



Working Papers

www.cesifo.org/wp

Interpreting Fiscal Accounting Rules in the European Union

Christopher Gandrud
Mark Hallerberg

CESIFO WORKING PAPER NO. 6228

CATEGORY 1: PUBLIC FINANCE

DECEMBER 2016

An electronic version of the paper may be downloaded

- from the SSRN website: www.SSRN.com
- from the RePEc website: www.RePEc.org
- from the CESifo website: www.CESifo-group.org/wp

ISSN 2364-1428

Interpreting Fiscal Accounting Rules in the European Union

Abstract

In the European Union, the creation of public debt statistics starts with member state governments' reports. The EU's statistical agency-Eurostat-then revises. How do these actors' incentives shape reported numbers? Governments have incentives to take a more favourable view of often ambiguous accounting rules than Eurostat. Lower debt improves governments' performance with domestic and external audiences. Eurostat is tasked with monitoring budgets for 'excessive' debts. We expect governments to present debt figures that Eurostat then revises upwards. This is more likely when governments have high debts, especially when in the eurozone, and prior to elections. Financial crises heighten the number of policies needing interpretation and both actors have more incentives to shape the numbers. We examine these propositions using Eurostat's debt revisions. We find debts are revised upwards more for eurozone countries with higher debt levels and years with unscheduled elections. Financial stress strengthens these effects.

JEL-Codes: F340.

Keywords: fiscal policy, European Union, financial crisis, electoral budget cycles, Eurostat.

Christopher Gandrud
City, University of London
Rhind Building
United Kingdom – EC1V 0HB London
christopher.gandrud@city.ac.uk

Mark Hallerberg
Hertie School of Governance
Friedrichstrasse 180
Germany – Berlin 10117
hallerberg@hertie-school.org

November 27, 2016

Thank you to workshop participants at Texas A & M University and attendees at the European Political Science Association 2016 Annual Conference, Brussels. This work was supported by the Deutsche Forschungsgemeinschaft under grant number HA5996/2-1. Replication material can be found at: https://github.com/christophergandrud/Eurostat_revisions.

1 Introduction

European Union member state public debt statistics are first created by national governments. They determine the budget implications of their policies by applying a shared statistical rule book—the European System of Accounts (ESA). The European Union’s statistical agency—Eurostat—then monitors the application of these rules. It can make revisions to the numbers. These actors have different incentives regarding the production of these statistics. Member states want to demonstrate their competence to cost-conscious voters and external audiences such as the European Commission and international investors. Eurostat also broadly wants to be seen as a tough monitor of member states’ finances. This enables the Commission to identify states that may be violating the Stability and Growth Pact’s (SGP) budget rules (Savage, 2005). How do these incentives shape what debt numbers are reported and when?

Specifically, we examine to what extent and why governments may make more favourable interpretations of the budget accounting rules than Eurostat when they determine how policies impact their debts. By ‘more favourable fiscal rule interpretations’ we mean that when the fiscal implications of a policy are potentially ambiguous under the ESA, a decision is made to interpret the rule in such a way as to minimise its effects on the member state’s public balance sheet.

For example, in 2009 in response to widespread banking system stress, the Irish government proposed creating a ‘bad bank’—the National Asset Management Agency—to acquire and dispose of Irish banks’ troubled assets. It had two choices in terms of reporting the bad bank’s liabilities that were not obvious under the accounting rules. They could count the bad bank’s liabilities as the government’s liabilities, thus increasing the public debt, or they could be counted solely under the bad bank’s accounts, thus having no impact on the public debt. The latter decision would have made the public accounts appear better, but may have been interpreted as being against the EU’s accounting rules. Eurostat, more concerned with reporting fiscal risks, may have later ruled against it. The government’s choice of the latter interpretation would be a more favourable interpretation of the fiscal rule than Eurostat’s likely view.

Interaction between member states and Eurostat on their debt statistics is continuous. Eurostat regularly revises European Union member states’ debt numbers. An interviewed Eurostat official¹ described their monitoring of member states’ debt statistics for the SGP as “police work” and that Eurostat is constantly “running behind” member states’ new accounting attempts to reduce their policies’ debt implications. This is born out in the data on revisions Eurostat has made to member states’ statistics. From 2003 through 2011, Eurostat revised three quarters of member state’s debt figures. On average, after a typical four year

¹The interview was given in summer 2014 and on the condition of anonymity.

review period, it revised debt figures upwards by one percentage point of GDP per year.² In only a quarter of these cases did Eurostat determine that debt was lower than originally reported, with the largest debt reduction amounting to only 1.1 percent of GDP. 12 member states during this period had their debt figures revised upward by two percentage points or more of GDP. Austria, Croatia, Greece, Ireland, and Portugal all had at least one instance where their debt figures were revised upwards by nine percentage points of GDP or more in a single year. Overall, Eurostat has tended to take a view of member states' debt figures that is less favourable to member states than their original reports.

Studying Eurostat revisions to member states' debt statistics impacts a number of political science literatures in interesting ways. Alt, Lassen and Wehner (2014) explore the relationships between fiscal data transparency, elections, and pressure from the European Union. They argue that European Union member states were more likely to violate the Eurostat statistical agency's budget reporting rules in ways that made the government look better to voters when fiscal transparency was low and when it was an election year. A related strand focuses on the economic vote and whether or not voters notice or incorporate information about these revisions into their decisions. Kayser and Leininger (2015) find that the press, and voters as a result, do not pay attention to revised figures.

If cost-conscious voters care most about initially reported, rather than actual, figures then governments have electoral incentives to release data that is more favourable to them than what Eurostat will ultimately allow. European Union institutions other than Eurostat and investors also influence member states' incentives. von Hagen and Wolff (2006) argue that member states are more likely to use 'creative accounting' when their deficits approach three percent of GDP. The reason is that such countries face a supranational fiscal rule under the Stability and Growth Pact where they are expected to run budget deficits less than three percent of GDP (and debts of less than 60 percent of GDP). More favourably interpreting statistical rules could give governments more budgetary room not to have to cut back in areas voters care about in order to meet internationally agreed commitments. Governments may similarly use favourable rule interpretations in order to maintain an attractive balance sheet for foreign sovereign bond investors, thus allowing them to fund spending that voters want. In more recent work that comes closest to our approach, De Castro, Pérez and Rodríguez-Vives (2013) find that most European Union member states are more likely to understate their deficits, that this behavior is more common in pre-electoral periods, and less common with more stringent fiscal rules in place. We expand this research in several important ways.

First, we consider the effects of financial crises on the likelihood of governments to favorably interpret

²See below for further details on this data.

fiscal rules. Many tools commonly used to respond to financial crises—guarantees, liquidity assistance, bad banks—have potentially ambiguous fiscal implications. This creates more opportunities for disagreement between member states and Eurostat about how their costs are counted. Additionally, during a financial crisis, electorally and SGP-motivated incentives to limit reported debts are more pronounced. Financial crises substantially strain public budgets as economic activity and so tax revenue decreases, while bank bailout policies may incur significant expenses. At the same time, Eurostat may be under more pressure from other EU institutions and member states to be more vigilant during crises in spotting ‘excessive’ debts. They will be under greater pressure to spot the fiscal problems that the SGP is designed to prevent.

Second, unlike De Castro, Pérez and Rodríguez-Vives (2013), who discuss any revision to deficit figures, we focus on revisions to debt figures, and specifically on those that Eurostat requires. There are several reasons to focus on debt data revisions made by Eurostat. First, as von Hagen and Wolff (2006) note for so-called ‘stock-flow’ adjustments and Milesi-Ferretti and Moriyama (2006) separately note using a balance sheet approach, that there are many operations that governments can use that change deficit figures without any need for revisions of deficit figures. This suggests that De Castro, Pérez and Rodríguez-Vives (2013) may underplay the extent of the manipulation. Note that the operations the authors above describe reduce the reported deficit, but do not affect the gross debt burden. It is in the latter part of government accounts where we focus our attention. Additionally, many operations governments engage in during financial crises appear on the debt ledger, and studies that focus only on deficits will miss the behavior of governments during such periods. Policies such as bank guarantees, liquidity assistance, and nationalizations have potentially ambiguous effects on the public debt, largely because they create contingent rather than immediately realized liabilities which can be difficult to categorise.

The third contrast with previous research concerns the countries and years included in our sample—we use a data set of the EU-28 members and include data from the the period 2003-2013, which allows us to consider the effects of financial crises.³

Our dataset is composed only of European Union member states. This is useful for several reasons beyond our interest in studying interactions between Eurostat and member states. All EU members fall under the same set of fiscal rules—the European System of Accounts (ESA)—, although the penalties for violating the rules are theoretically greater for eurozone states. Importantly for our analysis, national agencies produce the initial fiscal figures. They report this data to one body—Eurostat—which then evaluates the data and enforces the accounting standards by revising governments’ original figures. This means that differences across

³De Castro, Pérez and Rodríguez-Vives (2013) only looked at the EU-15 and their sample ended in 2008.

countries in initial reporting are not due to different accounting rules, but instead different interpretations of these rules. Institutionally, these countries are all parliamentary or semi-presidential systems where elections are crucial for the formation of governments.

