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Fiscal Affairs Department

INTERNATIONAL MONETARY FUND

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Authorized for distribution by Carlo Cottarelli

November 2009

This note has benefitted from comments and suggestions by many Fund colleagues, in particular Carlo Cottarelli, Phil Gerson, Jan Gottschalk, Fuad Hasanov, and Ricardo Velloso. The usual disclaimer applies.

JEL Classification Numbers:	E60, H62, H69
Keywords:	fiscal policy, automatic stabilizers, business cycle fluctuations, cyclical adjustment
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Computing Cyclically Adjusted Balances and Automatic Stabilizers

Prepared by Annalisa Fedelino, Anna Ivanova, and Mark Horton

This technical note provides guidance on how to decompose overall fiscal balances into cyclical and cyclically adjusted components, and how to interpret automatic fiscal stabilizers. These indicators are commonly used to assess how fiscal policy responds to macroeconomic conditions.[1] Various approaches to cyclical adjustment and estimation of the automatic stabilizers are possible—this note focuses on the approach used by the IMF's Fiscal Affairs Department (FAD) in the paper on the State of Public Finances (IMF, 2009a) and in the Fiscal Monitor (Horton et al. 2009). A key issue is the choice of scaling variable—nominal GDP or potential GDP. While results differ modestly under general conditions, care is needed in computing and interpreting these indicators, especially in "less general" cases.

I. Definitions

Fiscal variables, and by implication fiscal balances, move in response to both discretionary policy actions and other, "automatic" effects induced by changes in the macroeconomic environment (typically, but not solely, cyclical changes in output).[2] For example, taxes may be cut or expenditure increased—examples of discretionary policy actions—resulting in a worse fiscal balance. When economic activity slows down, revenues are negatively affected and spending may increase automatically (typically some components of spending, such as unemployment benefits, react to the cycle)—again, resulting in a deterioration of the fiscal balance. Looking solely at changes in the fiscal balance can thus be misleading: these movements may give an impression of expansionary (or contractionary) discretionary policy actions, even though the changes are

[1]When looking at the interaction between fiscal policy and demand conditions, two key sets of issues arise: (i) how do demand conditions affect fiscal positions (how do fiscal balances react to the cycle?); and (ii) how does fiscal policy affects demand (does it support growth, and how?). In this note, we focus on the first question; we include some references for those interested in the second set of questions.

[2]In addition to output, fiscal variables may respond to changes in asset prices, real estate prices, interest rates, exchange rates, and commodity prices. To the extent these effects are not correlated with output fluctuations, they may not be captured by cyclical adjustment techniques and need to be estimated separately. For more detail, see Chapter III in IMF (2009a).

driven by cyclical factors. This is why cyclical adjustment is applied, to filter the impact of cyclical movements on fiscal variables and assess the "underlying" fiscal stance. To do so, the starting point is to define the cyclically adjusted balance in ***nominal*** levels.

The overall fiscal balance may be decomposed as follows

$$OB = PB - INT = CAPB + CPB - INT \quad (1)$$

where *CAPB* is the cyclically adjusted primary balance and *CPB* is the cyclical primary balance (the part of the primary balance that automatically reacts to the cycle). Interest payments are often kept separate because their movements, while "automatic" in the sense of not generally reflecting discretionary fiscal policy actions, may not be necessarily correlated with cyclical output changes (see below).

From (1) changes in the *OB* can be decomposed into: (i) the automatic response of fiscal variables to changes in output; (ii) the response of fiscal variables to changes in discretionary policy; and (iii) changes in interest payments, as follows:[3]

$$\Delta OB = \Delta CPB + \Delta CAPB - \Delta INT \quad (2)$$

where Δ is the difference between two consecutive years, t and $t+1$ (or the difference relative to a reference year). Automatic stabilizers (*AS*) are defined as the change in the cyclical primary balance:

