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A Suggested New Approach to the Measurement and Reporting of Gross Short-Term Borrowing Operations by Governments

by

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As part of its Borrowing Outlook, the OECD estimates gross short–term government borrowing requirements. The article concludes that all methods for measuring short-term borrowing needs studied here – except one – provide either significantly underestimated or substantially overestimated measures. The article therefore suggests adopting the following measure: Gross Short-Term Marketable Borrowing Requirements is equal to Net Short-Term Borrowing Requirements plus the outstanding amount of the stock of short-term instruments. This new measure (referred to as Method 2 in the study) yields, in principle, meaningful estimates, comparable across different countries.

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I. Introduction and summary

OECD borrowing outlook

Since 2009, the OECD has published a central government borrowing outlook.[1] This gross and net borrowing outlook is based on submissions by debt management offices (DMOs) across the OECD area. The survey includes a question on estimates and projections of the gross short-term marketable borrowing needs for each OECD country (covered by issuing notes and bills with a maturity of up to one year).

Distortions in measuring gross short-term borrowing needs

The reporting on gross short-term issuance operations has raised questions concerning which method to use to reliably estimate the size of these operations, especially when the objective is to make meaningful cross-country comparisons. This policy issue was discussed at the last annual meeting of the OECD Working Party on Public Debt Management (WPDM),[2] held on 20-21 October 2009. To that end, the Swedish and Danish delegates submitted four methods for discussion. They also noted that all methods – except one – provide distorted measures of gross short-term borrowing needs, thereby hampering the calculation of meaningful, cross-county estimates and projections.

Which method to use for measuring gross short-term borrowing needs?

These distortions and complications were outlined in some detail in a supporting OECD discussion note on the measurement of gross short-term borrowing needs. More specifically, the note, circulated among WPDM Delegates, explains the various difficulties or complications in measuring the size of short-term borrowing requirements by discussing four different measurement methods. The discussion note concludes that all methods for measuring short-term borrowing needs studied here – except one (referred to as *Method 2* below) – provide either significantly underestimated or substantially overestimated measures. At the end of the debate, Delegates of the OECD WPDM agreed to adopt a uniform method[3] defined as follows:

Adoption of a method that provides meaningful estimates and projections

Gross Short-Term[4] Marketable Borrowing Requirements [GBR(ST) t] in calendar year t (CY=t) is equal to Net Short-Term Borrowing Requirements in CY=t [NBR(ST) t] plus the outstanding amount of the stock of T-bills and T-notes at the beginning of CY=t.

This measure yields in principle meaningful estimates and projections that are comparable across different countries.

II. Basic terminology on borrowing operations and funding strategy

In this note we are making a policy distinction between funding strategy and borrowing requirements. *Gross borrowing requirements* are calculated on the basis of budget deficits and redemptions (Table 1).

Table 1. Definition of total gross borrowing requirement

Revenues	T
Tax revenues	
Other revenues	
Expenditures	G
General expenditures	
Interest payments	
Budget deficit (BD)	T - G < 0
Budget surplus (BS)	T - G > 0
Total net borrowing requirement (NBR) = BD = [- (T-G)]	
Total Redemptions of:	
Short term debt	TR(ST)
Long term debt	TR(LT)
Total redemptions (refinancing requirement)	TR = TR(ST) + TR(LT)
Total gross borrowing requirement (GBR)	**GBR = TR + BD = TR + NBR** **GBR = TR - BS**

Source: OECD Staff

The *funding strategy* entails decisions about how the borrowing requirements or needs are going to be financed (*e.g.* by using long-term bonds, short-term securities, nominal or indexed bonds, etc.). Clearly, total gross borrowing requirements (Table 1) should be the same as total expected or projected funding amounts (Table 2).

