{i,t} \quad (2)$$

where $Budget_{i,t}$ measures the government primary budget balance (scaled by GDP) for country *i* during year *t*. The one-year lag of the dependent variable controls for path dependence. $Elections_{i,t}$ is the election variable as described above, $FRI_{i,t}$ is one of our fiscal rule indexes (i.e. the aggregate index and rules for budget deficits, public debt, government expenditures and government revenues)[13], and $Elections_{i,t} * FRI_{i,t}$ is the interaction between fiscal rules and elections. $X_{i,t}$ is a vector of control variables and contains a one-year lag of the public-debt-to-GDP ratio. In addition, $X_{i,t}$ includes inflation and GDP growth to control for business cycle dynamics (all from the World Economic Outlook Database). We also include annual time dummies, τ_t, to control for common time effects. Finally, μ_i captures the unobserved country-specific effects, and $\varepsilon_{i,t}$ is the i.i.d. error term.

We estimate the panel data model using panel fixed effects (FE) to eliminate country-specific heterogeneity. The dynamic panel data model, however, contains a potential bias due to the inclusion of the lagged dependent variable. Even though our sample period is quite long (T=31) so that the results may not be affected much by potential endogeneity that could arise due the inclusion of the lagged dependent variable, we use alternative estimators to control for the so-called Nickell bias. First, we use the bias corrected fixed effects (LSDVC) estimator (Bun and Kiviet 2003). The LSDVC estimation solves for the Nickell bias, but assumes strict exogeneity of the explanatory variables. Second, we use a GMM estimator which controls for endogeneity. The widely used Arellano-Bond (1991) GMM and system GMM (Blundell and Bond 1998) assume mean stationarity of the variables. This assumption is unlikely to hold in

[13] In the regressions we use the contemporaneous level of the fiscal rules index. If fiscal rules bite, they are more likely to do so in the same year as to which our fiscal policy variable refers.

our panel.[14] We therefore use the GMM estimator as suggested by Ahn and Schmidt (1995), which does not require mean stationarity.

Finally, as the fiscal rules index may be endogenous (countries having non-sustainable public finances may be more likely to adopt fiscal rules), we use instrumental variable estimates, using instruments based on Altunbas et al. (2017). We discuss the concern of endogeneity as well as the set of instruments to deal with it in detail in section 5 when we examine the robustness of our results.

4. Results

Table 1 shows the fixed effects estimation results with clustered robust standard errors. Column (1) provides estimates for Eq. (2) excluding the interaction between our election and aggregated fiscal rules index; this interaction is included in column (2). Following the same setup, the subsequent columns in Table 2 show the outcomes for the indexes referring to expenditures, revenues, budget balance, and debt, respectively.

In column (1) of Table 1, the one-year lag of the budget balance variable shows a high path dependence of the dependent variable and GDP growth seems to improve the budget balance. The coefficients for the inflation measure and the level of public debt are also positive and significant. The estimated coefficient for the election variable is negative and highly significant, suggesting that in election years the government budget balance decreases. Our results suggest that strong fiscal rules are associated with lower budget deficits. Furthermore, the coefficient of the aggregate fiscal index in column (1) is, on average, twice as large as the coefficients of the indexes referring to expenditures, revenues, budget balance, and debt rules as shown in columns (3), (5), (7), and (9).

As shown in column (2) of Table 1, the coefficient on the interaction of our election variable and the aggregate fiscal rules index is positive, but insignificant. The same holds for the interaction of our election variable and the sub-indexes.

[Insert Table 1 about here]

As shown by Brambor et al. (2006), the coefficients of the election variable and the fiscal rules indexes in the interaction models must not be interpreted as the average –

[14] Violations from the mean stationarity assumption could be detected based on Sargan's or Hansen's test of overidentifying restrictions, but these tests (can) have very low power when the number of instruments increases (Bun and Sarafidis 2013). As our T=31, the number of instruments would be rather high.

unconditional – effect on the government budget as it can in linear-additive models. The conditional effect of fiscal rules on the marginal effect of elections on the budget balance should therefore not be assessed on the basis of the significance (or lack thereof) of the coefficient of the interaction term. Figure 3 shows the marginal effect of elections on the government budget balance conditional on the overall fiscal index and the indexes for the different types of fiscal rules. The red line shows the marginal effect of elections and the dashed lines display the 95% confidence interval for which the marginal effect is calculated. The grey bars show the percentage of observations for the fiscal rule index. As shown in Figure 2, most countries had not yet a fiscal rule in place at the beginning of our sample period and the adoption of fiscal rules gradually increased over time. Therefore, for many observations the fiscal rules index contains a value of zero (i.e. a country did not have a fiscal rule in place). Also note that most of the observations are located in the interval where the marginal effect of elections is significant, which might explain the wider confidence intervals on the right side of the graphs.

The graphs show that all types of fiscal rules constrain politicians to use fiscal policy for re-election purposes. Only in countries with weak fiscal rules (i.e. in countries with low values for the fiscal rules index) the marginal effect of the elections-variable is significantly different from zero.[15] Once the fiscal rules index increases to a certain level (depending on the fiscal rules index, somewhere between 1.75 and 3.75), the marginal effect of elections becomes insignificant. Hence, Figure 3 suggests that elections, on average, do not affect fiscal policy in countries with strong fiscal rules.

[Insert Figure 3 about here]

5. Sensitivity analysis

Are these findings robust if we use the different estimation methods outlined in section 3? Table 2 shows the results for the bias corrected fixed effects estimation (LSDVC) and generalized methods of moments estimation (GMM) approaches for the aggregated fiscal rules index. Figure A1 in the Appendix shows the corresponding marginal effect plots. The LSDVC estimates seem to give a bit more explanatory power to the lagged dependent

[15] As the number of countries with revenue rules is rather limited, the results for the revenues rule index should be interpreted with caution. As Figure 3 shows, in contrast to the results for the other fiscal rules, the marginal effect line is flat for the revenues rule index.

variable[16], whereas the effect of fiscal rules is more prevalent and significant in the GMM estimation. Most importantly, overall the results do not differ much from those reported in Table 2. Hence, given our data, it does not seem that the Nickell bias affects our results so that we continue using panel fixed effects estimations.

[Insert Table 2 about here]

One issue with the results reported in the previous section is the potential endogeneity of our fiscal rules index. After all, it is possible that countries with fiscal sustainability issues are more likely to introduce fiscal rules to get their policies back on track. We consider two IV estimations. Following Debrun et al. (2008), we first use a lag as instrument for the fiscal rules index. However, it is very likely that the lag of the fiscal rules index will correlate as much with the error term as the instrumented fiscal rules index (because of the high path dependency in the government budget balance).[17] Therefore, we also use four instruments based on the work of Altunbas and Thornton (2017). They find that the probability that a country adopts a fiscal rule increases when a country, amongst others, has an inflation targeting regime, as the combination improves public revenue collection (Minea and Villieu 2009; Lucotte 2012). Moreover, adopting a fiscal rule might be a necessity for joining a monetary union (Bova et al. 2014). Furthermore, Altunbas and Thornton (2017) find the likelihood of adopting a fiscal rule is affected by whether a country has deep credit markets and if it is open to international trade, as they make governments more vulnerable to, respectively, domestic and foreign market developments. Based on Altunbas and Thornton (2017), we consider a financial development index, trade openness, the presence of an inflation targeting regime, and membership of a monetary union as instruments for the fiscal rules index.[18]

[16] Note that the LSDVC estimator is calculated with bootstrap standard errors (non-clustered), whereas FE estimation and GMM estimation correct for potential heteroskedasticity using clustered robust standard errors. This could possibly explain the minor differences between the LSDVC and the FE estimation results. Although the results of the FE estimation using classic standard errors (available upon request) and clustered robust standard errors do not differ a lot, the model seems to improve a little using clustered robust standard errors. Unfortunately, to the best of our knowledge, there is no LSDVC package available with clustered standard errors.

[17] A Sargan-Hansen test (testing the validity of the instrument) could not be performed as the equation is exactly identified.

