COMMENTS ON SESSION 1: CYCLICAL ADJUSTMENT

Charles Perreault[*]

Introduction

First, I would like to thank Daniele Franco and the Banca d'Italia for giving me the opportunity to attend this year's workshop. The high quality of the papers presented and ensuing discussions provided much valuable insight about the analysis of structural fiscal developments.

The papers presented in Session 1 are all linked, albeit to various degrees, through one concept: the cyclically-adjusted budget balance (CABB). More specifically, I will focus my comments on the issues raised by two specific papers, although these issues are likely to be widely shared by others.

1. Decomposing structural budget balances

The two papers which I will touch on, the one from Kremer *et al*. and the one from Brandner, Kohler-Toglhofer and Diebalek focused on the decomposition and analysis of changes to structural budget balances. This part of research on CABBs is of primary importance, as policy-makers need to understand changes to CABBs to put forward appropriate measures.

In particular, Kremer *et al*. presented a disaggregated framework for the analysis of past and projected structural developments in the main revenue and expenditure categories and the fiscal balance. They applied this framework to six European countries over the 1998-2004 period, which allows them to pinpoint the main elements responsible for the changes in the structural balance and discriminate between changes due to pure discretionary policy versus more systematically-induced changes.

On the other hand, Brandner, Kohler-Toglhofer and Diebalek used a framework that broke down the observed budgetary balance as a percentage of GDP into four components: a) the core balance; b) automatic stabilizers; c) a component reflecting discretionary fiscal policy responses to the business cycle, and; d) a component reflecting all other transitory shocks to the fiscal balance. Using this framework, they estimated the cyclical discretionary changes in the structural balance of Austria as computed by the OECD and found that discretionary fiscal policy was pro-cyclical, most notably in the case of revenues. Their results show that

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[*] Department of Finance – Canada.

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over the 1976-2004 period, discretionary fiscal policy actions in response to the cycle were systematically offsetting, albeit partially, the operation of automatic stabilizers. The authors attributed these results to the structure of the Austrian federation, notably to the use of fiscal rules on the budget balance at both the federal and provincial levels.

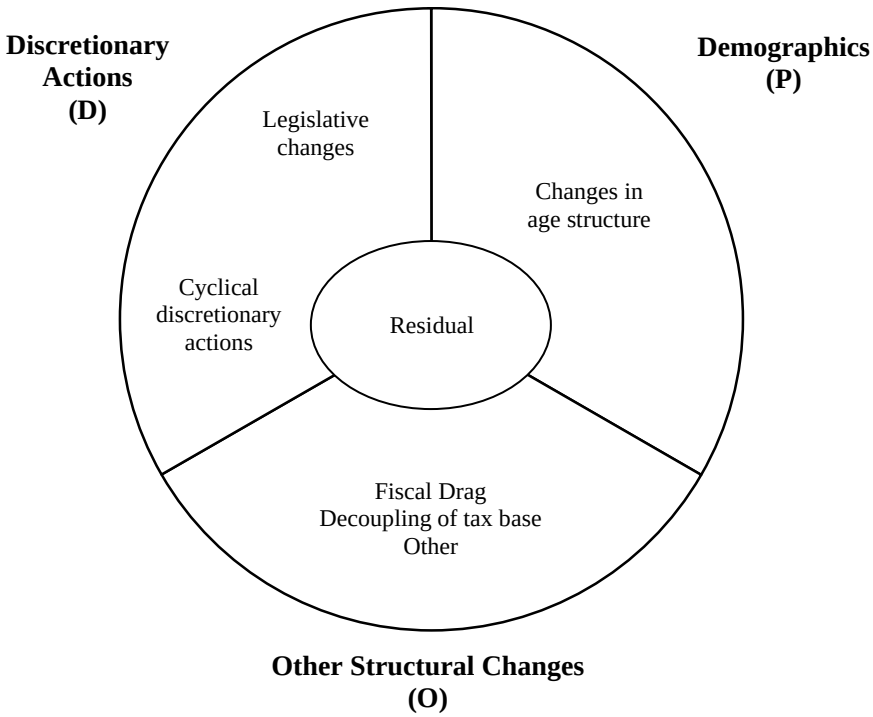
To better visualize the breakdown of structural balances made by the authors of the two papers, I will refer to an alternative approach, which was presented by Assarsson, Gidehag and Zettergren in 1999 at Banca d'Italia's First Workshop on Public Finances. Assarsson *et al*. illustrated the structural balance as being a function of three elements:

$$CABB = f(D, P, O)$$

where *D* refers to governments' discretionary actions, *P* refers to demographic changes and *O* to other structural changes. The simple framework provided by Assarsson *et al*. helps make a bridge between the two papers presented at this year's workshop, which mainly expanded our understanding of the "other structural changes" (Figure 1).

Figure 1

Theoretical Breakdown of the Structural Balance



This simple wheel enables a useful categorization of the contributions of the two papers and also highlights areas where further work could be devoted. There are two topics that readily come to mind, namely the evaluation of cyclical discretionary actions and the impact of demographics on the changes in the structural balance.