$$AS = \Delta CPB = \Delta OB - \Delta CAPB + \Delta INT \quad (3)$$

Automatic stabilizers are one of the factors that explains changes in overall balances (ΔOB). Their name derives from the fact that they both help "stabilize" the business cycle and are "automatically" triggered by the tax code and by spending rules. For example, taxes that are a function of income react automatically to the cycle—with lower growth and correspondingly lower business profits or pre-tax household income, the government's tax take will be lower while disposable income and, hence, consumption will decline by less than pre-tax income, helping ease the impacts of a slowdown. Progressive income tax and loss carry-forward provisions for corporate income taxes provide an added degree of stability compared to flat income taxes (see Baunsgaard and Symansky, 2009). Similarly, some spending programs also react automatically to the cycle, such as unemployment benefits or other social transfers, which are designed to kick in when economic conditions deteriorate.[4]

[3]This assumes there are no other automatic factors (see footnote 2).

[4]Fatás (2009) notes that fiscal variables that are acyclical (such as public sector wages) may in practice produce a more stabilizing effect on GDP than countercyclical variables (such as taxes) by their virtue of providing a certain amount of income regardless of economic conditions. This distinction may play a role when discussing the effectiveness of fiscal policy (i.e., its impact on income and growth), which should be measured in reference to outcomes, and not only in relation to the cyclical behavior of fiscal variables.

The change in the cyclically adjusted primary balance can be derived from cyclically adjusted revenue and expenditure. In particular, the cyclically adjusted component of revenue R^{CA} is defined as[5]

$$R^{CA} = R\left(\frac{Y^p}{Y}\right)^{\varepsilon_R}, \tag{4}$$

where R is nominal primary revenue, Y^p is potential output (that is, the maximum output compatible, at any given time, with the absence of unexpected inflation), Y is actual output and ε^R is elasticity of revenue with respect to the output gap

$$gap = \left(\frac{Y - Y^p}{Y^p}\right), \tag{5}$$

Cyclically adjusted primary expenditure is similarly defined as

$$G^{CA} = G\left(\frac{Y^p}{Y}\right)^{\varepsilon_G}, \tag{6}$$

where G is nominal primary expenditure and ε_G is the elasticity of expenditure with respect to the output gap.

Then the cyclically adjusted primary balance is

$$CAPB = R\left(\frac{Y^p}{Y}\right)^{\varepsilon_R} - \mathrm{G}\left(\frac{Y^p}{Y}\right)^{\varepsilon_G}, \tag{7}$$

If revenue elasticity is equal to one (i.e., revenues are perfectly correlated with the cycle) and expenditure elasticity is equal to zero (i.e., expenditures are not affected by the cycle (see more on this issue below) the cyclically adjusted primary balance becomes:

$$CAPB = R\left(\frac{Y^p}{Y}\right) - \mathrm{G}, \tag{8}$$

The cyclical primary balance is therefore

$$CPB = OB - CAPB + INT = R\left[1 - \frac{Y^p}{Y}\right] = \frac{R}{Y}\, Y^p gap, \tag{9}$$

[5]The methodology presented here is a simplified version of OECD/European Commission methods, which employs separate components of revenue to compute cyclically adjusted revenue and adjusts expenditures based on the deviation of the actual level of unemployment from structural unemployment. In the absence of information on revenue/expenditure components and unemployment rates, FAD has opted to perform cyclical adjustment on total revenue and spending by applying aggregate elasticities.

Hence, if the elasticity of spending is assumed to be zero, the cyclical primary balance depends on the level of taxation as a ratio to GDP, output gap and potential output.

In practice, fiscal variables are seldom assessed in nominal levels, instead, ratios to GDP or potential GDP are used. As the next section shows, the choice of the scaling variable affects the computation of automatic stabilizers.

II. Scaling and Other Issues

The cyclically adjusted primary balance is often measured in relation to potential output—the "natural" scaling variable since cyclically adjusted balances measure what the fiscal balance would have been if the output had been at its potential level—as follows:

$$capb = \frac{CAPB}{Y^p} = \frac{R^{CA}}{Y^p} - \frac{G^{CA}}{Y^p} = \frac{R}{Y}\left(\frac{Y^p}{Y}\right)^{\varepsilon_R - 1} - \frac{G}{Y}\left(\frac{Y}{Y}\right)^{\varepsilon_G - 1}, \qquad (10)$$
$$= r(1+gap)^{-(\varepsilon_R - 1)} - g(1+gap)^{-(\varepsilon_G - 1)}$$

where gap is the output gap and small letters r and g denote ratios of revenue and expenditure to GDP while small letter for ***capb*** denotes the ratio of cyclically adjusted primary balance to potential GDP.