2 Budgeting interactions between member states and Eurostat

Member states have many possible incentives from domestic and external sources to take more favourable views of the budget rules than Eurostat. In this section we discuss member states' possible incentives in detail and contrast them with Eurostat's.

2.1 Favourable interpretations for domestic audiences

The literature on the economic vote often assumes that voters are able to access regular data on the state of the economy and they use this to determine their government's economic policy management competence (for a discussion see Ansolabehere, Meredith and Snowberg, 2014). One debate considers whether voters are prospective or retrospective. On the latter, the assumption is that voters observe outcomes, and they decide whether or not to support the incumbent government. In response to the strong assumptions about voter knowledge, there is a growing literature on 'real-time fiscal policy'. Kayser and Leininger (2015) argue that the press ignores revisions to data. Moreover, Kayser and Peress (2015) find that voters pay particular attention to data they do not experience themselves. They observe unemployment, for example, but they do not observe economic growth and instead rely on reported figures when making decisions about which party to support. In our case, we are interested in government fiscal data that only the government can report. If one combines the insights in the two papers, they suggest that voters make decisions on the first set of data they see. This would make manipulation of such data potentially rewarding for governments that seek to remain in office.

Following Nordhaus (1975), as well as Alt, Lassen and Wehner (2014), one would anticipate that there are opportunistic business cycles where governments manipulate macro-economic tools at their disposal in an effort to make the economy look better before an election. Clark (2003) finds the tools a government uses depends upon the logic of the Mundell-Fleming model: if one assumes that capital is mobile, a government relies on monetary policy when the exchange rate is flexible while it leans on fiscal policy when the exchange rate is fixed. Both Nordhaus and Clark, however, focus on actual economic output from the use of these instruments.

We are interested in the perceived figures. In the ‘strongest’ version of the electoral incentives approach, voters are very attentive to public debts and politicians know this. Voters are concerned with both economic figures, which may be improved by government spending, as well as a countervailing concern for fiscal figures. Previous work has found that voters are averse to government spending increases (for a discussion see de Haan and Klomp, 2013). So governments have an interest in spending more at elections, while also taking steps to make their balance sheets look better. We are interested in the latter behavior here.

There is a possible spin-off from Clark’s argument. One can expect that extra spending in EU member states with flexible exchange rates has no macro-economic payoffs, while it does have payoffs in countries with fixed exchange rates, which will mostly be those in the eurozone.⁴ Governments may, however, want to look good to their voters on budget figures even in countries with flexible exchange rates.

At the same time, there is an opposite force at work. Governments do not want to present completely non-credible figures for fear that voters (and external actors we detail below) will heavily discount them. As discussed, in the European Union there is an external third party—Eurostat—that makes decisions on the credibility of debt figures. As a supranational agency appointed by the European Commission, Eurostat lacks the electoral incentives to interpret rules in member states’ favour. Instead, Eurostat is tasked with enforcing a common set of rules across member states and especially monitoring their budgets for ‘excessive’ debts and deficits, as defined by the Stability and Growth Pact (see Savage, 2005). The body regularly publicises non-credible figures, though it may take a few years for their review to play out.

We would expect that governments will avoid always presenting highly favourable interpretations given that there is an independent body that monitors them. Instead they may alternate the intensity of this behaviour in conjunction with situations under which there are stronger incentives to do so. This suggests that there may be a cycle to this behaviour according to elections. De Castro, Pérez and Rodríguez-Vives (2013) in fact find that fiscal data for years closer to elections are revised by Eurostat more.

Moreover, we add two additional parts to the model. First, and separate from Alt, Lassen and Wehner (2014) who focus on all election years, we anticipate that manipulation of figures is greater when the government calls an early election. This means that it is unscheduled and does not go to full-term. The reasoning follows the insights of Clark (2003) on the use of instruments, but with the expectation that elections called quickly—largely for non-fiscal or economic reasons—do not give the government time to affect the economy directly either through monetary or fiscal policy. Kayser (2005) finds that manipulation of the economy be-

⁴Exceptions would be those countries that fix their exchange rate to the euro or that have very narrow bands. Some central and East European countries like Lithuania, for example, have (or had) currency boards that maintained a de facto fix. Denmark has chosen not to join the eurozone, but it maintains a tight band around the euro for its kronor.

fore unscheduled elections is too cumbersome and too difficult to time. This suggests that the manipulations are substitutes for actual instrument use. Governments are manipulating budget figures on the margin to appear more competent to voters.

Second, we are interested in circumstances under which governments can more easily manipulate the figures. Where are the ‘grey’ areas in terms of the classification of assets and liabilities? For Alt, Lassen and Wehner (2014), those ‘grey’ areas are in the budgetary shadows, in places where there is less transparency. However, as we discuss in more detail below, there are many policies, especially those used during a financial crisis such as bank guarantees, that are complex and often difficult to classify for experts, let alone voters. As such, having a transparent budget process may not prevent governments from taking highly favourable views of accounting rules.

2.2 Favourable interpretations for external audiences

Domestic voters may not be the only or, in some contexts, even the primary actor the government is trying to impress with its budget statistics. There is evidence that countries intentionally distort statistics so that they receive some sort of payoff from international organisations. For example, Kerner, Beatty and Jerven (2016) find that some African countries kept their per capita incomes below the eligibility threshold for World Bank’s International Development Association. This is a clear case where governments change their official statistics in response to expectations from international organisations.

Reported outcomes in terms of economic and fiscal data have a real impact on policy, especially in European Union countries because of the role of EU institutions, and in particular the European Commission and Council of Ministers. GDP figures affect what type of co-financing governments receive from the European Union for a range of activities, such as environmental protection, guarantees for small and medium-sized enterprises loans, and the construction of roads.⁵ Under the Stability and Growth Pact, all member states are expected to have budget balances no worse than 3 percent of GDP and debt burden no greater than 60 percent of GDP. The European Commission decides each year whether a member state has an ‘excessive deficit’, with those earning this distinction subject to an Excessive Deficit Procedure (EDP). Member states in an EDP must propose corrective methods. The subset that are also eurozone members face potential penalties, such as fines. Member states that do not adjust their performance could lose their access to structural and cohesion funds, which are the largest part of the European Union budget. As such, we would

⁵The amounts can be substantial as a percentage of total funding for a given project, up to 85 percent of the cost of the project in regions judged to be “less developed”, which are those with a per capita income below 75 percent of the European Union average.

expect governments to have more favourable statistical rule interpretations as they approach and are above SGP limits, especially if they are in the eurozone.

There are several articles that find empirical support for the argument that European Union member states adjust their national accounts so that their figures look better to European authorities. Koen and van den Noord (2005) find that governments resort to more fiscal gimmicks in Europe, which include one-off measures that make final budget figures look better, the more binding the fiscal rule in place. von Hagen and Wolff (2006) document that so-called ‘stock-flow adjustments’ increase as member states approach the deficit maximum of 3 percent of GDP. Similarly, Milesi-Ferretti and Moriyama (2006), using a balance sheet approach, find that member states adjust their budget figures in ways that make it more likely they comply under the European rules but also in ways that do not affect the overall net worth of the government.

The impact of external audience evaluations and voters’ interests are not mutually exclusive. The former could reinforce the latter. For example, a member state that receives a negative European Union evaluation of its fiscal policy may lose credibility as competent in voters’ eyes. The member state may feel pressure to cut spending on activities that voters want and/or raise taxes. So, even if voters did not pay attention to public debt statistics, in the EU member states and especially eurozone countries, governments have electoral incentives generated by the EU to limit their debts.

2.3 Favourable interpretations during financial crises

Governments in countries that experience financial market stress and crises face considerable fiscal difficulties (see Laeven and Valencia, 2012) that heighten politicians’ incentives to interpret fiscal rules in their favour. At the same time, and an unexplored area in the literature, the policy options available to politicians to respond to financial crises—e.g. buying equity in failing banks, bad banks, and bank nationalizations—present numerous opportunities for fiscal rule optimism. As such, we expect politicians to engage in favourable accounting even more during periods of financial market stress and crisis.

Gandrud and Hallerberg (2016) argue that many of the policies available to politicians, especially during the 2008-2011 crisis in Europe, were both rarely used before and had potentially ambiguous budget implications. If a government buys equity in a troubled bank as, for example, Ireland did with Irish Nationwide Building Society and the Educational Building Society in 2010 has the government spent money or does it have a different, but equivalently valued asset? Does the transaction hit the budget, or is it what the European System of Accounts terms a ‘financial transaction’, with no effect on the budget? If a government owns a stake in a bad bank—otherwise known as an asset management company (AMC)—used to clean up a failed

bank, are the AMC's liabilities also government liabilities counted against its debt? Or are they what the ESA terms 'contingent liabilities', where the government is liable only if the AMC cannot repay them? These questions are particularly difficult to answer because they rely on complex and opaque information about probabilistic outcomes (Gandrud and O'Keefe, forthcoming). For example, whether a publicly guaranteed AMC ends up costing the public money largely depends upon whether the institution is able to manage and/or sell its assets to return at least as much money as it paid for them. It is difficult to predict *ex ante* whether a non-performing asset held by an AMC will become performing or can be sold for a particular value in the future. Governments with incentives to minimise crisis costs, have incentives to take optimistic views of these probabilities.

