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Fiscal Transparency, Fiscal Performance and Credit Ratings

Elif Arbatli and Julio Escolano

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Fiscal Transparency, Fiscal Performance and Credit Ratings[1]

Prepared by Elif Arbatli and Julio Escolano

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Abstract

This paper investigates the effect of fiscal transparency on market assessments of sovereign risk, as measured by credit ratings. It measures this effect through a direct channel (uncertainty reduction) and an indirect channel (better fiscal policies and outcomes), and it differentiates between advanced and developing economies. Fiscal transparency is measured by an index based on the IMF's Reports on the Observance of Standards and Codes (ROSCs). We find that fiscal transparency has a positive and significant effect on ratings, but it works through different channels in advanced and developing economies. In advanced economies the indirect effect of transparency through better fiscal outcomes is more significant whereas for developing economies the direct uncertainty-reducing effect is more relevant. Our results suggest that a one standard deviation improvement in fiscal transparency index is associated with a significant increase in credit ratings: by 0.7 and 1 notches in advanced and developing economies respectively.

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I. INTRODUCTION

This paper explores whether fiscal transparency has an effect on the assessment of sovereign risk by market participants as reflected in sovereign credit ratings. It considers two different channels through which transparency may affect ratings. The first channel is indirect and it would work through the effect of transparency on fiscal outcomes. A more transparent fiscal system could be expected to provide policy makers with incentives to adopt better policies: it reduces the scope for special interest groups and rent-seekers to influence policy and provides public recognition for policies that credibly improve public finances. Better fiscal and economic outcomes, in turn, would reduce the risk of sovereign default reflected in credit ratings. The second channel is the direct effect that transparency has in reducing uncertainty associated with a given set of fiscal and financial policies. One can think of this channel as reducing economic agents' uncertainty around the expected fiscal outcomes, even with unchanged policies. More clarity regarding future fiscal policies and risks would help lower the risk premium.

We assess the significance of these two separate channels by estimating a system of equations that relate fiscal transparency to fiscal indicators such as the ratio of debt and primary balance to GDP as well as to credit ratings directly. Credit ratings are thus modeled as a function of fiscal indicators, fiscal transparency and other control variables. In turn, fiscal outcomes are modeled as a function of transparency and control variables. This allows the separate estimation of both the direct and the indirect effects of fiscal transparency on credit ratings.

We use two separate measures of fiscal transparency: one measure based on IMF's reports on the Observance of Standards and Codes (ROSCs)—in particular the fiscal transparency ROSCs—and the other measure based on the 2010 fiscal transparency index of the International Budget Partnership. These two fiscal transparency measures are closely related to Kopits and Craig (1998) definition of fiscal transparency; which essentially involves "openness toward the public at large about government structure and functions, fiscal policy intentions, public sector accounts, and projections." It also entails "ready access to reliable, comprehensive, timely, understandable, and internationally comparable information on government activities – whether undertaken inside or outside the government sector – so that the electorate and financial markets can accurately assess government's financial position and the true costs and benefits of government activities, including their present and future economic and social implications." (Kopits and Craig (1998), p.1)

We find that fiscal transparency has a positive and significant effect on ratings. However, its effect works through different channels in advanced and developing economies. In advanced economies the indirect effect of transparency through better fiscal outcomes is more significant whereas for developing economies the direct credibility effect seems to be more relevant. For advanced economies, a one standard deviation increase in transparency is

associated with an increase in average primary balance of 2.4 percentage of GDP and a lower debt to GDP ratio of about 17 percent of GDP.[2] These results are consistent with the previous literature on the effects of fiscal institutions on economic outcomes such as Alesina et. al (1999)[3] and Alt and Lessen (2006).[4] Alt and Lessen (2006) present evidence that a higher degree of fiscal transparency[5] is associated with lower public debt for a sample of 19 OECD economies and that this relationship is robust to using instrumental variables to account for the possible endogeneity of fiscal institutions. We draw a similar conclusion in this paper, using political competition as an instrument for fiscal transparency. For advanced economies there is some evidence that the relationship between transparency and debt is robust to possible endogeneity and reverse causality. The associated indirect effect of a one standard deviation improvement in fiscal transparency on credit ratings is an increase of 0.45 notches. The direct effect of a similar increase in transparency is about 0.24 notches for advanced economies but this effect is not statistically significant.

For developing economies the indirect effect of transparency is estimated to be much smaller (about 0.06-0.10 notches depending on the fiscal transparency index and the sample) than in advanced economies and it is not statistically significant. This is due to a weak link between transparency and fiscal outcomes as well as between fiscal fundamentals and ratings. In contrast, the direct effect is estimated to be larger than in advanced economies and statistically significant (about 0.50-0.90 notch increase per one standard deviation point improvement in fiscal transparency). A weaker relationship between transparency and fiscal performance in developing economies could be due to several factors. First of all, there can be other factors, not included in our controls, which play a more important role in affecting fiscal performance in developing economies. A second reason could be the existence of non-linearities in the effect of fiscal transparency on ratings. For instance, it is possible that fiscal transparency only affects fiscal performance once a certain level of institutional and

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[2] One standard deviation in the fiscal transparency index corresponds to 15 points out of 100 in both the ROSC and the OBI indices. Difference in the ROSC index between Spain and Estonia, Norway and Italy, Mozambique and Uganda or Costa Rica and Paraguay is about 15 points.

[3] Alesina et. al. (1999) is based on questionnaires answered by budget directors in various Latin American countries and transparency is measured by whether the control of the central government over its budget can be undermined by the actions of other public agencies. They find that ex-ante constraints on fiscal deficits, top-bottom decision making and transparent procedures are associated with better fiscal discipline.

[4] Other studies that also find evidence for a relationship between transparency and fiscal outcomes include von Hagen (1992) and von Hagen and Harden (1994) for EU countries, and Stein et. al. (1999) for Latin American countries. Dabla-Norris et al. (2010) use the IMF's ROSCs for fiscal transparency as a dimension of the quality of budget institutions index that they construct for a large sample of low-income countries. They find that strong budget institutions improve fiscal performance as measured by fiscal balances and public external debt. They also find that countries with better budget institutions tend to follow more counter-cyclical fiscal policies.

[5] The source for the construction of their index is a questionnaire answered by budget directors of OECD member countries.

economic development is achieved. The large and significant direct effect of transparency on ratings is consistent with previous studies such as Hameed (2005) and Gracia et. al. (2011), both of which use the same transparency index based on IMF's fiscal ROSCs.[6] These studies find that controlling for other factors; economies that disclose quantitative information on fiscal risks have credit ratings one notch higher than economies providing even partial information on these issues.[7] The significant direct effect of transparency on ratings could be due to relatively higher risk premia and uncertainty regarding current and future fiscal and economic policies in developing economies. Credible and technically solvent policy and market analyses, reports, data, and general information relevant to investors are typically less abundant for developing economies than for advanced economies. This paucity of information may result in a high marginal value of fiscal transparency due to its impact in reducing uncertainty—an impact that may decline as other sources of information become available. Although this is a reasonable explanation, there are important econometric caveats. The estimated direct effect of fiscal transparency could also be capturing the effects of omitted variables that are correlated with fiscal transparency. One solution to this econometric problem would be to use instruments for transparency—as we do in the advanced economy case when looking at the effect of transparency on debt and primary balance. Some plausible instruments which have been suggested in the literature such as political and electoral competition, or whether the country has common or civil law were explored.[8] However, we could not rule out the existence of weak instrument problems for the developing country sample.