[18] The Financial Development index describes how well developed financial institutions and financial markets are in terms of their depth, access, and efficiency (source: IMF Financial Development Index Database); trade openness is defined as the ratio of exports and imports to GDP (source: WDI database); the dummy reflecting

Table 3 shows the IV estimation results and Figure A2 in the Appendix shows the corresponding marginal effect plots. The instruments appear to be relevant (Kleibergen-Paap statistic) and pass the Sargan-Hansen test of overidentifying restrictions.[19] Although the significance of the fiscal rules variable drops, the general findings based on IV estimates, namely that strong fiscal rules reduce the marginal impact of elections on the government's budget balance, are similar to the fixed effects estimation results. Furthermore, the null hypothesis that the specified endogenous regressors can be treated as exogenous cannot be rejected, suggesting that FE estimation is allowed.

[Insert Table 3 about here]

Next, we have added some additional control variables to our model suggested by the literature to check whether our findings concerning the role of fiscal rules are sensitive to the inclusion of these variables. In line with recent contributions to the literature, we control for the potential confounding effect of media freedom (Shi and Svensson 2006; Veiga et al. 2017), the presence of checks and balances in the political system (Streb and Torrens 2009; 2013) and the age of democracy (Brender and Drazen 2005).[20] Unfortunately, a cross-country

membership of a monetary union is based on own calculations following Altunbas and Thornton (2017), while the dummy reflecting the presence of an inflation target is based on information provided by Hammond (2012). Other variables that influence fiscal rules adoption suggested by Altunbas and Thonton (2017) were either not suitable as instrument (macroeconomic variables, lagged fiscal performance, popularity index whether other countries already had adopted a fiscal rule) or turned out to be of no use as an instrument (exchange range regime) for the fiscal rules index.

[19] Consistent with these tests outcomes, an additional check whether the instruments are directly related to the primary budget balance shows that these variables do not have a significant impact on the dependent variable (results available on request).

[20] Streb and Torrens (2013) model the role of legislative veto players. Since the legislature must typically authorize new debt, divided government can make fiscal rules limiting public debt credible. Their model implies that the absence of checks and balances may undermine commitment to this rule. Streb et al. (2009) study these implications empirically using a panel of 67 democracies over the 1960–2001 period. Their evidence suggests that the presence of checks and balances has a moderating effect on political budget cycles. Brender and Drazen (2005: 1289-90) argue that "in economies in which the electorate has a lot of experience with elections, and where the collection and reporting of the relevant data to evaluate economic policy are common, voters would be unlikely to 'fall' for the trick of making the economy look good right before elections. In contrast, fiscal manipulation may work when voters lack the necessary information to draw such inferences, as well as the ability to process that information correctly." However, several studies report that also in well-established democracies PBCs occur (see the discussion in de Haan and Klomp 2013).

multiannual budget transparency measure that will cover the bulk of our sample is not available.[21]

In view of the findings of Veiga et al. (2017), we start by including a proxy for media freedom. The variable we use is defined as a press status variable and is obtained from the Freedom of the Press 2017 database of the Freedom House. It indicates whether the media environment is considered to be "free", "partially free", or "not free" and varies between 0 and 1.[22] The results shown in column (1) of Table 4 suggest that including this variable does not affect our main findings. The coefficient on the media freedom variable is not significantly different from zero. We also considered using the media freedom index from the Global Media Freedom Dataset of the Media Freedom Resource Centre (MFRC), which provides data from 1948-2014. We find similar results using this index, but end up with fewer observations as information for 2015 is missing.[23]

The next column in Table 4 shows the results if we consider checks and balances. This measure counts the number of legislative veto players and is taken from the Database of Political Institutions (DPI) 2017 of the Inter-American Development Bank (Scartascini et al. 2018). This control variable also does not seem to have a significant impact on the primary budget balance (column 2 of Table 4). Furthermore, it hardly affects the estimated coefficient(s) of elections and its interaction with fiscal rules. Yet, whether this has consequences for our main results will be evaluated below in our marginal effect analysis corresponding to this robustness analysis.

Finally, we examine whether experience with the political system affects our results. Following Veiga et al. (2017), we created a dummy whether a country has had four competitive elections and at least 10 consecutive democratic years, i.e. whether a country is considered to be an established democracy. As column 3 of Table 4 shows, the estimated coefficient on this variable is positive, but significant. This implies that in our sample the established democracies, on average, do not have lower fiscal deficits. Once again, we find

[21] The budget transparency measure that is most suitable for our sample is the Open Budget Index of the International Budget Partnership. This index covers a broad set of countries – 107 countries in total –, but is only available for six nonconsecutive years (2006, 2008, 2010, 2012, 2015, and 2017).

[22] "Not free" = 0; "Partially free" = 0.5; "Free" = 1.

[23] For robustness, we also tried two combinations of the Freedom House's index with the MFRC's index as the press status variable of the Freedom House is only available from 1989 onwards: (i) we extend the Freedom House's index with the MFRC's index where data is missing, and (ii) we use a weighted average of the two indexes. Combining the two indexes, however, does not have our preference. The correlation between the index of Freedom House and MFRC is 0.753, which is high, but also indicates that the indexes do not entirely overlap. Moreover, the loss in observations using the Freedom House's index is small (i.e. 26). Results in all cases, however, remain similar and are available upon request.

that the coefficients of the elections-variable and its interaction with fiscal rules is hardly affected.

To check the robustness of our marginal effect plot, we recalculate the marginal effects based on column 4 of Table 4. In this column, we add all control variables simultaneously. The marginal effect plot shown in Figure A3 in the Appendix shows that the calculated marginal effects are robust to the inclusion of the possible confounding variables that we have added to our model.

[Insert Table 4 about here]

In addition to the inclusion of additional control variables, we have also examined whether the constraining effect of fiscal rules on the occurrence of political budget cycles is different for different groups of countries. More specifically, we have estimated three-way interaction models in which we examine to which extent elections and fiscal rules interact with (1) media freedom, (2) checks and balances, and (3) being an established democracy, respectively. To distinguish the different groups, we have constructed a dummy variable for each of the additional control variables.[24]

Table 5 provides the results considering the three-way interaction models.[25] Our results are robust against the inclusion of media freedom: strong fiscal rules constrain political budget cycles irrespective of whether a country has a low or high degree of media freedom. Furthermore, fiscal rules keep their constraining effect on political budget cycles in established democracies, but in new democracies political budget cycles are present irrespective of fiscal rules. The latter finding is consistent with the results of Brender and Drazen (2005). Note, however, that in our sample new democracies did not have a fiscal rule in place in more than 80 percent of the observations. Moreover, fiscal rules appear to be less strong in new democracies compared to more established democracies.

In addition, we find that the presence of checks and balances is of importance; in countries with a high number of legislative veto players, we find no evidence for political budget cycles (also not when fiscal rules are weak). However, in countries where the number

[24] The dummy variable for media freedom indicates whether the media environment in a country was considered to be free (Z=1) or not (Z=0). The dummy variable for the presence of checks and balances is based upon the median and distinguishes whether the number of legislative veto players is low (Z=0) or high (Z=1). The construction of the democracy variable has already been described above.

[25] The results containing the estimation output and marginal effect plots are available upon request.

of veto players is low, the conditional effect of fiscal rules on the relation between elections and fiscal deficits is unaffected.

Overall, the conditional effect of fiscal rules on political budget cycles appears to be robust for the inclusion of other conditioning factors identified in the literature. Furthermore, the results for which we confirm the presence (or lack) of political budget cycles irrespective of fiscal rules seem to be in congruence with earlier literature.

Janků and Libich (2019) argue that fiscal policy analyses that consider both the pre-GFC and post-GFC periods must check whether results are the same for both periods. Finally, we therefore examine whether our results differ for the pre-GFC and post-GFC periods using a three-way interaction between our election and fiscal rule variables and a dummy differentiating between both periods.[26] We find that the conditional effect of fiscal rules on the marginal impact of elections on the government budget is different for the pre-GFC and post-GFC periods. Prior to the GFC, fiscal rules do not seem to dampen political budget cycles, but in the post-GFC period fiscal rules strongly affect the opportunistic behavior of governments in election years.