Table 2: The funding strategy

Components of cash inflows **How to finance?**	**Components of cash outflows** **Total repayments (TR)**
Marketable debt issuance	Marketable debt repayments
- *Short-term securities*	- *Redemptions*
(Money Market Instruments [(1)])	- *Interest/ coupon repayments*
- *Long-term Securities*	*Interest repayments of maturing debt*
(Capital Market Instruments)	*Interest repayments of other coupon paying debt*
. *Domestic bonds*	
. *International bonds*	
Non-marketable debt	Non-marketable debt repayments
- *Loans*	- *Redemptions*
- *Other*	- *Interest/ coupon repayments*
	Interest repayments of maturing debt
	Interest repayments of unmaturing debt
(1) Excluding the issuance for monetary policy purposes	

Source: OECD Staff

III. How to measure gross short-term borrowing operations

Estimates of gross short-term borrowing operations are not straightforward

Although applications of the standard definitions of gross and net longer-term borrowing requirements are clear cut, this is not the case for gross short-term borrowing requirements. The simple question on how to estimate gross short-term borrowing requirements on a yearly basis (say CY 2010 or CY 2011) is not straightforward. We will show via a simple example in this section (and more complicated ones in Annex I) that answers can easily become meaningless. For example, if daily or monthly (re)financing operations are aggregated within a year (or by including every single redemption of short-term paper within the year), then estimates of gross short-term borrowing requirements can become huge and essentially meaningless, especially when making comparisons across countries.

Mechanical estimates can easily be misleading

Take the following two simple examples to demonstrate why a mechanical within-year aggregation of issuance and redemption activities can easily lead to a meaningless or inflated calculation or estimate of **GBR(ST**).

Two examples with different short-term borrowing and redemption patterns

Example 1:

On 1 January 2009, the total stock of debt of *government A* consists entirely of short-term debt [**D(ST)**= €100m]. Assume that this outstanding debt will need to be redeemed at the end of August. At the beginning of each month, *government A* needs to borrow €50m by issuing short-term treasury notes with a maturity of one month (total borrowing in each month: **TB**=€50m). At the end of each month, *government A* redeems the short-term stock of debt (total redemptions at the end of each month: **TR**=€50m, except in August when **TR**=€150m). The pattern in the chart resembles largely roll-over (refinancing) operations during the calendar year 2009.

2009	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TB:	50	50	50	50	50	50	50	50	50	50	50	50
TR:	50	50	50	50	50	50	50	150	50	50	50	50

Example 2:

On 1 January 2009, the total stock of debt of *government B* consists again entirely of short-term debt [**D(ST)**= €100m]. This outstanding debt will also need to be redeemed at the end of August. The borrowing needs of *government B* are the same as those of *government A* but its credit reputation is better. The funding strategy of *government B* can therefore be based on the issuance of T-bills with a maturity of up to 12 months. The within-year issuance and redemption patterns of *government B* are therefore radically different from those of *government A*.

2009	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TB:	50											
TR:								100				50

Illustrating problems with the use of Method 4

Simply aggregating all funding/redemption operations during the calendar year 2009 would result in the following two estimates for total **GBR(ST).** In the case of example 1, using *Method 4* (see Annex I)[5] results in an estimate for GBR of 2009 : 12 * €50m + €100m = €700m, while using *Method 2* results in a more meaningful estimate of €150 million.[6] In the case of example 2, this results in an estimate of €150 for both *Methods 1* and *2*.

Problems in using the concept of net short-term borrowing needs

Some countries, such as Denmark and Sweden, use the concept of **net short-term borrowing** requirements for funding horizons of less than one year. This means that the calculation of gross borrowing requirements is not inflated by simply adding all short-term operations within the calendar year. A drawback of this approach, however, is that it clearly *underestimates* the calculation of **GBR(ST)** because the refinancing of the stock of T-bills and T-notes at the beginning of the calendar year is completely ignored. A cross-country analysis should not only focus on the financing of budget deficits but also include comparable refinancing operations with corrections for artificially inflated short-term roll-over operations within the year. *Method 2* constitutes, therefore, a pragmatic and sensible compromise solution by simply adding the net short-term borrowing amount to the stock of T-bills and T-notes at the beginning of the calendar year (as, by definition, they need to be refinanced within the year). This method yields, in principle, meaningful estimates that are comparable across different countries.

