Financial Effects of Fiscal Transparency:
A Critique

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Abstract: This paper investigates the effects of budget transparency on fiscal performance. It fits a panel regression model on data from the Open Budget Index through its five rounds (OBI 2006-OBI 2015) and investigates the effect of openness on budget balance, primary balance and government debt across a sample of 57 countries. We seek to validate the proposed positive effect of fiscal transparency on objective performance indicators. Main results show that the link between openness and budget balance is relatively weak, while the effect of OBI on debt is more robust. This effect is also differentiated, with the lowest and highest-income countries benefitting most from openness.

I.   Introduction

The issue of fiscal transparency has received its fair share of attention both in policy debates and in academic discourse (Heald, 2011), sometimes with unqualified enthusiasm. Budgets that are more open could, in principle, be subjected to greater scrutiny in all phases of the budget management cycle—from planning though implementation to reporting and control. Increased input from a self-interested public should lead to more efficient spending, less political influence and decreased deficit pressure. Thus, one is compelled to expect sizeable financial effects from increasing transparency by minimizing deficits and avoiding unsustainable public debt.

Apart from its instrumental effects on better budgetary management, transparency is touted as a good in itself—the public needs to be informed about state revenue and expenditure that government is undertaking on its behalf. Budget openness is supposed to increase democratic legitimacy by making governments more accountable to the public and thus build trust and promote integrity. While important, this argument carries less sway in the transparency debate as the benefits in terms of improving the public environment are harder to measure quantitatively and so they tend to be less persuasive.

Even the quantitative effects of budget openness on fiscal performance are not always straightforward to discern. There are very few universally accepted and widely available indicators of openness. While it is clear that transparency is about providing complete, accurate, and timely information on all aspects of budget management (Kopits & Craig, 1998), it is less clear what the best approach to measure this is. Some researchers have chosen to construct an index of transparency themselves using available data, while others have preferred to utilize some form of pre-existing index. Research so far is characterized by using a variety of transparency indicators and a number of different econometric specifications. While most studies do find a positive effect of openness on fiscal performance, it is far from robust and it seems very dependent on each country's particularities.

The largest and most popular such index of transparency is the Open Budget Index (OBI), now it its fifth edition. It compares fiscal transparency across a large set of countries using a survey of 140 questions. The length of the time series and its global impact makes this index a good starting point to evaluate fiscal openness. Using all five waves of the index, we can

investigate if there is measurable effect of transparency on two key indicators of fiscal performance—the level of public debt, and the budget deficit across different country dimensions.

To this end, the paper is structured as follows: Section II is a short literature review, and Section III presents briefly the OBI and shows its correlation with deficit and debt. Section IV fits a number of panel models to investigate the relationship further and presents a number of robustness checks. Section V is a discussion of results, and Section VI concludes.

II.   Fiscal Transparency and Performance: A Short Review

The management of public funds is a typical instance of the principal-agent problem, whereby the principal (the public) has less information on the intentions and actions of the agent (government) when spending the public's money. This situation can lead to a possibly suboptimal outcome with the government not acting in the best interests of the sovereign and realizing wasteful and inefficient spending (Persson et al., 1997). Increased transparency closes the information gap between the principal and the agent and thus eliminates some of the agency problem.

Against this general backdrop, public finance theories have developed the concept of fiscal illusion—this means that due to some aspect of the informational asymmetry the public cannot discern the correct tax price of public goods and usually underestimates it. This naturally leads to a higher demand for public goods, which goes above the willingness to pay for them in taxes. That phenomenon gives raise to a pronounced deficit bias in government spending. The fiscal illusion may be due to many reasons. Some of them have to do with the complexity of tax systems (Buchanan, 1967; Wagner, 1976; Cullis & Jones, 1987), while others point to asymmetric elasticities of tax revenue (Oates, 1975). Newer explanations also revolve around the structure of financing and the grant system (Dougan & Kenyon, 1988) and the debt illusion—the fact that taxpayers perceive differentially tax increases and new debt (Dalamags, 1993).