For small output gaps (10) can be further approximated as follows

$$capb = r(1+gap)^{-(\varepsilon_R - 1)} - g(1+gap)^{-(\varepsilon_G - 1)} \approx r(1-(\varepsilon_R - 1)gap) - g(1 - (\varepsilon_G - 1)gap) \qquad (11)$$

This expression captures the "structural" primary balance i.e. primary balance not affected by cyclical fluctuations. Changes in the ***capb*** are often used to estimate the size/cost of discretionary policy.

Once the cyclically adjusted primary balance has been defined as in (10) or (11), the cyclical/automatic part of the primary balance is calculated as a residual. There are, however, two commonly applied approaches to this.

Method 1. The first approach defines the cyclical/automatic part of the primary balance (cpb) as the primary balance in percent of actual GDP net of the cyclically adjusted balance in percent of potential GDP, namely:

$$cpb = \frac{CPB}{Y} = \frac{PB}{Y} - \frac{CAPB}{Y^p} = pb - capb = r(\varepsilon_R - 1)gap - g(\varepsilon_G - 1)gap, \qquad (12)$$

where ***pb*** and ***cpb*** are the primary balance and the cyclical primary balance in percent of actual GDP.[6] The contribution from automatic stabilizers to changes in the overall balance is then given by the change in (12) between two periods.

When revenue elasticity ε_R is one and expenditure elasticity ε_G is zero (12) becomes

[6]This approach was used by FAD staff in the "***State of Public Finances***" paper (IMF 2009a).

$$cpb = g \times gap \tag{13}$$

and the automatic stabilizers (as a ratio to ***nominal*** GDP) are given by

$$as = AS/Y = \Delta cpb = \Delta(g \times gap) \tag{13a}$$

When the ratio of expenditures to GDP is fairly stable over time, the contribution from automatic stabilizers (as a share of nominal GDP) can be approximated by the change in the output gap multiplied by the expenditure-to-GDP ratio:

$$as \approx g \times \Delta gap \tag{14}$$

This formula offers a practical and simple way to compute automatic stabilizers, but it is counter-intuitive on two grounds. First, the contribution of automatic stabilizers is found to depend on *g*—the expenditure-to-GDP ratio—even though the formula derives from the assumption that spending does not react to the cycle. Second, the formula also mixes different scaling variables—GDP for the primary balance, and potential GDP for the cyclically adjusted balance. At the same time, (13) is useful when seeking to explain the changes in the fiscal balance to GDP ratio—the variable on which policy makers most typically focus: when there are no discretionary actions, (13) provides the change in the fiscal balance ratio.

Method 2. Under the second approach, all variables in (1) are expressed as a ratio to potential GDP (which does not react to cyclical fluctuations), rather than actual GDP. In this case, the cyclically adjusted primary balance is still defined as in (9), however, the cyclical balance as a share of potential output is derived as the difference between the primary balance and the cyclically adjusted primary balance, both in relation to potential output. Substituting from (9) and (10) (with the same notation as above, but with a prime symbol indicating ratios to ***potential*** GDP)

$$\begin{aligned} cpb' &= \frac{CPB}{Y^p} = \frac{PB}{Y^p} - \frac{CAPB}{Y^p} = pb' - capb, \\ &= r(1+gap) - g(1+gap) - r(1-(\varepsilon R - 1)gap) + g(1 - (\varepsilon_G - 1)gap) \\ &= r\varepsilon_R gap - g\varepsilon_G gap \end{aligned} \tag{15}$$