There are other related papers that use different measures of transparency or consider other market-based measures of credibility. Glennerster and Shin (2008) consider the transparency-improving measures adopted by the IMF during the late 1990s to study the benefits of transparency for a set of 23 emerging market economies. They find that the countries that chose to publish Article IV reports and ROSCs and participate in the Special Data Dissemination Standards (SDDS) had their credit spreads decline by 11 percent on average. They also note that the marginal benefit of transparency was lower for countries that are more transparent and that the benefits of transparency were more pronounced for economies with smaller and less liquid debt markets. Since the timing of the publication of Article IV reports was exogenous, the authors were able to use the decision by country authorities to publish Article IV reports or ROSCs as an instrument for transparency and study its impact

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[6] Hameed (2005) describes in detail the construction of the fiscal transparency index.

[7] Gracia et. al. (2011) also suggests that certain aspects of fiscal transparency such as the disclosure of contingent liabilities, quasi-fiscal and off-budget activities are important in affecting ratings. See Everaert et. al. (2009) and Cebotari et. al. (2009) for a discussion of international practices in fiscal risk disclosure.

[8] Finding robust instruments for transparency is challenging and, unfortunately, relatively little is known about what drives cross-country differences in fiscal transparency. This is not only important in interpreting the results of this paper but also in drawing policy recommendations.

on spreads. Gelos and Wei (2005) consider the impact of government transparency on portfolio holdings of emerging market funds around the world. They find that funds systematically invest less in less transparent economies and have a higher propensity to flee less transparent economies during crisis periods.

The organization of this paper is as follows: Section II describes in more detail the construction and coverage of the two measures of fiscal transparency that are used in this paper. Section III outlines the empirical strategy. Section IV presents results and Section V concludes.

II. MEASURES OF FISCAL TRANSPARENCY

Most measures of fiscal transparency used in previous studies are based on detailed reports of international institutions such as the IMF fiscal transparency ROSCs,[9] independent rankings prepared by think tanks such as the International Budget Partnership (IBP) which publishes the Open Budget Index (OBI), or ad-hoc surveys (for OECD economies in Alt and Lessen (2006), European Community members in Von Hagen (1992) and Latin American economies in Alesina et. al. (1999)). Yet, other studies have used event-based measures such as the publication of IMF Article IV reports or the frequency and coverage of published data. These measures typically aim at capturing all or some of the dimensions of fiscal transparency identified in Kopits and Craig (1998): 1) provision of reliable information on the government's policy intentions and forecasts, 2) provision of timely and reliable data on the government operations, such as the publication of comprehensive budget documents that contain information on the general government and the quasi-fiscal activities, and 3) institutional frameworks that encompass "conflict-of-interest rules for elected and appointed officials, freedom-of-information requirements, a transparent regulatory framework, open public procurement and employment practices, a code of conduct for tax officials, and published performance audits." (Kopits and Craig (1998), p.1)

Measuring or quantifying fiscal transparency is certainly a challenging task, as it requires translating and reducing multi-dimensional qualitative information on institutions to significantly fewer dimensions in a quantitative manner. In addition, there are various practical ways in which policymakers can use budgetary accounting strategies to conceal information and circumvent formal transparency requirements.[10] As with other aspects of

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[9] Various papers have used IMF's fiscal ROSCs to discuss the state of fiscal institutions and draw policy recommendations. See Allan and Perry (2003) for EU accession countries and Parry (2007) for Latin American countries. Petrie (2003) summarizes the views and the awareness of financial market participants and civil society groups regarding IMF's fiscal ROSCs. It indicates that rating agencies do indeed pay attention to these measures and proposes ways to improve the coverage of ROSCs. Finally, Weber (2011) finds that the transparency index based on public ROSCs is related to the average stock flow residuals for public debt.

[10] See Alesina and Perotti (1996) for more details on budgetary tricks that are typically used. They note, for example, that the presence of deficit limits might create incentives to reduce budget transparency.

fiscal disclosure, it is not always possible to capture the use of such tricks in typical numerical indices of fiscal transparency.[11] Despite these limitations, studying the effects of fiscal transparency on fiscal performance or market perceptions of risk in a cross-country setting inevitably requires the use of standardized measures of fiscal transparency

We use IMF's ROSCs and the fiscal transparency index of the International Budget Partnership (IBP)[12]—the Open Budget Index (OBI)—because of their wide country coverage and public availability. In addition, the fact that they originate from two sources that are independent from each other makes them suitable for comparison and as a double check. In this section we first provide a brief overview of these two main indices and then discuss their properties and how they relate to other proxies for fiscal transparency.

Fiscal Transparency Reports on the Observance of Standards and Codes (ROSC):

During the late 90s, the IMF undertook different initiatives to improve the reporting and transparency of data and macroeconomic policies. One such measure was the introduction of ROSCs. ROSCs covered twelve different areas where certain internationally recognized standards and codes could be applied, such as banking supervision, data dissemination, monetary and financial policy transparency and fiscal transparency. The Code of Good Practices on Fiscal Transparency was approved by the IMF Board in 1998.[13] The Code is divided into four main sections: clarity of roles and responsibilities; public availability of information; open budget preparation, execution, and reporting; and assurances of integrity. During 1998-2010, 93 economies had their fiscal transparency ROSCs completed and published.[14]

Hameed (2005) constructs a numerical index using the fiscal ROSCs by translating information that is mainly textual into numerical values. This is the index that we use in this paper. It takes values between 0 and 100 and has three main components:

1) Public Information: This component involves the availability of forward estimates for the next two years; whether tax expenditures, contingent liabilities, quasi-

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[11] There are various theoretical explanations for why politicians may choose to be less transparent. Buchanan and Wagner (1977) propose a model of "fiscal illusion" where voters underestimate the costs of current and future public programs if the budgets are not transparent; whereas in Rogoff (1990) strategic ambiguity creates opportunities for politicians to pursue their own goals.

[12] Information on IMF's ROSCs can be found in http://www.imf.org/external/NP/rosc/rosc.aspx/. Information on the IBP index can be found in http://internationalbudget.org/what-we-do/open-budget-survey/.

[13] More details on the Code can be found in the IMF's Manual on Fiscal Transparency (IMF (2007)).

[14] Participation and publication of fiscal transparency ROSCs are voluntary. This study only uses information on the publicly available ROSCs.

fiscal activity (in the financial and non-financial sectors) and debt are reported comprehensively in budget documents and whether fiscal data is released in a timely manner with sufficient detail and quality.

2) Budget process (preparation, execution and reporting): This component has three sub-components concentrating on budget preparation, budget execution and budget reporting. Budget preparation involves whether medium-term quantitative macroeconomic framework guides fiscal policies, whether new policy costs are reported, whether statement on medium-term policy objectives and fiscal and macro risks are included in budget documents. Budget execution covers whether budget classification is uniform and consistent with the standards of the 2001 Government Financial Statistics Manual (IMF (2001)), whether there is a comprehensive and integrated accounting system that allows for a reliable assessment for payment arrears and whether the coverage of budget documents is sufficiently wide including extra-budgetary transactions. Budget reporting includes the internal audit of budget execution, whether a mid-year report on budget developments is published and presented to the legislature and finally whether final accounts are presented in a timely manner with a description of compliance with the budget, and explanations for deviations.