At any rate more budget openness should provide the public with better information, thus enabling them to correctly assess the tax price of the public goods and the burden of new debt. The process will hopefully lead to improvement in fiscal management and more sustainable

public finance. The empirical record, however, is mixed. Using a relatively small sample of 19 developed countries Alt and Lassen (2006) construct a transparency index with OECD data and test it against government debt. They find a statistically significant negative relationship, thus implying that higher transparency levels are also associated with lower sovereign debt. Andersen et al. (2010) peruse Alt and Lassen (2006)'s indicator to obtain similar results.

Using a similar design, Benito and Bastida (2009) investigate a larger sample of 41 countries with both developing and developed ones among those. They find a positive correlation between a measure of transparency they construct themselves and both budget balance and electoral turnover. The authors argue that transparency prevents the political elites from using public funds to achieve opportunistic goals and incentives citizens to exercise their voting rights.

Hameed (2005) leverages data from the International Monetary Fund to construct an alternative indicator of budget openness and measures its long-run implication on the fiscal balance. Using data of average 5-year primary balance of a panel of 57 countries, he finds a positive and statistically significant relationship thus implying that more transparency improves the long run average primary balance. The observed positive effect of openness is not universally valid – it seems to be crucially dependent on any individual country's prevailing economic and institutional environment (De Renzio et al., 2005).

This effect is not observed across all studies. Jarmuzek (2006) investigates a panel of 27 Central and Eastern European countries and finds a very small effect of his transparency indicator on government debt, and the transparency coefficient fails to reach statistical significance. In a similar vein Sedmihradska and Haas (2013) fail to observe a distinct and clear-cut effect of the OBI variable on indicators of fiscal performance, and this result holds across countries with different transparency ratings.

The current paper aims to probe into the fiscal outcomes of increased transparency by testing an unusually large sample countries and using a comparable and well-known openness index in order to establish the quantitative effects of fiscal openness on two key variables—deficit and debt. The study is done over a full economic cycle—from the calm period around 2005-2007 through the lowest depression points of 2009-2011 and into recovery afterwards.

III.   The OBI and its correlation with fiscal performance

The Open Budget Index is the indicator of choice mainly because of its availability and comprehensive coverage across a large number of countries. The index is constructed by using 109 of 140 survey questions pertaining on the quality and timeliness of publication of key budgeting documents. The OBI survey asks respondents about the availability and scope of eight key documents: the Pre-budget Statement, the Budget Proposal, the Enacted Budget, the Citizen Budget, the In-year Reports, the Mid-year Review, the End-year Report, and the Audit Report. Those documents aim to cover the necessary prerequisites for meaningful citizen participation and control in the budgeting process. The survey is completed by local respondents and then further reviewed for completeness by local investigators. Government officials are presented with the results but have no final say on the responses.

Currently the OBI 2015 is in its fifth edition. It covers 102 countries from all regions of the world at different levels of economic development. One should note that the survey questions pertain to the year preceding the year of publication, i.e. the OBI 2015 measures transparency in 2014, and should therefore affect fiscal performance in that year. For testing we use the calculated OBI index and check it against fiscal data provided by the International Monetary Fund. Looking at specific countries fiscal transparency seems to be improving on average throughout the survey from 2005 to 2014 but the inclusion of further states with lower transparency tends to keep the global average almost unchanged.

Plotting the OBI variable and the budget balance, even a brief visual inspection fails to reveal a clear-cut connection between both, as can be observed on Figure 1. The index generally divides countries in five groups depending on their total score in groups or increments of twenty. The countries in the first group – from zero to twenty are the least transparent, while in the last one from eighty to one hundred are the most transparent. Within those groups, there is no discernible correlation between transparency and fiscal performance. The figure shows that while countries with very high openness scores have deficits, some completely non-transparent countries such as oil-rich ones register considerable budget surpluses.
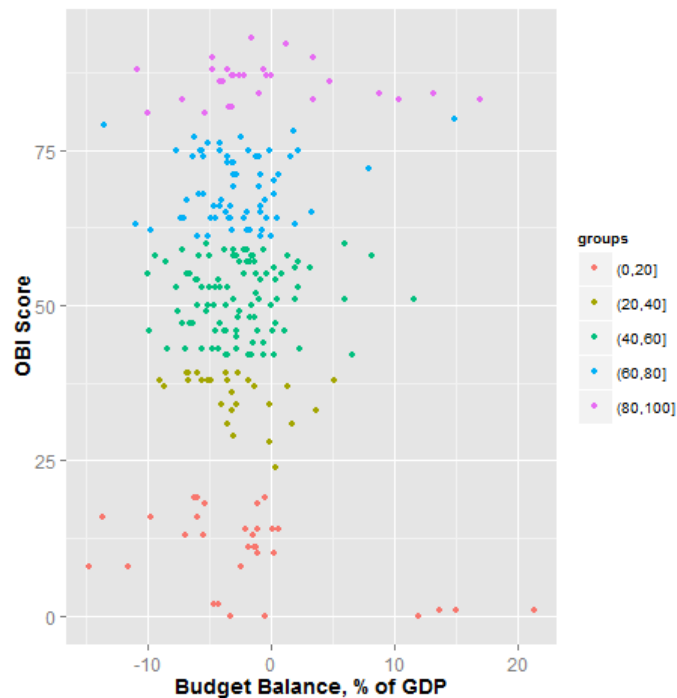
Figure 1: Budget balance and OBI score across a pooled sample of countries, OBI 2006-OBI 2015