It is important to emphasise that another component of why we would expect to see more revisions during crises is that there are generally more instances during financial market stress where it is difficult to determine how a policy affects the public debt. Thus, regardless of politicians' incentives, we would expect there to be a higher *number* of revisions made to public debt statistics during higher financial market stress than otherwise. However, if governments lack incentives to rule in their favour in these instances, then we would expect revisions to sum to zero because there should be no bias one way or the other. On the other hand, if they do have these incentives, then revisions should be positive (i.e. debts were higher than initially reported).

Eurostat also has more incentive to monitor member states' budget statistics during crises. The contagion risks of fiscal profligacy for other member states, which the SGP is designed to limit, will be higher during crises as more national budgets will be stressed. Therefore, Eurostat has more incentive to be vigilant so as not to miss a fiscal risk that could harm other member states. ⁶

2.4 National control of fiscal accounting

An assumption of the previous discussion is that elected politicians have at least some control over budget statistics. Is this a reasonable assumption? Given our focus on democratic European countries with advanced economies, perhaps there are politically independent national statistical agencies that are primarily responsible for compiling and monitoring budget statistics and are unmotivated by elections. While such institutions do indeed exist, there are a number of reasons to be skeptical that they fully control creation of public finance data. First, research by the International Monetary Fund (Bova et al., 2015) finds that in

⁶While anecdotal, our interviews with Eurostat officials and our review of Eurostat's official opinions from the early 2000s through the eurozone debt crisis indicates that Eurostat was much more vigilant in the crisis period and especially did not want to be blamed for missing another situation like Greece, where the numbers were found to be highly understated.

our observation period (2003-2013) only six EU member states had fiscal councils in place, which amount to national independent debt rule monitoring institutions.⁷ Second, these bodies, as well as other domestic statistical agencies, react to government figures and cannot prevent an initial act of interpreting rules in a highly favourable manner for politicians. In practice, the process of applying statistical rules involves disagreements between domestic political and non-political bureaucratic actors, as well as Eurostat. The result can be a Eurostat revision. For example, Gandrud and Hallerberg (2016) describe how in 2009—an election year—the German Ministry of Finance initially classified its newly created AMC–Erste Abwicklungsanstalt (EEA) used to clean up the failed lender WestLB—as a contingent liability. As such it did not impact the public debt. The German statistical agency—Destatis—disputed this decision. In 2010 Eurostat, responding to the dispute, determined EEA counted as a liability against the government’s debt.⁸ We further consider the characteristics of national budget institutions below.

3 Hypotheses

We will test the following hypotheses for explaining Eurostat’s upward revisions to member states’ debt figures:

H_1 : Debt revisions will be larger for years closer to national government elections.

H_2 : Debt revisions will be greater for years when there are unscheduled elections.

H_3 : Debt revisions will be larger for EU countries with larger debts.

H_4 The effects predicted by H_3 will be stronger when a country is in the eurozone.

H_5 : The effects predicted by the first three of these hypotheses will be stronger when a country also has high financial market stress.

4 Additional explanations

There are two alternative explanations that could be relevant here. Governments subject to higher fiscal policy transparency could have less ability to make interpretations that are more favourable to them than

⁷The Fiscal Compact requires its signatories to establish fiscal compacts to monitor compliance of a given fiscal rule. Some member states already had such a council, such as the Netherlands, Sweden (as of 2007), and the United Kingdom (as of 2010), but most did not in the time period we examine, which ends in 2013.

⁸For more details see: <http://ec.europa.eu/eurostat/documents/1015035/2993710/471529-1et-WR-BMF-EAA.pdf/a52a49df-0785-4dd3-a943-8d45fd4a847a>. Accessed March 2016.

what Eurostat would decide (e.g. Alt, Lassen and Wehner, 2014). There are reasons to be skeptical of this reasoning in this context. The interpretations are of highly technical rules and possibly probabilistic outcomes that voters and even sophisticated market actors likely do not know. This suggests that greater fiscal transparency either has no effect on the behaviour we are interested in or it may even have a positive effect as politicians in more transparent contexts use stealthier methods of improving the appearance of their budget in the short-term. Regardless, this is an empirical question we address below.

A second alternative explanation to explore is an institutional one. Hallerberg, Strauch and von Hagen (2009) find that European Union member states that fit most closely a ‘fiscal contracts’ approach to budgeting have more conservative forecasts in their Stability and Convergence Programmes than member states that delegated to a ‘strong finance minister’. Pina and Venes (2011) similarly find that ‘contract’ states have more prudent fiscal forecasts using a different data set, namely the forecasts found under the Excessive Deficit Procedure. Hallerberg, Strauch and von Hagen (2009) focus on actual forecasting errors. While countries with fiscal contracts are less likely to miss their targets, it could be that such states are more active in making sure they hit those targets through a more generous interpretation of the rules. If it turns out later that the government missed the target, this is unlikely to bring down the government. At the same time, this logic ignores the institutional structures that support such contracts. Precisely because there is a temptation to do this one might have especially competent staff do the numbers. The Dutch largely outsource the production of the figures to its fiscal council, the Netherlands Bureau of Economic Analysis, which, while technically part of the executive, has established a reputation since the end of World War II as an independent body. What may ultimately matter most, then, is the relative independence of the body that reports the data. As we note above, there are few fiscal independent fiscal councils as of 2013, but we do not have data on statistical agencies. Delegation to a strong finance minister may suggest that the finance ministry does the numbers. This, too, can be checked, as happened in the United Kingdom, when frustration with habitually optimistic figures led to pressure for an objective body, which was the inspiration for the Office of Budget Responsibility created in 2010. Here, we consider the difference between ‘delegation’ and ‘fiscal contract’ countries a good proxy for these type of institutional distinctions. Supporting this argument is De Castro, Pérez and Rodríguez-Vives (2013), who find that there are fewer revisions to deficit figures where member states have fiscal rules in place that are closer to the ideal under ‘fiscal contracts’.

5 Empirical tests: Set up

To test our hypotheses, we ran a series of linear regressions with cumulative debt revisions made by Eurostat as the dependent variable and a number of relevant political and economic indicators on the right-hand side.

5.1 Dependent variable: Eurostat revisions

We gathered a data set of all revisions that Eurostat made to EU member state debt figures from 2003 through 2013.⁹ This sample includes debt data revisions for all EU member states as of 2016. Eurostat publishes revisions bi-annually—typically once at the end of April and again in late October. These revisions cover government finance statistics released within the previous four years. For every year that government statistics are revised, there are up to seven revisions: the first revision occurs in October of the initial reporting year and continues bi-annually for three years thereafter.

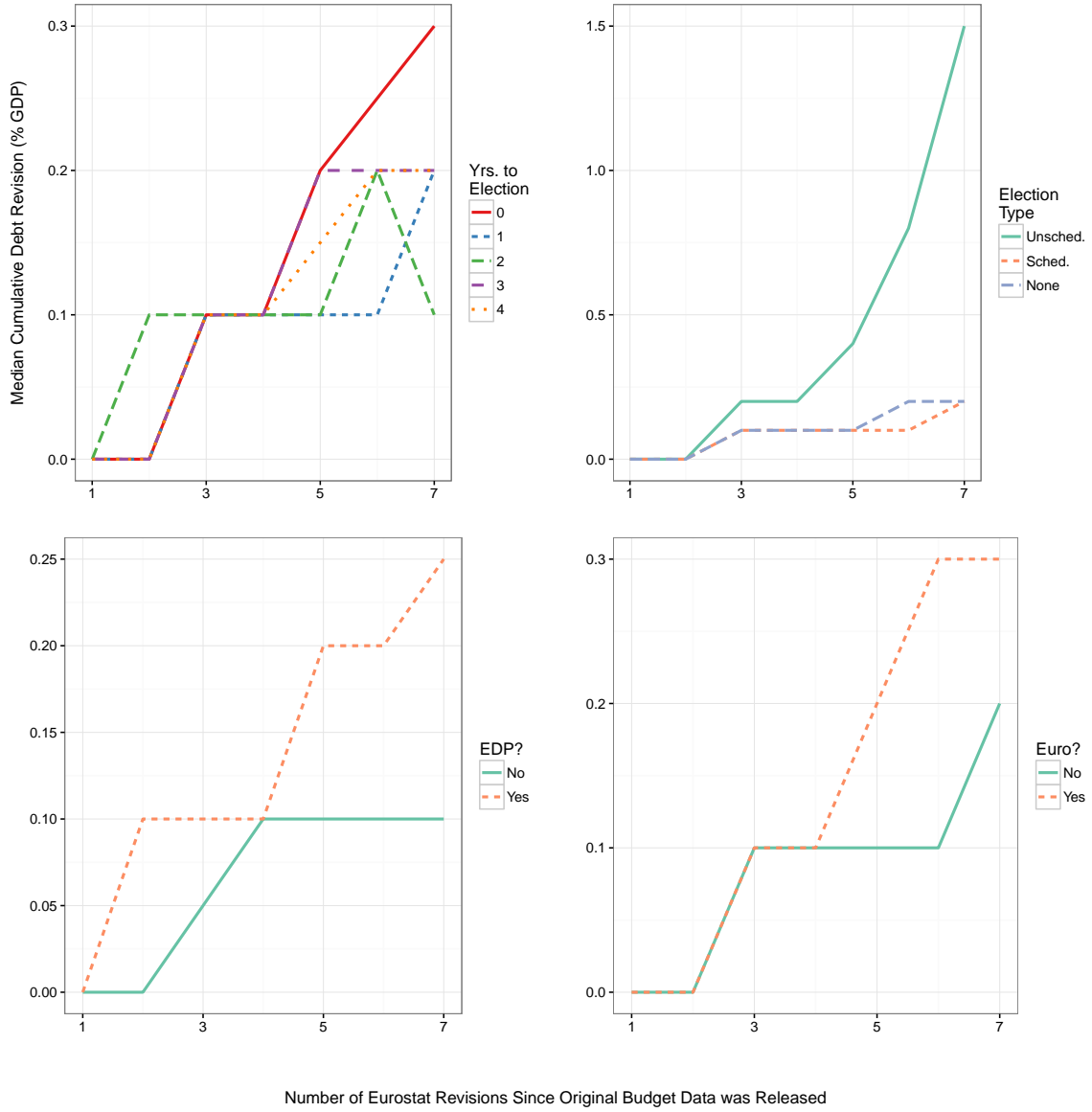
We used this data to create a variable of *cumulative debt revisions* as a percent of GDP by at least the final possible revision year. As such our unit of analysis is country-budget year and the sample was truncated to the 2011 budget year so that we only include data that has been revised for three years. We used this as our dependent variable. The variable ranged from -1.1 to 12.7 percent of GDP.¹⁰ It is important to note that these revisions were not due to corrections made to the denominator: GDP. Eurostat reports GDP revisions separately from corrections made to debt data. As mentioned earlier and corroborated by De Castro, Pérez and Rodríguez-Vives (2013) in a sample of Eurostat data from the pre-financial crisis period, there is a clear tendency for fiscal statistics to be revised such that, in the aggregate, policies are more expensive than governments initially reported.

