# BREAKING THE IMPEDIMENTS TO BUDGETARY REFORMS: EVIDENCE FROM EUROPE

## Stefania Fabrizio* and Ashoka Mody

In addition to the known effects of government fractionalization, we find that larger deficits are associated with a reduced likelihood of budgetary reforms. In a war of attrition setting, larger deficits signify stronger entitlements on the budget, generating unwillingness to impose self-discipline. A sense of crisis emerges only when macroeconomic imbalances appear. However, while a crisis creates the opportunity for reform, policy credibility is important for effectively using that opportunity. We find that one way of establishing credibility is by undertaking measures in opposition to the government's known ideological position – these presumably signal motivation by broader social welfare considerations.

## 1. INTRODUCTION

A SIZEABLE literature concludes that strong budget institutions – credible checks and balances in the formulation and implementation of the budget – deliver desirable fiscal discipline and outcomes. Contributions include Alesina et al. (1999), Alt and Lowry (1994), von Hagen and Harden (1995), Hallerberg and von Hagen (1999), and Poterba (1994). These authors find that the rules and procedures that constitute budget institutions are not a "veil" but have real effects on budgetary aggregates. However, because these conclusions rely on cross-sectional variations (across states within a country or across countries), they are open to the criticism that budget institutions may be correlated with omitted variables that are the true determinants of fiscal outcomes. To overcome this limitation, Fabrizio and Mody (2006) constructed, for several Eastern European countries, an index that tracked the quality of budget institutions over time. Even in this more demanding framework – controlling for unobserved country fixed effects and a variety of time-varying observed influences – the finding is that, within countries over time, strong budget institutions are associated with lower budget deficits even when domestic politics are unfavorable to fiscal discipline.

If budget institutions are so potent in determining fiscal outcomes, then the factors that determine their evolution are of obvious interest. Surprisingly, this enquiry has received little empirical attention. In this paper,

*Corresponding author: Stefania Fabrizio, c/o The International Monetary Fund, 700 19th Street NW, Washington, DC 20431, USA. E-mail: sfabrizio@imf.org

we conduct, to our knowledge, the first statistical examination of the determinants of budget reform, using time-series measures of the quality of budget institutions for 23 European Union nations: the data span 1994–2003 for the new member states and 1991–2004 for older members. More ambitiously, we use this setting to investigate some central propositions in the literature on the political economy of reform.

The construction of the quality of fiscal institutions index follows Poterba (1996, p. 47) who regards them as a form of ''self-control'' imposed by fiscal actors on themselves. The aim, Eichengreen et al. (1999, p. 425) note, is not to ''depoliticize'' fiscal decision making but rather to improve the quality of decisions. Under the centralized, or delegation, approach, budgetary power is concentrated in the hands of key policy-makers (e.g. the prime minister or finance minister), who have an incentive to internalize the costs and benefits of public activities. Under a more decentralized approach, the solution is collective negotiation and commitment to detailed multiannual fiscal targets. These two approaches, combined with structures and devices to transparently and efficiently monitor and enforce budget decisions, can promote fiscal discipline. To be clear, we claim no innovation in the design or construction of this index. We use the numbers that have been developed over the years by Hallerberg and von Hagen (as well as their collaborators and students) culminating in their 2009 book.

In our empirical analysis, the dependent variable is the *change* in budget institutional quality two years ahead. Because the changes take discrete values, we categorize them into four groups: a large improvement, an improvement, no change, and a setback. Using panel-ordered logit regressions, we have three main findings.

First, we find evidence consistent with Alesina and Drazen's (1991) depiction of a ''war of attrition.'' In a war of attrition, the needed budget consolidation is delayed because socioeconomic interest groups maneuver to shift the burden of consolidation onto other groups, but such maneuvering results only in a stalemate. Alesina et al. (2006) infer a war of attrition from their finding that budget consolidation becomes more likely following a crisis, at which time the political stalemate becomes untenable. While we also test the crisis hypothesis, our focus on a policy action allows an additional perspective on the war of attrition. We find that the reform of budget institutions becomes less likely just when such reform could help reverse large deficits. In other words, the same forces that generate sizeable primary deficits also prevent the reforms required for sustainable budgetary discipline. As Drazen and Grilli (1993) point out, a large deficit by itself does not generate a sense of crisis: rather, it reinforces a sense of entitlement. Eventually, persistent deficits will generate macroeconomic disequilibria, manifest in high inflation and large current account deficits. But until then, the competition to garner resources from the budget wins over the growing costs from the disequilibria. The deficits, therefore, persist and reforms to

contain them – which, as Poterba (1996) notes, are a discipline that actors impose on themselves – find no traction. The implication is that countries will, all else equal, tend to move to two outcomes: large deficits and weak institutions or small fiscal deficits and good institutions. Supporting the "war of attrition" also, we find that the more fragmented the political decision-making process, the more serious is likely to be the stalemate (as discussed by Spolaore, 2004). Specifically, even when budgetary resources are in a relatively healthy state and the appetite for continued budget discipline exists, a more fragmented government lowers the probability of reform.

How then can a country exit from a vicious cycle of poor fiscal performance and delays in needed reforms of budget institutions? Consistent with Alesina and Drazen (1991) and especially with the predictions of Drazen and Grilli (1993) and the historical examples they cite, the mere deterioration of a country's fiscal position is insufficient to induce a change because economic agents do not immediately observe the costs of fiscal indiscipline. Indeed, as these authors suggest and our results confirm, fiscal indiscipline tends to be self-perpetuating. That leads to our second finding, supporting such earlier results as those of Alesina et al. (2006) and Drazen and Easterly (2001). The likelihood of reforms increases when a crisis is at hand, i.e. when the costs associated with fiscal indiscipline are noticeably visible in an "overheated" economy – with evident costs on account of high inflation and vulnerability due to large current account deficits. Such macroeconomic imbalances (if they are large enough) can help focus the minds of those competing for scarce budgetary resources and, hence, help build a constituency for improving budget institutions. As Keynes (1963, p. ix) wrote in the Preface to his *Essays in Persuasion*, the policy battles are won: ". . . mainly by the irresistible pressure of events and only secondarily by the slow undermining of old prejudices."

While our results on the implications of a crisis are in line with those of others, the approach in arriving at the result is different, and arguably more robust. Thus, Drazen and Easterly (2001) test the hypothesis that a crisis contributes to economic reforms; however, unable to measure reform directly, they acknowledge (p. 149) that their approach requires the same variable to measure "crisis (when it indicates extremely poor performance) and reform (when there is a significant improvement)." This is also true for Alesina et al. (2006), who examine the determinants of deficit reduction in response to a crisis, where the crisis itself is measured by extreme outcomes of deficits. The risk with this approach is that when deficits are extremely high, there will be some tendency for return to more normal levels. Such mean reversion cannot easily be distinguished from a reform in response to a crisis. In contrast, we use changes in the quality of budget institutions to measure reform and define a crisis as an extreme macroeconomic outcome rather than as fiscal distress.

Finally, the government's credibility matters. Here our results are consistent with the Cukierman and Tommasi (1998) proposition that political leaders are most credible when they support decisions that they are known to intrinsically oppose. We find that when the economy is overheating, "leftist" coalitions are more proactive in reforming budget institutions than are "rightist" coalitions typically more closely associated with a conservative fiscal attitude. The "unlikely" party carries greater credibility in breaking the logjam, because its constituents are opposed to that move and perceive themselves to be hurt in the short run. The government's pursuit of reforms despite the risk of offending its constituents signals motivation by broader social welfare considerations. Credibility can, of course, be demonstrated in other forms. Forward-looking leadership appears to be a necessary ingredient of the solution.

Our paper adds to growing empirical evidence on the political economy of reform. Although the interest in the political economy of reform is long standing, the empirical literature remains dominated by case studies. Krueger (1993) and Williamson (1994) trace several country timelines to evaluate the determinants of macroeconomic stabilization. In contrast, statistical testing of the rich set of available hypotheses has been more limited (see Drazen, 2000). Even within the statistically oriented literature, papers relying on direct measures of reform are few. Methodologically, we draw on Abiad and Mody (2005), who study the determinants of financial sector liberalization.

The rest of this paper is organized as follows. Section 2 provides the theoretical background to the empirical analysis. Section 3 describes the construction of the index of budget institutions' quality and the basic empirical approach. Section 4 reports the main evidence that the reform process is subject to a war of attrition. Section 5 assesses how economic shocks – including a crisis – can shake the status quo that arises from the war of attrition. Section 6 examines how economic shocks interact with political ideology to create a channel for establishing credibility. And a concluding section draws lessons for the political economy of reform.

## 2.  THEORETICAL BACKGROUND

Three theoretical themes guide the empirical work reported in this paper. First, the premise is that policy actions known to be welfare improving are nevertheless delayed – a strong tendency exists for maintaining the status quo. Second, because self-correcting mechanisms do not set in until the sense of welfare loss is acute, crises may become necessary to dislodge the status quo. And, third, in a democratic system, a crisis is an opportunity for reform but it requires that decision-makers be able to make a credible case for change. We consider each of these in turn.