What could explain the difference in the conditional effect of fiscal rules on political budget cycles between the pre-GFC and post-GFC periods? In the aftermath of the GFC, public finances deteriorated in most countries. As a consequence, many countries responded by strengthening their fiscal frameworks. As shown in Figure 2, the number of countries having fiscal rules in place increased after the GFC. In addition, these rules may have started to 'bite' more often. After the GFC, fiscal variables more often reached or even surpassed the numerical constraints laid down in the rules. Arguably, binding fiscal rules have a differential effect on the government budget compared to non-binding fiscal rules (Milesi-Ferretti 2004).

[Insert Table 5 about here]

[26] A simple sample split yields the same results (available on request).

6. Conclusions

There is a long tradition of examining political budget cycles. Like most of the recent contributions, we have focused on the conditionality of the relationship between elections and budget deficits. That is, for a sample of 77 (advanced and developing) countries over the 1984-2015 period and using data on fiscal rules provided by the IMF, we find that political budget cycles occur only in countries with weak fiscal rules. However, this result only holds for the post-GFC period. In addition, we confirm the finding of previous studies that fiscal rules in general also lead to more positive budget balances.

Our main result that fiscal rules reduce PBCs is remarkably robust and is not affected by the type of fiscal rules index, the used empirical model, or the possible endogeneity of the fiscal rules index. Furthermore, we do find that our results are robust to the inclusion of other (conditional) determinants proposed by the literature on political budget cycles, such as media freedom, the presence of political checks and balances, and the maturity of democracy.

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Table 1. Estimation results: Fixed effects with clustered robust standard errors (Dependent variable: primary government budget balance)

VARIABLES	(1) Aggregate fiscal rules index	(2) Aggregate fiscal rules index	(3) Expenditure rules index	(4) Expenditure rules index	(5) Revenue rules index	(6) Revenue rules index	(7) Balanced budget rules index	(8) Balanced budget rules index	(9) Debt rules index	(10) Debt rules index
Elections	-0.489***	-0.583***	-0.486***	-0.541***	-0.484***	-0.473***	-0.483***	-0.576***	-0.485***	-0.574***
	(0.130)	(0.196)	(0.129)	(0.158)	(0.130)	(0.139)	(0.130)	(0.190)	(0.130)	(0.185)
FRI	0.401**	0.376**	0.214***	0.192**	0.0953	0.112	0.211**	0.194**	0.232*	0.213
	(0.161)	(0.161)	(0.0745)	(0.0762)	(0.138)	(0.140)	(0.0934)	(0.0936)	(0.131)	(0.131)
Elections* FRI		0.101		0.0976		-0.0709		0.0665		0.0751
		(0.109)		(0.0953)		(0.198)		(0.0716)		(0.0788)
Primary balance (-1)	0.596***	0.596***	0.601***	0.601***	0.606***	0.606***	0.599***	0.598***	0.600***	0.600***
	(0.0487)	(0.0488)	(0.0475)	(0.0475)	(0.0472)	(0.0472)	(0.0478)	(0.0480)	(0.0495)	(0.0497)
Inflation	0.0654***	0.0650***	0.0628***	0.0623***	0.0593**	0.0593**	0.0642***	0.0637***	0.0639***	0.0636***
	(0.0222)	(0.0223)	(0.0222)	(0.0224)	(0.0230)	(0.0230)	(0.0225)	(0.0226)	(0.0225)	(0.0226)
Growth	0.150***	0.149***	0.146***	0.145***	0.142***	0.142***	0.147***	0.147***	0.148***	0.147***
	(0.0312)	(0.0312)	(0.0307)	(0.0308)	(0.0311)	(0.0311)	(0.0311)	(0.0311)	(0.0316)	(0.0316)
Debt (-1)	0.0106**	0.0106**	0.0103**	0.0103**	0.0132***	0.0132***	0.0121***	0.0121***	0.0122***	0.0123***
	(0.00449)	(0.00451)	(0.00468)	(0.00470)	(0.00475)	(0.00475)	(0.00448)	(0.00449)	(0.00445)	(0.00447)
Constant	-1.078	-1.038	-1.198	-1.167	-1.290	-1.294	-1.144	-1.105	-1.157	-1.118
	(0.788)	(0.798)	(0.782)	(0.790)	(0.806)	(0.806)	(0.795)	(0.803)	(0.786)	(0.794)
Observations	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546
R-squared	0.564	0.564	0.562	0.562	0.559	0.559	0.563	0.563	0.562	0.562
Number of countries	77	77	77	77	77	77	77	77	77	77

Note: Fixed effects (FE) estimation of Eq. (2) with robust standard errors shown in parentheses: *** p<0.01, ** p<0.05, * p<0.1. The fiscal rules index is calculated using Eq. (1), including flexibility; Columns 1 and 2 provide the results using the aggregate fiscal rules index; Columns 3 and 4 using the expenditure rules index; Columns 5 and 6 using the revenue rules index; Columns 7 and 8 for the balanced budget rules index; Columns 9 and 10 for the debt rules index. Results for the time dummies are not displayed for reasons of parsimony, but are available upon request.

Table 2. Estimation results: Fixed effects with clustered robust standard errors (Dependent variable: primary government budget balance)

VARIABLES	(1) LSDVC	(2) LSDVC	(3) GMM	(4) GMM
Elections	-0.501***	-0.591***	-0.492***	-0.589***
	(0.172)	(0.222)	(0.126)	(0.189)
FRI	0.372***	0.349***	0.462***	0.435***
	(0.109)	(0.114)	(0.132)	(0.138)
Elections* FRI		0.0965		0.105
		(0.146)		(0.106)
Primary balance (-1)	0.656***	0.656***	0.594***	0.594***
	(0.0202)	(0.0202)	(0.0489)	(0.0490)
Inflation	0.0622***	0.0617***	0.0631***	0.0626***
	(0.0122)	(0.0121)	(0.0196)	(0.0198)
Growth	0.144***	0.144***	0.149***	0.148***
	(0.0223)	(0.0223)	(0.0305)	(0.0305)
Debt (-1)	0.00949***	0.00952***	0.0103**	0.0104**
	(0.00310)	(0.00310)	(0.00408)	(0.00410)
Constant			-1.034	-0.994
			(0.827)	(0.832)
Observations	1,546	1,546	1,546	1,546
Number of countries	77	77	77	77

Note: Columns 1 and 2 display the results for the biased corrected fixed effects (LSDVC) estimation of Eq. (2) with bootstrapped standard errors shown in parentheses: *** p<0.01, ** p<0.05, * p<0.1; Bootstrapped standard errors were calculated using 200 repetitions; Bias correction was initialized using the Arellano-Bond estimator; constant is not displayed for LSDVC estimation; Columns 3 and 4 display the results for the generalized methods of moments (GMM) estimation of Eq. (2) with robust standard errors shown in parentheses: *** p<0.01, ** p<0.05, * p<0.1; GMM estimator was implemented following Ahn and Schmidt (1995); GMM-type instruments: *Primary balance(-2) and Primary balance(-3)*; IV-type instruments*: Elections, FRI, Elections*FRI, Inflation, Growth, and Debt(-1)*; GMM-type instruments were collapsed into standard instruments; all instruments apply to the model in deviations from within-group means; time-specific effects were added to the model

Table 3. Estimation results: IV estimates (Dependent variable: primary government budget balance)