This proxy for rule interpretation differences is related to the dependent variable that is most common in work on ‘creative accounting’, namely stock-flow adjustments (e.g., von Hagen and Wolff 2006, Alt, Lassen and Wehner 2014; see also Seiferling 2013 on the technical details). This term refers to the accounting difference between a country’s change in its debt burden and its budget deficit, where positive numbers indicate that debts grew more than deficits. von Hagen and Wolff (2006) find that there are more such adjustments when the deficit fiscal rule of 3 percent is in force in Europe, or after 1997. Our dependent variable here represents an outside agency’s evaluation of the figures a given member state reports. One issue on stock-flow adjustments that make them more problematic for our paper is how European accounting rules

⁹PDF files with the fiscal figures were downloaded from <http://ec.europa.eu/Eurostat/news/news-releases>. Accessed March 2015.

¹⁰For completeness, we did the same for deficit revisions. The cumulative deficit revisions variable ranged from -9.8 to 1.3 percent of GDP. Results from models with deficit revisions are in the Online Appendix.

Figure 1: Median **Debt** Revisions for Data Released Under Various Domestic and External Audience Conditions



consider equity injections into public companies, as well as transactions in financial assets. Both affect debts but do not affect deficits. Stock-flow adjustments, therefore, would change significantly when governments intervene in the financial sector—purchases of equity in banks as part of recapitalization or the nationalization of banks. An advantage of our measure is that we can check whether governments made more favourable interpretations than Eurostat even during times of high financial stress when governments took action.

Before moving onto the regression analysis let’s examine descriptive statistics of debt revisions over the revision period under different conditions related to our non-interactive hypotheses. Figure 1 shows the median cumulative Eurostat debt revisions in our sample under such conditions.¹¹ The upper left-panel indicates that revisions are slightly higher for budget data released in years with elections, though the difference is small. Cumulative revisions are similar regardless of election timing until the fifth revision. Over the next two revisions, the median cumulative revision for non-election years remains between 0.1 and 0.2 percent of GDP. In contrast, median debt revisions for election years increase to 0.3 percent of GDP by the seventh revision. In the upper right-panel of Figure 1 we see that the median revision for debt data released in years with unscheduled elections is much higher by the seventh revision (about 1.5 percent of GDP) than for years with scheduled elections or no elections (both are about 0.2 percent of GDP). Again, the divergence in the magnitude of the data revisions largely begins from the fifth time that Eurostat examines the numbers. These descriptive findings are indicative of politicians having more favourable debt rule interpretations than Eurostat in election years with impromptu elections.

The lower panels of Figure 1 show median debt revisions for countries in and out of an Excessive Deficit Procedure and euro membership. The ultimate median debt revision of 0.25 percent of GDP for countries in EDP enforcement is more than double that for countries without EDP enforcement (lower left-panel). Euro members have a higher median debt data revision than non-eurozone members (upper right-panel). These descriptive findings suggest that the external audience may also be an important factor.

5.2 Right-hand variables

To examine the role of election timing on debt revisions, we use Gandrud’s (2015) *years to election* variable. The variable counts down from the year that is the furthest away from the next scheduled election. Election years are recorded as zero, regardless of whether they were scheduled or not. To make the substantive interpretation of the results more intuitive—so that a positive coefficient indicates that being closer to an election is associated with an increase in debt data revisions—we reversed the direction of the election timing

¹¹Below we discuss these variables in detail. In figures 1 and A-2 in the Online Appendix we use the original electoral timing variable, not the reversed scale as, in this representation, the original scale is easier to interpret.

scale for the regression models.¹²

We expect that member states should have more favourable assessments than Eurostat when they have less time to act for a planned election in ways that would present themselves in the best fiscal light to voters, as well as international institutions. As such, we also include a categorical variable indicating *election type*. It codes country-years as having a scheduled election, unscheduled election, or no election. The variable is based on Brender and Drazen (2005), which was updated and corrected by Hallerberg and Wehner (2015) through 2010. We updated it through 2013.¹³ Based on our theoretical framework and what we saw in the descriptive statistics, we expect that the revisions will be greater for years when there is an unscheduled election. See the Online Appendix for the list of country-years in our sample with unscheduled elections.

One way we examined the role of external audiences on revisions was with a binary variable that was one when a country was in an *excessive deficit procedure* and zero otherwise. The majority of this data was from Baerg and Hallerberg (2016), which we updated from 2003 through 2004 and 2013 through 2015.¹⁴ Being in an Excessive Deficit Procedure could have both a positive and/or negative effect on revisions. On the one hand, we may expect countries in EDPs to make more favourable interpretations in order to lower their debts and get out. Conversely, an important consideration in how to enforce the EDP is a government's good faith in returning to compliance. Data that is determined by Eurostat to be too optimistic may be viewed as a bad faith move. As such countries subject to SGP enforcement may be less likely to make highly favourable interpretations.

There is a clear interactive possibility that we consider. Perhaps countries that have higher debts and so are in threat of, or have actually breached the SGP's limits will be more likely to make highly favourable interpretations. We would expect that countries in the eurozone specifically would be more likely to do this when their debts are close to and above the 60 percent of GDP limit. Presenting rosy numbers in this situation may help them even if only in a marginal way, at least temporarily, stay or get under the SGP's 60 percent debt to GDP limit. As such, we gathered data on *gross central government debt* as a percentage of GDP reported by the World Bank's Development Indicators.¹⁵ We then interacted this variable with *eurozone membership* to see if being in the eurozone specifically gave governments added pressure to stay

¹²I.e. for each observed election timing value x for country i and year t : $\text{Max}(X) - x_{i,t}$.

¹³We used information from the NSD European Elections Database available at http://www.nsd.uib.no/european_election_database. Accessed February 2016.

¹⁴We used information from the European Commission available at: http://ec.europa.eu/economy_finance/economic_governance/sgp/corrective_arm/index_en.htm. Accessed February 2016.

¹⁵Available at: <http://data.worldbank.org/data-catalog/world-development-indicators>. Accessed December 2015. While the European Union targets are for general government, we intentionally use central government debt in the regressions. We assume that these are the figures the central government is most able to influence. They are also highly correlated with the general government figures.

under the SGP's 60 percent limit.¹⁶ Note that the debt level data is revised data. Therefore, we expect the effect of this variable on revisions to occur at higher observed levels on the revised data. Governments should rule stretch more for years with debts somewhat above 60 percent of GDP in data that is ultimately revised debt data.

To examine how responding to financial market stress may incline governments' to have more favourable rule interpretations, we included Gandrud and Hallerberg's (2015) 'FinStress' measure. Political economy research has tended to rely on dichotomous financial crisis measures from Laeven and Valencia (2012) and Reinhart and Rogoff (2010) that are hand-coded *post hoc*. Problems with these measures are well known (see Gandrud and Hallerberg, 2015). FinStress was constructed to overcome many of these problems by measuring real-time perceptions of financial market stress using a text analysis of monthly *Economist Intelligence Unit* country reports on banking and financial systems. We converted the monthly variable values into annual averages. In our sample it ranges from 0.19 through 0.76. To ease interpretation, we multiplied these values by 100. As a robustness check, we alternatively measured stress with Duprey et al.'s (2015) measure of financial market stress. They found their indicator for 27 EU member states by measuring co-movements in key financial market characteristics such as equity, bond market, and foreign exchange volatility. Results from the two measures are substantively similar and so we show only models with FinStress for simplicity.