In the specific context of this paper, the premise is that budget con-
solidations – and, hence, budget reforms – enhance welfare by limiting the
likelihood and the size of macroeconomic imbalances. In motivating the
desirability of reducing budget deficits, Alesina and Drazen (1991) and
Drazen and Grilli (1993) focus on the costs of inflation, but large current
account deficits can also be destabilizing. However, despite the potential
gains from budget consolidation and associated reforms, conflict among
"interest groups" has the effect of locking in existing arrangements and,
consequently, results in persistent budgetary indiscipline.

The indiscipline arises because interest groups have an incentive to lobby
for public spending in their favor, knowing that they will bear only a fraction
of the taxes needed to finance the expenditures that benefit them. This is the
so-called common pool problem (Shepsle and Weingast, 1981; Weingast
et al., 1981). The persistence arises because, as Alesina and Drazen (1991)
highlight, no group is willing to forgo its benefits or bear the necessary tax
burden. In their words, the persistent budget deficits are the consequence of
this "war of attrition" as the various interest groups have an incentive to
"hold out." The possibility of an impasse exists even when all parties are
agreed that fiscal consolidation – and the reform of budgetary institutions
necessary to sustain the consolidation – are broadly beneficial and will in-
crease the size of the pie to be shared. As Fernandez and Rodrik (1991)
argue, the uncertainty surrounding the distribution of the gains, and the
possibility that some may lose, hinders the formation of the necessary
consensus.

There is a particular implication of this analysis that is relevant for in-
terpreting our findings. Just as sizeable budget deficits may persist, so may
surpluses. When budgetary positions are healthy, the sense of conflict is
mitigated and greater weight is attached to the social value of sound fiscal
outcomes. Even if a group's demands on the common pool are substantially
restrained by the stronger checks in the budgetary system, there remains
scope to accommodate reasonable and legitimate claims. All groups,
therefore, have a greater incentive to institute or maintain budgetary control
to support a continuation of the socially desirable fiscal outcomes.

Thus, both the weak and strong states of public finances are likely to
persist. Weakness in public finances reflects conflict and creates short-term
incentives to further reduce fiscal discipline. In contrast, when public fi-
nances are strong, the conflicts are likely to be more muted, increasing the
likelihood that discipline will be reinforced. However, even when public fi-
nances are strong, a happy accommodation cannot be taken for granted and
the potential for conflict does not disappear. In particular, the extent of
fragmentation in the decision-making process can counter this otherwise
favorable condition. As Alesina and Drazen (1991) note, reforms will be
accelerated by "a conservative government with a solid majority" (p. 1174)
and delayed by "weak and divided coalition governments" (p. 1173).

Spolaore (2004) shows that political fragmentation hurts particularly in "consensus-based" systems, where many actors exercise veto power, as is the case in most European political systems. Thus, while healthier public finances can be expected to give support to budgetary reform, thereby perpetuating sound fiscal positions, this advantage may be compromised by fractionalized governments.

These considerations lead to the second strand in the literature. Although the war of attrition tends to reinforce the status quo, the deadlock may nevertheless become untenable following an economic shock or a "crisis." As Rodrik (1996, p. 26) notes: ". . . if there is one single theme that runs through the length of the political economy literature it is the idea that crisis is the instigator of reform." In a crisis, the old distributional certainties dissolve, and for some groups, the costs of continuing with the existing system become too large. The war of attrition, for example, ceases when at least one interest group finds it superior to pay the price necessary for stabilization rather than continue to be hurt by the unresolved circumstances.

Rodrik himself is skeptical of the analytic content of the crisis hypothesis. It is not surprising, he says, that things must get (really) bad before the perception sinks in that they must be changed. Drazen and Easterly (2001) argue, however, that there remains an interesting empirical question of what is the threshold of pain at which reform becomes imperative. Alesina et al. (2006) also pursue the empirical relevance of a crisis in escaping from a war of attrition. In both these analysis, the authors find evidence to support the view that reforms become more likely when the costs of the status quo become excessive. In this vein, a Drazen and Grilli (1993, p. 606) example neatly illustrates the sequencing implicit in theory. "After the end of World War I several European countries faced serious fiscal problems. Very large debt had been accumulated during the war; revenues were insufficient to cover current expenditures, let alone repay the outstanding war debt. While fiscal adjustments were necessary, a social consensus on the sharing of the burden of stabilization programs was difficult to achieve. Only after inflation was out of control, or threatened to become so, was agreement finally achieved and new tax packages introduced." Note, in particular, the persistence of the deficits until the welfare losses became untenable.

This brings us to the third theme: spurred by crises or otherwise, are governments in a position to take decisive actions? Alternatively, as Rodrik asks, why does the same crisis in different countries elicit different reactions? Alesina et al. (2006) focus on the ability of governments to take the necessary measures. Strong governments – those relatively unconstrained by internal or external opposition – they conclude, are more likely to undertake the necessary measures in the midst of a crisis. While the notion that strong governments can ram through necessary reforms is well entrenched, it raises troubling issues. At one extreme, it implies that authoritarian systems are best suited to forcing the pace of reform. Even in a democratic setting, the

implication is that governments must go against legitimate opposition, which is assumed to be misinformed or opportunistically obstructive. Accordingly, another avenue for democratic governments is to establish their credibility and, hence, persuade the relevant constituents of the value of reform. In this regard, Cukierman and Tommasi (1998) offer the intriguing hypothesis that credibility is sometimes achieved by taking policy positions that go against the known ideological positions of policy-makers. This they refer to as the "Nixon going to China" phenomenon.

## 3.   DATA AND EMPIRICAL APPROACH

We construct a quantitative index of the quality of budget institutions – the rules and mechanisms that govern the budget process. Effective budget institutions create mechanisms for fiscal self-discipline. From the initiation of budget design to its implementation, several decisions are necessary. Budget priorities can be influenced, and, indeed, the budget can be hijacked as it makes its way through the complex approval and implementation process. At each point, various economic and political interests are represented. Discipline is crucial throughout for ensuring the integrity of the process. This discipline may be generated in two ways, which, in practice, are typically combined (Hallerberg and von Hagen, 1999; Hallerberg et al., 2009). The "delegation," or hierarchical decision-making, approach creates clear authority and accountability by assigning budgetary powers to a strong central player (and is regarded as more suitable for single-party governments or governments where coalition parties are closely aligned). The contrasting "contract" approach allows for a cooperative process, buttressed by transparent rules (and is considered more suitable for multiparty coalition governments). Because, in practice, elements of both approaches are needed in all countries, our index is a composite of their desirable elements.

As detailed in Table A1 of Appendix A, the index is built up from specific attributes in each of three stages of the budgetary process: (1) the preparation stage, when the budget is drafted; (2) the authorization stage, in which the draft budget is approved and formalized; and (3) the implementation phase, when the budget is executed and may be modified or amended. Thus, in the preparation of the budget, the presence of a rule that limits the debt or the deficit is seen as a virtue. Similarly, the centralized setting of the agenda by the finance minister is regarded as limiting the possibility of unrestrained or frivolous claims on the budget. In the authorization stage, the restriction on making changes to the proposals is viewed as a desirable feature as are particular procedures for sequencing the legislative process and balancing the powers of the executive and the parliament. In the implementation stage, firmness in the execution of the budget is needed, together with the procedures governing adjustments to unforeseen shortfalls or unexpected overspending.

Based on a determination of where countries stand on these criteria, we construct the index for 23 countries of the European Union.[1] The index consolidates the objective features of the budget process such that a larger value implies greater checks and balances. Attributes that create the greatest discipline are assigned a score of four, with others taking lower values that go to zero (Table A1). For the judgments on these scores, we draw on Fabrizio and Mody (2006), Gleich (2003), and Yläoutinen (2004) for the new member states. Expanding the data to a broader set of European countries was made possible by the reporting in Hallerberg et al. (2007, 2009). Importantly, to confirm and update the status of budgetary practices, we consulted annual fiscal budget laws and the Fiscal Transparency Module of the International Monetary Fund's Reports on the Observance of Standards and Codes (ROSC). Where ambiguities persisted, we were in direct contact with the country authorities. The data availability is such that the period covered for the new member states is 1994–2003, and 1991–2004 for the older members.

Table A2 reports the changes over time to the quality of the individual features of the budgetary processes as well as the overall index for each country for two years, 1994 and either 2003 or 2004; Table A3 reports the country rankings based on the indices in Table A2. As is clear, budget institutions have tended to improve over time in almost all countries (although because of the differences in pace of change, the relative rankings have changed). Figure 1 aggregates the indices for two groups of countries. The more advanced economies have gradually reached a plateau of improvement along the dimensions we examine. Countries in emerging Europe have made progress to varying degrees, with some suffering occasional setbacks. Figure 2 confirms that richer economies tend to have better institutions. Figure 3 shows that, because there is more scope for improvement when institutions are relatively backward, countries at the lower end of the spectrum tend to make more progress.