3) Assurance of integrity: This component involves the independence and soundness of external audit, whether there is independent assessment of macroeconomic and fiscal forecasts and whether budget projections are based on realistic assumptions, reflecting recent revenue and expenditure trends.

The index calculated by Hameed (2005) (the ROSC index) assigns a rating of 0, 33, 66 or 100 to the different sub-components, which are averaged to get ratings for the three main components described above. Our empirical analysis we use the average of the first two components as the main ROSC index. We found that the assurance of integrity component of the index has a smaller and less significant effect on ratings and fiscal performance. This component captures the integrity and independence of budget projections and reports and hence reflects the internal checks and balances of the budgetary institutions. The other two components, on the other hand, capture the availability of information and the transparency of the budget process. It is conceivable that this component affects fiscal performance and ratings in a different way than the other transparency indicators.[15]

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[15] Results using an average of the three components are similar but have a slightly lower econometric significance.

The Open Budget Index (OBI) of the International Budget Partnership (IBP):

The IBP conducts bi-annual surveys (the OBI) which cover the availability of key budget documents that relate to budget formulation, budget execution and budget audit processes, the legislative strength and the strength of the supreme audit institution. There are currently three vintages of these surveys: 2006, 2008, and 2010. The country coverage has increased over time with the different vintages. The main OBI survey covers the availability, clarity and quality of different budget documents. It also has two other indices that capture the legislative strength and the strength of the supreme audit institution (SAI) respectively. All indices take values between 0 and 100.

The main OBI is based on 92 questions which cover the quality and comprehensiveness of 8 key budget documents: pre-budget statement (3 questions), executive's budget proposal (6 questions), executive's budget proposal (58 questions), enacted budget (1 question), citizen's budget (1 question), in-year reports (8 questions), mid-year review (4 questions), year-end report (10 questions) and audit report (7 questions). The other indices on legislative strength and the strength of the audit institution are based on 12 and 10 questions respectively. In our empirical analysis we use the main OBI, covering the quality and comprehensiveness of budget documents.

Properties of Fiscal Transparency Indices:

Table 1 shows the main properties of the fiscal ROSC and OBI indices, distinguishing between advanced and developing economies. The average levels of transparency in the ROSC and OBI indices are comparable for both country groups. As expected, average transparency for advanced economies is significantly higher than the average for other developing economies.[16] Fiscal transparency is highly correlated with income per capita (Figure 1). The standard deviations of transparency indices are comparable across advanced and developing economies; which suggest that there is significant variation in transparency among both the advanced and the developing economies. The coverage of the fiscal ROSC index for advanced economies is significantly higher.

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[16] Fiscal transparency is highly correlated with income per capita.

Table 1. Properties of Fiscal Transparency Indices

Index	Mean		Standard Deviation		Min		Max		Number of Countries	
	Advanced Economies	Developing Economies	Advanced Economies	Developing Economies	Advanced Economies	Developing Economies	Advanced Economies	Developing Economies	Advanced Economies	Developing Economies
ROSC Public Information	73.2	39.8	16.2	15.6	37.9	9.4	95.1	80.6	22	56
ROSC Budget Process	79.0	46.6	16.2	15.5	46.5	7.3	100.0	89.8	22	56
OBI Index Main	74.2	43.1	12.3	20.7	57.6	0.0	90.1	92.3	12	59

Source: ROSC Reports on Fiscal Transparency, IMF and Open Budget Index, 2010.

Figure 1. ROSC Index and GDP Per Capita
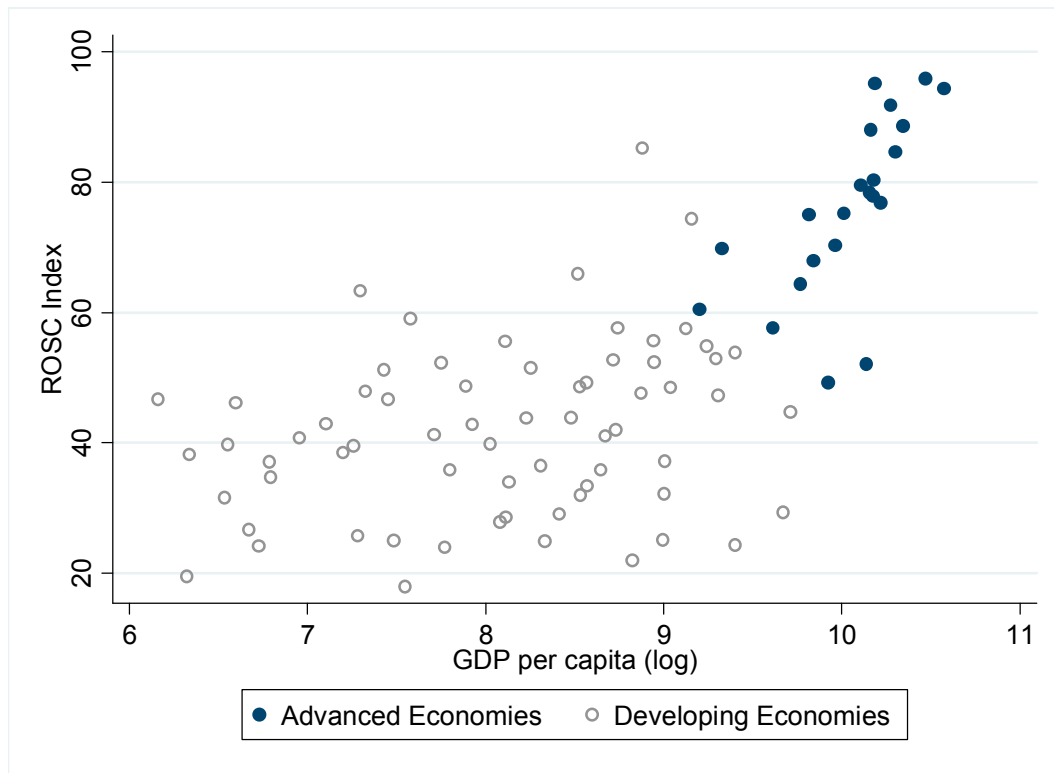
Source: ROSC Reports on Fiscal Transparency, IMF.

Table 2. Correlation Between Different Transparency Indices

ROSC Sub-Index	OBI Index Main
ROSC Public Information	0.51
ROSC Budget Process	0.71

Source: ROSC Reports on Fiscal Transparency, IMF and Open Budget Index, 2010.

The correlation between ROSC and OBI indices is high which suggests that they are broadly consistent with each other and capture a similar definition of fiscal transparency (Table 2 and Figure 2). We also consider how our fiscal transparency indices relate to other proxies for fiscal transparency such as stock-flow adjustments and perceptions of corruption in a country.