When revenue elasticity ε_R is one and expenditure elasticity ε_G is zero, (15) becomes

$$cpb' = r \times gap \tag{16}$$

and, accordingly

$$as' = AS/Y^p = \Delta cpb' = \Delta(r \times gap) \tag{16a}$$

Again, if the revenue-to-GDP ratio does not change much, the contribution of automatic stabilizers can be approximated by:

$$as' \approx r \times \Delta gap \tag{17}$$

The relationship between cyclical primary balance calculated under the two alternative approaches as described by (13) and (16) is as follows:

$$cpb = r(\varepsilon_R - 1)gap - g(\varepsilon_G - 1)gap$$
$$= cpb' - pb^{*}gap \qquad (18)$$

Hence, for small output gaps and primary balances, the two approaches would yield very similar results. In extreme cases when the primary balance is far away from zero or the output gap is very large the results may differ significantly. Note, however, that both formulae were derived under the assumption of a small output gap, hence, their application to large output gaps is subject to caveats. Example 1 illustrates this point.

However, results under Method 1 and 2 may differ significantly when the primary balance is significantly different from zero (large surpluses or deficits, see Examples 2-3) or the output gap is large (Example 4).

This approach also yields very different results across the two methods for large output gaps, as illustrated by Example 4.

Example 4 present a rather extreme case; the (linear approximation-based) formulas (13a) and (16a) were derived under the assumption of small output gaps. The assumption of zero-one elasticities allow (13a) and (16a) to hold always, regardless of the size of the output gap. However, when the elasticities are different from zero-one and the output gap is large it would be preferable to calculate automatic stabilizers starting from ***capb*** as defined in (10).

One final consideration. As both automatic stabilizers and discretionary measures have an impact on demand, for any given growth target, the larger the size of automatic stabilizers, the lower the need to use discretionary policy. This "inverse" relationship between the size of AS and the size of discretionary fiscal policy packages is documented for G-20 countries in IMF (2009b).

The elasticity assumptions

While we provide formulae for a more general case, in the examples we focus on the case of constant unitary elasticity of revenue with respect to the output gap and zero elasticity of spending. While an approximation, these elasticities are close to those estimated for OECD countries. In particular, the OECD (Girouard and André, 2005) elasticities computed for specific tax categories yield an aggregate revenue elasticity close to 1 (EU Commission , 2005).[7] Similarly, the "aggregate" spending elasticity is close to zero, as most spending is not correlated to the output gap, with the exception of items like unemployment benefits—these, however, typically represent a small share of total spending in most countries (if at all). The assumption of constant elasticity, however, may introduce distortions in the estimates of automatic stabilizers in case of changes in the composition of revenue.

[7]The elasticities are generally higher for corporate and personal income taxes, equal to 1 for indirect taxes, and less than 1 for social security contributions

Example 1: Small change in output gap (Method 1 ≈ Method 2)

In this example, output is falling by 2 percent in the second period, while potential output remains unchanged; the output gap widens from zero to 2 percent (Table 1). Expenditures remain constant in nominal terms while revenues decline in line with output. The primary deficit widens from 0 to 0.4 percent of GDP. Interest payments remain unchanged, and represent 9 percent of total spending in period *t+1*.

In this case the two methods broadly yield the same results, although they are not numerically identical. Both methods attribute all the change in the overall balance to automatic stabilizers (0.4 percentage point of GDP and potential GDP, respectively). Automatic stabilizers are computed by applying (13a) and (16a) for both methods, respectively.[1]

Table 1. Small output gap

	t	*t+1*	*t*	*t+1*	*t*	*t+1*
	Levels		In percent of GDP		In percent of Y^p	
Y	100	98				
Y^p	100	100				
Output gap	0.0	–2.0				
R (Rev)	20	19.6	20.0	20.0	20	19.6
G (Primary spending)	20	20	20.0	20.4	20	20
Interest payments	2	2	2.0	2.0	2.0	2.0
OB (Overall balance)	–2	–2.4	–2.0	–2.4	–2.0	–2.4
PB (primary balance)	0	–0.4	0.0	–0.4	0.0	–0.4
			Method 1		Method 2	
Change in OB				–0.45		–0.40
Automatic factors				–0.45		–0.40
Automatic stabilizers				–0.41		–0.40
Interest payments				–0.04		0.00
Discretion (residual)				0.00		0.00

[1]For example, given that as = $\Delta(g \times gap)$, the result under Method 1 is computed as (0.24 * .02 – .20*0)*100 = – 0.41 as shown under the column "Method 1."