The pooled sample of countries is comprised in no small part of data coming from the years of the global financial crisis and the post-crisis aftermath. During times of crisis, it may be possible that governments choose to have counter-cyclical fiscal policy to fend off the economic downturn, which leads to inflated deficits. Despite the benefits of transparency, it may be the case that crisis years have been a strong impetus for increased spending and have thus led to a deterioration of fiscal performance. To disentangle this effect we need to look at different waves of the OBI survey and investigate if we observe any difference in effect during crisis and non-crisis periods This is presented visually in Figure 2, where the OBI transparency score is plotted against the level of deficit.

In three of the five sample periods there is no clear-cut association between the levels of budget openness and fiscal performance. There is some sign of interaction between the two in 2005 and 2014. In the first case, the relationship is negative and in the second – positive. At any rate, both trends seem to be largely driven by a small number of easily identifiable outliers. Overall, there is little evidence of robust positive effect in any of the years under study.
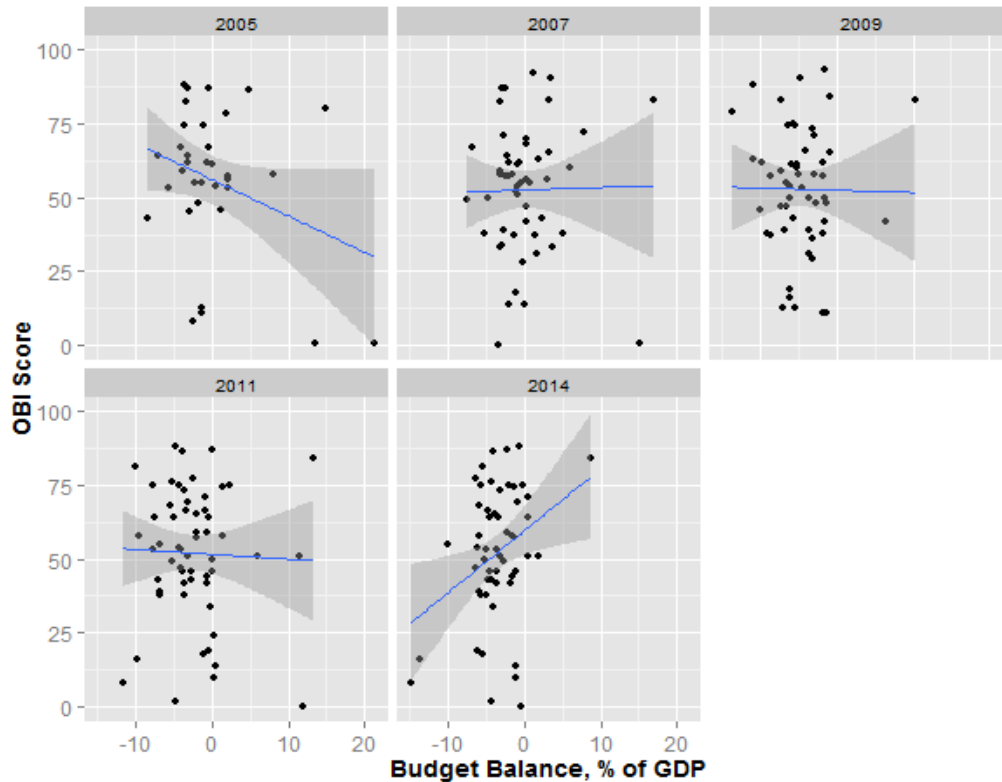
Figure 2: Budget balance and OBI score across a pooled sample of countries in individual survey rounds, OBI 2006-OBI 2015