The dependent variable is the *change* in budget institutions two years ahead. The two-year gap is an empirical compromise. Often, the exact timing of a reform is not known with precision and, hence, fixing it in a particular year is difficult and potentially incorrect. Considering a longer spell would, however, have further shortened an already short time series. The change in institutional quality is categorized into four groups. Most (78 of the 102) observations are associated with no change in institutional quality. Twelve observations are associated with strengthening of up to 0.7 point (on the scale from zero to four) and are designated "an improvement"; and a

[1]Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom. The index is also available for France and Ireland; however, these two countries are not included in the study as data for some of the political variables used in the analysis are not available for them.
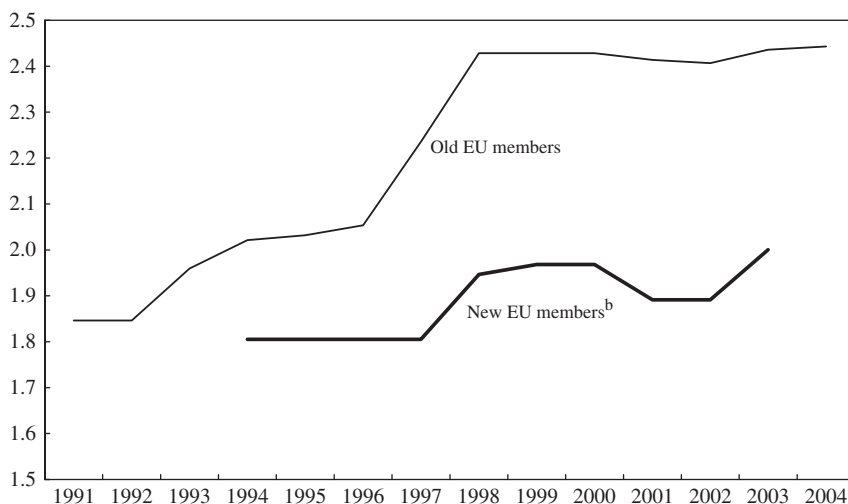
Figure 1.    Average value of fiscal institutions index, 1991–2004.[a]
Notes: [a]Higher rank indicates better quality (highest rank = 23).
[b]Data for the new member states are available for the period 1994–2003.
Sources: Fabrizio and Mody (2006), Hallerberg et al. (2007), and authors' calculations.

strengthening larger than 0.7 (associated with six observations) is referred to as ''a large improvement.'' Finally, for six observations, there is an institutional setback. We check our results for robustness to these categorizations (both by combining the two improvement categories and by further dividing them).

The natural approach to analyzing these changes is through an ordered regression technique. Note that, it may appear in principle that we have over 200 observations, for 23 countries and 10 years. However, that is not strictly true. Because we project reforms two years from the date of assessment, taking into account intervening years would lead to counting the same reform more than once. While there are statistical approaches to dealing with overlapping samples, we have chosen to put our analysis to a stringent test by dropping the intervening years. Taking account of missing values, we are left with about 100 observations for the analysis. Also, throughout, we report robust standard errors. Although there is no evidence that the residuals ''misbehave,'' there is the risk that the standard errors may not be consistent. However, in all cases, the results are manifestly stronger with the conventional standard errors.

## 4.    THE SETTING: WAR OF ATTRITION

Table 1 presents the basic results to illustrate the presumption of a ''war of attrition.'' However, a few preliminaries are in order. Throughout, we
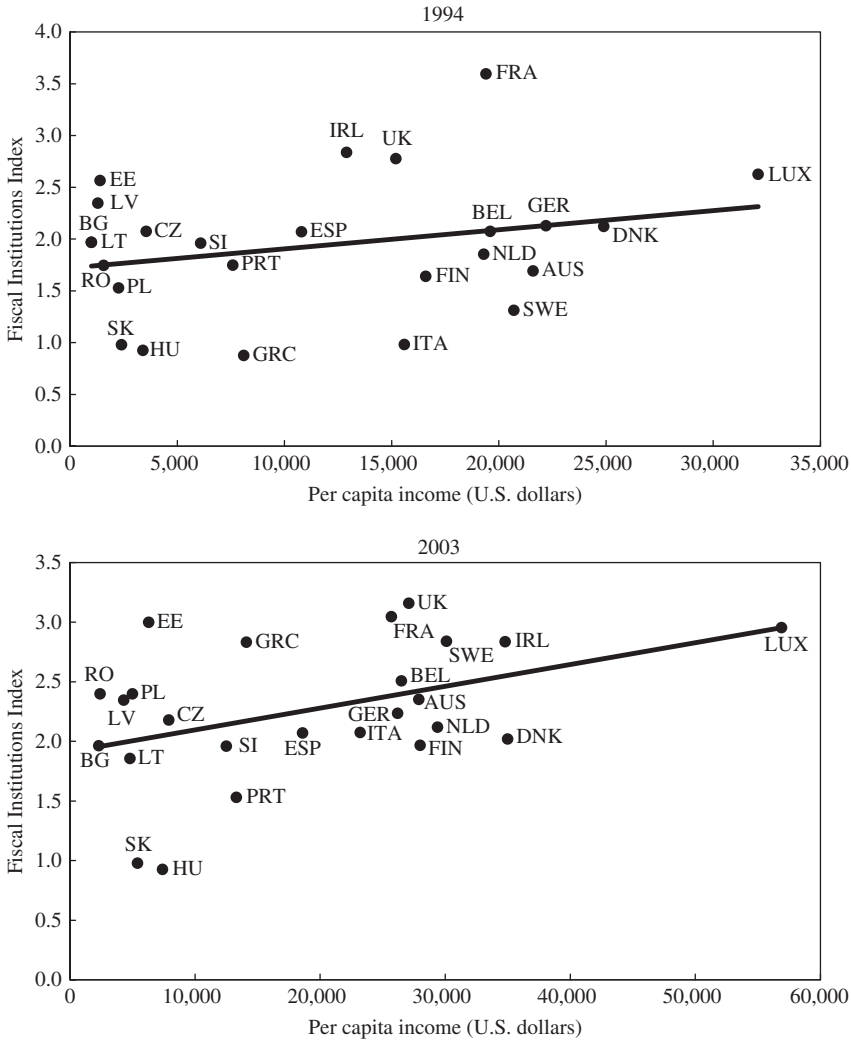
**1994**

**2003**

Figure 2.   Quality of fiscal institutions index and per capita income.[a]
Notes: [a]Higher rank indicates better quality (highest rank = 23). Data for the new member states are available for the period 1994–2003.
Sources: Fabrizio and Mody (2006), Hallerberg et al. (2007), and authors' calculations.

include the gap between the highest possible institutional quality (which takes the value four) and the country's state of fiscal institutions. This "institutional gap" variable serves several purposes. First, the gap determines the scope of the subsequent improvements in quality of the fiscal institutions. Not surprisingly, the larger the gap in the quality of fiscal institutions at the beginning of the period, the greater the scope (and possibly the incentive) for
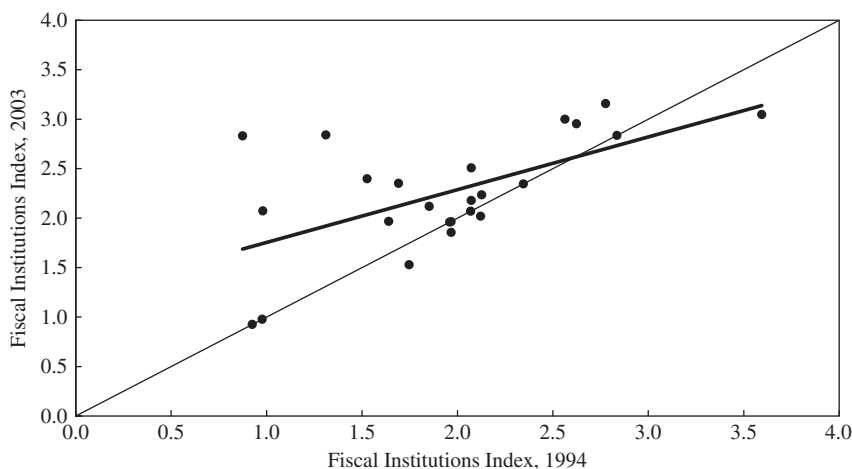
Figure 3.    Fiscal institutions index, 1994–2003.[a]
Notes: [a]Higher rank indicates better quality (highest rank = 23). Data for the new member states are available for the period 1994–2003.
Sources: Fabrizio and Mody (2006), Hallerberg et al. (2007), and authors' calculations.