For example, Sancak et al., 2009 finds that in some countries VAT buoyancy (with respect to GDP) tends to increase during expansions and go down during recessions, particularly in emerging market countries. Hence, in these countries the contribution form automatic stabilizers may be overstated if one/zero elasticity is used to estimate automatic stabilizers.

How should interest payments be treated?

So far we have treated interest payments as an automatic factor separate from automatic stabilizers. This is because, as mentioned earlier, interest rates change with economic conditions, but do not necessarily react automatically to, or predictably in line with, cyclical conditions. However, it is possible that interest payments contain some component that is correlated with the cycle, in

(Extreme) Example 2: Country with only spending, yet non-negligible AS under Method 1

Suppose a country does not collect tax revenue.[1] By definition, with zero elasticity of spending, there should be no automatic stabilizers. However, the application of (13a) would produce non-zero automatic stabilizers. In particular, under the same growth dynamic as in Example 1, the output gap widens to negative 2 percent in the second year, while revenue remains at zero and expenditure stays constant in nominal terms (interest payments are zero) (Table 2). In this case, there is no change in the overall balance in percent of potential GDP while the overall balance deteriorates by 0.4 percentage points of nominal GDP. The application of Method 1 suggests that the 0.4 percent of GDP deterioration in the ratio of the OB to GDP is all due to the functioning of automatic stabilizers, reflecting the widening of the output gap. However, applying Method 2 and using potential GDP to scale the fiscal variables yields results that are in line with the underlying economic developments.

Table 2. No revenue, yet relatively large AS

	t	*t+1*	*t*	*t+1*	*t*	*t+1*
	Levels		In percent of GDP		In percent of Y^p	
Y	100	98				
Y^p	100	100				
Output gap	0.0	–2.0				
R (Rev)	0	0	0.0	0.0	0	0
G (Primary spending)	20	20	20.0	20.4	20	20
Interest payments	0	0	0.0	0.0	0	0
OB (Overall balance)	–20	–20	–20	–20.4	–20	–20
PB (primary balance)	–20	–20	–20	–20.4	–20	–20
			Method 1		Method 2	
Change in OB				–0.4		0.0
Automatic factors				–0.4		0.0
Automatic stabilizers				–0.4		0.0
Interest payments				0.0		0.0
Discretion (residual)				0.0		0.0

[1]This may seem extreme, but consider the case of a small, oil-producing country that does not levy domestic income taxes or VAT.

which case a proper adjustment method would need to include the cyclical component of interest payments in automatic stabilizers. Separating, however, the cyclical portion of interest payments is difficult. Moreover, if government borrowing and lending are largely on a long-term basis, the automatic component of interest payments is likely to be small.

One option to tackle these issues would be to perform cyclical adjustment on total spending, including interest payments. Example 5 below shows that such approach would yield similar results under Method 1 and Method 2, while the two methods differ when interest payments are treated separately. While this option may be preferable if interest payments accrue to domestic

(Extreme) Example 3: Country with only revenue, yet no AS under Method 1

In this example, a country has no spending but only collects revenues. Under the same deterioration in output gap as in the previous examples (–2 percent), revenue declines with output. While the automatic stabilizers do operate on revenue side, the application of Method 1—which relies on the expenditure-to-GDP ratio—suggests that the automatic stabilizers are zero (Table 3). However, Method 2, which utilizes the ratio of revenues to potential GDP, shows to a deterioration of the overall balance of 0.8 percentage points of potential GDP through the functioning of the automatic stabilizers.