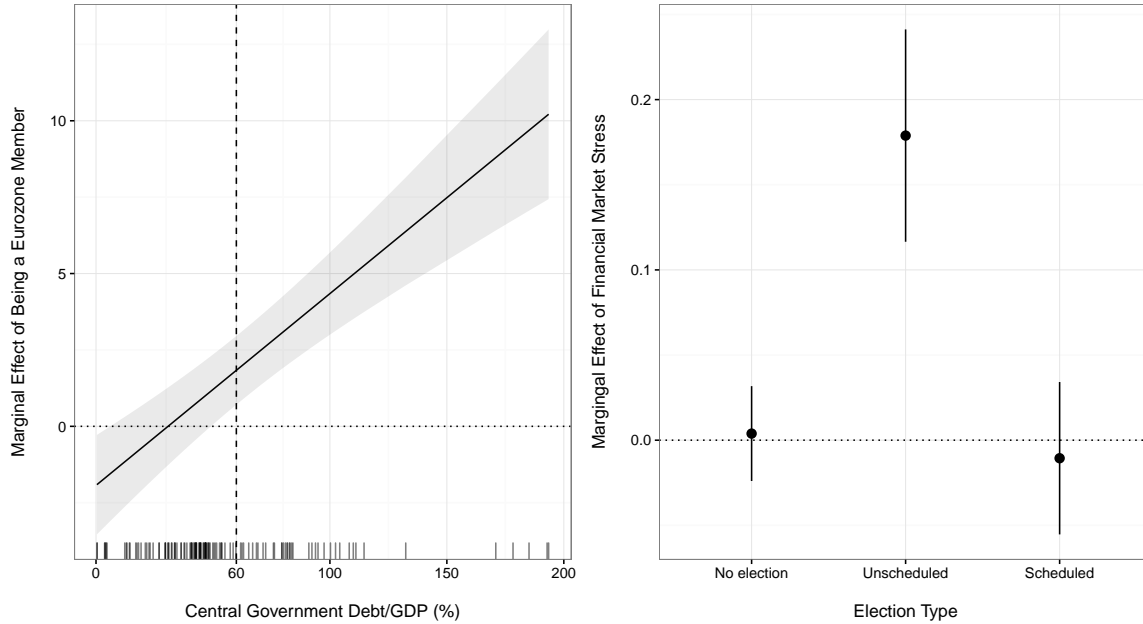
We hypothesize that the eurozone membership and election effects on debt revisions will increase at higher levels of financial market stress. So in the following discussion we include interactions between financial market stress and these variables.

To measure *fiscal transparency*, we use a fiscal transparency index created by Wang, Irwin and Murara (2015). They measure the degree to which and what type of fiscal data is reported to the International Monetary Fund from 2003 to 2013. Their index ranged from zero to 100 (the maximum possible extent) in our sample of EU member states. We also examined if economic growth as measured by year-over-year GDP growth (percentage) would affect revisions.¹⁷ Perhaps governments facing broad economic shocks have incentives to more favourably interpret the rules (De Castro, Pérez and Rodríguez-Vives, 2013). We used the budget *contracts* institutions (as opposed to institutions that delegate budget responsibility to a ministry of finance) variable from Hallerberg, Strauch and Von Hagen (2007) and Hallerberg, Strauch and von Hagen (2009). We may expect that more contractual budgetary institutions have more accurate budget numbers

¹⁶The SGP also specifies a 3 percent of GDP deficit. This limit was in many ways the focus of EDP enforcement much more so than the 60 percent of GDP debt limit until the advent of the eurozone debt crisis. To examine the role that deficit levels may play on debt revisions, we gathered data on *general government deficits* as a percentage of GDP from Eurostat. The data is available at: <http://ec.europa.eu/Eurostat/> (accessed December 2015.) We used this data in regressions where deficit revisions are modeled. See the Appendix for results.

¹⁷From the World Bank Development Indicators. Indicator ID NY.GDP.MKTP.KD.ZG. Accessed February 2016.

Figure 2: Marginal Effects of Various External and Domestic Audience Conditions on Debt Revisions



Shaded areas and solid vertical bars represent 95% confidence intervals.

The dashed vertical line in the left-panel indicates a debt level of 60% of GDP. This is the Stability and Growth Pact debt limit.

the first time around. The variable ranges from 0.19 to 1 in our sample with higher values indicating more contractual institutions.

All EU countries have an independent supranational debt rule monitor—Eurostat. Six member states had fiscal councils that played the role of additional national independent debt rule monitors during our sampling period (see the Online Appendix). In some models we included a dummy variable which was one in years a country had one of these institutions, zero otherwise.¹⁸ The variable was never significant and we do not show results from models including it below. Finally, given the increased attention on government debts from the start of the eurozone debt crisis in 2010, perhaps Eurostat scrutinized government numbers more closely and so more revisions were made from 2010. To test this possibility, we included a dummy variable that was one from 2010 onwards, and zero otherwise. This variable was never statistically significant, so we do not report results from these models below.

¹⁸Data available at: <http://www.imf.org/external/datamapper/FiscalRules/map/map.htm>. Accessed February 2016.

6 Empirical tests: results

Table 1 shows results from linear regressions with cumulative debt revisions as the dependent variable. All models include country fixed effects to account for unobserved country variation. As a robustness check we re-ran the key models without fixed effects, but including country clustered robust standard errors. The results are substantively similar and so not shown. Because a number of the variables are logically highly correlated with each other, we ran our models in a step-wise fashion.

Central government debt was associated with debt revisions in most models at at least the 10 percent significance level. The direction of the effect is as expected: countries with higher debt levels were more likely to have debt data that Eurostat revised upwards. Governments with high debts appear to be more likely to interpret the accounting rules more favourably than Eurostat. This could be because they have increased incentives—from voters and EU institutions—to decrease or at least slow the increase in their debts.

Given that we expect a non-linear relationship between debt and debt revisions, i.e. increasing around the 60 percent of GDP SGP debt limit, we also examined a quadratic polynomial relationship. This results in a somewhat better fit and the estimated nature of the relationship is as expected (see Figure A-1 in the Online Appendix). Due to the complexity of estimating and interpreting interactions with polynomial terms and the broad substantive similarity between the linear and polynomial versions of the variable, below we focus on interactions estimated with a linear debt term.

We expect that eurozone members with debt levels around or above the 60 percent of GDP SGP debt limit would be more likely to have more favourable views of their budget than Eurostat ultimately has. The left-panel of Figure 2 shows the marginal effect of eurozone membership at various debt levels. We can see that the effect is positive—eurozone members with higher debt levels are more likely to have revised debt numbers. Interestingly, this effect becomes statistically significant at the 5 percent level when debt is about at the 60 percent SGP limit in the revised data.¹⁹

¹⁹While these figures are for central government and not general government, in practice they are very close to one another.

Table 1: Linear Regression Estimation of Debt Revisions (Full Sample)

	<i>Dependent variable:</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Revised Cent. Gov. Debt	0.023* (0.010)	0.016* (0.008)	0.016 (0.011)	0.025* (0.010)	0.016 (0.011)	0.015 (0.011)	0.009 (0.010)	0.028** (0.009)	0.056*** (0.012)	0.027** (0.010)
Euro Member	1.825* (0.847)	-1.933 (0.993)	1.418 (0.905)	-2.872 (1.552)	1.538 (0.905)	1.430 (0.914)	1.268 (0.828)	2.132* (0.824)	0.014 (0.866)	-1.369 (0.979)
EDP	0.158 (0.386)									-0.133 (0.355)
Financial Stress			0.016 (0.017)	-0.058* (0.026)	-0.016 (0.029)	0.014 (0.017)	0.004 (0.017)			-0.039 (0.022)
Election Timing			0.177 (0.107)		-0.417 (0.457)					
Unscheduled Elect.						1.216* (0.588)	-7.736*** (1.986)			-5.481** (1.863)
Scheduled Elect.						-0.007 (0.366)	0.620 (1.325)			0.717 (1.246)
Fiscal Transparency								0.008 (0.010)		
GDP Growth								0.071 (0.046)		0.049 (0.042)
Contracts									3.395 (4.934)	
Debt * Euro		0.063*** (0.012)								0.071*** (0.016)
Euro * Fin. Stress				0.096*** (0.028)						
Elect. Timing * Fin. Stress					0.012 (0.009)					
Unscheduled Elect. * Fin. Stress							0.175*** (0.037)			0.113** (0.036)
Scheduled Elect. * Fin. Stress							-0.014 (0.028)			-0.014 (0.027)
Constant	8.294*** (1.675)	7.815*** (1.442)	8.179*** (1.627)	10.610*** (1.694)	9.792*** (2.020)	8.602*** (1.630)	9.908*** (1.549)	7.213*** (1.762)	4.629 (4.639)	8.202*** (1.573)
Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	120	125	125	125	125	125	125	125	114	120
R ²	0.696	0.760	0.698	0.724	0.703	0.703	0.762	0.697	0.746	0.818
Adjusted R ²	0.602	0.689	0.606	0.640	0.609	0.608	0.679	0.605	0.670	0.742

Note: ** p<0.05; *** p<0.01; **** p<0.001

Note: we also ran the primary models with country-clustered standard errors rather than fixed effects. The results were substantively similar.