The effects of transparency are likely to be driven by the institutional environment of the country and its level of social and economic development (Poterba & von Hagen, 2008). The existence of well-structured and receptive institutions should enable citizens to use the budget information effectively and exert control over spending, thus curbing deficit and debt. As a proxy for economic and institutional development, we can use the level of GDP per capita in the sample countries. Dividing the pool into quartiles gives four distinct groups of countries according to their income levels. Those quartiles are plotted against budget balance in Figure 3.

The first two quartiles are characterized by a lack of association between fiscal transparency and budget balance. The third quartile – upper-middle income countries – show some association between the openness indicators and fiscal performance in the expected positive direction. Highest income countries are notable for the negative direction of association between transparency and performance. This is likely driven by the rising budget deficits in the developed world during the times of the global economic and financial crisis and its aftermath. Despite high level of openness and accountability, these governments were given

clear mandates to increase spending or were unable to curb its rise. At any rate, higher transparency during this period did not automatically lead to better performance.
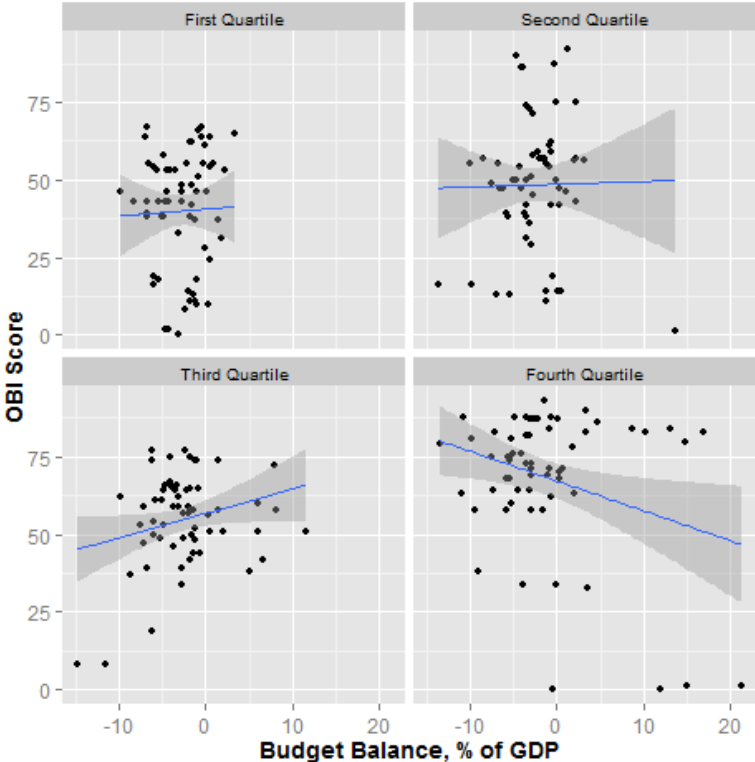

Figure 3: Budget balance and OBI score across a pooled sample of countries according to income quartiles, OBI 2006-OBI 2015

Looking at the Pearson correlations of OBI with budget balance, primary balance, and the gross debt in Table 1, one is compelled to notice their relatively small values, standing at $r = -0.1$, $r = -0.08$, and $r = 0.05$, respectively. Further, those correlations fail to reach statistical significance even at the 5% level, with only the budget balance approaching it. These results point to the difficulty of directly observing a clear-cut effect positive effect of transparency on the management of public finance.

Table 1: Correlations of OBI with key indicators of fiscal performance

Correlated Variable	Correlation Coefficient	P-value
Budget Balance, % of GDP	-0.10	0.052
Primary Balance, % of GDP	-0.08	0.101
Gross Government Debt, % of GDP	0.05	0.373

While such a line is hard to discern in the simple correlational and visual analysis, it may very well exist and be uncovered with a somewhat more involved econometric analysis. Next section looks further into this possibility.