Table 3. Only revenue, yet no AS

	t	*t+1*	*t*	*t+1*	*t*	*t+1*
	Levels		In percent of GDP		In percent of Y^p	
Y	100	98				
Y^p	100	100				
Output gap	0.0	–2.0				
R (Rev)	40	39.2	40.0	40.0	40	39.2
G (Primary spending)	0	0	0.0	0.0	0	0
Interest payments	0	0	0.0	0.0	0	0
OB (Overall balance)	40	39.2	40	40.0	40	39.2
PB (primary balance)	40	39	40	40.0	40	39.2
				Method 1		Method 2
Change in OB				0.0		–0.8
Automatic factors				0.0		–0.8
Automatic stabilizers				0.0		–0.8
Interest payments				0.0		0.0
Discretion (residual)				0.0		0.0

creditors, it does not fully capture the true cyclical part of interest payments: it assumes that all interest payments contain a cyclical component, but at the same time ignores changes in interest payments due to the variations in interest rates that result from cyclical factors that do not commove with the output gap. This approach would also not account correctly for the changes in primary spending that may be triggered by changes in interest payments (for example, if a government takes advantage of lower interest payments to expand other spending programs). Still, during a slowdown, to the extent monetary policy is accommodative and interest rates are lower, this may lead to an overestimation of cyclically adjusted balances (or underestimation of cyclically adjusted deficits); the reverse would happen in the recovery phase, when interest rates are likely to increase.[8]

[8]See Bouthevillain and Quinet (1999).

Example 4: Large(r) output gaps

Assume that output is falling by 20 percent, while potential output remains unchanged (to put this example in perspective, output gaps in some countries, most notably in Central and Eastern Europe, have swung by as much as 15 percentage points in the current crisis). Using the same assumptions as in Example 1 for period *t*, expenditures again remain constant in nominal terms, while revenues decline in line with output (to a nominal level of 16). The primary deficit rises from 0 to 5 percent of GDP. In this case, the two methods yield somewhat different results both in terms of the total change in the fiscal balances and the contribution of various automatic factors. Still, the contribution from automatic stabilizers dominate the change in overall balances in both cases (5 percentage points and 4 percent points under Method 1 and 2, respectively).

Table 4. Large output gap

	t	*t+1*	*t*	*t+1*	*t*	*t+1*
	Levels		In percent of GDP		In percent of Y^p	
Y	100	80				
Y^p	100	100				
Output gap	0.0	–20.0				
R (Rev)	20	16	20.0	20.0	20	16
G (Primary spending)	20	20	20.0	25.0	20	20
Interest payments	2	2	2.0	2.5	2.0	2.0
OB (Overall balance)	–2	–6	–2.0	–7.5	–2.0	–6.0
PB (primary balance)	0	-4.0	0.0	–5.0	0.0	–4.0
			Method 1		Method 2	
Change in OB				–5.50		–4.00
Automatic factors				–5.50		–4.00
Automatic stabilizers				–5.00		–4.00
Interest payments				–0.50		0.00
Discretion (residual)				0.00		0.00

Is it better to scale variables by potential GDP or nominal GDP?

In principle, using potential GDP is conceptually more correct than using nominal GDP. For example, the expenditure ratio *g* may change simply as a result of changes in nominal GDP (even when the nominal level of spending, *G*, remains unchanged); this will not happen when ratios are computed in relation to potential GDP. While a variety of approaches can be applied to compute potential GDP and output gaps, they are subject to a number of challenges (IMF 2005b). More generally, potential GDP is a less "visible" concept than nominal GDP—and rarely used by policy makers and the public—as shown by the fact that fiscal analysis is typically based on ratios to nominal GDP.[9] Accordingly, deviations of headline deficits (and fiscal variables) from those published in budget documents, if expressed as a percent of potential GDP,

[9]These issues are further explored in IMF (2005a) and IMF (2005b).

Example 5: The role of interest payments

In this example output again falls by 2 percent while potential output remains unchanged (Table 5). Expenditures remain constant in nominal terms while revenues decline in line with output. Interest payments are also significantly larger than in the previous examples, comprising one fourth of total spending. While again both approaches assign the total change in the balance to automatic factors, the estimated contribution from automatic stabilizers in the first approach falls to 67 percent of the total change in the overall balance while it remains 100 percent under the second approach.