We did not find evidence that once countries are in an Excessive Deficit Procedure that they are unconditionally more likely to present debt figures that Eurostat revises upwards. This is possibly because of the ambiguous benefit of making more favourable rule interpretations when under the EDP. Countries might be able to get their debts under the SGP limit with such optimistic accounting, but once revealed, these actions could be seen as bad faith efforts leading to further penalties.

Contrary to our expectations based on previous research, we did not find evidence of an election timing effect on revisions. There is, however, evidence that having an unscheduled election has the hypothesized non-interactive effect on debt revisions. We estimate that having an unscheduled election, but not a scheduled election, is associated with larger cumulative Eurostat debt data revisions. The election type finding may go some way to explaining why there we found no election timing effect. If this optimistic budgeting is confined to a subset of elections—those where governments have the least ability to affect real economic outcomes and therefore have to rely on more marginal tactics such as favourable budgeting—we would be less likely to see an overall election timing effect.

Using an interaction between euro membership and election timing (not shown) we examined if election timing may have an effect mediated by being in the eurozone. These countries cannot use monetary policy to boost the economy before elections. The interaction was not statistically significant at any standard level.

How does financial market stress impact debt revisions? We hypothesised that revisions should be larger when there is more stress and the effect of unscheduled elections and eurozone membership should be stronger at higher levels of stress. We did not find strong evidence of an unconditional relationship between financial market stress and debt revisions, but did find consistent evidence for a relationship conditional on election type and eurozone membership. In the right-panel of Figure 2 we see that the marginal effect of financial market stress is positive on revisions when there is an unscheduled election.²⁰ Similarly, more stress in eurozone countries is associated with larger revisions.

Fiscal transparency and GDP growth were not associated with debt revisions in our models. We also did not find evidence that ‘contract’ institutions impacted debt revisions.

Because Greece is a considerable outlier in terms of its debt revisions, we also ran our models with Greece omitted from the sample. The results of these models are shown in the Online Appendix. Removing Greece did not change the substantive significance of the findings, suggesting that the behavior we have identified

²⁰Perhaps governments that face higher levels of financial market stress are more likely to call unscheduled elections. In the Online Appendix we investigate this possible endogeneity. We do not find evidence that unscheduled elections are more likely at higher levels of financial market stress.

Also, note that the magnitude of the marginal effect is seemingly quite large in this plot. This is partially because the marginal effect captures the effect of a one unit change in stress. This is thus essentially the comparative estimated effect of going from a state of no to full stress.

is not confined to Greece, but is instead a wider phenomenon in the European Union.

7 Conclusion

We have sought to understand how governments interpret budget accounting rules compared to an external third party with different incentives, especially during periods of financial market stress and crisis. The European Union provides a unique opportunity for studying this behavior as it has a common set of statistical rules—the ESA—and has a highly independent monitor—Eurostat—that regularly revisits and revises member state balance sheet statistics to ensure that they are in line with these rules.

We significantly deepen findings in previous work that elections are associated with revisions to government finance figures. We did not find an unconditional effect between election timing and revisions, as suggested by previous work, but did find that unscheduled elections, especially during periods of financial market stress are associated with debt revisions. These are periods when budgets are under significant stress and governments have few opportunities to affect economic fundamentals in time for voters to appreciate it. We also explore how the European-level audience affects the interactions between member states and Eurostat. We found that policy-makers in the eurozone are cognizant of the Stability and Growth Pact’s 60 percent of GDP debt limit and possibly use more favourable interpretations of the accounting rules in attempts to be below it.

Future research could consider other ways in which politicians can improve the outward appearance of their debt statistics in crucial periods, such as unscheduled elections or during financial crises. They may, for example, be more likely to choose policies that create contingent liabilities that do not directly impact the debt in unscheduled election years or during crises. Future work could examine how the relative share of these sorts of policies change under certain conditions, possibly heading off some of the need to use optimistic fiscal rule interpretations to improve budget figures in the short term.

A major takeaway from our work is that even among a group of developed economies with generally strong economic policy institutions, it is common for political incentives to significantly affect our knowledge about government spending and financial obligations. This is especially true during financial market stress. European-level debt limits and the enforcement of these limits also appears to encourage more optimistic budget interpretations in certain circumstances. As such, highly independent government accounting agencies, such as Eurostat, are a crucial component of ‘getting the numbers right’, even if it takes a few years.

References

- Alt, James, David Dreyer Lassen and Joachim Wehner. 2014. "It Isn't Just about Greece: Domestic Politics, Transparency and Fiscal Gimmickry in Europe." *British Journal of Political Science* 44(04):707–716.
- Ansolabehere, Stephen, Marc Meredith and Erik Snowberg. 2014. "Mecro-Economic Voting: Local Information and Micro-Perceptions of the Macro-Economy." *Economics & Politics* 26(3):380–410.
- Baerg, Nicole and Mark Hallerberg. 2016. "Explaining Instability in the Stability and Growth Pact: The Contribution of Member State Power and Euroskepticism to the Euro Crisis." *Comparative Political Studies* 49(7):968–1009.
- Bova, Elva, Tidiane Kinda, Priscilla Muthoora and Frederik Toscani. 2015. "Fiscal Rules at a Glance: Country Details from a New Dataset." *IMF Working Paper* (WP/12/273).
- Brender, Adi and Allan Drazen. 2005. "Political Budget Cycles in New Versus Established Democracies." *Journal of Monetary Economics* 52(7):1271–1295.
- Clark, William Roberts. 2003. *Capitalism, Not Globalism*. Ann Arbor: University of Michigan Press.
- De Castro, Francisco, Javier J Pérez and Marta Rodríguez-Vives. 2013. "Fiscal Data Revisions in Europe." *Journal of Money, Credit, and Banking* 45(6):1187–1209.
- de Haan, Jakob and Jeroen Klomp. 2013. "Conditional political budget cycles: a review of recent evidence." *Public Choice* 157(3-4):387–410.
- Gandrud, Christopher. 2015. "Corrections and Refinements to the Database of Political Institutions' yrcurnt Election Timing Variable." *The Political Methodologist* 22(2):2–4.
- Gandrud, Christopher. 2016. "coreSim: Core Functionality for Simulating Quantities of Interest from Generalised Linear Models." R package version 0.2.2.
- Gandrud, Christopher and Mark Hallerberg. 2015. "What is a Crisis?: Efficiently measuring real-time perceptions of financial market stress." *Working paper presented at the International Political Economy Society Annual Conference 2015*.
- Gandrud, Christopher and Mark Hallerberg. 2016. "Statistical Agencies and Responses to Financial Crises: Eurostat, Bad Banks, and the ESM." *West European Politics* 39(3).

- Gandrud, Christopher and Mícheál O’Keeffe. forthcoming. “Information and Financial Crisis Policy-making.” *Journal of European Public Policy* .
- Hallerberg, Mark and Joachim Wehner. 2015. “Update and Corrections to Brender and Drazen (2008) Election Endogeneity Variables.”. Unpublished.
- Hallerberg, Mark, Rolf Strauch and Juergen von Hagen. 2009. *Fiscal Governance: Evidence from Europe*. Cambridge: Cambridge University Press.
- Hallerberg, Mark, Rolf Strauch and Jürgen Von Hagen. 2007. “The design of fiscal rules and forms of governance in European Union countries.” *European Journal of Political Economy* 23(2):338–359.
- Kayser, Mark. 2005. “Who Surfs, Who Manipulates? The Determinants of Opportunistic Election Timing and Electorally Motivated Economic Intervention.” *American Political Science Review* 99(1):17–27.
- Kayser, Mark Andreas and Michael Peress. 2015. “The Media, the Economy, and the Vote.” *Working paper prepared for the 2015 meeting of the European Political Science Association* . https://dl.dropboxusercontent.com/u/35349845/website/_papers/EconNews_Omnibus_9_15.pdf.
- Kayser, Mark and Arnt Leininger. 2015. “Vintage errors: do real-time economic data improve election forecasts?” *Research and Politics* pp. 1–11.
- Kerner, Andrew, Alison Beatty and Morten Jerven. 2016. “Does It Pay To Be Poor? Testing for systematically under-reported GNI estimates.” *Review of International Organizations* .
- King, Gary, Michael Tomz and Jason Wittenberg. 2000. “Making the Most of Statistical Analyses: Improving Interpretation and Presentation.” *American Journal of Political Science* 44(2):347–361.
- Koen, Vincent and Paul van den Noord. 2005. “Fiscal Gimmickry in Europe: One-Off Measures and Creative Accounting.” *OECD Economics Department Working Papers* (417).
- Laeven, Luc and Fabián Valencia. 2012. “Systemic Banking Crises Database: An Update .” *IMF Working Paper* (WP/12/163).
- Milesi-Ferretti, Gian Maria and Kenji Moriyama. 2006. “Fiscal Adjustment in EU Countries: A Balance Sheet Approach.” *Journal of Banking and Finance* 30.
- Nordhaus, William D. 1975. “The Political Business Cycle.” *The Review of Economic Studies* 42(2):169–190.