IV. Econometric Modeling

The link between budget openness and fiscal performance can be more formally modeled within the general linear model framework. The OBI variable should be the driving force behind better results and thus needs to affect the budget balance, the primary balance, and also the amount of debt, all of them presented as percent of GDP. The starting observation needs to be that deficit and debt are crucially dependent on many other factors besides transparency. Those include the prevailing economic environment, spending pressures, the quality of institutional framework and possible international developments. To this end we include a number of control variables.

Inflation and unemployment proxy the state of the economy and the possible pressures exerted on government to increase spending. The level of development is proxied by a country's income— its GDP per capita, normalized in logarithmic form. Possible exogenous shocks via the trade balance are accounted for by including data from the balance of payments, namely the amount of export growth. This is an indicator of the global economic environment and a component of the effective aggregate demand a country is facing. All data are obtained from the International Monetary Fund and presented as percentage points. The only exception is GDP per capita, which is calculated in current international dollars, adjusted for Purchasing Power Parity and normalized in logarithmic form.

The specification under test can be summarized in the following regression equation:

$$F_t = \beta_0 + \beta_1 OBI_t + \beta_i X_{it} + \varepsilon_t$$

In this equation *F* denotes a measure of fiscal performance, *OBI* – the Open Budget Index, X_i – a vector of controls (inflation, unemployment, GDP per capita, export growth) and ε is the error term. Here *i* denotes the individual observation, and *t* is the time index.

Combining the five waves of the OBI survey with IMF's Global Economic Outlook database and removing countries with incomplete data across one of the studies dimensions, we obtain

a total number of 249 observations, comprising an unbalanced panel of 57 countries with 5 cross-sections. The panel is somewhat skewed towards the later rounds as more countries are included and data availability is generally expanded. The initial pooling test rejects the hypothesis that OLS calculation would be suitable and therefore a panel design is chosen.

The Hausman test (1978) for panel data models rejects the hypothesis of model consistency between fixed effects and random effects models for all variables studied. Across the budget balance, the primary balance, and the gross debt, Hausman test p-values are invariably below the 1% significance levels and we thus choose the fixed effects model specification. Further testing with the Lagrange multiplier test (Honda, 1985) shows that the optimal specification includes both an individual and a time effect, reaching the following equation:

$$F = \beta_{i0} + t + \beta_1 OBI + \beta_i X_i + \varepsilon_{it}$$

Table 2: Panel regression results of fiscal performance on budget openness

Variable	Budget Balance	Primary Balance	Gross Debt
Inflation	-0.052	-0.048	-0.173
	(0.444)	(0.045)	(0.145)
Unemployment	-0.178*	-0.089	1.907***
	(0.104)	(0.106)	(0.342)
GDP per capita, log	7.825***	6.266**	-53.835***
	(2.921)	(2.979)	(9.631)
Export growth	0.021	0.012	0.000
	(0.024)	(0.025)	(0.080)
OBI	-0.010	-0.022	-0.189**
	(0.024)	(0.025)	(0.080)
Adjusted R^2	0.07	0.04	0.39

Note: Standard errors in brackets. * denotes significance at the 10% level, ** - at the 5% level, and *** - at a level of 1% or below

Table 2 presents the results of this estimation, where the indicator of financial performance is the budget balance, the primary balance, and the gross debt, respectively. Across the panel there seems to be little or no effect of the OBI indicator on either the overall or the primary balance. Their betas fail to reach or even approach significance at any conventional levels. On the other hand, the gross debt—a longer-term measure of fiscal performance—does reach significance at the 5% level. An increase of OBI by 10 points leads to an average reduction of gross debt by 1.8% of GDP. While statistically significant, this effect is of only moderate practical importance. We note the significance of both indicators of economic activity (unemployment) and the level of economic development as proxied by GDP per capita.

The sample under study contains an important structural break – the years 2009 and 2011 represent the depth of the global economic crisis, which has stirred many governments to increase spending in efforts to implement countercyclical fiscal policy. Despite the levels of transparency this should lead to a ceteris paribus higher deficit and debt levels. It is thus appropriate to investigate the effects of OBI across all different rounds of the study and measure its effects within a cross-section OLS-regression framework. The results from this estimation are presented in Table 3.