Figure 2. ROSC and OBI Indices
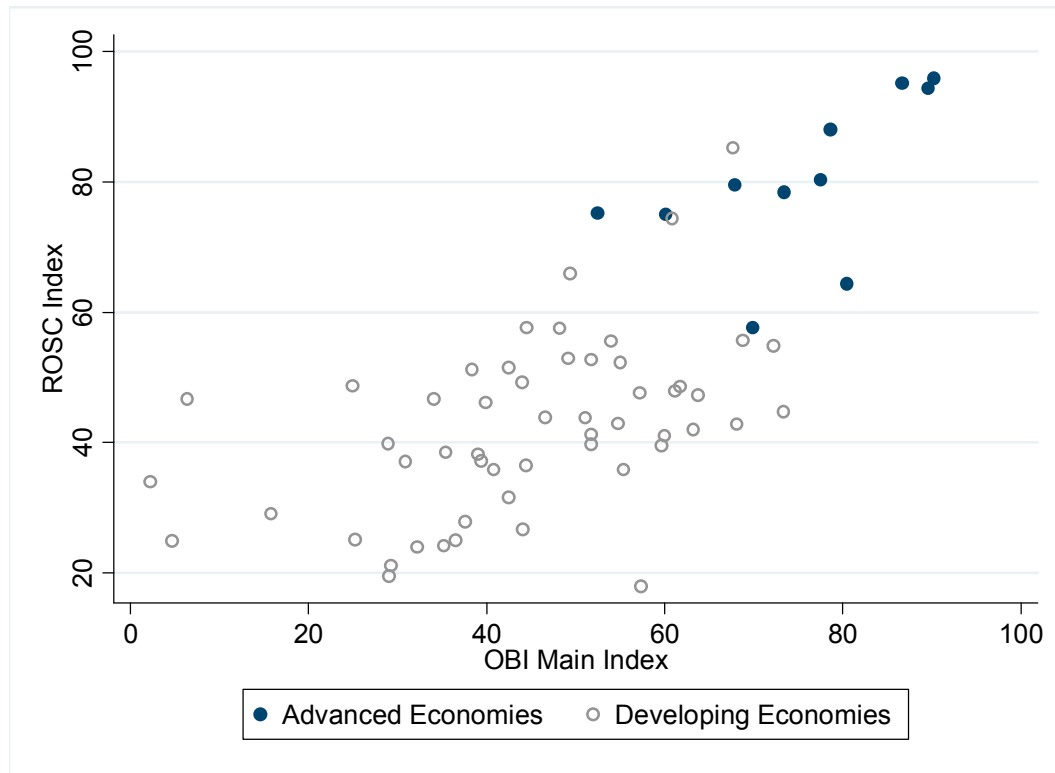
Source: ROSC Reports on Fiscal Transparency, IMF and Open Budget Index. 2010.

Table 3. Fiscal Transparency and Other Proxies for Transparency

	Average Stock Flow Adjustment[1]	Corruption Perceptions[2]
ROSC Public Information	-0.40	0.62
ROSC Budget Process	-0.49	0.65
OBI Index Main	-0.28	0.64

Source: ROSC Reports on Fiscal Transparency, IMF and Open Budget Index, 2010.
1. The data for average stock-flow adjustment is from Weber (2012). The average stock-flow adjustment captures the average difference between fiscal balances and the change in debt which is not explained by factos such as exchange rate movements and financial transactions.
2. The corruption perceptions index is the 2010 index calculated by Transparency International.

The average stock-flow adjustments[17] can be interpreted as a proxy for lack of transparency since this measure would be higher for countries that resort to off-budget activities and other

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[17] The stock-flow adjustment refers to the difference between the reported fiscal balance and the reported change in net government debt. There are legitimate reasons for the stock-flow adjustment to differ from zero, such as proceeds from privatization or financial divestments or acquisitions. However, it is also found to be a good proxy for non-disclosure of budgetary operations or other non-transparent budgetary practices (Weber (2012)).

accounting tricks to manipulate fiscal balances. As Table 3 shows, there is a negative correlation between these two variables, which is consistent with our priors: higher stock-flow adjustments may be indicative of less transparent budgetary institutions.

The extent of corruption in a country is also expected to be closely related to general transparency of fiscal operations. We consider the relationship between the corruption perceptions index computed by Transparency International in 2010 and the different fiscal transparency indices. We find that economies that do better in the corruption perceptions index also tend to score higher on fiscal transparency, which is consistent with our priors.

III. EMPIRICAL APPROACH AND DATA

In our empirical analysis we use cross-country regressions to study the effect of fiscal transparency on market performance as measured by sovereign credit ratings, controlling for other potential determinants of market performance. Unfortunately, we do not have fiscal transparency measures that vary over time and cover a sufficiently long time period. Therefore, it is not possible to use a panel estimation method. Our baseline regression model relates average credit ratings in 2010 to fiscal transparency, average primary balance over the previous 10 year period, the 2010 debt to GDP ratio and other control variables:

$$R_i(2010) = \alpha_0 + \alpha_1 fistrans_i + \alpha_2 debt(2010)_i + \alpha_3 fisbal_i + \alpha_4 X_i + \varepsilon_{1,i}$$

$$fisbal_i = \chi_0 + \chi_1 debt_i(2000) + \chi_2 growth_i + \chi_3 frac_i + \chi_4 fistrans_i + \chi_5 Y_i + \varepsilon_{2,i}$$

$$debt_i(2010) = \eta_0 + \eta_1 debt_i(2000) + \eta_2 growth_i + \eta_3 frac_i + \eta_4 fistrans_i + \eta_5 Z_i + \varepsilon_{3,i}$$

where R_i denotes the credit rating for country i, $fistrans_i$ denotes the relevant fiscal transparency measure for country i, and $debt_i$ and $fisbal_i$ stand for the gross general government debt and primary fiscal balance ratios to GDP respectively. $growth_i$ and $frac_i$ denote the average real growth rate and average political fractionalization[18] and finally X_i, Y_i, and Z_i stand for the set of other control variables that we include in the regressions such as whether the country is a fuel exporter.

We define the direct effect of a one unit increase in transparency as α_1 and the indirect effect is defined as $\alpha_2 \eta_4 + \alpha_3 \chi_4$ reflecting the effects of transparency through its impact on levels of debt and fiscal balance.[19] The number of economies that have been assigned a sovereign

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[18] This variable is the 2000-2010 average of the fractionalization index in the World Bank's Political Institutions Database.

credit rating has increased substantially since the 1990s and sovereign credit ratings are one of the key determinants of bond yield spreads on international bonds.[20] We convert ratings by the three main rating agencies (S&P, Fitch and Moody's) to numerical indices and use their average as our main sovereign credit rating variable.[21]

An extensive literature looking at the determinants of sovereign credit ratings and yield spreads offers useful guidance regarding the set of macroeconomic variables that needs to be included in X_i.[22] The control variables that we consider include GDP per capita (PPP based) in 2000, average growth rate, default history and average inflation.[23]

IV. RESULTS

Tables 4- 6 show the estimation results using different country samples. We first consider the advanced country sample (Table 4) and then the developing country sample (Table 5) and finally the full sample (Table 6). In all the results that we present, we use a seemingly unrelated regression estimation (SURE) method.[24] For all samples, we start with a specification that only considers the indirect effect of fiscal transparency on credit ratings. We then run a second set of regressions that include the direct effect on ratings to analyze how the inclusion of fiscal transparency affects the estimates of other variables such as the fiscal performance indicators. We then consider instruments for fiscal transparency in a separate sub-section to investigate the robustness of our baseline results.