TABLE 1    WAR OF ATTRITION

| Variables | Dependent variable: institutional reform | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Institutional gap | 4.61*** | 6.23*** | 6.34*** | 7.35*** |
| | [4.02] | [3.85] | [3.92] | [4.38] |
| Primary balance | | 0.50* | 0.49* | 0.92*** |
| | | [1.90] | [1.76] | [2.93] |
| Fractionalization (FRAC) | | | − 2.09 | − 0.80 |
| | | | [− 1.00] | [− 0.42] |
| Primary balance × FRAC | | | | − 0.97* |
| | | | | [− 1.92] |
| Observations | 102 | 102 | 102 | 102 |
| Pseudo-$R^2$ | 0.39 | 0.44 | 0.45 | 0.48 |

Notes: Robust $z$-statistics in brackets.
Coefficients for country and year dummies not reported.
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.

further improvements in their quality. This is just a statistical validation of Figure 3. Second, as Figure 2 showed, per capita income is correlated with institutional quality. When we add per capita income as an additional explanatory variable, it is insignificant, while the institutional gap variable remains robustly significant. Finally, the strongly statistical positive sign on

the institutional gap variable also captures the secular tendency for improvement in budget institutions.

Year dummy variables are always included to pick up common influences across all countries. Also, country dummy variables are also included to minimize the risk of omitted country variables. In some cases, these country fixed effects are of considerable importance. In other words, country features create inertia in institutions. Thus, the strongly negative coefficient on the Hungary dummy puts the onus on that country's leadership to break through the historical constraints against reform.

We use two variables to focus on the war of attrition. First, the primary fiscal balance defines the context within which the competition for resources operates. As discussed above, the premise is that a larger deficit signifies a more severe ongoing war of attrition and is therefore likely to be associated with a reduced likelihood of reform. As also noted above, a deficit by itself is not a crisis until its persistence generates macroeconomic imbalances – those imbalances we examine for their independent influence in the next section. We use the lag of the primary balance as the explanatory variable, which reduces the risk of reverse causality from budget institutions to budgetary outcomes.[2] Our second variable, a more fragmented government coalition, is the conventional channel through which attrition is thought to act. The fractionalization variable is constructed as one minus the sum of the squares of the shares of each party in the government coalition (the Herfindahl index; further details are in Appendix B, as for all variables used). If a single party forms the government, the measure takes the value zero; as the coalition becomes more diverse, the fractionalization measure becomes larger, with a maximum value of one (in our data, about a quarter of the observations representing single parties take the value zero, the median is 0.37 and the 90th percentile value is 0.67). We also examine if resource competition (reflected by the primary balance) and the fractionalization interact.

A positive value of the primary balance implies a surplus, and hence the finding in column (2) of Table 1 is that a larger primary budget surplus is associated with a higher probability of budgetary reforms – correspondingly, the larger the deficit, the more likely that reform will be delayed. Thus, a worse fiscal balance at time $t - 1$ is associated with a smaller likelihood of improvements in fiscal institutions' quality between $t$ and $t + 2$. This finding is consistent with the presumption that larger deficits reflect a more intense

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[2]Also, because primary balances are more subject to revisions and uncertainty than other variables, the presumption is that its size is known only with a lag. However, because of considerable persistence in the primary balance, the key results remain intact even with the contemporary primary balance. Given the likely measurement error in the most recent primary balance, not surprisingly, its significance by itself is somewhat lower than for the lagged primary balance. However, when the primary balance is interacted with fractionalization in our preferred specification, the results are virtually identical.

war of attrition among policy-makers, who then have no incentive to embark on reforms of fiscal institutions intended to curb their claims on the budget. The implication also is that countries may move in "virtuous" and "vicious" circles. Stronger budget balances help strengthen budget institutions, which, in turn, feeds back to further improving budget balances. In contrast, deficits are likely to persist as countries are unable to institute rules and procedures that impose self-discipline.

In column (3) of Table 1, we add the fragmentation variable. The negative sign implies that more fragmentation is, indeed, less supportive of reforms, although this direct effect is not statistically significant. An indirect effect, however, is important. Column (4) reports a negative sign on the interaction between the primary balance and fragmentation. As Kam and Franzese (2007) have emphasized, when interpreting interaction terms, it is important to recognize that the effective coefficient on one of the two variables varies with the changes in the other variable – but so also does the standard error of that effective coefficient. Using the STATA code that they have generously posted, we generated Figure 4, which plots the effective coefficient and the upper and lower bands giving the 95% confidence interval within which the coefficient lies.

The first panel of Figure 4 shows that the effective coefficient on fractionalization has a point estimate close to zero in the lower ranges of the primary balance. In this range, the upper confidence band lies above the zero line and the lower confidence band lies below this line, implying that the effective coefficient is statistically not different from zero when the fiscal balance is in deficit. When the fiscal balance is about 3% of gross domestic product (GDP), both the upper and lower bands are below the zero line: at that point, fractionalization begins to exercise a statistically significant negative effective on budgetary reforms. In more fully specified models reported below, fractionalization appears to exert its negative influence earlier, before the primary balance reaches 2% of GDP. Thus, fragmentation exercises a stronger dampening influence on the probability of reform when the primary balance is larger and hence greater resource latitude exists. In other words, fragmentation erodes this resource latitude. When surpluses are small – or deficits are being run – the incentives for reform are weak in any case and fragmentation matters less, if at all.

Another perspective, in the second panel of Figure 4, shows that the primary balance always has a positive and statistically significant value: a larger primary balance aids reforms over the observed range of fractionalization. However, as fractionalization increases, a given primary balance has a smaller reform impulse. In other words, while a comfortable primary balance reduces the fight over scarce resources and, hence, creates the conditions for forward-looking discipline, a more fractionalized government does lower the likelihood of achieving this discipline. This indirect effect of fractionalization, our data suggest, can be potent.
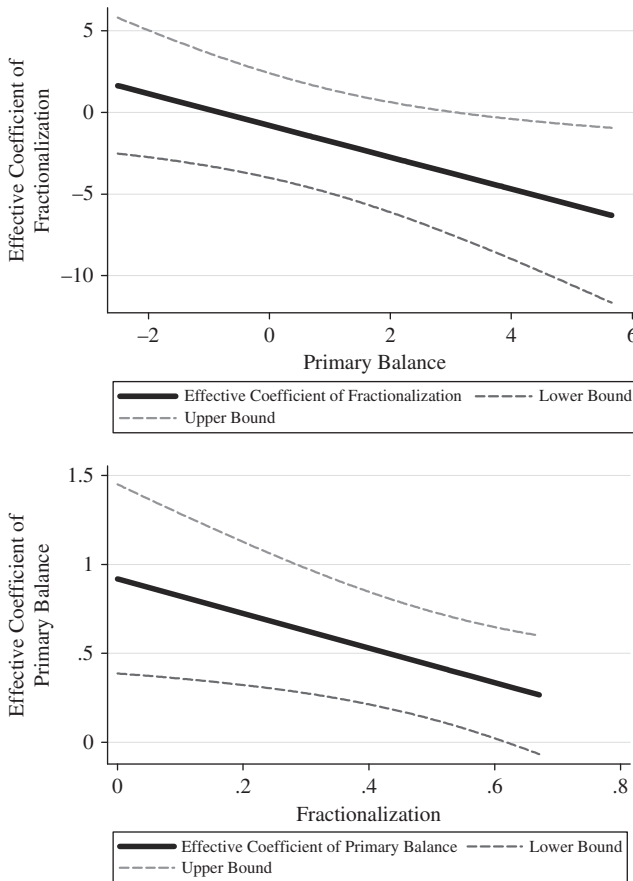
Figure 4.   Interaction of primary balance and fractionalization.

The basic findings of this section – a direct influence of a larger primary balance on the likelihood of reform and the erosion of this effect as fractionalization increases – remain intact when additional variables are included in the regression specification. But before moving on to more elaborate specifications with significant findings in the following sections, we consider in Table 2 the possibility that some obvious omitted variables are influencing our results. For example, fiscal discipline is known to weaken in an election year. Also, the risk of poor decisions is minimized when the broader governance process – not just the process relating to public finances – is subject to constraints against arbitrary action. We use the PolConIII indicator, which measures the extent to which the legislature can constrain the executive. The premise of the measure is that an unchecked executive cannot make credible commitments and generates significant policy

TABLE 2 POLITICAL CONSTRAINTS

| Variables | Dependent variable: institutional reform | | |
| --- | --- | --- | --- |
| | (1) | (2) | (3) |
| Institutional gap | 7.33*** | 7.36*** | 7.30*** |
| | [4.25] | [4.41] | [4.53] |
| Primary balance | 0.92*** | 0.92*** | 0.91*** |
| | [2.98] | [2.91] | [3.05] |
| Fractionalization (FRAC) | − 0.76 | − 0.80 | − 0.62 |
| | [− 0.42] | [− 0.42] | [− 0.29] |
| Primary balance × FRAC | − 0.99** | − 0.97* | − 0.98* |
| | [− 1.99] | [− 1.90] | [− 1.95] |
| Election year | − 0.54 | | − 0.54 |
| | [− 0.54] | | [− 0.54] |
| Political constraints | | − 0.23 | − 0.15 |
| | | [− 0.041] | [− 0.025] |
| Rightist ideology | | | − 0.02 |
| | | | [− 0.11] |
| Observations | 102 | 102 | 102 |
| Pseudo-$R^2$ | 0.48 | 0.48 | 0.48 |

Notes: Robust $z$-statistics in brackets.
Coefficients for country and year dummies not reported.
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.

uncertainties. In international comparisons, this measure of constraints on the executive is associated with better investment and growth outcomes (see, for example, Henisz, 2000).[3] Finally, ideology is thought to influence reform decisions. We use a measure due to Benoit and Laver (2006). These authors conducted expert surveys on assessing the ideological positions of European parties. We weight the party's ideology by the share of the party in the government coalition to measure the government's ideology. Our results suggest that these variables do not have a noticeable influence on budgetary reforms. It is possible, of course, that they exert more subtle influences. We explore one of these – that related to ideology – in section 6.