Table 3: OBI effects on fiscal performance across rounds of the OBI survey

Year	Budget Balance	Primary Balance	Gross Debt
2005	-0.169***	-0.141***	-0.012
	(0.043)	(0.039)	(0.199)
2007	-0.062*	-0.044	0.166
	(0.034)	(0.028)	(0.189)
2009	0.005	0.011	0.061
	(0.032)	(0.029)	(0.188)
2011	-0.025	-0.016	0.133
	(0.037)	(0.031)	(0.190)
2014	0.035	0.038**	0.142
	(0.024)	(0.018)	(0.210)

Note: Standard errors in brackets. * denotes significance at the 10% level, ** - at the 5% level, and *** - at a level of 1% or below

The intuition of crisis-driven deficit bias is largely correct. Budget openness seems to have some effect on the balance (overall or primary) in non-crisis years but not in crisis ones. The OBI indicator has a significant effect on balance in 2005 and 2007 and on primary balance in 2014. In 2009 and 2011 it is more the economic dynamics and government policy that drives fiscal performance. Throughout the divided sample, the OBI indicator fails to influence gross government debt, likely due to the cross-sectional nature of the study and the relatively smaller sample size, which affects test power. Under this specification, one cannot observe the long-term dynamic effects of transparency on debt, which also develops over time. We thus hypothesize that the within-country effects of OBI on debt tend to be larger than the between-countries ones.

We finally test the hypothesis that transparency has differential effects at different levels on income, which probably reflects variance in the institutional environments. Again, the sample of countries is divided into four income quartiles, and a fixed effects two-way panel regression model is fitted on data. Table 4 presents the beta coefficients of the OBI variable

on indicators of fiscal performance. Rather unsurprisingly, the OBI coefficients fail to reach significance in both the overall and the primary balance model specification. This result holds across all income quartiles, with one exception. The case with OBI's link to debt is notably different.

Table 4: OBI effects on fiscal performance across countries in different income quartiles

Income Quartile	Budget Balance	Primary Balance	Gross Debt
First Income Quartile	0.008 (0.033)	-0.022 (0.035)	-0.456*** (0.155)
Second Income Quartile	-0.056 (0.041)	-0.066* (0.038)	-0.121 (0.089)
Third Income Quartile	0.053 (0.057)	0.065 (0.058)	-0.019 (0.128)
Fourth Income Quartile	0.030 (0.087)	0.018 (0.092)	-0.724* (0.370)

Note: Standard errors in brackets. * denotes significance at the 10% level, ** - at the 5% level, and *** - at a level of 1% or below

In both the first and the fourth income quartile, the effects of openness on debt reach statistical significance at the 1% and the 5% level respectively, with the coefficients relatively large and with the expected sign. In the first income quartile an increase in OBI with 10 points leads to 4.56% of GDP less debt, and in the fourth – to 7.24% of GDP less debt. Those effects are of large practical significance as well. The positive effect can also be seen through a visual inspection of Figure 4, where transparency is plotted against gross debt, and all countries are colored according to the income quartile they belong to. One observation is that the top and the bottom quartiles do exhibit a negative trend between debt and OBI, whereas this is less obvious in the two middle quartiles.
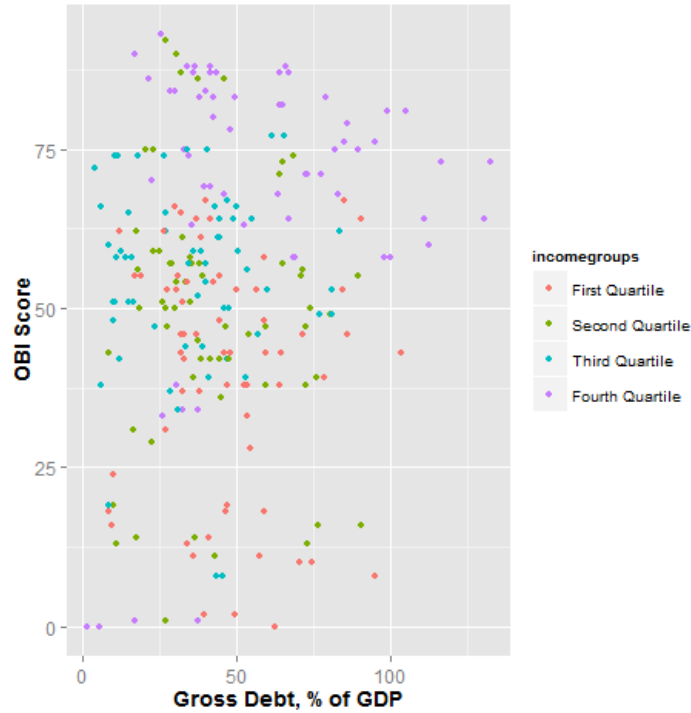
Figure 4: Gross debt and OBI score across a pooled sample of countries divided according to income quartiles, OBI 2006-OBI 2015