VARIABLES	(1) IV 'lag'	(2) IV 'lag'	(3) IV 'instruments'	(4) IV 'instruments'
Elections	-0.489***	-0.624***	-0.498***	-0.676***
	(0.150)	(0.212)	(0.147)	(0.247)
FRI	0.395***	0.358***	0.255	0.242
	(0.118)	(0.124)	(0.353)	(0.371)
Elections* FRI		0.146		0.186
		(0.132)		(0.198)
Primary balance (-1)	0.596***	0.596***	0.599***	0.598***
	(0.0469)	(0.0469)	(0.0519)	(0.0518)
Inflation	0.0653***	0.0647***	0.0539***	0.0535***
	(0.0140)	(0.0139)	(0.0145)	(0.0145)
Growth	0.149***	0.149***	0.151***	0.150***
	(0.0263)	(0.0264)	(0.0271)	(0.0273)
Debt (-1)	0.0106***	0.0107***	0.0116***	0.0114***
	(0.00265)	(0.00265)	(0.00323)	(0.00322)
Instruments	1	1	4	4
Kleibergen-Paap stat.(p)	0.000	0.000	0.000	0.000
Hansen J-stat.(p)	-	-	0.372	0.223
Endogeneity test(p)	0.928	0.571	0.517	0.769
Observations	1,546	1,546	1,508	1,508
R-squared	0.564	0.564	0.567	0.567
Number of countries	77	77	76	76

Notes: Columns 1 and 2 display the results for the IV estimation of Eq. (2) with a lag of the fiscal rules index as instrument; Columns 3 and 4 display the results using a financial development index, trade openness, membership of a monetary union, and whether there is a inflation targeting regime as instruments. Data for Trinidad and Tobago on trade openness is missing; Robust standard errors shown in parentheses: *** p<0.01, ** p<0.05, * p<0.1; The endogenous regressors are both the constitutive term of the fiscal rules index (*FRI*) as the interaction with the elections variable (*Elections*FRI*); The Kleibergen-Paap LM statistic shows the result for an under-identification test whether the instruments are relevant. Under the null hypothesis the equation is under-identified; The Hansen-J statistic shows the result for the overidentification test of the restrictions. Under the null hypothesis the instruments are valid instruments; The endogeneity test checks the endogenous regressors. Under the null hypothesis the specified endogenous regressors can actually be treated as exogenous.

Table 4. Estimation results: Fixed effects with clustered robust standard errors; additional control variables (Dependent variable: primary government budget balance)

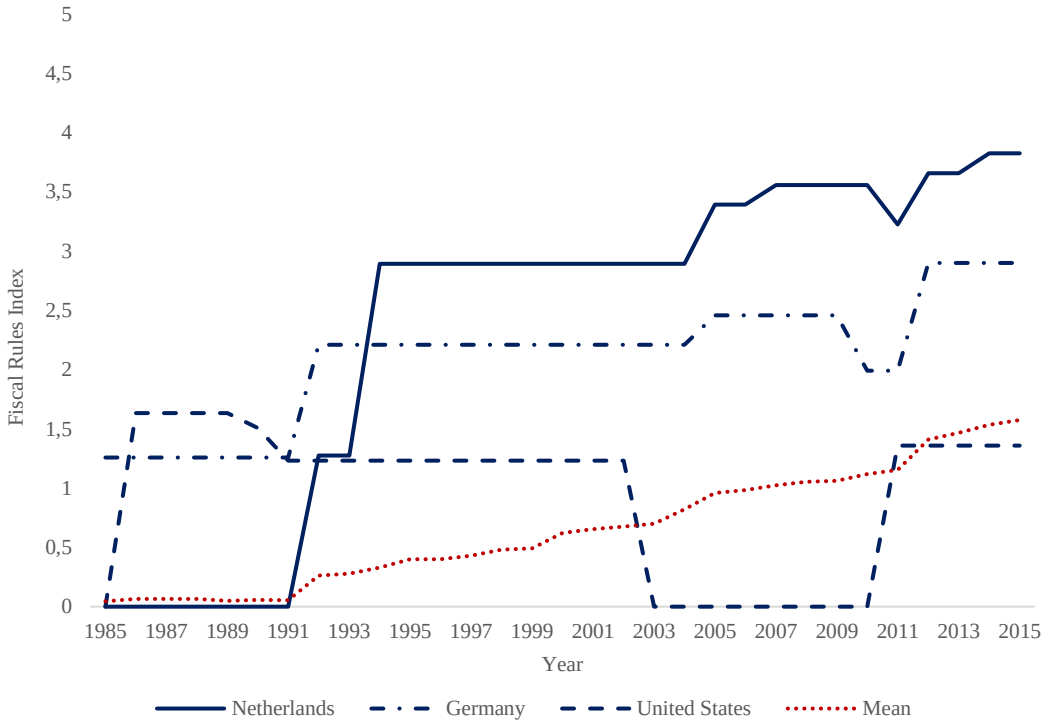
VARIABLES	(1) Media freedom	(2) Checks and balances	(3) Established democracy	(4) All
Elections	-0.639***	-0.584***	-0.563***	-0.618***
	(0.187)	(0.196)	(0.196)	(0.188)
FRI	0.380**	0.392**	0.360**	0.381**
	(0.149)	(0.164)	(0.164)	(0.154)
Elections* FRI	0.127	0.105	0.0970	0.124
	(0.106)	(0.111)	(0.109)	(0.108)
Primary balance (-1)	0.590***	0.595***	0.596***	0.590***
	(0.0498)	(0.0497)	(0.0493)	(0.0512)
Inflation	0.0652***	0.0643***	0.0657***	0.0655***
	(0.0221)	(0.0223)	(0.0228)	(0.0224)
Growth	0.148***	0.149***	0.148***	0.147***
	(0.0308)	(0.0314)	(0.0313)	(0.0310)
Debt (-1)	0.0117***	0.0107**	0.0111**	0.0123***
	(0.00422)	(0.00451)	(0.00458)	(0.00427)
Media freedom	-0.332			-0.299
	(0.568)			(0.575)
Checks and balances		-0.0198		-0.0340
		(0.0487)		(0.0484)
Established democracy			0.296	0.325
			(0.205)	(0.210)
Constant	-0.974	-0.936	-1.269	-0.605
	(0.805)	(0.832)	(0.850)	(1.254)
Observations	1,520	1,538	1,546	1,512
R-squared	0.563	0.566	0.565	0.566
Number of ID	77	77	77	77

Notes: See notes to Table 2. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Conditional effect of fiscal rules on political budget cycles interacted with additional control variables.

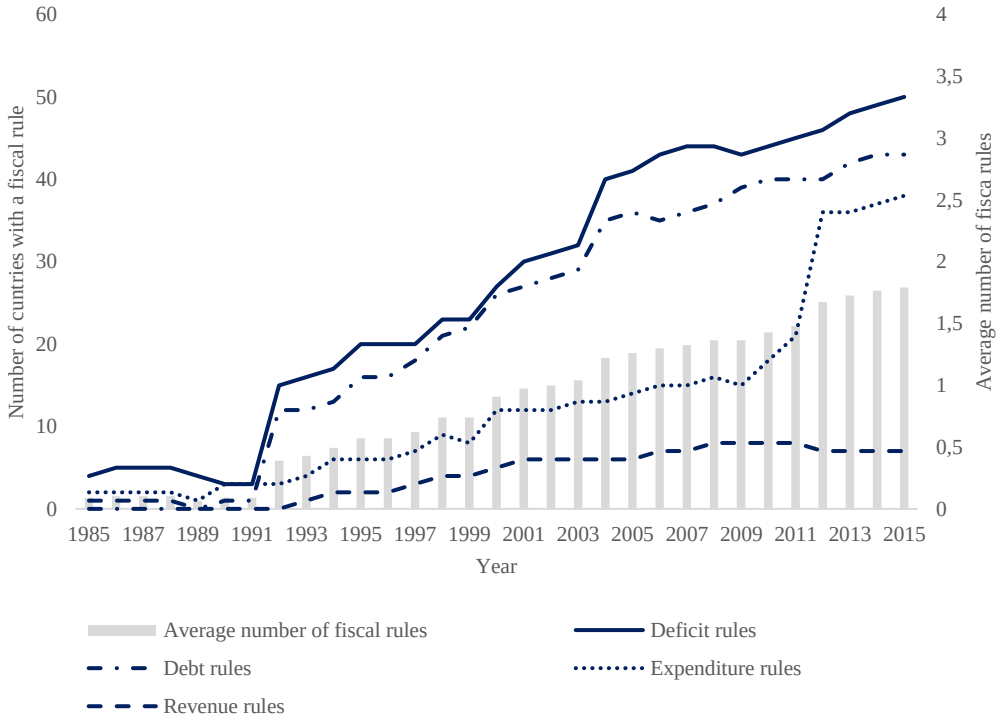
CONTROL VARIABLE (Z)	Z = 0	Z = 1
Media freedom	*Conditional effect of fiscal rules on political budget cycles remains similar given a 95% confidence interval*	*Conditional effect of fiscal rules on political budget cycles remains similar given a 95% confidence interval*
Checks & balances	*Conditional effect of fiscal rules on political budget cycles remains similar given a 95% confidence interval*	*In democracies with a high number of legislative veto players, the effect of elections is not statistically significant irrespective of the presence and strength of fiscal rules*
Established democracy	*In new democracies, elections significantly deteriorate the government budget irrespective of the presence and strength of fiscal rules.*	*Conditional effect of fiscal rules on political budget cycles remains similar given a 90% confidence interval*
Global financial crisis	*Prior to the GFC, elections significantly deteriorate the government budget irrespective of the presence and strength of fiscal rules*	*Conditional effect of fiscal rules on political budget cycles remains similar given a 95% confidence interval*