## 5. ECONOMIC SHOCKS AND CRISES

Thus, clearly, political influences matter: they tend to support the status quo. That raises the question whether economic "shocks" or "crises" can alter these self-reinforcing tendencies, particularly when the status quo is

[3]Henisz's political constraint measure is an example of "institutional" veto points, where the executive can be limited by other branches of government. Others focus on veto possibilities within the government. We capture that notion, at least partly, in our fractionalization measure.

TABLE 3   ECONOMIC SHOCKS

| Variables | Dependent variable: institutional reform | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Institutional gap | 10.99*** | 11.68** | 11.76*** | 14.20** |
| | [2.75] | [2.55] | [2.67] | [2.52] |
| Primary balance | 1.42** | 1.41** | 1.41** | 1.85** |
| | [2.09] | [2.00] | [2.03] | [2.07] |
| Fractionalization (FRAC) | − 0.17 | − 1.38 | − 1.41 | − 1.50 |
| | [− 0.064] | [− 0.48] | [− 0.49] | [− 0.55] |
| Primary balance × FRAC | − 1.46** | − 1.34** | − 1.37** | − 2.02** |
| | [− 2.00] | [− 1.97] | [− 2.01] | [− 2.16] |
| Unemployment | 0.94* | 0.97* | 1.00* | 0.90** |
| | [1.84] | [1.80] | [1.90] | [2.26] |
| Log(inflation) | 4.66*** | 5.25*** | 5.32*** | 3.16** |
| | [2.91] | [2.83] | [2.92] | [2.43] |
| Current account surplus | | − 0.30* | − 0.29* | − 0.24* |
| | | [− 1.78] | [− 1.78] | [− 1.79] |
| Excessive deficit procedure dummy | | | − 2.55 | − 2.80 |
| | | | [− 1.13] | [− 1.26] |
| Euro adoption dummy | | | | 4.37 |
| | | | | [1.60] |
| Trade/GDP | | | | 0.09 |
| | | | | [1.45] |
| Observations | 102 | 100 | 100 | 100 |
| Pseudo-$R^2$ | 0.54 | 0.56 | 0.56 | 0.60 |

Notes: Robust $z$-statistics in brackets.
Coefficients for country and year dummies not reported.
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.

damaging to social welfare. As such, this section attempts to identify the shocks and crises that are associated with a higher likelihood of reform.

In column (1) of Table 3, we add, as proxies to the so-called misery index, the unemployment rate and log of the inflation rate. The evidence is that a worsening domestic economic situation raises the likelihood of reforms. The unemployment rate is significant at the 10% level and the inflation rate is significant at the 1% level. The inference is that as domestic "misery" increases, political alliances cannot proceed with business as usual and are called on to tighten the grip over public finances. In column (2), we add the current account surplus. The negative sign implies that a larger surplus reduces the likelihood of reform – an increasing deficit raises external vulnerability and with it the pressure to reform. Although, once again, the coefficient is significant only at the 10% confidence level, the combined sense of the exploration thus far is that internal and external economic distress does generate the expected tendency toward reforms.

Before proceeding to examine this possibility in somewhat greater depth, two observations are in order. First, our representation of the "war of attrition model" through the primary balance and government fractionalization continues to perform well with the introduction of the additional variables; in fact, the point estimate on fractionalization is increased and the statistical significance of the interaction variable is stronger than before. Second, once again, there is the question whether other obvious economic variables have been omitted. We considered, for example, the GDP growth rate, but found it to be not significant, while the results reported did not change. We also evaluated the influence of the institutional setting within which European economies operate. A country under the European Union's watch through the Excessive Deficit Procedure does not do any better on reform proclivity than a country not subject to this discipline. There is some suggestion that countries that have adopted the euro, all else equal, tend to create more checks and balances in their budgetary process; however, this coefficient falls just short of being significant, even at the 10% level. Similarly, a country's trade openness appears to favor reform but the statistical significance does not pass the relevant thresholds.

With that, we return to the trio of unemployment, log of inflation, and the current account deficit. It seems reasonable to presume that the effects of these variables are not linear. In other words, an increase in the current account deficit increase from a low level is less alarming than an equivalent increase when the deficit is already large. It is beyond some benchmark that a country's perception of itself as in a crisis forces political forces into needed action.

As a first step, we construct two principal components of these three variables. The first principal component, which explains about two-thirds of the variation, has an interesting interpretation. It is highly correlated with the inflation rate and with the current account deficit. We refer to this variable as "overheating" since unsustainable domestic demand is likely to be reflected in a combination of high inflation rates and large current account deficits. Our labeling of the second principal component as "stagflation" is more of a stretch: it has a tight correlation with the unemployment rate and more modest correlations with inflation and the current account deficit. In the rest of the analysis, we use these two principal components as our economic variables.

In the first column of Table 4, we add the "overheating" variable. It has the expected positive sign but is not statistically significant. This is not surprising since, at low levels of inflation and current account deficit, there would be little pressure to respond to their increase. We test for a non-linear response in two ways. First, in column (2), we allow for the possibility that the response to overheating changes once that variable crosses the 67th percentile of all the observations in our dataset. Thus, our "overheating, non-linearity" variable takes the value zero for all values of overheating

TABLE 4   CRISES AND REFORMS

| | Dependent variable: institutional reform | | | | |
|---|---|---|---|---|---|
| Variables | (1) | (2) | (3) | (4) | (5) |
| Institutional gap | 7.27*** | 9.89*** | 18.53** | 8.80*** | 10.79*** |
| | [4.01] | [3.78] | [2.38] | [3.74] | [3.79] |
| Primary balance | 0.86** | 1.16*** | 2.00*** | 1.08*** | 1.40*** |
| | [2.52] | [2.91] | [2.90] | [3.17] | [3.09] |
| Fractionalization (FRAC) | − 1.00 | 0.46 | 1.48 | 0.53 | − 0.05 |
| | [− 0.42] | [0.17] | [0.58] | [0.26] | [− 0.023] |
| Primary balance × FRAC | − 0.95* | − 1.34** | − 1.85** | − 1.20** | − 1.37** |
| | [− 1.87] | [− 2.20] | [− 2.37] | [− 2.29] | [− 2.52] |
| Overheating | 0.41 | − 0.56 | − 0.20 | | |
| | [1.05] | [− 1.05] | [− 0.33] | | |
| Overheating non-linearity | | 2.05*** | 4.01** | | |
| | | [2.74] | [2.15] | | |
| Stagflation | | | 2.45** | | 1.01 |
| | | | [2.36] | | [1.57] |
| Overheating crisis | | | | 3.72* | 4.12* |
| | | | | [1.82] | [1.84] |
| Observations | 100 | 100 | 100 | 100 | 100 |
| Pseudo-$R^2$ | 0.49 | 0.53 | 0.62 | 0.51 | 0.54 |

Notes: Robust $z$-statistics in brackets.
Coefficients for country and year dummies not reported.
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.

below the 67th percentile and then takes the overheating values thereafter. The positive sign on this variable, with its clear statistical significance, points to a sharp non-linearity.[4] The implication is that once the macroeconomic imbalances cross a threshold, their further worsening is evidently associated with higher probabilities of reform. In column (3), we add the stagflation variable, which has a positive sign, but one that is not statistically significant. Thus, stagflation does improve the prospect of reform, and efforts to identify non-linearities lead to findings similar to that for overheating. But because this result is not robust, we do not pursue it.

A second approach to examining non-linearity is through a "crisis" dummy, which takes the value one when the overheating variable is over its 67th percentile and zero otherwise. The coefficient on this variable is positive and significant (although the $p$-value is 0.07); this is so with or without the stagflation variable. Thus, the evidence once again is that when overheating crosses a threshold the likelihood of reform increases.

[4]The sum of the "overheating" and "overheating, non-linearity" coefficients is positive and statistically significant at the 5% level.