IV. Four different methods for measuring gross short-term borrowing operations

Illustrating the use of four methods for measuring gross short-term borrowing needs

To illustrate the differences in outcomes by using different approaches, we have made additional hypothetical calculations in Annex I based on four different methods for measuring gross short-term borrowing requirements,[7] including *Method 2*. *Method 1* calculates total gross borrowing requirements by ignoring the complications associated with short-term operations by focusing on (redemptions of) long-term debt (longer than one year) only. *Method 3* takes as gross funding estimate all redemptions for bonds, the refinancing of all three-month T-bills and cash. *Method 4* calculates total gross borrowing requirements by aggregating all redemptions (as with *Method 3*) plus daily cash operations during the year.

Demonstration that the new proposed method 2 provides meaningful estimates

These examples also show that that three out of four methods either significantly underestimate or substantially inflate gross borrowing requirements, while *Method 2* yields an economically sensible estimate. Annex II provides a slightly more complicated numerical example of the application of the suggested new approach to the measurement and reporting of **GBR(ST)** (*i.e. Method 2*).[8]

We conclude that the proposed new measure is both a pragmatic and sensible solution.

ANNEX I: DIFFERENT METHODS FOR CALCULATING GROSS BORROWING REQUIREMENT (GBR)

Method 1: Initial stock of debt is not taken into account [D(.)=0], while all long-term redemptions are being refinanced.[9] GBR = TR(LT).

	NBR	Bonds	T-bills	Cash	Total
Stock of Debt 2009-01-01		**150**	**47**	**3**	**200**
Net borrowing requirement (**NBR**)	0				
Redemptions (refinancing) (**TR**)		30	0	0	
Gross borrowing requirement (**GBR**)	0	30	0	0	**30**
Stock of debt 2010-01-01		**150**	**47**	**3**	**200**

Gross borrowing requirement = EUR 30 bn

Method 2: Refinancing of the stock of T-bills plus cash at the beginning of year plus NBR. GBR = D(ST) + NBR(ST).

	NBR	Bonds	T-bills	Cash	Total
Stock of debt 2009-01-01		**150**	**47**	**3**	**200**
NBR	0				
Redemptions		30	47	3	
GBR	0	30	47	3	**80**
Stock of debt 2010-01-01		**150**	**47**	**3**	**200**

Gross borrowing requirement EUR 80 bn

Method 3: Initial stock of debt is not taken into account, while all redemptions (including all three-month T-bills) and cash balance are being refinanced. GBR = TR=TR(ST)+TR(LT) + Cash.[10]

	NBR	Bonds	T-bills	Cash	Total
Stock of debt 2009-01-01		**150**	**47**	**3**	**200**
NBR	0				
Redemptions		30	188	3	
GBR	0	30	188	3	**221**
Stock of debt 2010-01-01		**150**	**47**	**3**	**200**

Gross borrowing requirement EUR 221 bn

Method 4: Initial stock of debt is not taken into account, while all redemptions (including all three- month T-bills) plus daily cash positions are being refinanced. GBR = TR=TR(ST)+TR(LT) +Cash.

	NBR	Bonds	T-bills	Cash	Total
Stock of debt 2009-01-01		**150**	**47**	**3**	**200**
NBR	0				
Redemptions		30	188	750	
GBR	0	30	188	750	**968**
Stock of debt 2010-01-01		**150**	**47**	**3**	**200**

Gross borrowing requirement EUR 968 bn

ANNEX II: APPLICATION OF METHOD 2 TO CALCULATE GBR

The basic procedure is to add redemptions of all debt maturing within the year + outstanding stock of T-bills (at the beginning of the year) to the net borrowing requirement.