Figure 1. Fiscal Rule Index (mean and index in selected countries)



Source: IMF Fiscal Rules dataset

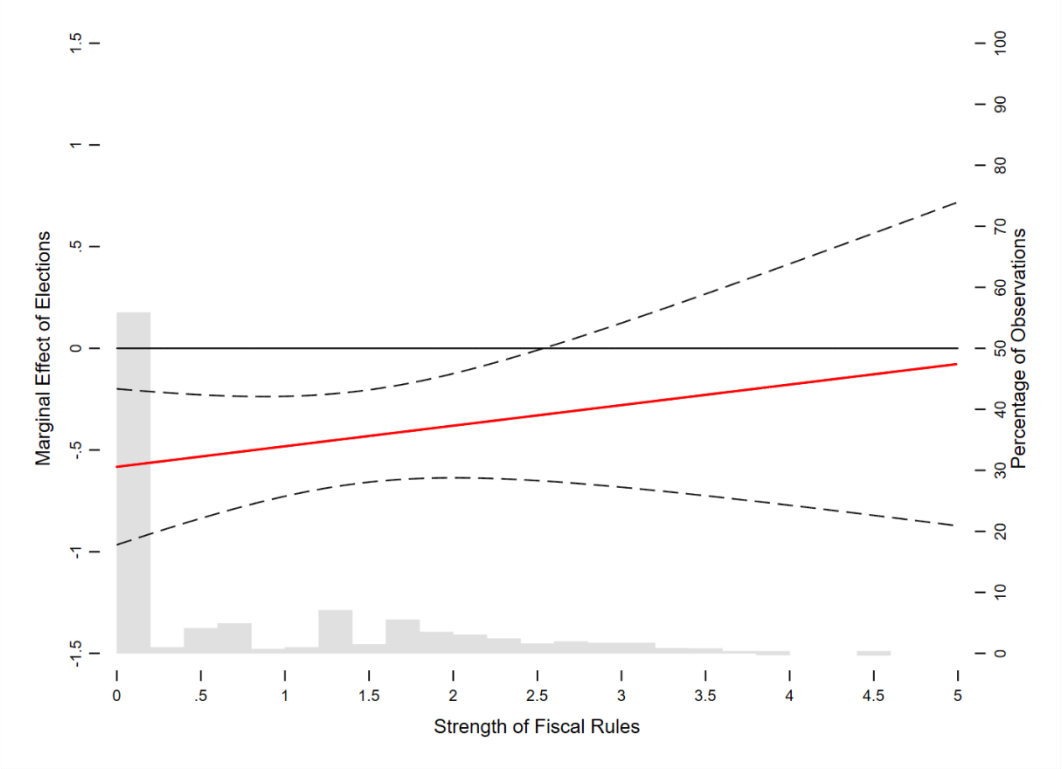
Figure 2. Number of fiscal rules



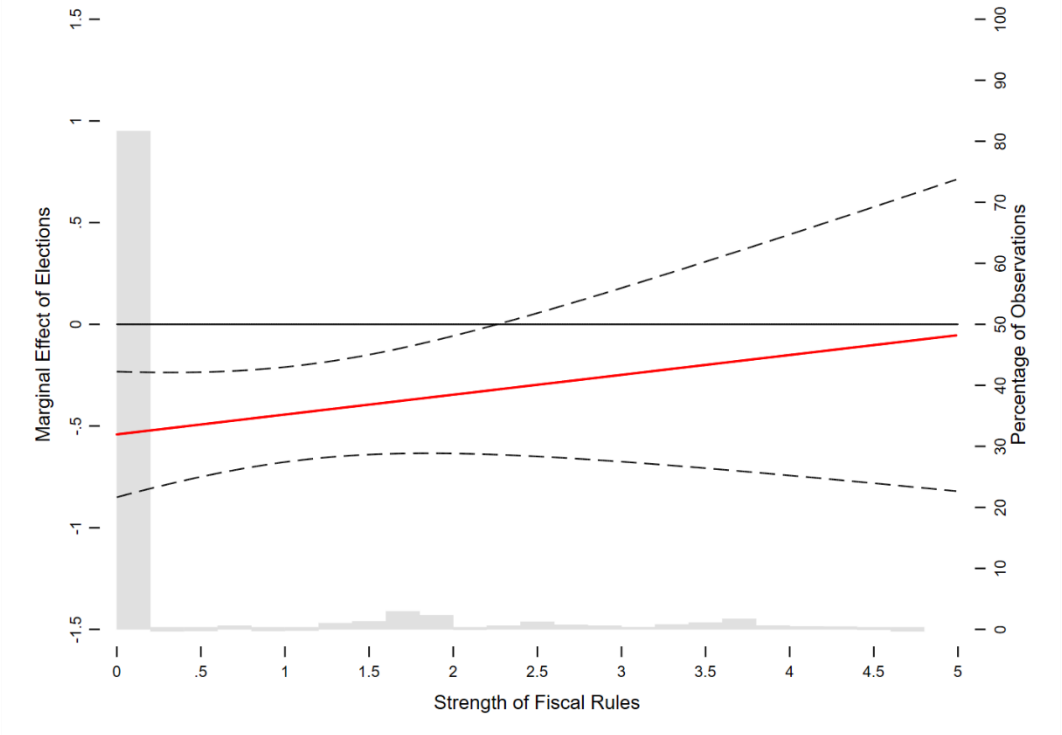
Source: IMF Fiscal Rules dataset

Figure 3. Marginal effect of elections conditional on different types of fiscal rules