## 6.  CREDIBILITY: DOES IT TAKE NIXON TO GO TO CHINA?

While crises present an opportunity to break the status quo, reforms inevitably take away long-held entitlements and create short-term losses for some. The policy and political task is to persuade a sufficiently broad set of interest groups that the long-term benefits offset the short-term costs. Such persuasion requires credibility. Cukierman and Tommasi (1998) propose that a government's credibility is enhanced when it pursues policy actions that go against its own ideological predispositions. Their vivid example is that of Richard Nixon, a Republican U.S. president, who took the initiative to build ties with communist China. Similarly, a leftist government may be better positioned to persuade voters that belt-tightening reforms are needed. The premise is that leftist governments are not otherwise disposed to tightening the fiscal belt (see, among others, Fabrizio and Mody, 2006) and, hence, voters are likely to accept their claim that the reforms and the consequent fiscal discipline are needed to achieve longer-term objectives.

Our framework allows us to test this proposition. In Table 5, we first reestablish, as in Table 2, that the political ideology variable is not significant by itself (column (1)). In the second column, we interact the (continuous) overheating variable with ideology. The results are clear. The overheating variable by itself is positive and significant, implying that more overheating raises the possibility of reform. And the interaction variable is negative and also significant. Thus, the response to overheating is smaller the more "right wing" the ruling government. In other words, a "leftist" government is more likely to respond to overheating. At its median value of the "rightist" ideology index, 11, the effective coefficient on overheating is almost zero, and beyond that the response is negative (as if strongly rightist governments find it difficult to respond to overheating).

In column (3), we interact the "rightist" ideology variable with our overheating crisis dummy. We obtain a similar result. The crisis dummy itself is positive and significant, as above. And the interaction between this dummy variable and "rightist ideology" is negative and also highly significant. Thus, the more leftist the government, the more likely it is to reform. Using once again the techniques of Kam and Franzese (2007), Figure 5 reports the effective coefficient on the crisis dummy as a function of the ideology variable. As in the other specification, the dividing point on the ideology continuum is just under 11. To the left of 11, as governments become more "leftist," the probability of reform while in a crisis rises. To the right, the probability does remain positive but it steadily falls and is statistically insignificant.

In the context of this full model, a number of robustness checks are worth highlighting. First, Figure 5 also repeats the interactions between the primary balance and fractionalization for the fuller model of column (3), Table 5. These basic findings are reinforced. The effective coefficient on

TABLE 5    CREDIBILITY

| Variables | Dependent variable: institutional reform | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Institutional gap | 7.32*** | 9.93*** | 10.88*** |
| | [4.73] | [3.10] | [3.56] |
| Primary balance | 0.91*** | 1.12** | 1.14*** |
| | [3.09] | [2.16] | [2.77] |
| Fractionalization (FRAC) | − 0.66 | − 4.43 | − 1.79 |
| | [− 0.30] | [− 1.41] | [− 0.62] |
| Primary balance × FRAC | − 0.96* | − 1.27* | − 1.37** |
| | [− 1.90] | [− 1.87] | [− 2.16] |
| Rightist ideology | − 0.02 | 0.32 | 0.19 |
| | [− 0.11] | [1.11] | [0.71] |
| Overheating | | 3.71** | |
| | | [2.36] | |
| Overheating × rightist ideology | | − 0.31** | |
| | | [− 1.97] | |
| Overheating crisis | | | 15.79** |
| | | | [2.25] |
| Overheating crisis × rightist ideology | | | − 0.98** |
| | | | [− 2.28] |
| Observations | 102 | 100 | 100 |
| Pseudo-$R^2$ | 0.48 | 0.52 | 0.54 |

Notes: Robust $z$-statistics in brackets.
Coefficients for country and year dummies not reported.
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.

the fractionalization variable now becomes negative and statistically significant for a lower value of the primary deficit (just under 2% of GDP). The effective coefficient on the primary balance variable is now generally higher than in the simpler model. Next, we tested the results by dropping one country at a time to assess if one country was driving the findings. This was not the case (results can be obtained from the authors). Similarly, given the limited number of reform and reversal episodes, we also tested if one of the episodes was driving the results. Again, this was not the case. Also, we collapsed the institutional improvements into one category rather than dividing them into "an improvement" and "a large improvement." Going in the other direction, we divided the improvements into three rather than two categories. Once again, our results held up well. Finally, Table 6 shows that the actual changes and those predicted by the model match rather well. Thus, for "reversals," the model predicts half of those outcomes to be reversals and half as "no change." For "no change," almost 90% are predicted as such. For the reforms, about half the "improvements" are predicted as either "improvements" or "large improvements," while the other half as no change. And, the

Interaction of Primary Balance and Fractionalization



Interaction of Economic Overheating
and Political Ideology
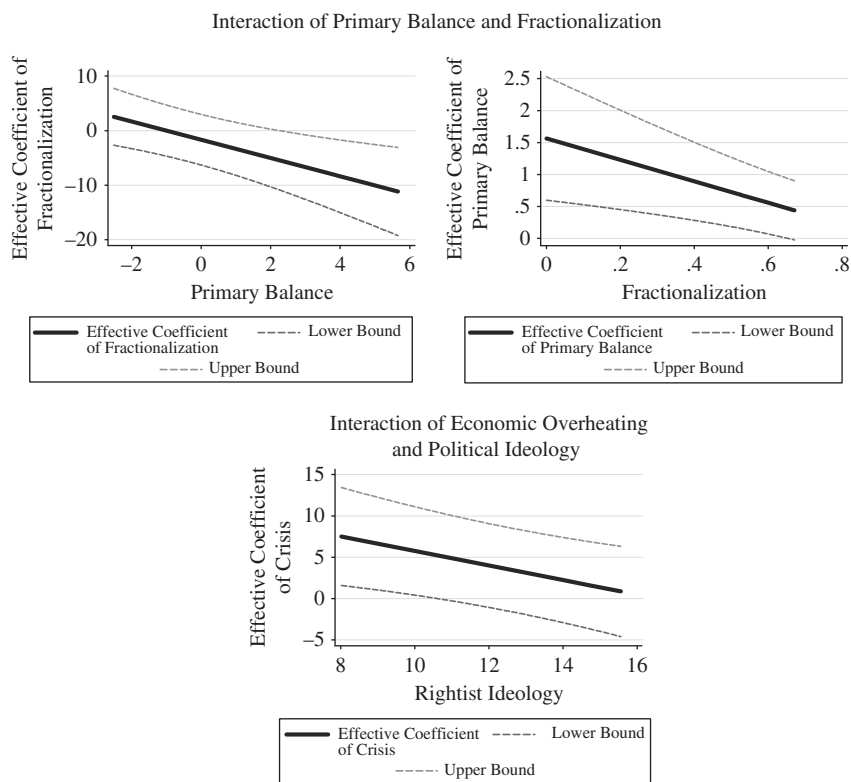


Figure 5.   Non-linear effects in the full model.

TABLE 6   MODEL PREDICTIONS

| | Predicted probability of change | | | |
|---|---|---|---|---|
| Actual change | Reversal | No change | Improvement | Large improvement |
| Reversal | 0.46 | 0.54 | 0.00 | 0.00 |
| No change | 0.04 | 0.87 | 0.08 | 0.01 |
| Improvement | 0.00 | 0.48 | 0.42 | 0.10 |
| Large improvement | 0.00 | 0.04 | 0.27 | 0.69 |
| Total | 0.06 | 0.76 | 0.12 | 0.06 |

model does particularly well for "large" reforms, two-thirds of which are predicted correctly.


7.   CONCLUSIONS

Our findings suggest that in favorable fiscal conditions, when fiscal performance is good, reforms are easier to undertake. Under those conditions, the

compromises necessary for the reforms apparently bite less. In unfavorable fiscal conditions, when reforms have significant distributional implications (e.g. when reforms leading to curtailment of expenditures are likely to hurt particular constituencies), needed reforms are delayed. These findings are in line with Alesina and Drazen (1991), who argue that, when budgetary resources are limited and there are many claimants, a war of attrition ensues. No political interest group has the incentive to concede, so the reform process stalls. We also find evidence fragmented governments erode the possibility of sustaining favorable fiscal conditions.

How, then, does a country shake the status quo and, in particular, emerge from a vicious into a virtuous cycle? The answer is that economic pain helps. When economic conditions deteriorate, intractable opposing political positions are weakened, interest groups are unable to hold onto their claims, and compromises become feasible. In particular, macroeconomic imbalances that result in "overheating" raise reform probabilities. Reflecting unsustainable demand, the pain of overheating is manifest in high inflation and policymakers are alerted to the vulnerabilities arising from large current account deficits. Fiscal restraint is a key policy requirement in this context and improves the likelihood of political self-discipline.

But the results also highlight that while a crisis creates the opportunity for reform, credibility is an important aid in effectively using that opportunity. We examine one possible channel through which credibility can be achieved. Actions seen to be in opposition to the government's known ideological position are likely to be viewed as motivated by broader social welfare considerations. Thus, in a crisis, leftist parties acquire credibility for reform because such action goes against their mandate and the interests of their obvious constituents. This is a hopeful finding. Political leadership is necessary in breaking the logjam, especially when long-standing historical forces create inertia. However, such leadership can derive from persuasion rather than force. Reforms based on a democratic government's credibility are likely to be more inclusive, and, hence, possibly more sustainable than those based on "strong" leaders.