Starting with the advanced economy sample in Table 4,[25] specification [1] shows that there is a significant effect of transparency on fiscal performance. A one standard deviation increase in transparency (about 15 points) improves primary balance to GDP ratio by 2 percent of GDP and the debt to GDP ratio by about 16 percentage points. The improvement in credit

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[19] The delta method is used to estimate the standard errors for the indirect effect. The significance levels of the indirect effects are reported in Tables 4-8.

[20] In addition to the sovereign credit ratings, we also experimented with using the EMBI yield spreads as another measure of sovereign creditworthiness. However, the number of countries that have both EMBI yield spreads and a measure of fiscal transparency is very limited and our results using spreads were insignificant and not robust.

[21] See Appendix for more details.

[22] See Bellas et. al (2010).

[23] See the Appendix for a more detailed description of variable definitions and data sources.

[24] We also repeated our estimates using single-equation OLS and found that the estimates are comparable, although with the SURE estimations the statistical significance of fiscal transparency improves slightly.

[25] We only report results using the ROSC index since the OBI index only covers a few advanced economies.

ratings associated with a one standard deviation increase in transparency is about 0.45 notches.[26] When we include fiscal transparency in the equation for credit ratings (specification [2]), the estimated effect is not found to be statistically significant and is smaller than the indirect effect. Furthermore, the coefficients of other variables are not affected by the inclusion of the fiscal transparency variable. This leads us to conclude that for advanced economies, fiscal transparency affects credit ratings mainly through its indirect effect on fiscal performance, whereas the direct credibility effect seems to be not as significant.

Tables 5-6 show the same estimates for developing economies using the ROSC and the OBI indices respectively. For all specifications and for both indices, the effects of transparency on primary balance and debt are small and not statistically significant. It could be the case that the effect of fiscal transparency on fiscal performance depends on other variables or only becomes significant when the economic and institutional development in a country is above a certain threshold. When we include fiscal transparency as an additional explanatory variable for credit ratings (specification [2]), we find that fiscal transparency has a significant and large direct effect on ratings under both the ROSC and the OBI indices. A one standard deviation increase in fiscal transparency is associated with an increase in ratings of about 0.5-0.9 notches depending on the transparency index. The large direct effect of transparency for developing economies could indicate that the risk premium associated with uncertainty about past and future fiscal policies may indeed be more important than headline fiscal indicators. Another possibility is that the measured effect of transparency also includes the effects of omitted variables in our regression model. Although we include various control variables, it is unfortunately not possible to rule out the existence of omitted variables. We investigate whether an instrumental variable approach can deliver a more conclusive assessment on the size and significance of the direct effect of fiscal transparency on ratings in the next section.

Finally, Tables 7-8 show the same estimates using the full sample for comparison with previous studies using the ROSC index. Our estimates using the full sample are mainly driven by developing economies. The estimated effect of transparency on fiscal variables is small and the direct effect on ratings is significant and large. We include in our regression model a dummy for advanced economies to capture fixed effects that are not captured by other variables. Our estimates using the ROSC index are similar to Hameed (2005) but our estimate of the direct effect is smaller, which is primarily due to the inclusion of the advanced country dummy as the inclusion of this dummy reduces the size of the estimated direct effect of transparency.[27]

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[26] See the last rows in the table which computes the estimated effect of transparency on ratings coming from the direct and indirect channels.

[27] If we do not include the advanced country dummy, the estimated direct effect of transparency increases to levels that are comparable to Hameed (2005).

Robustness and Instrumental Variables

Although using as many control variables as possible could go a long way in isolating the impact of transparency on ratings, it may still be subject to omitted variable bias. Furthermore, it can be argued that fiscal transparency is endogenous with respect to fiscal performance. Countries that have better fiscal policies may also have higher incentives to be more transparent and hence the interpreted causal relationship between transparency and fiscal performance may be misleading. An alternative empirical approach is using instruments for fiscal transparency. Although fiscal transparency and institutions in general are endogenous with respect to many macroeconomic and policy-related variables that affect market perceptions of risk, there have been some attempts at finding instruments for transparency. For instance, Glennerster and Shin (2008) use the timing of the publication of Article IV reports and ROSCs as instruments for transparency since the timing of the publication of these reports is exogenous to the macroeconomic developments in the country and the decision to publish the reports can be used as a measure of transparency. Alt and Lassen (2006), on the other hand, propose political competition, presidential system and the legal tradition as instruments for fiscal transparency.

In this paper we explore using political and electoral competition as instruments for fiscal transparency.[28] Our political competition variable captures the frequency of political turnover as in Alt and Lessen (2006). Countries that have a higher political turnover are expected to have higher fiscal transparency since political parties in power would have higher incentives to adopt transparency-enhancing institutions if they know that there is a high probability of being in opposition in the future.

Electoral competition is also expected to be related to transparency since countries that have higher electoral competition and that are more democratic, would have more checks and balances in their political system and more incentives for transparency-improving measures. Figure 3 and Figure 4 show the correlation between fiscal transparency, based on the ROSC index, and political competition for advanced and developing economies. Although there is a positive relationship for the advanced economies, there does not seem to be a strong relationship for the developing economies.

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[28] We also considered a dummy variable for whether the legal origin is common or civil law. As argued by Alt and Lessen (1996), the existence of common law tradition can be related to higher limits on the role of the state and could be associated with the promotion of higher openness and transparency. However, in our sample correlation of legal origin with fiscal transparency was very low and hence we do not report any results with the common law dummy in the instrument set.

Figure 3. ROSC Index and Political Competition in Advanced Economies
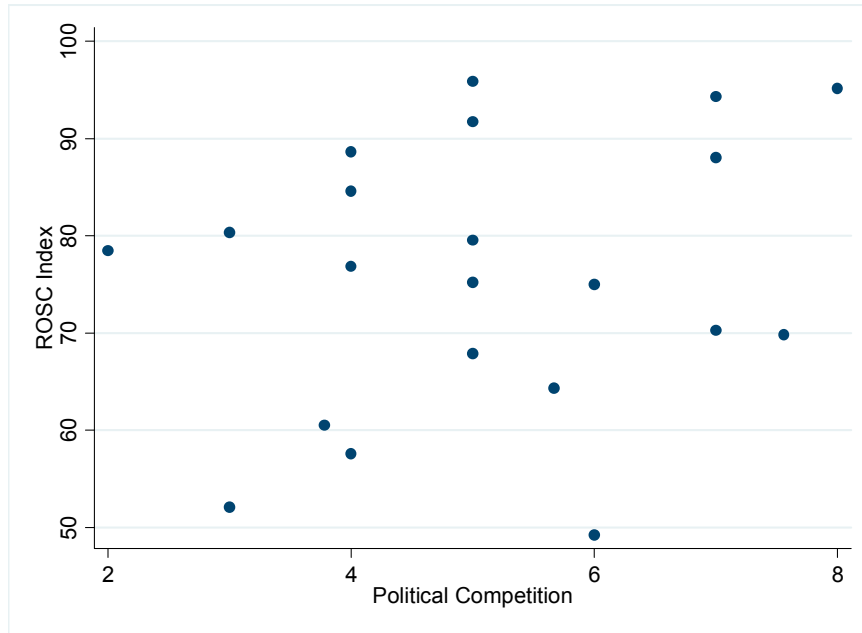
Source: ROSC Reports on Fiscal Transparency, IMF, and authors' calculation using Database of Political Institutions, World Bank.