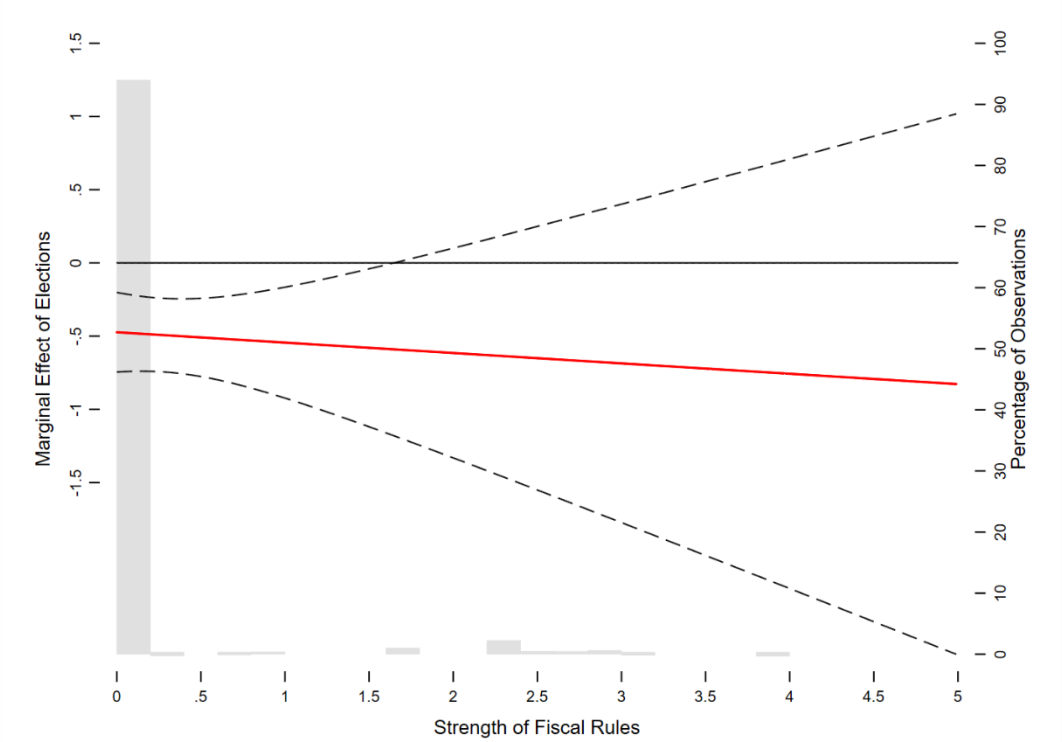
Aggregated fiscal rules index



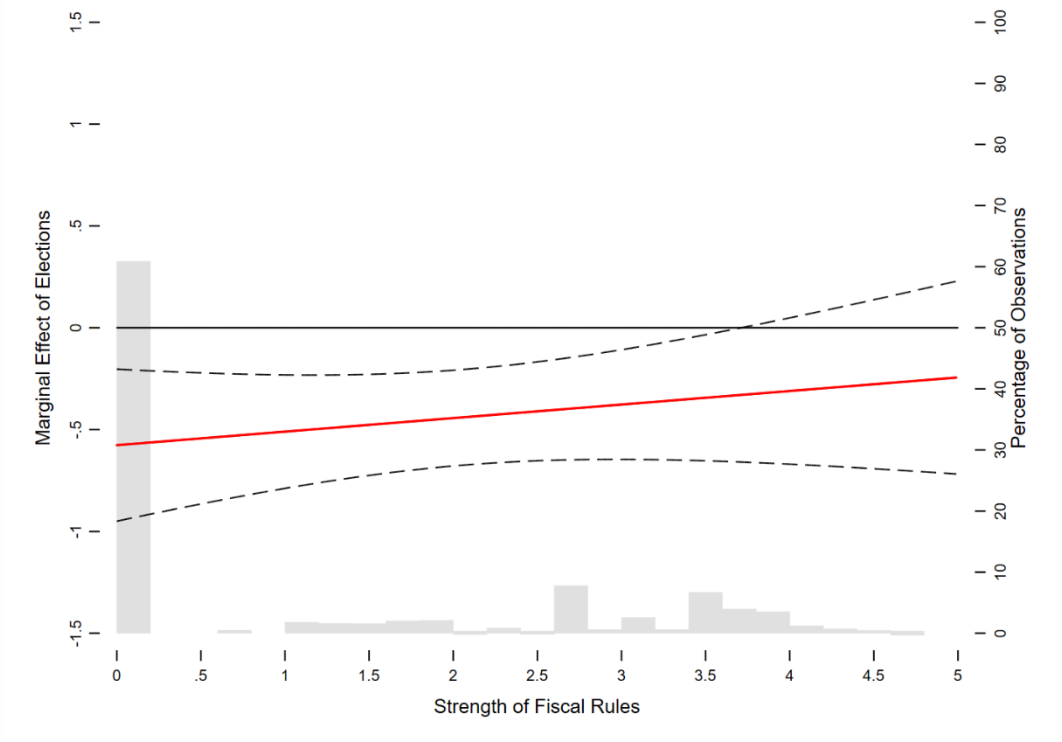
Expenditure rules index



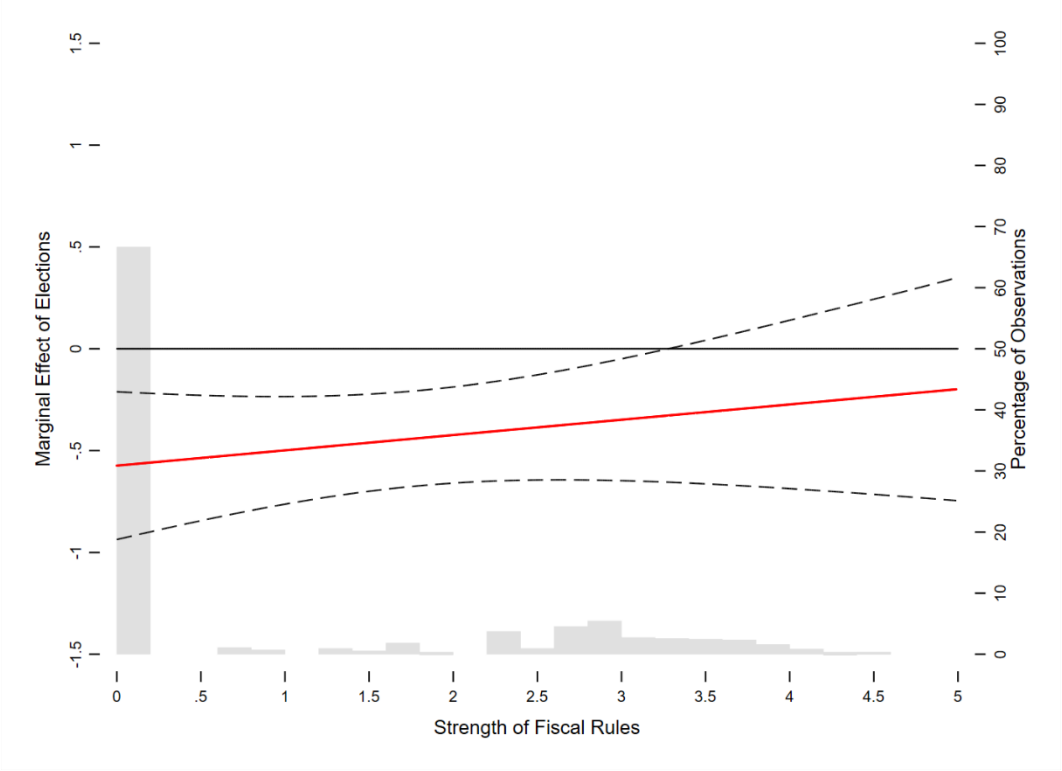
Revenue rules index



Balanced budget rules index



Debt rules index



Notes: The marginal effects of elections on the primary budget balance conditional on the strength of fiscal rules are calculated with a 95% confidence interval following the instructions of Brambor et al. (2006). The graphs are based on the estimates shown in columns (2), (4), (6), (8) and (10) of Table 2, respectively.