## APPENDIX A: QUALITY OF BUDGET INSTITUTIONS

Following Fabrizio and Mody (2006) and Hallerberg et al. (2007), we constructed a quantitative index of the overall quality of budget institutions for 23 European countries: Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.

The index is intended to consolidate the objective features of the budget process, such that a larger value implies more checks and balances. Values were assigned to the three phases of the budget process: (1) the preparation stage, when the budget is drafted; (2) the authorization stage, in which the

TABLE A1 CONSTRUCTION OF THE INDEX: FISCAL INSTITUTIONS AND THEIR INDEX PARAMETERS

| | Weighting factors | | |
|---|---|---|---|
| | Index | Subindex | Numerical coding |
| Preparation | 0.33 | | |
| General constraint | | 0.33 | |
| Spending and debt as share of GDP | | | 4.00 |
| Spending as share of GDP or golden rule or limit on public borrowing | | | 3.00 |
| Balance and debt as share of GDP | | | 2.00 |
| Balance as share of GDP | | | 1.00 |
| None | | | 0.00 |
| Agenda setting | | 0.33 | |
| MF or PM determines budget parameters to be observed by spending ministers | | | 4.00 |
| MF proposes budget norms to be voted on by cabinet | | | 3.00 |
| Cabinet decides on budget norms first | | | 2.00 |
| MF or cabinet collects bids subject to the preagreed guidelines | | | 1.00 |
| MF or cabinet collects bids from spending ministers | | | 0.00 |
| Structure of negotiations | | 0.33 | |
| Finance ministry holds bilateral negotiations with each spending ministry | | | 4.00 |
| Finance ministry holds multilateral negotiations | | | 2.00 |
| All cabinet members are involved in the negotiations at the same time | | | 0.00 |
| Legislation | | | |
| Parliamentary amendments of the budget | | 0.33 | |
| Are not allowed, or required to be off-setting | | | 4.00 |
| Do not required to be off-setting | | | 0.00 |
| Sequence of votes | | 0.33 | |
| Initial vote on total budget size or aggregates | | | 4.00 |
| Final vote on budget size or aggregates | | | 0.00 |
| Relative power of the executive vis-à-vis the parliament; can cause fall of government? | | 0.33 | |
| Yes | | | 4.00 |
| No | | | 0.00 |
| Implementation | 0.33 | | |
| Changes in the budget law during execution | | 0.25 | |
| Only new budgetary law to be passed under the same regulations as the ordinary budget | | | 4.00 |
| Requires parliament consent | | | 2.00 |
| At total or large discretion of government | | | 0.00 |
| Transfers of expenditures between chapters (i.e. ministries' budgets) | | 0.25 | |
| Not allowed | | | 4.00 |
| Only possible within departments with MF consent | | | 3.20 |
| Only possible within departments | | | 2.56 |
| Require approval of parliament | | | 1.92 |
| Only if provided for in initial budget or with MF approval | | | 1.28 |
| Limited | | | 0.64 |
| Unlimited | | | 0.00 |
| Carryover of unused funds to next fiscal year | | 0.25 | |
| Not permitted | | | 4.00 |
| Limited and required authorization by the MF or parliament | | | 2.67 |
| Limited | | | 1.33 |
| Unlimited | | | 0.00 |
| Procedure to react to a deterioration of the budget deficit (due to unforeseen revenue shortfalls or expenditure increase) | | 0.25 | |
| MF can block expenditures | | | 4.00 |
| MF cannot block expenditures | | | 0.00 |

Sources: Fabrizio and Mody (2006) and Hallerberg et al. (2007).

TABLE A2 INDEX OF QUALITY OF BUDGET INSTITUTIONS

| | A. Preparation stage | | | | | B. Authorization stage | | | | | C. Implementation stage | | | | | | Overall quality index | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Variable | | | 1994 | 2003/2004 | Variable | | | 1994 | 2003/2004 | Variable | | | | 1994 | 2003/2004 | 1994 | 2003/2004 |
| | 1 | 2 | 3 | score | score | 4 | 5 | 6 | score | score | 7 | 8 | 9 | 10 | score | score | score | score |
| Austria | 2, 0[a] | 4, 2[a] | 4 | 1.98 | 3.30 | 0 | 2 | 0 | 0.66 | 0.66 | 2 | 4, 1.28[a] | 2.66 | 4 | 2.49 | 3.17 | 1.69 | 2.35 |
| Belgium | 4, 0[b] | 2, 1[b] | 2, 0[b] | 2.64 | 2.64 | 4, 0[c] | 4, 0[b] | 4 | 2.64 | 3.96 | 0, 4[b] | 0, 2.56[b] | 0 | 4, 0[b] | 1.00 | 1.00 | 2.07 | 2.51 |
| Bulgaria | 0 | 3, 0[a] | 4 | 1.32 | 2.31 | 0 | 0 | 4 | 1.32 | 1.32 | 0, 4[d] | 1.28 | 4 | 4 | 3.32 | 2.32 | 1.97 | 1.96 |
| Czech Republic | 0 | 3, 0[a] | 4 | 1.32 | 2.31 | 0 | 4 | 4 | 2.64 | 2.64 | 4 | 1.28 | 1.33, 4[d] | 0 | 2.32 | 1.65 | 2.07 | 2.18 |
| Denmark | 4 | 4, 3[a] | 2, 4[a] | 3.63 | 3.30 | 0 | 4, 0[a] | 0, 4[a] | 1.32 | 1.32 | 2, 4[a] | 0, 1.92[a] | 0 | 4, 0[a] | 1.48 | 1.50 | 2.12 | 2.02 |
| Estonia | 3 | 3 | 4 | 3.30 | 3.30 | 4 | 0 | 0[c] | 1.32 | 2.64 | 4 | 1.92 | 2.67 | 4 | 3.15 | 3.15 | 2.56 | 3.00 |
| Finland | 4, 1[e] | 2 | 2 | 1.65 | 2.64 | 0 | 0 | 4 | 1.32 | 1.32 | 0 | 4 | 4 | 0 | 2.00 | 2.00 | 1.64 | 1.97 |
| Germany | 3 | 2, 1[a] | 2, 4[a] | 2.64 | 2.31 | 0 | 4, 0[a] | 4 | 1.32 | 2.64 | 0, 2[a] | 0.64, 1.28[a] | 2.66 | 4 | 2.49 | 1.83 | 2.13 | 2.24 |
| Greece | 2, 0[a] | 4, 1[a] | 4, 0[a] | 0.33 | 3.30 | 4, 0[a] | 4, 0[a] | 4, 0[a] | 1.32 | 3.96 | 0 | 1.28 | 0, 4[a] | 4 | 2.32 | 1.32 | 1.31 | 2.83 |
| Hungary | 0 | 3 | 4 | 2.31 | 2.31 | 0 | 0 | 0 | 0.00 | 0.00 | 0 | 0.64 | 1.33 | 0 | 0.49 | 0.49 | 0.92 | 0.92 |
| Italy | 2, 2[f] | 1, 4[d] | 4 | 1.65 | 2.31 | 0, 4[f] | 4, 0[f] | 4, 0[f] | 1.32 | 2.64 | 0 | 0 | 1.33, 0[g] | 4, 0[f] | 0.00 | 1.33 | 0.98 | 2.07 |
| Latvia | 3 | 3 | 2 | 2.64 | 2.64 | 0 | 0 | 4 | 1.32 | 1.32 | 4 | 1.92 | 2.67 | 4 | 3.15 | 3.15 | 2.35 | 2.35 |
| Lithuania | 0 | 1, 0[h] | 4 | 1.32 | 1.65 | 4 | 0 | 0 | 1.32 | 1.32 | 4 | 1.28 | 1.33, 4[d] | 4 | 3.32 | 2.65 | 1.97 | 1.86 |
| Luxemburg | 4, 3[i] | 4 | 0 | 2.31 | 2.64 | 4 | 0 | 4 | 2.64 | 2.64 | 4 | 4, 0[a] | 4 | 4 | 3.00 | 4.00 | 2.62 | 3.06 |
| Netherlands | 3, 1[a] | 2, 3[a] | 4 | 2.64 | 2.97 | 0 | 4 | 4 | 2.64 | 2.64 | 0 | 1.92, 0[j] | 1.33 | 0 | 0.33 | 0.81 | 1.85 | 2.12 |
| Poland | 3, 0[a] | 1, 0[h] | 4 | 1.32 | 2.64 | 4 | 0 | 4 | 1.32 | 2.64 | 4 | 1.28 | 2.67 | 0 | 1.99 | 1.99 | 1.53 | 2.40 |