	Total debt	T-bond	T-bills	Cash
Government debt 31-12-2008*) (in Bn EUR)	**200**	**150**	**45**	**5**
Net cash borrowing requirement (should at least approx. equal the cash budget deficit)	**20**			
Redemptions (debt beginning of year maturing within 12 months)	**80**	**30**	**45**	**5**
Bonds maturing during 2009		25		
T-bills on 31-12-2009 shorter than 12 months **			45	
Cash position on 31-12-2009				5
Buy back of bonds during 2009		5		
Gross borrowing requirement (GBR)	**100**	**45**	**50**	**5**
Net funding in bonds		*15*		
*Net funding in T-bills****)*			*5*	
*Net funding in cash *****)*				*0*
Government debt 31-12-2009	**220**	**165**	**50**	**5**

In Bn EUR during 2009	T-Bond	T-bills	Cash
Financing plan on a yearly basis in this example:	45	50	5

*) Initial stock of debt at the beginning of 2009.

**) *i.e.* maturing during 2009.

***) Equals the increase in T-bill stock on yearly basis (*i.e.* refinancing during the year is netted out) but the excess of all issuance over all maturing T-bills is included in the net figure. Gross funding of T-bills is initial stock + net funding.

****) Equals the change in cash position between the last day of 2008 and the last day of 2009 (*i.e.* the same treatment as for T-bills).

Note 1: **Actual total issuance operations** of T-bills and deposits (cash) will be much larger due to refinancing of short debt during the year.
Note 2: **Net funding per instrument** is by definition equal to gross borrowing minus redemptions per instrument.

Note 3: **Gross funding per instrument** calculated by summing redemptions per instrument with issuance per instrument from the government's funding or financing plan.

Notes

[1] For details see Blommestein and Gok (2009).

[2] The WPDM consists of senior debt managers from OECD countries.

[3] Referred to as *Method 2* in the discussion below.

[4] All short-term estimates and projections concern borrowing operations for a borrowing horizon of less than one year.

[5] **Method 4** calculates total **GBR** by aggregating all issuance and redemption operations for both long-term and short-term debt within a certain year, while also including daily cash operations, and correcting for roll-over or refinancing activities. When total borrowing (**TB**) and total redemptions (**TR**) are corrected by excluding roll-over refinancing operations within the year, they are referred to as follows: TB* and TR*. In both examples 1 and 2, TB*=€50m and TR*=0.

[6] **Method 2** calculates **GBR** by taking short-term debt stock at the beginning of the year [**D(ST)**] and adding the total short-term net borrowing requirement [**NBR(ST)**]. In other words: **GBR = D(ST) + NBR(ST) = D(ST) + TB*= €100m + €50m= €150 million**.

[7] For the sake of simplicity, the deficit (net borrowing requirement) is assumed to be zero in the calculations in annex I.

[8] There are additional complications that we ignore in this note such as the statistical treatment of foreign currency borrowing (in some countries forex borrowing cannot be used to finance the budget so it needs to be matched with a change at the asset side – government account/forex reserves); on-lending activities (changes at both the liability side and asset side via income in the form of interest payments); discussions in some countries about the treatment of the provision of T-bills by the government to the central banks (for use in special liquidity schemes); the statistical treatment of capital injections (again, there are changes at the liability and asset side of the government balance sheet) etc.

[9] Assume net borrowing requirement (NBR) is zero. In other words: NBR=0 together with D(.)=0 → issuance equals total long-term redemptions → GBR = TR(LT).

[10] Assume NBR is zero. T-bills have three month original duration. NBR=0 together with D(.)=0 → issuance equals total short-term and long-term redemptions → GBR = TR=TR(ST)+TR(LT) +Cash.

References

Blommestein, Hans J. and Arzu Gok (2009), "The Surge in Borrowing Needs of OECD Governments: Revised Estimates for 2009 and 2010 Outlook", *OECD Journal: Financial Market Trends*, vol. 2009/2.