Figure 4. ROSC Index and Political Competition in Developing Economies
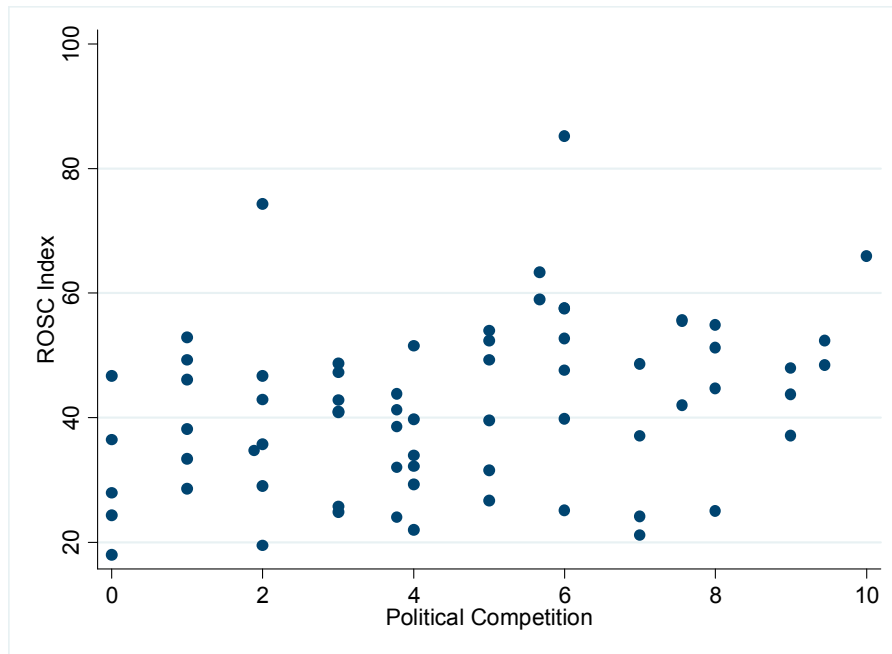
Source: ROSC Reports on Fiscal Transparency, IMF, and authors' calculation using Database of Political Institutions, World Bank.

Table 9 shows the estimated effect of (instrumented) fiscal transparency on average primary balance and debt to GDP ratio in 2010 for advanced economies.[29] The estimated effect of fiscal transparency on the average primary balance for advanced economies is similar to the previous SURE results; however, the coefficient is no longer significant. The effect of fiscal transparency on debt to GDP ratio in 2010 is significant at almost 5 percent level and its size is similar to our previous estimates. This seems to suggest that the effect of fiscal transparency on fiscal discipline is somewhat robust to reverse causality and omitted variable bias. However, it is important to note that ideally the rejection of weak instrument problems as measured by the Cragg-Donald statistic needs to be stronger to conclude definitively that the relationship is robust to omitted variable and reverse causality problems.[30] Table 10 reports estimates of the direct effect of transparency on ratings for developing economies using electoral and political competition as instruments for transparency. The estimate of the direct effect of transparency is positive but the Cragg-Donald F-statistic and the Shea's partial R-squared are quite low, suggesting that the correlation between our instruments and transparency is not sufficiently high (Figure 4).

V. CONCLUSIONS

Enhancing fiscal transparency is associated with better credit ratings for both advanced and developing economies. Fiscal transparency appears to have both a direct credibility effect on ratings and an indirect effect through its role in encouraging better fiscal policies. However, the relative importance of these two channels seems to be different for advanced and developing economies. Fiscal transparency affects ratings in advanced economies mainly through its effect on fiscal variables, whereas for developing economies transparency has a stronger direct credibility effect.

Previous studies have either concentrated on the relationship between transparency and fiscal outcomes or on estimating the direct effect of transparency on ratings. In this paper, we consider these two channels together in a large cross-country setting. In addition we consider two different measures of fiscal transparency for comparison and to assess the robustness of our results to alternative country samples and data sources.

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[29] The Cragg-Donald statistic for the full sample and for the OBI index suggested a serious weak instrument problem and hence those results are not reported here.

[30] The Cragg-Donald F-statistic has a sufficiently low p-value, however, as Staiger and Stock (1997) has shown, weak instrument problem can arise even if the first-stage tests are significant at conventional levels. Ideally, the F statistic should be higher than 10.

Empirical estimates of the effects of fiscal transparency are subject to various caveats including measurement issues and endogeneity concerns. Lack of time series data on transparency and the slowly changing nature of institutions in general also pose challenges for the econometric analysis. Despite these limitations, our results suggest an important relationship between fiscal performance, credit ratings and transparency. Future empirical work on fiscal transparency could benefit from understanding what determines fiscal transparency. Research along this line can not only generate alternative measures of transparency but also good instruments. It would also inform the policy debate on transparency and explore which reforms work better than others.

Table 4. Fiscal Transparency, Primary Balance and Public Debt – Advanced Economies Sample

	[1]			[2]		
	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)	Credit Rating (2010)	P. Balance (2000-2010)	Del
GDP per capita (2000)	4.06 **		13.09	3.60 *		
	(2.51)		(.91)	(1.82)		
Gross public debt (2000)		-0.02	0.88 ***		-0.02	
		-(.78)	(7.34)		-(.77)	
Gross public debt (2010)	-0.04 ***			-0.04 ***		
	-(3.57)			-(3.17)		
Avg. primary balance (2000-2010)	-0.07			-0.07		
	-(.64)			-(.69)		
Inflation (2000-2010)	-0.96 *			-0.99 **		
	-(1.93)			-(1.96)		
Real growth (2000-2010)	-0.29	-0.25	-10.37 ***	-0.24	-0.25	
	-(.61)	-(.34)	-(2.81)	-(.50)	-(.33)	
ROSC Index (Average)		**0.14 ****	**-1.07 *****	**0.02**	**0.14 *****	
		(2.48)	**-(3.64)**	**(.42)**	**(2.48)**	
Average Polarization		2.38 **	-11.34 ***		2.39 **	
		(2.32)	-(2.63)		(2.33)	
R-squared	0.67	0.47	0.92	0.67	0.47	
N	21	21	21	21	21	
Total effect of 15 point (one standard deviation) increase in fiscal transparency index on ratings [1]	**0.50**			**0.69**		
Direct Effect	0.00			0.24		
Indirect Effect	0.50			0.46		
Due to debt	0.64 **			0.60 **		
Due to primary balance	-0.14			-0.15		

Source: Authors' calculations and estimations.