Appendix

Table A.1. List of countries

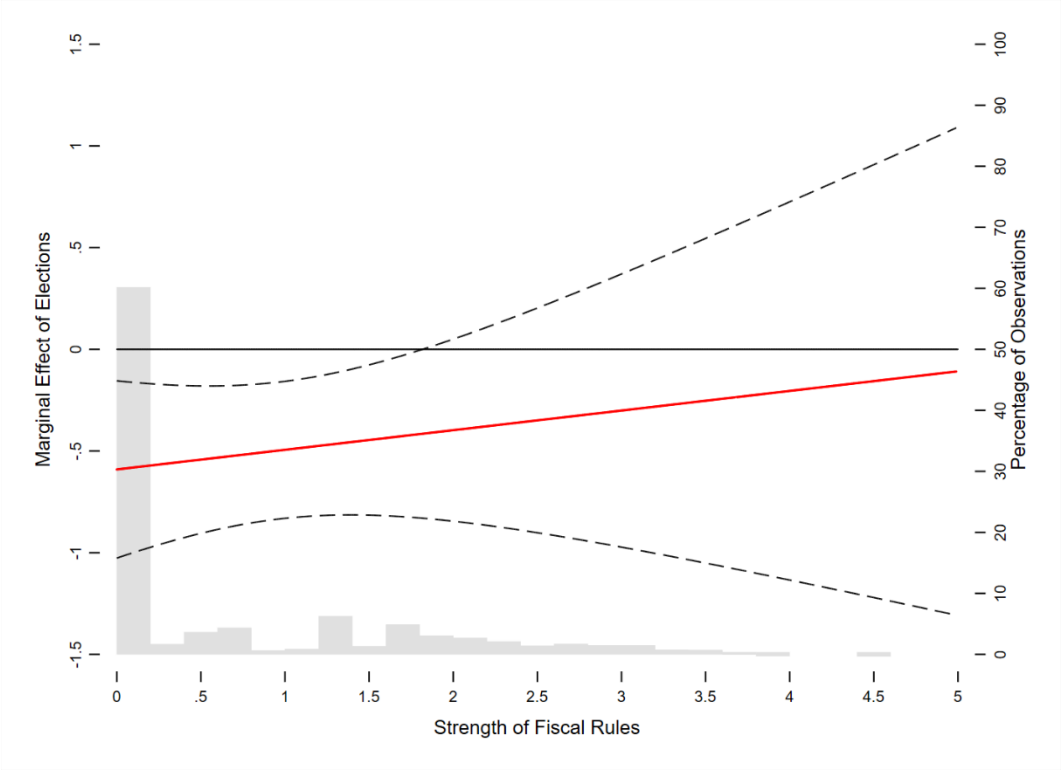
Country	Number of Elections	Fiscal Rules	Country	Number of Elections	Fiscal Rules
Albania	2		Japan	8	1985-2015
Argentina	6	2000-2008	Kenya	3	1997-2015
Australia	9	1985-1988; 1998-2015	Korea, South	4	
Austria	6	1995-2015	Latvia	4	2004-2015
Belgium	8	1992-2015	Lesotho	4	
Benin	3	2000-2015	Lithuania	5	1997-2015
Bolivia	3		Luxembourg	4	1990-2015
Botswana	3	2003-2015	Macedonia	3	
Brazil	4	2000-2015	Madagascar	5	
Bulgaria	4	2003-2015	Malawi	3	
Burundi	2	2013-2015	Mauritius	3	2008-2015
Canada	6	1998-2005	Mexico	3	2006-2015
Cape Verde	4	1998-2015	Moldova	4	
Chile	5	2001-2015	Namibia	5	2001-2015
Colombia	5	2000-2015	Netherlands	4	1992-2015
Costa Rica	5	2001-2015	New Zealand	10	1994-2015
Croatia	4	2009-2015	Nicaragua	4	
Cyprus	4	2004-2015	Norway	8	2001-2015
Czech Republic	5	2004-2015	Panama	4	2002-2003; 2009-2015
Denmark	6	1992-2015	Paraguay	3	2015
Dominican Republic	5		Peru	2	2000-2015
El Salvador	5		Philippines	4	
Estonia	5	1993-2015	Poland	5	1999-2015
Finland	8	1995-2015	Portugal	5	1992-2015
France	5	1992-2015	Romania	3	2007-2015
Georgia	4	2014-2015	Senegal	2	2000-2015
Germany	5	1985-2015	Slovak Republic	5	2004-2015
Ghana	3		Slovenia	5	2000-2015
Greece	5	1992-2015	Solomon Islands	3	
Guatemala	4		South Africa	3	
Guyana	4		Spain	8	1992-2015
Honduras	6		Sweden	6	1995-2015
Hungary	5	2004-2015	Switzerland	7	2003-2015
India	4	2004-2008	Trinidad and Tobago	4	
Indonesia	3	1985-2015	Ukraine	4	
Ireland	4	1992-2015	United Kingdom	6	1992-2015
Israel	3	1992-2015	United States	4	1986-2002; 2011-2015
Italy	4	1992-2015	Uruguay	3	2006-2015
Jamaica	4	2010-2015			

Table A.2. Summary statistics

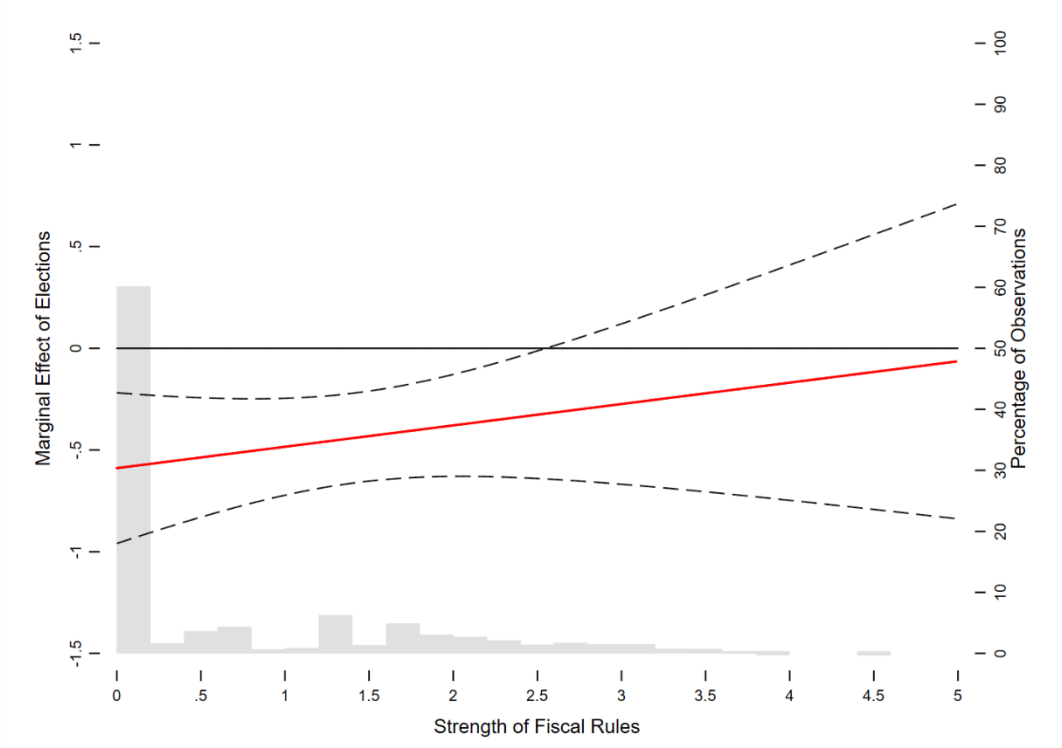
Variable	Mean	Std. Dev.	Min	Max	Observations
Democracy (Polity IV score)	7.334	4.280	-9	10	2370
Elections	0.204	0.310	0	1	2464
Primary Budget Balance	-0.131	3.785	-29.736	15.888	1855
Inflation	32.439	355.351	-27.835	12377.37	2328
Debt	53.920	33.898	0.089	236.543	1707
Growth	3.135	3.878	-30.9	25.486	2347
Fiscal Rules Index	0.655	0.975	0	4.433	2387
Expenditure Rules Index	0.400	0.997	0	4.667	2387
Revenue Rules index	0.115	0.506	0	3.933	2387
Balanced Budget Rules Index	1.004	1.475	0	4.667	2387
Debt Rules Index	0.822	1.347	0	4.467	2387
Financial Development Index	0.355	0.239	0	1	2464
Trade Openness	77.853	43.355	12.346	410.172	2291
Monetary Union	0.128	0.334	0	1	2464
Inflation Targeting Regime	0.257	0.437	0	1	2464
Press score (Freedom house)	0.755	0.310	0	1	2102
Press score (Global Media Freedom dataset)	1.716	0.733	1	3	2282
Checks & Balances	3.502	1.728	1	18	2332
Established Democracy	0.541	0.498	0	1	2464

Figure A1. Marginal effects of elections conditional on aggregated fiscal rules index: LSDVC and GMM estimation