- Pina, Alvaro M. and Nuno M. Venes. 2011. "The political Economy of EDP Fiscal Forecasts: An Empirical Assessment." *European Journal of Political Economy* 27(3):534–546.
- Reinhart, Carmen and Kenneth Rogoff. 2010. "This Time is Different Chartbook: Country Histories on Debt, Default, and Financial Crises." *NBER Working Paper* (15815). Data available at <http://www.carmenreinhart.com/data/>. Accessed February 2014.
- Savage, James D. 2005. *Making the EMU: e Politics of Budgetary Surveillance and the Enforcement of Maastricht*. Oxford: Oxford University Press.
- Seiferling, Mike. 2013. "Stock-Flow Adjustments, Government's Integrated Balance Sheet and Fiscal Transparency." *IMF Working Paper* (WP/13/63).
- Thibaut Duprey, Benjamin Klaus and Tuomas Peltonen. 2015. "Dating systemic financial stress episodes in the EU countries." *ECB Working Paper Series* (1873):1–45. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1873.en.PDF>.
- von Hagen, Juergen and Guntram B. Wolff. 2006. "What do deficits tell us about debt? Empirical evidence on creative accounting with fiscal rules in the EU." *Journal of Banking and Finance* 30.
- Wang, Rachel F, Timothy C Irwin and Lewis K Murara. 2015. "Trends in Fiscal Transparency: Evidence from a New Database of the Coverage of Fiscal Reporting; ." *IMF Working Paper* WP/15/188:1–37.

Online Appendix

Independent national debt rule monitors

Table A-1: Start and End Years (if any) of Independent National Debt Rule Monitors, from Bova et al. (2015)

Country	Start	End
Lithuania	2004	
Netherlands	2003	
Poland	2004	2012
Romania	2013	
Slovakia	2012	
United Kingdom	2010	

Crisis and the possibility of selection into unscheduled elections

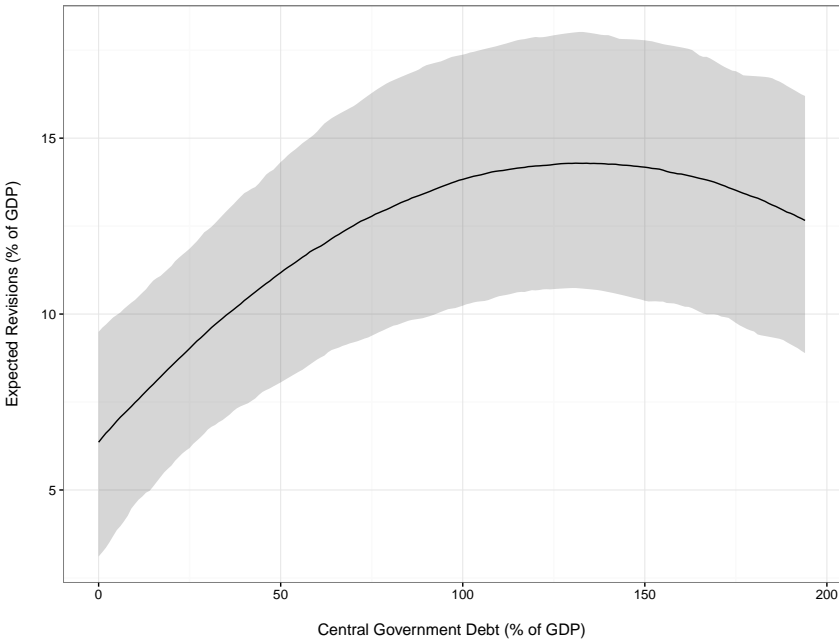
We examined whether or not governments select into unscheduled elections according to the prevailing level of financial market stress. Table A-2 shows the list of country-years with unscheduled elections in our sample. Table A-3 shows results from a logistic regression where we tried to predict having an unscheduled election in a year for our sample based on annual average stress level. We can see that there is a null result. We made a similar finding when running a similar model with lagged financial market stress, a rare logistic regression, and a multinomial logistic regression (not shown), with unscheduled and scheduled elections as categories and no election as the reference category.

Estimated non-linear relationship between debt and debt revisions

Omitting Greece

Greece has very large debt revisions in our sample. For each year from 2007 through 2011 Greece's debt statistics were cumulatively revised upward by over 10 percentage points. To examine if this one country was driving our election results, we reran our models omitting Greece. The results of this exercise are shown in Table A-4. We can see that the substantive findings from reported from models in the full sample in Table 1 are largely unchanged in models excluding Greece.

Figure A-1: Simulated Effect of Central Government Debt on Eurostat Debt Revisions Using a Quadratic Polynomial



Estimated from a model that include a quadratic polynomial, eurozone membership, financial market stress, and country fixed effects. The shaded area represents the central 95 percent interval of 1,000 simulations per integer value of the x-axis drawn from the multivariate normal distribution estimated from this model. The central line indicates the median of these simulations. See King, Tomz and Wittenberg (2000) and Gandrud (2016).

Table A-2: Country-years With Unscheduled Elections in Our Sample

Country	Unscheduled Election Year
Austria	2008
Belgium	2010
Denmark	2007
Germany	2005
Greece	2007
Greece	2009
Greece	2012
Ireland	2011
Italy	2008
Latvia	2011
Netherlands	2003
Netherlands	2012
Poland	2007
Portugal	2005
Portugal	2011
Slovakia	2012
Slovenia	2011
Spain	2011
United Kingdom	2005

Table A-3: Logistic Regression Estimation of Having an Unscheduled Election

<i>Dependent variable:</i>	
Unscheduled Election	
Financial Stress	0.985 (2.395)
Constant	-2.595 (1.647)
Country FE?	Yes
Observations	245
Log Likelihood	-47.124
Akaike Inf. Crit.	152.248
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

Table A-4: Linear Regression Estimation of Debt Revisions (Excluding Greece)

	Dependent variable: Cumulative Debt Revisions									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Revised Gen. Gov. Deficit	0.023* (0.010)	0.016* (0.008)	0.016 (0.011)	0.016 (0.011)	0.015 (0.011)	0.009 (0.010)	0.028** (0.009)	0.017 (0.011)	0.056*** (0.012)	0.029** (0.010)
Euro Member	1.825* (0.853)	-1.971 (0.998)	1.408 (0.911)	1.522 (0.911)	1.426 (0.920)	1.259 (0.834)	2.142* (0.830)	1.543 (0.904)	0.011 (0.871)	-1.450 (0.982)
EDP	0.158 (0.389)									-0.142 (0.355)
Election Timing			0.178 (0.108)	-0.429 (0.461)				-0.416 (0.456)		
Unscheduled Elect.					1.217* (0.591)	-7.741*** (1.996)				-5.342** (1.867)
Scheduled Elect.					-0.007 (0.368)	0.618 (1.332)				0.733 (1.245)
Financial Stress			0.016 (0.017)	-0.016 (0.029)	0.014 (0.017)	0.004 (0.017)		0.00002 (0.030)		-0.041 (0.022)
Fiscal Transparency							0.008 (0.010)	0.004 (0.010)		
GDP Growth							0.072 (0.046)	0.107* (0.050)		0.053 (0.043)
Contracts									3.369 (4.960)	
Debt * Euro		0.064*** (0.012)								0.075*** (0.016)
Elect. Timing * Fin. Stress				0.012 (0.009)				0.012 (0.009)		
Unscheduled Elect. * Fin. Stress						0.175*** (0.038)				0.110** (0.036)
Scheduled Elect. * Fin. Stress					-0.014 (0.028)					-0.014 (0.027)
Constant	8.294*** (1.687)	7.750*** (1.450)	8.192*** (1.638)	9.857*** (2.042)	8.609*** (1.641)	9.923*** (1.560)	7.185*** (1.778)	8.259*** (2.143)	4.614 (4.663)	8.003*** (1.584)
Country FE?	Yes 118	Yes 123	Yes 123	Yes 123	Yes 123	Yes 123	Yes 123	Yes 123	Yes 112	Yes 118
Observations	0.695	0.760	0.698	0.703	0.703	0.762	0.697	0.718	0.746	0.820
R ²	0.604	0.692	0.608	0.611	0.610	0.681	0.607	0.623	0.672	0.746
Adjusted R ²										

Note: * p<0.05; ** p<0.01; *** p<0.001

Deficit Revisions

In addition to debt revisions explored in the main text, we also explored deficit revisions in a similar manner. First we examine deficit revisions descriptively. Figure A-2 (similar to construction to Figure 1 in the main text) shows the cumulative Eurostat deficit revisions in our sample under different electoral conditions. The electoral pattern is somewhat less clear for deficit revisions than debt revisions discussed in the main paper though the effect is in the same theoretical direction as we found in the debt revisions. In the left-panel of Figure A-2 years far away from a scheduled election—i.e. three and four years from the election—deficits are generally either not revised or slightly revised upwards such that the government ran a slight surplus relative to the original data. Conversely, data for years closer to an election are revised somewhat downward. In other words, governments spent more relative to their income than they had originally reported. The right-panel of Figure A-2 indicates that both scheduled and unscheduled election years see larger median downward deficit revisions. There appears to be a small cumulative difference between these two types of elections with unscheduled elections having somewhat larger downward revisions by the seventh revision. We see a broadly similar story in the left-panel of Figure A-3 for countries in an EDP as with the debt data. By the end of the revision period, on average downward deficit revisions are higher for countries in an EDP. Interestingly, non-eurozone members had larger deficit revisions than eurozone members. This is the opposite direction of what we found in the debt revisions data.