Notes: The t-statistics are reported in parantheses (* denotes significance at 10%, ** significance at 5%. And *** significance at 1%). All specifications include a constant, which is not reported

1. The effect is in terms of notches in credit ratings. For example, a 1 notch improvement corresponds to moving from AA+ to AAA

Table 5. Fiscal Transparency (ROSC Index), Primary Balance and Public Debt - Developing Country Sample

	[1]			[2]		
	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)
GDP per capita (2000)	2.44 ***		8.73 **	2.03 ***		8.67 **
	(3.99)		(2.52)	(3.50)		(2.50)
Default history	-1.85 *			-1.61		
	-(1.65)			-(1.53)		
Gross public debt (2000)		-0.06 ***	0.57 ***		-0.06 ***	0.57 ***
		-(3.53)	(4.46)		-(3.52)	(4.45)
Gross public debt (2010)	-0.06 **			-0.03		
	-(2.37)			-(1.06)		
Avg. primary balance (2000-2010)	-0.16			0.05		
	-(.84)			(.27)		
Inflation (2000-2010)	-0.14			-0.13		
	-(1.37)			-(1.36)		
Real growth (2000-2010)	0.24	-0.23	0.46	0.27 *	-0.23	0.46
	(1.45)	-(1.27)	(.30)	(1.73)	-(1.27)	(.30)
ROSC Index (Average)		**0.02**	**-0.27**	**0.06 ****	**0.02**	**-0.24**
		(.58)	**-(1.13)**	**(2.46)**	**(.62)**	**-(1.01)**
Average Polarization		-0.96	4.65		-0.95	4.18
		-(1.41)	(.86)		-(1.41)	(.77)
Fuel Exporter dummy		8.32 ***	-37.39 ***		8.33 ***	-37.68 ***
		(5.33)	-(2.94)		(5.34)	-(2.96)
R-squared	0.49	0.59	0.52	0.49	0.59	0.52
N	35	35	35	35	35	35
Total effect of 15 point (one standard deviation)						
increase in fiscal transparency index on ratings[1]	**0.20**			**0.99**		
Direct Effect	0			0.87 **		
Indirect Effect	0.20			0.11		
Due to debt	0.24			0.10		
Due to primary balance	-0.04			0.01		

Source: Authors' calculations and estimations.

Notes: The t-statistics are reported in parantheses (* denotes significance at 10%, ** significance at 5%. And *** significance at 1%). All specifications include a constant, which is not reported.

1. The effect is in terms of notches in credit ratings. For example, a 1 notch improvement corresponds to moving from AA+ to AAA

Table 6. Fiscal Transparency (OBI Index), Primary Balance and Public Debt - Developing Country Sample

	[1]			[2]		
	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)
GDP per capita (2000)	2.53 ***		7.36 ***	2.11 ***		7.35 ***
	(4.45)		(2.88)	(3.69)		(2.87)
Default history	-2.67 **			-2.68 ***		
	-(2.53)			-(2.67)		
Gross public debt (2000)		-0.04 ***	0.52 ***		-0.04	0.52 ***
		-(2.83)	(5.73)		-(2.80)	(5.72)
Gross public debt (2010)	-0.04 *			-0.02		
	-(1.68)			-(.91)		
Avg. primary balance (2000-2010)	0.10			0.27		
	(.58)			(1.57)		
Inflation (2000-2010)	-0.14 ***			-0.14 ***		
	-(3.04)			-(3.36)		
Real growth (2000-2010)	0.35 **	-0.15	0.94	0.35 **	-0.15	0.93
	(2.19)	-(.79)	(.78)	(2.25)	-(.79)	(.77)
OBI Index		**0.00**	**-0.14**	**0.03 ****	**0.00**	**-0.15**
		(.00)	**-(.98)**	**(2.04)**	**(.11)**	**-(1.04)**
Average Polarization		-0.78	6.27		-0.83	6.36
		-(1.00)	(1.37)		-(1.06)	(1.38)
Fuel Exporter dummy		7.14 ***	-34.12 ***		7.13 ***	-34.14 ***
		(5.02)	-(4.01)		(5.01)	-(4.02)
R-squared	0.64	0.5	0.53	0.68	0.5	0.53
N	37	37	37	37	37	37
Total effect of 15 point (one standard deviation)						
increase in fiscal transparency index on ratings 1/	**0.09**			**0.59**		
Direct Effect	0.00			0.52 **		
Indirect Effect	0.09			0.06		
Due to debt	0.09			0.05		
Due to primary balance	0.00			0.01		

Source: Authors' calculations and estimations.

Notes: The t-statistics are reported in parantheses (* denotes significance at 10%, ** significance at 5%. And *** significance at 1%). All specifications include a constant, which is not reported.

1. The effect is in terms of notches in credit ratings. For example, a 1 notch improvement corresponds to moving from AA+ to AAA

Table 7. Fiscal Transparency (ROSC Index), Primary Balance and Public Debt - Full Sample

	[1]			[2]		
	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)
GDP per capita (2000)	2.37 ***		13.11 **	2.06 ***		12.99 **
	(4.15)		(2.44)	(3.89)		(2.42)
Default history	-1.69			-1.36		
	-(1.61)			-(1.41)		
Gross public debt (2000)		-0.04 ***	0.81 ***		-0.04 ***	0.81 ***
		-(2.95)	(7.32)		-(2.93)	(7.31)
Gross public debt (2010)	-0.02 *			-0.01		
	-(1.79)			-(1.30)		
Avg. primary balance (2000-2010)	0.11			0.09		
	(1.16)			(1.07)		
Inflation (2000-2010)	-0.15			-0.15 *		
	-(1.50)			-(1.65)		
Real growth (2000-2010)	0.16	-0.22	-0.74	0.22	-0.22	-0.71
	(.98)	-(1.05)	-(.42)	(1.51)	-(1.06)	-(.40)
Advanced country dummy	4.60 ***	-0.94	11.99	3.21 ***	-0.92	11.44
	(5.11)	-(.75)	(1.17)	(3.52)	-(.73)	(1.11)
ROSC Index (Average)		**0.05 ***	**-0.32**	**0.06 ***	**0.05 ***	**-0.29**
		(1.88)	**-(1.50)**	**(3.39)**	**(1.83)**	**-(1.35)**
Average Polarization		0.29	-3.92 *		0.32	-4.20
		(.47)	-(.87)		(.52)	-(.93)
Fuel Exporter dummy		9.49 ***	-39.91 ***		9.54 ***	-40.37 ***
		(5.00)	-(2.79)		(5.02)	-(2.82)
R-squared	0.83	0.43	0.69	0.86	0.43	0.69
N	56	56	56	56	56	56
Total effect of 15 point (one standard deviation)						
increase in fiscal transparency index on ratings¹	**0.18**			**1.06**		
Direct Effect	0.00			0.94 ***		
Indirect Effect	0.18			0.13		
Due to debt						
Due to primary balance						

Source: Authors' calculations and estimations.

Notes: The t-statistics are reported in parantheses (* denotes significance at 10%, ** significance at 5%. And *** significance at 1%). All specifications include a constant, which is not reported.