LSDVC



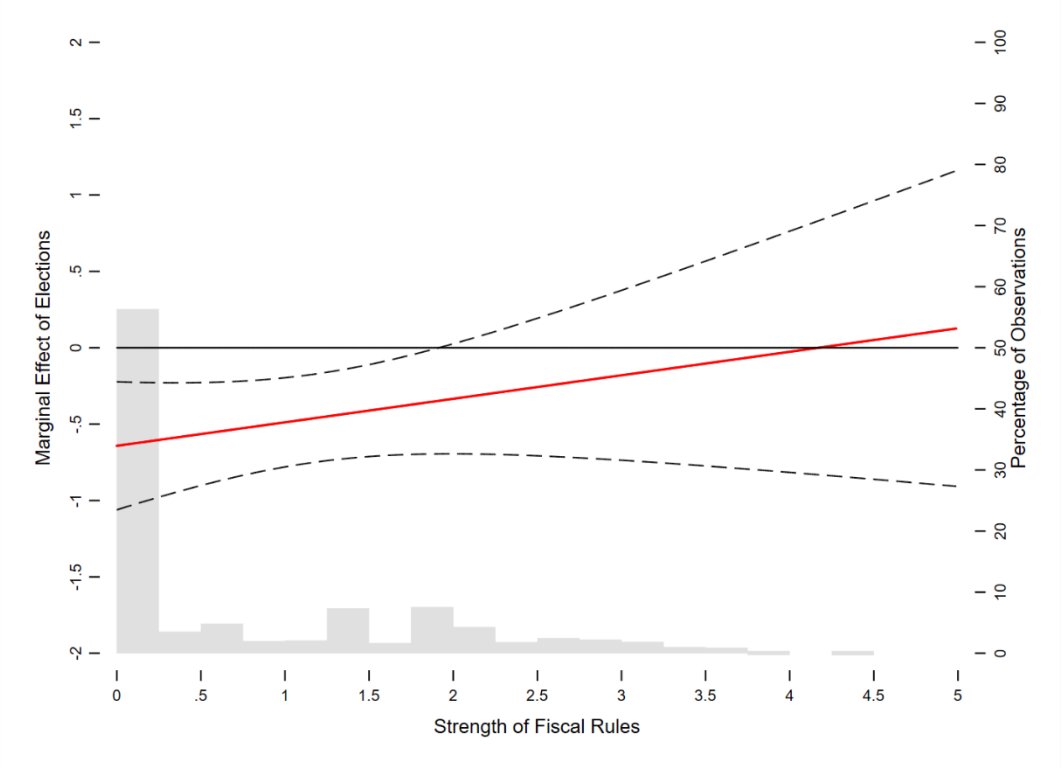
GMM



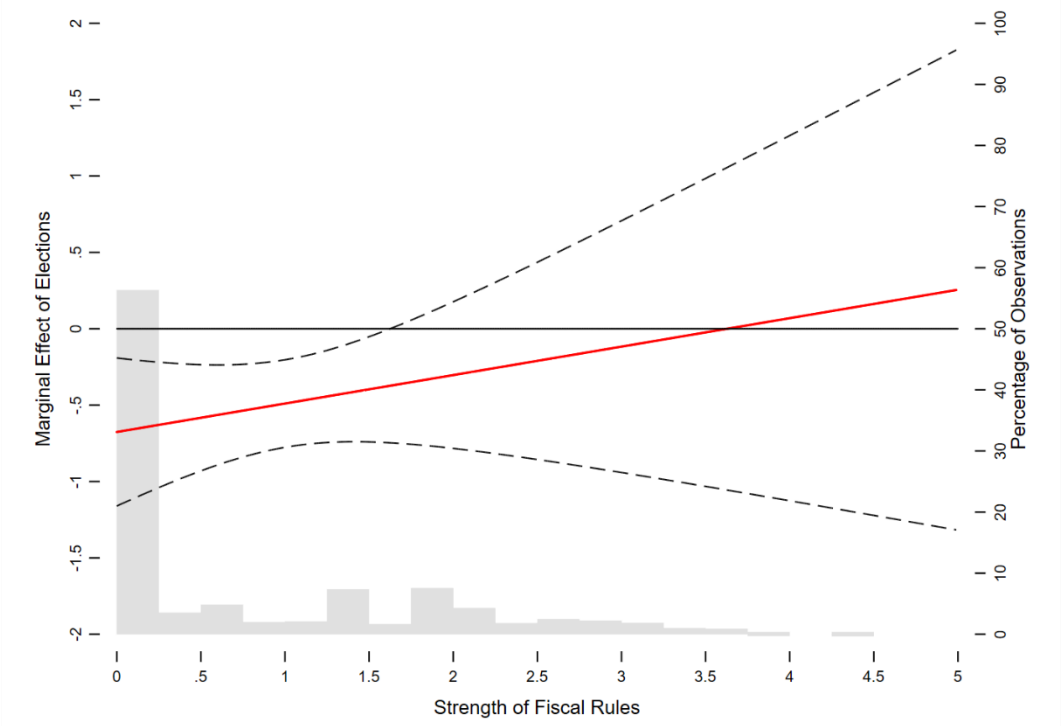
Notes: See notes to Figure 3. The graphs are based on the estimates shown in columns (2) and (4) of Table 3, respectively.

Figure A2. Marginal effects of elections conditional on aggregated fiscal rules index: IV estimations

With lag fiscal index as instrument

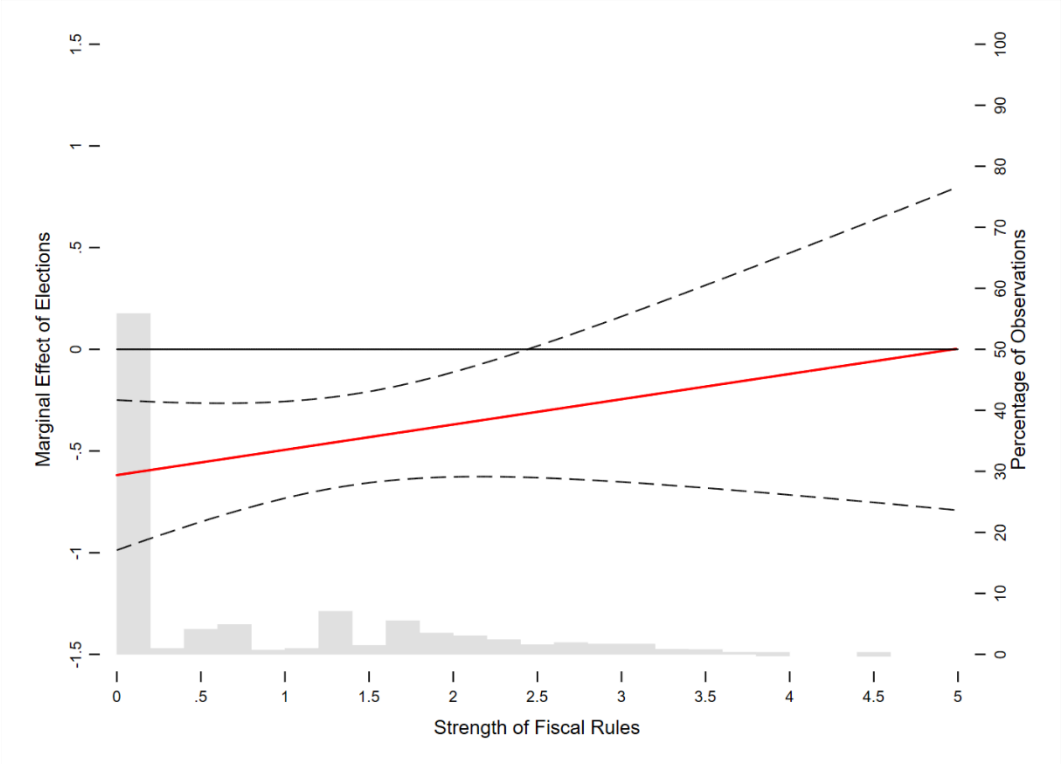


With external instruments based on Altunbas and Thornton (2017)



Notes: See notes to Figure 3. The graphs are based on the estimates shown in columns (1) and (2) of Table 4, respectively.

Figure A3. Marginal effects of elections conditional on aggregated fiscal rules index: including additional control variables



Notes: See notes to Figure 3. The graphs are based on the estimates shown in column (5) of Table 5.

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