Table 5. The misleading contribution from interest payments in GDP ratios

	t	*t+1*	*t*	*t+1*	*t*	*t+1*
	Levels		In percent of GDP		In percent of Y^p	
Y	100	98				
Y^p	100	100				
Output gap	0.0	–2.0				
R (Rev)	40	39.2	40.0	40.0	40	39.2
G (Primary spending)	20	20	20.0	20.4	20	20
Interest payments	10	10	10.0	10.2	10	10
OB (Overall balance)	10	9.2	10	9.4	10	9.2
PB (primary balance)	20	19	20	19.6	20	19.2
			Method 1		Method 2	
Change in OB				–0.6		–0.8
Automatic factors				–0.6		–0.8
Automatic stabilizers				–0.4		–0.8
Interest payments				–0.2		0.0
Discretion (residual)				0.0		0.0

The differences in the estimated composition of automatic factors could be eliminated by applying cyclical decomposition to total rather than primary spending. In this case, total expenditure in percent of GDP should be used. It may be argued, however, that a more relevant indicator of the fiscal expansion is the primary rather than overall balance since interest payments, if paid to foreigners, do not contribute to the change in aggregate domestic demand.

will likely not resonate well with country authorities and the public. Hence, there is a trade-off between analytical rigor (when potential GDP is used) and convenience of commonly used indicators (when nominal GDP is used).

III. Some Conclusions

This note clarifies the methodology for decomposing changes in overall fiscal balances into discretionary and "automatic" effects. The emphasis on automatic stabilizers and their calculations is not suggestive that other relevant aspects—such as the feedback loop effects of fiscal policy on demand conditions—are not relevant. They are, but they are not covered in this note, which focuses

on methodological issues. From that standpoint, Examples 1-4 demonstrate that conceptually the approach proposed in Method 2 (equation 16a) is superior to that proposed in Method 1 (equation 13a). However, the former relies on the decomposition of the overall balance expressed as a share of potential GDP, a concept that, while familiar to economic analysts, is rarely used by policy makers or the public. In addition, measurement errors in computing potential GDP (and its likely revisions) may further complicate the interpretation of fiscal ratios using this variable. Hence, there is a trade-off between theoretical rigor and convenience of (more) commonly used indicators.

References

Baunsgaard T. and S. Symansky (2009)) "Automatic Fiscal Stabilizers: How Can They be Enhanced without Increasing the Size of Government? IMF Staff Position Note 09/23.

Bouthevillain C. and A. Quinet (1999) "The Relevance of Cyclically Adjusted Public Balance Indicators—The French Case" in *Indicators of Structural Budget Balances* Proceedings of the Bank of Italy Public Finance Workshop (Perugia, November 26-29, 1998).

Girouard N. and C. André (2005), "Measuring Cyclically Adjusted Budget Balances for OECD Countries," OECD Economics Department Working Papers No. 434.

European Commission (2005), "New and Updated Budgetary Sensitivities for the EU Budgetary Surveillance", Information note for the Economic and Policy Committee, European Commission, ECFIN/B/6(2005)REP54508, September, 2005.

Horton M., M. Kumar, and P. Mauro (2009) "The State of Public Finances: A Cross-Country Fiscal Monitor" IMF Staff Position Note 09/21, http://www.imf.org/external/pubs/ft/spn/2009/spn0921.pdf.

IMF (2009a) "The State of Public Finances: Outlook and Medium-Term Policies After the 2008 Crisis" http://www.imf.org/external/np/pp/eng/2009/030609.pdf.

IMF (2009b) "Global Economic Policies and Prospects" Note prepared for the Group of Twenty Meeting in London, March 13-14 2009.

IMF (2005a) "Promoting Fiscal Discipline Over the Business Cycle" SM/05/392.

IMF(2005b) "Cyclicality of Fiscal Policy and Cyclically Adjusted Fiscal Balances" SM/05/393.

Sancak, C. , R. Velloso and J. Xing (2009) "Tax Revenue Response to the Business Cycle," IMF, forthcoming.

TNM/09/05

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