We then ran similar models as those found in Table 1 with cumulative deficit revisions as the dependent variable. A difference is that we use deficits rather than debts on the right-hand side. Also, rather than interacting euro membership with debts, in these models we made the more relevant interaction: deficit levels interacted with euro membership. These results are shown in Table A-5. Having larger deficits is associated with larger deficit revisions, likely as governments use fiscal rule stretching to contain their reported deficits. We largely did not find evidence for the electoral effects or their interaction with financial market stress.

Figure A-2: Median **Deficit** Revisions for Data Released Under Various Electoral Conditions

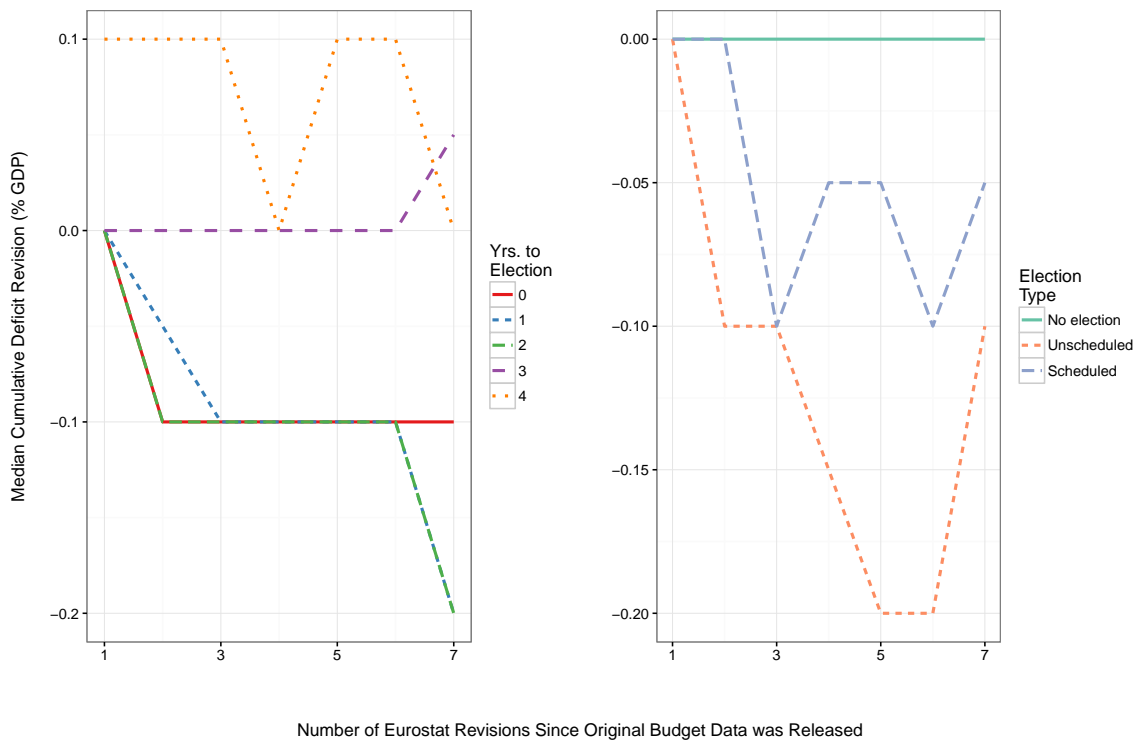


Figure A-3: Median **Deficit** Revisions for Data Released Under Various EDP and eurozone conditions

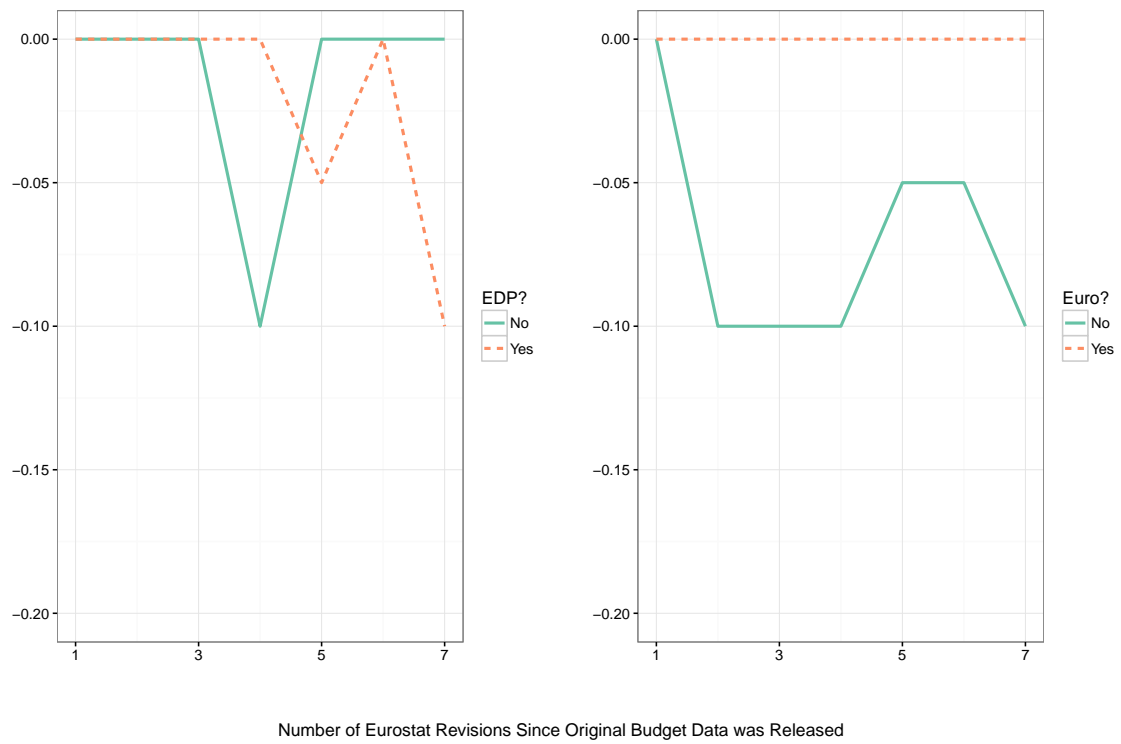


Table A-5: Linear Regression Estimation of Deficit Revisions (Full Sample)

	Dependent variable: Cumulative Deficit Revisions									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Revised Gen. Gov. Deficit	0.053*** (0.013)	0.042* (0.020)	0.048*** (0.013)	0.051*** (0.013)	0.048*** (0.013)	0.049*** (0.013)	0.049*** (0.013)	0.038*** (0.013)	0.033** (0.011)	0.098*** (0.030)
Euro Member	-0.190 (0.197)	-0.180 (0.193)	-0.183 (0.182)	-0.508 (0.369)	-0.180 (0.182)	-0.192 (0.181)	-0.205 (0.182)	-0.145 (0.188)	-0.329 (0.262)	-0.353 (0.212)
EDP	0.340*** (0.104)									0.346*** (0.112)
Financial Stress			0.008 (0.004)	0.005 (0.006)	0.007 (0.008)	0.009* (0.004)	0.009 (0.005)			0.005 (0.006)
Election Timing			-0.014 (0.027)		-0.041 (0.123)					
Unscheduled Elect.						-0.163 (0.153)	0.663 (0.640)			0.518 (0.661)
Scheduled Elect.						0.115 (0.090)	-0.197 (0.369)			-0.349 (0.427)
Fiscal Transparency								-0.001 (0.003)		
GDP Growth								-0.008 (0.010)		-0.004 (0.012)
Contracts									-0.669 (1.999)	
Debt * Euro		-0.013 (0.024)								-0.042 (0.029)
Euro * Fin. Stress				0.007 (0.007)						
Elect. Timing * Fin. Stress					0.001 (0.003)					
Unscheduled Elect. * Fin. Stress							-0.017 (0.013)			-0.016 (0.013)
Scheduled Elect. * Fin. Stress							0.007 (0.008)			0.011 (0.009)
Constant	-0.322 (0.267)	-0.303 (0.259)	-0.654* (0.314)	-0.523 (0.347)	-0.585 (0.441)	-0.696* (0.310)	-0.704* (0.324)	-0.265 (0.273)	0.464 (1.839)	-0.428 (0.381)
Country FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	413	460	460	460	460	460	460	460	423	413
R ²	0.286	0.267	0.274	0.275	0.274	0.279	0.283	0.268	0.265	0.306
Adjusted R ²	0.232	0.216	0.221	0.223	0.220	0.225	0.226	0.215	0.215	0.240

*p<0.05; **p<0.01; ***p<0.001