1. The effect is in terms of notches in credit ratings. For example, a 1 notch improvement corresponds to moving from AA+ to AAA

Table 8. Fiscal Transparency (OBI Index), Primary Balance and Public Debt - Full Sample

	[1]			[2]		
	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)	Credit Rating (2010)	P. Balance (2000-2010)	Debt to GDP (2010)
GDP per capita (2000)	2.71 ***		8.03 **	2.41 ***		8.07 **
	(5.29)		(2.24)	(4.67)		(2.26)
Default history	-2.74 ***			-2.62 ***		
	-(3.12)			-(3.08)		
Gross public debt (2000)		-0.04 **	0.55 ***		-0.04 **	0.55 ***
		-(2.24)	(6.26)		-(2.24)	(6.25)
Gross public debt (2010)	-0.03 *			-0.02		
	-(1.82)			-(1.36)		
Avg. primary balance (2000-2010)	0.10			0.16 *		
	(1.08)			(1.68)		
Inflation (2000-2010)	-0.12 ***			-0.12 ***		
	-(2.95)			-(3.11)		
Real growth (2000-2010)	0.36 **	-0.11	0.13	0.37 **	-0.11	0.11
	(2.42)	-(.47)	(.10)	(2.56)	-(.47)	(.09)
Advanced country dummy	4.86 ***	0.63	15.05 *	4.31 ***	0.61	15.34 *
	(4.97)	(.41)	(1.83)	(4.40)	(.40)	(1.87)
OBI Index		**0.01**	**-0.12**	**0.03 ***	**0.01**	**-0.13**
		(.28)	**-(.87)**	**(1.93)**	**(.34)**	**-(.95)**
Average Polarization		0.46	-2.18		0.42	-2.26
		(.59)	-(.57)		(.54)	-(.59)
Fuel Exporter dummy		7.73 ***	-36.31 ***		7.74 ***	-36.33 ***
		(4.47)	-(4.08)		(4.47)	-(4.08)
R-squared	0.84	0.34	0.61	0.85	0.34	0.61
N	49	49	49	49	49	49
Total effect of 15 point (one standard deviation)						
increase in fiscal transparency index on ratings[1]	**0.06**			**0.50**		
Direct Effect	0.00			0.43 *		
Indirect Effect	0.06			0.06		
Due to debt	0.05			0.04		
Due to primary balance	0.01			0.02		

Source: Authors' calculations and estimations.

Notes: The t-statistics are reported in parantheses (* denotes significance at 10%, ** significance at 5%. And *** significance at 1%). All specifications include a constant, which is not reported.

1. The effect is in terms of notches in credit ratings. For example, a 1 notch improvement corresponds to moving from AA+ to AAA

Table 9. Fiscal Transparency and Fiscal Performance - Instrumental Variable Results

	Avg. Primary Balance	Gross Public Debt (2010)
	Advanced	Advanced
Debt (2000)	-0.02	0.88 ***
	-(.65)	(6.26)
Average real growth	-0.22	-12.33 ***
	-(.22)	-(2.94)
Average Polarization	2.39 **	-11.55 **
	(2.26)	-(2.54)
ROSC Index (Average)	**0.14**	**-0.94 ***
	(1.26)	**-(1.93)**
Excluded Instruments:	political competition	political competition
Cragg - Donald statistic (weak instrument)	5.09	5.09
Hansen J statistic (p-value)	…	…
Shea's Partial R-squared	0.24	0.24
R-squared	0.47	0.92
Number of Observations	21	21

Source: Authors' calculations and estimations.
Notes: The robust t-statistics are reported in parantheses (* denotes significance at 10%, ** significance at 5% and *** significance at 1%). All specifications include a constant, which is not reported. All estimates are obtained by using two-stage least squares.

Table 10. Fiscal Transparency and Ratings - Instrumental Variable Results

	Developing Economies\ Sample	
	Credit Rating (2010)	Credit Rating (2010)
GDP per capita	1.87 **	1.75 ***
	(3.29)	(2.71)
Default history	-0.93	-0.75
	-(.96)	-(.69)
Gross public debt (2000)	-0.01	0.00
	-(.39)	-(.02)
Primary balance	0.13	0.20
	(.63)	(.79)
Inflation	-0.16 **	-0.15 *
	-(2.14)	-(1.78)
Real growth	0.26 *	0.28 *
	(1.80)	(1.77)
Rosc Index (average)	**0.09**	**0.12 ***
	(1.52)	**(1.44)**
Excluded Instruments:	political competition, electoral competition	political competition
Cragg - Donald statistic (weak instrument)	2.60	2.93
Hansen J statistic (p-value)	0.56	...
Shea's Partial R-squared	0.14	0.08
R-squared	0.56	0.50
N	42	42

Source: Authors' calculations and estimations.

Notes: The robust t-statistics are reported in parantheses (* denotes significance at 10%, ** significance at 5% and *** significance at 1%). All specifications include a constant, which is not reported. All estimates are obtained by using two-stage least squares.

APPENDIX

Table A.1. Numerical Conversion of Sovereign Credit Ratings

Fitch		Moody's		S&P	
Ratings	Numerical	Ratings	Numerical	Ratings	Numerical
AAA	23	Aaa	20	AAA	22
AA+	22	Aa1	19	AA+	21
AA	21	Aa2	18	AA	20
AA-	20	Aa3	17	AA-	19
A+	19	A1	16	A+	18
A	18	A2	15	A	17
A-	17	A3	14	A-	16
BBB+	16	Baa1	13	BBB+	15
BBB	15	Baa2	12	BBB	14
BBB-	14	Baa3	11	BBB-	13
BB+	13	Ba1	10	BB+	12
BB	12	Ba2	9	BB	11
BB-	11	Ba3	8	BB-	10
B+	10	B1	7	B+	9
B	9	B2	6	B	8
B-	8	B3	5	B-	7
CCC+	7	Caa1	4	CCC+	6
CCC	6	Caa2	3	CCC	5
CCC-	5	Caa3	2	CCC-	4
CC	4	Ca	1	CC	3
C	3	C	0	C	2
DDD	2			SD	1
DD	1			D	0
D	0				
RD	0				

Source: Fitch Ratings, Moody's Investor Services and S&P.

Table A.2. Data Source and Variable Definitions

Variable	Definition	Source
Average primary balance	Average ratio of primary fiscal balance to GDP (in percent)	WEO Database
Gross public debt (2000)	Gross debt to GDP in 2000 (in percent)	WEO Database
Average real growth	Average real growth during 2001-2010.	WEO Database
Fuel exporter dummy	Dummy variable that equals one if the country is a fuel exporter according to the WEO classification.	WEO Database
Electoral Competition	Average of the executive index of electoral competitiveness during 2000-2010. The variable taxes values between 1 and 7, where higher values correspond to higher electoral competitiveness.	The executive index of electoral competitition "eiec" variable, Database of Political Institutions, World Bank.
Average Polarization	Maximum polarization between the executive party and the four principle parties of the legislature, average during 2000-2010.	The "polariz" variable, Database of Political Institutions, World Bank.
Political Competition	Author's calculation based on the frequency of political turnover since 1975.	Using the variable that captures the name of the largest government party "gov1me", Database of Political Institutions, World Bank.
GDP per capita, 2000	GDP per capita (PPP), in US Dollars	WEO Database
Default history	Author's calculation based on whether the country has been classified as in defauly by S&P over the past 10 years.	S&P
Inflation	Average level of inflation (in percent) during 2001-2010.	IFS Database

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