TABLE A2 Continued

| | A. Preparation stage | | | | | B. Authorization stage | | | | | | C. Implementation stage | | | | | Overall quality index | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Variable | | | 1994 | 2003/2004 | Variable | | | | 1994 | 2003/2004 | Variable | | | 1994 | 2003/2004 | 1994 | 2003/2004 |
| | 1 | 2 | 3 | score | score | 4 | 5 | 6 | 7 | score | score | 8 | 9 | 10 | score | score | score | score |
| Portugal | 2 / 1[a] | 2 / 0[f] | 2 / 4[a] | 2.31 | 1.98 | 0 | 0 | 4 | 0 / 4[a] | 1.32 | 1.32 | 0 | 1.33 | 4 / 0[a] | 1.67 | 1.33 | 1.75 | 1.53 |
| Romania | 0 / 1[c] | 3 | 4 | 1.65 | 2.31 / 0[c] | 4 | 0 | 4 | 4 | 1.32 | 2.64 | 1.28 | 4 / 2.66[a] | 0 | 2.32 | 2.32 | 1.75 | 2.40 |
| Slovak Republic | 0 | 1 | 2 | 0.99 | 0.99 | 0 | 0 | 4 | 0 | 1.32 | 1.32 | 1.28 | 1.33 | 0 | 0.65 | 0.65 | 0.98 | 0.98 |
| Slovenia | 0 | 3 | 4 | 2.31 | 2.31 | 4 | 0 | 4 | 0 | 2.64 | 2.64 | 1.28 | 2.67 | 0 | 0.99 | 0.99 | 1.96 | 1.96 |
| Spain | 3 | 4 | 4 | 3.63 | 3.63 | 0 | 4 | 0 | 0 | 1.32 | 1.32 | 1.28 / 1.33[k] | 4 | 0 | 1.32 | 1.32 | 2.07 | 2.07 |
| Sweden | 3 / 0[f] | 3 / 0[f] | 4 | 1.32 | 3.30 | 0 | 4 / 0[f] | 4 | 4 | 1.32 | 2.64 | 4 / 0[f] | 2.66 / 1.33[f] | 0 | 1.33 | 2.67 | 1.31 | 2.84 |
| United Kingdom | 4 / 2[a] | 3 | 4 | 3.30 | 3.63 | 4 | 4 | 4 | 4 / 1.92[a] | 3.96 | 3.96 | 2.56 / 1.33[a] | 0 / 0[a] | 4 | 1.81 | 2.64 | 2.99 | 3.38 |

Notes:
[a] Before 1998.
[b] Before 1993.
[c] Before 2003.
[d] Before 2001.
[e] Before 1996.
[f] Before 1997.
[g] Before 2002.
[h] Before 1999.
[i] Before 2004.
[j] Before 1995.
[k] Before 1994.
Sources: Fabrizio and Mody (2006), Hallerberg et al. (2007), and authors' calculations.

TABLE A3  FISCAL INSTITUTIONS QUALITY INDEX

Rank[a]

| | 1994 | | | | 2003/2004[b] | | | |
|---|---|---|---|---|---|---|---|---|
| | Preparation | Authorization | Implementation | Overall | Preparation | Authorization | Implementation | Overall |
| Austria | 11 | 3 | 17 | 8 | 18 | 2 | 22 | 15 |
| Belgium | 16 | 18 | 6 | 16 | 11 | 21 | 5 | 18 |
| Bulgaria | 3 | 4 | 22 | 13 | 4 | 3 | 15 | 6 |
| Czech Republic | 3 | 18 | 14 | 17 | 4 | 11 | 11 | 12 |
| Denmark | 22 | 4 | 9 | 18 | 22 | 3 | 10 | 8 |
| Estonia | 21 | 4 | 20 | 21 | 18 | 11 | 20 | 21 |
| Finland | 8 | 4 | 13 | 7 | 11 | 3 | 14 | 7 |
| Germany | 16 | 4 | 17 | 19 | 4 | 11 | 12 | 13 |
| Greece | 1 | 1 | 14 | 1 | 18 | 21 | 6 | 19 |
| Hungary | 12 | 1 | 3 | 2 | 4 | 1 | 1 | 1 |
| Italy | 8 | 4 | 1 | 4 | 4 | 11 | 8 | 10 |
| Latvia | 16 | 4 | 20 | 20 | 11 | 3 | 20 | 14 |
| Lithuania | 3 | 4 | 22 | 13 | 2 | 3 | 18 | 4 |
| Luxemburg | 12 | 18 | 19 | 22 | 11 | 11 | 23 | 22 |
| Netherlands | 16 | 18 | 2 | 11 | 16 | 11 | 3 | 11 |
| Poland | 3 | 4 | 12 | 6 | 11 | 11 | 13 | 16 |
| Portugal | 12 | 4 | 10 | 10 | 3 | 3 | 8 | 3 |
| Romania | 10 | 4 | 14 | 9 | 4 | 11 | 15 | 17 |
| Slovak Republic | 2 | 4 | 4 | 3 | 1 | 3 | 2 | 2 |
| Slovenia | 12 | 18 | 5 | 12 | 4 | 11 | 4 | 5 |
| Spain | 22 | 4 | 7 | 15 | 23 | 3 | 6 | 9 |
| Sweden | 3 | 4 | 8 | 5 | 18 | 11 | 19 | 20 |
| United Kingdom | 16 | 23 | 11 | 23 | 16 | 21 | 17 | 23 |

Notes:
[a]Higher rank indicates better quality (highest rank = 23).
[b]Data for the new member states are available until 2003.
Sources: Fabrizio and Mody (2006), Hallerberg et al. (2007), and authors' calculations.

draft budget is approved and formalized; and (3) the implementation phase, when the budget is executed and may be modified or amended.

Data sources include annual fiscal budget laws, ROSC Fiscal Transparency Module, produced by the International Monetary Fund, and direct contact with the countries' authorities.

The tables in this appendix provide: (1) the components of this index (Table A1); (2) the changes to the quality of individual features of the budgetary processes for the countries in our sample as well as two snapshots (1994 and 2003 or 2004) of the overall index; (3) the country rank-ordering based on the quality indices in Table A2 (Table A3).

APPENDIX B: DEFINITIONS AND SOURCES OF VARIABLES USED IN REGRESSION ANALYSIS

TABLE B1    DEFINITIONS AND SOURCES OF VARIABLES USED IN REGRESSION ANALYSIS

| Variable | Definition | Source |
|---|---|---|
| Institutional reform | The change in the quality of budget institutions two years ahead, i.e. between $t$ and $t+2$ | Appendix A |
| Institutional gap | The difference between 4 (the maximum value of the quality index and the quality of budget institutions in the country at time $t$) | Appendix A |
| Primary balance | The primary budget balance/GDP in $t-1$ | IMF, *World Economic Outlook* |
| Fractionalization | Measure of the distribution of parties in the government's coalition, represented by the Herfindahl index, $[1 - [\Sigma s_i]]$, where $s_i$ is the share of party $i$ in the coalition in year $t$. The index ranges in value from 0 (in the case of very fragmented coalitions) to 1 (if one party forms the government) | Parties and Elections in Europe (http://www.parties-and-elections.de) and Elections Around the World (http://www.electionworld.org) |
| Election year | A dummy variable taking the value 1 if an election occurred at time $t$ | |
| Political constraints | The political constraint index (POLCON): measure of veto players at time $t$, a higher value representing more constraints | http://www.management.wharton.upenn.edu/henisz/ |
| "Rightist" ideology | Benoit and Laver (2006), use expert surveys to measure of the ideology of each European political party. The index of ideology takes values from 1 to 20, with higher values representing a more "rightist" world view. We weight each party's ideology by its share in the government to measure the government's ideology | Benoit and Laver (2006), http://www.tcd.ie/Political_Science/ppmd/ |

TABLE B1    *Continued*

| Variable | Definition | Source |
| --- | --- | --- |
| Unemployment | The country's unemployment rate at time $t$ | IMF, *World Economic Outlook* |
| Log (inflation) | The log of the country's consumer price inflation rate at time $t$ | IMF, *World Economic Outlook* |
| Current account surplus | The country's current account surplus at time $t$ | IMF, *World Economic Outlook* |
| Excessive deficit procedure dummy | A dummy taking the value 1 if the country was subject to the European Union's Excessive Deficit Procedure | |
| Euro adoption dummy | A dummy taking the value 1 in the year the country adopted the euro and thereafter | |
| Trade/GDP | [Exports + imports]/GDP at time $t$ | IMF, *World Economic Outlook* |
| Overheating | First principal component of the unemployment rate, log (inflation), and the current account surplus. Larger values imply a combination of larger current account deficits and higher inflation; hence, the reference to ''overheating'' | Authors' construction |
| Overheating non-linearity | Takes the values of the overheating variable above the 67th percentile and zero below that. Is intended to allow for non-linearity in policy response to overheating | Authors' construction |
| Crisis | Takes the value 1 if the overheating variable is above its 67th percentile and zero otherwise | Authors' construction |
| Stagflation | Second principal component of the unemployment rate, log (inflation), and the current account surplus. Strongly correlated with the unemployment rate and more modestly with inflation and the current account deficit | Authors' construction |

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STEFANIA FABRIZIO                                                    ASHOKA MODY
*The International Monetary Fund*

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