Results from the econometric modeling present a nuanced picture of the effects of budget openness on key measures of fiscal performance. These effects and their policy implications are discussed in more detail in the next section.

V. Discussion and Implications

Econometric modeling of the effects of transparency on fiscal performance produced a multitude of results that are not uncommon and have been partially revealed in a number of other studies. An overarching result is the limited and elusive effect of budget openness on the current period deficit and primary balance. While this link can be seen in some periods, during the crisis years it evaporates altogether, and can be observed neither visually nor through formal modeling. This is not the case with gross general government debt. The coefficient of openness in the gross debt model robustly reaches statistical significance under a host of different model specifications and is characterized by the expected sign and relatively large size.

On the other hand, an indicator of economic activity and cyclical position such as unemployment invariably reaches significance. So does the logged GDP per capita, which could be a measure of socio-economic development. Those indicators retain their significance in almost all alternative specification, both across the time and the income dimension. Those results lead to a number of conclusions and key policy recommendations for the conduct of efficient public funds management.

First, transparency *per se* does not automatically bring about lower and more sustainable levels of the budget deficit. While in some cases it is correlated with better fiscal performance, more openness does not necessarily lead to decreased public spending. During the crisis years even very transparent countries had to run large deficits in attempts to conduct counter-cyclical fiscal policy. More transparency could have possibly informed the public debate thus improving the quality of financial management but it certainly did not promote balanced budgets. Such results echo other research (Jarmuzek, 2006) where one is hard-pressed to find the current period impact of more open budgets.

In this line of thought, unfettered optimism about increasing transparency should be carefully qualified. Publishing more fiscal data in itself has no direct effect on current period fiscal performance. This data need to be analyzed and interpreted intelligently, used by citizens to feed into policy discussion, and finally this feedback has to be internalized by a host of receptive institutions. All in all, openness works best when supported by an active and informed civil society.

Second, the openness indicator is more closely related to long-run measures of fiscal performance such as the gross government debt than to short-run measures such as the deficit or the primary balance. This is also obvious in other research finding a connection between openness and multiple-year average measures of performance (Hameed, 2005). This needs to be considered against the backdrop of the wide variability of individual country results on the OBI index—especially countries at lower level of openness tend to swing between publishing and not publishing budget-related documents. Further, the effect of openness on debt cannot be easily discerned under a cross-sectional research design and can only be observed as a dynamic process.
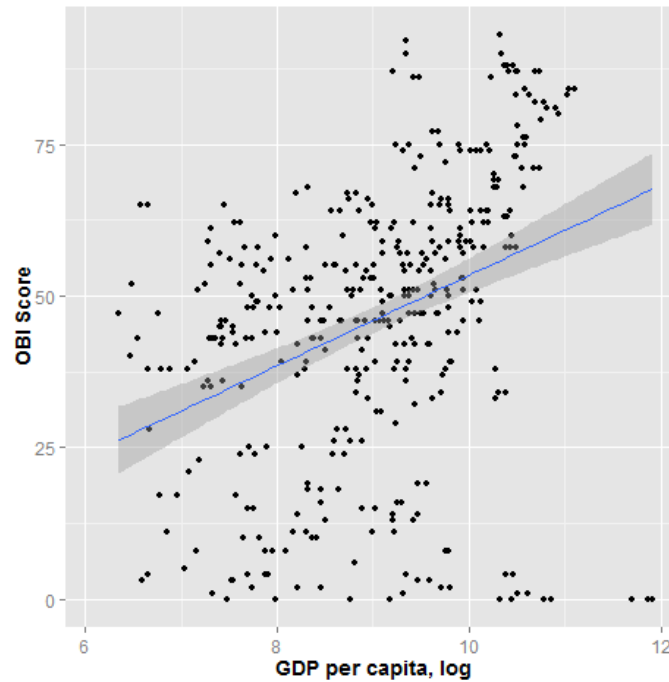
Figure 5: GDP per capita and OBI score across a pooled sample of countries, OBI 2006-OBI 2015

Thus, while the OBI indicator itself is characterized by some variance, its long-run average affects long-run average fiscal performance. A possible reason for this is that the transparency indicators actually reflect the deep institutional structure of the country. It is good institutions that tend to produce both better fiscal performance and more transparent budget management, while suboptimal institutions allow for government waste and possibly engender debt spirals. The hypothesis that the OBI reflects institutional quality is given more credence by its close association with GDP—higher income countries which also likely have superior institutions, tend to score high on the Open Budget survey (cf. Figure 5). This view is also echoed in the literature on institutions as the driving force behind fiscal results (e.g., Poterba & von Hagen, 2008).

Third, whether the OBI indicator reflects transparency alone or serves as a proxy for institutional quality, we need to note that its effects are non-linear in nature. The OBI affects debt very notably in the lowest and in the highest income quartile, and not at all in the middle ones. It seems that transparency is most important at two key junctions. One is when the government produces and makes fiscal information available to its citizens for the first time. There is huge benefit to be reaped in the situation of some information versus none whatsoever. As more becomes available its benefits diminish. This is likely due to the fact

that under some disclosure, governments prefer to publish only documents they see as advantageous to themselves. This is only solved at full disclosure where everything is published and there is yet more benefit to be reaped, and so the OBI indicator again affects fiscal outcomes. The estimated effect is also rather large and of considerable practical significance. Low and high-income countries can gain in particular with an increase of 10 points in the OBI index being associated on average with lower government debt of 5% to 7% of GDP. This result varies across countries and likely hinges crucially on a supportive national institutional environment.

The discussion so far begs the final important question of the validity of the OBI as an instrument for measuring budget transparency. The elusive link to fiscal performance may make some observers to question the validity of the index itself. Since the survey measures the availability, timeliness and completeness of budget data across a wide range of countries using a relatively objective and comparable methodology one is hard pressed to argue against its validity. The OBI scores only strive to measure openness and they do measure it relatively well. While the results presented here indicate that it is not openness in itself but the quality of institutions that drive fiscal outcomes, transparency is a noble goal per se and the index can be leveraged as a suitable metric. However, the analyst should be well advised not to expect an increase in OBI to drive improvement in the budget balance.

VI.   Conclusion

The effect of budget transparency on fiscal performance is a key question in the conduct of public policy. The unfettered enthusiasm that transparency automatically leads to better fiscal outcomes is not always borne out in reality or easily visible in empirical data. This paper investigates this issue further by using the biggest comparative cross-country study of budget transparency—the Open Budget survey and looks into the effects of the Open Budget Index on hard indicator of fiscal performance—the budget balance, the primary balance, and the gross government debt.

Using a panel model specification, we observe a rather elusive effect of the OBI on the overall or the primary budget balance, which evaporates altogether during crisis years. The effect of openness on a long-run indicator of fiscal performance—the government debt—seems to be more robust. This fact together with some results from the fiscal transparency literature lead

us to hypothesize that it is not fiscal transparency in itself that drives sustainable public finances but the quality of the prevailing institutional environment in any given country. Better institutions produce both more transparency and less fiscal imbalances. At any rate, the effects of openness or institutions seem to proceed in non-linear fashion. Countries are thus well-advised to complete their efforts at strengthening their institutions and processes for fiscal governance and not be satisfied with middle-of-the-road solutions.

Budget transparency is a key ingredient of a democratic society, which increases the democratic legitimacy of fiscal policies and builds trust in governments. This process should drive better performance but modeling shows that its financial effects are somewhat limited. The ability of openness to improve fiscal governance seems to be crucially dependent on a country's social and economic environment and transparency *per se* is not guaranteed to produce a balanced budget. While further research is needed to shed additional light on this subtle issue, countries can safely focus on improving the general institutional environment, which will also drive more openness, engagement and improve budget management.

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