Using sophisticated statistical techniques, Brandner *et al*. calculated the size of cyclical discretionary actions for Austria and concluded that they often offset the impact of automatic stabilizers. However, when calculating CABBs, some cyclical discretionary actions are often captured in the cyclical component of budget balances and thus are not reflected in Brandner *et al.* calculations. This does not change their conclusions that cyclical discretionary actions partially offset automatic stabilizers, although it understates actual size of cyclical discretionary actions.

The second topic relates to a concern shared by most industrialized countries, whereby the aging of the population is expected to have an increasing impact on public finances. It is a difficult task to pinpoint the impact of government spending decisions on the changes in the structural budget balance, especially given that various forces, such as aging populations, exert pressures on public finances. Kremer *et al.* broke down the annual changes to the structural primary expenditure ratio in six categories and included a number of sub-categories, which provided additional information as to where the annual changes came from. I acknowledge that the impact of aging-related pressures on public finances are usually handled using a longer-term approach, but the Kremer *et al*. framework provide a good opportunity to deepen the analysis regarding this issue.

For example, a simple approach would be to take into account the impact of changes to population growth and composition on some expenditure categories, notably health care. By age-adjusting health spending, under certain assumptions, it would be possible to highlight the changes in health care spending that are due to the "enrichment" of health care services, which can stem from a combination of changes in the quality, quantity and mix of services provided. This would therefore provide a more precise estimation of the impact of government policy decision as compared to the ubiquitous changes induced by changes in the age structure of the population. Of course, this approach would yield little additional information on the changes to the CABB at present, but its usefulness is likely to grow in the future.

2. Simultaneity bias

More generally, there is a common issue that applies to both papers and most others that use CABB estimates: the simultaneity bias between fiscal and economic variables, whereby changes in government revenues and expenditures affect output and vice versa. When unadressed, this issue tends to result in estimators that are likely to be biased towards zero, therefore underestimating the cyclical component of the budget balance. In other words, CABB estimates are likely to be overstated.

Former colleagues at Finance Canada have addressed this issue by jointly estimating the CABB and the short-term impact of government revenues and spending on

economic activity (called the indicator of fiscal policy stance or FiPS),[1] using the Generalized Method of Moments estimation technique. This approach yields statistically unbiased estimates of both the CABB and the FiPS.

The cyclical component of the budgetary balance is estimated and the cyclically-adjusted component is computed as a residual. The cyclical component is estimated in a system of equations, whereby each equation in the system represents a budgetary revenue or expenditure. For example,

$$\Delta x_{it} = \beta_I \Delta y_t + e_{it}$$

where Δxit represents the quarterly change in the budgetary components (*i.e.*, revenues and expenditures) expressed as a per cent of potential GDP, Δyt is the quarterly change in the output gap (actual output less potential output as a per cent of potential output) and e_{it} is a residual. The estimated coefficient, β_i, represents the percentage point change in budgetary revenues or expenditures from a one-percentage-point change in the output gap. It is possible to sum the equations for each revenue and expenditure to obtain the sensitivity of the budgetary balance to changes in the output gap,

$$\Sigma\Delta x_{it} = \Sigma\beta_I \Delta y_t + \Sigma e_{it}$$

The estimated sensitivity of the budgetary balance to the output gap ($\Sigma\beta_i$) can be applied to the annual level of the output gap to approximate the level of the cyclical component of the budget balance, which is then deducted from the actual budget balance to obtain the level of the CABB.

Estimated simultaneously, the FiPS measures the amount (in percentage points) that fiscal policy adds to or subtracts from GDP growth. The FiPS equation is as follows:

$$\Delta y_t = \alpha_i \Delta x_{it} + \gamma z_{it} + u_t$$

where Δy_t is the quarterly change in the output gap, Δx_{it} represents the quarterly change in the budgetary revenues and expenditures, expressed as a per cent of potential GDP, γz_{it} represents exogenous determinants of economic growth, and u_t is an error term. The estimated coefficient, α_i, represents the impact on GDP growth (in percentage points) of a 1-percentage-point change in the budgetary components.

When estimating Canada's cyclically-adjusted budget balance, a statistically significant cyclical component is found for all revenues and for spending on non-wage goods and services and transfers to persons. This differs from the conventional methods employed by the OECD and IMF, whereby only personal income tax, corporate income tax, direct taxes and employment-related spending are adjusted for the business cycle. This, combined with the GMM estimation technique, leads to a much larger cyclical component. Such an approach is very useful to assess

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[1] For more information on the methodology, please refer to Murchison and Robbins (2002), Proceedings of the Banca d'Italia Fourth Workshop on Public Finance, *The Impact of Fiscal Policy*.

both the cyclical component of the budgetary balance and the impact of fiscal policy on the economy. However, it might be more difficult to extend this methodology to large cross-country comparisons given the large data and modelling requirements. Nevertheless, it is a very useful tool for single country analysis.

3. General observations

There are four issues raised by these papers that are worth highlighting. First, both papers provide valuable insights into the composition and evolution of budgetary balances. Their solid methodologies have been applied in other work, which is a good indicator of their reliability. For example, Kremer *et al.* disaggregated framework for analysing changes in structural budget balances have been used by the Deutshe BundesBank in a special section on the case of Germany in its March 2006 Monthly Report.

Second, results of the analysis of structural fiscal balances often provide a different view on what is deemed "appropriate fiscal policy". For example, the findings of Brandner *et al*. show that fiscal policy in Austria was generally tightened in downturns and loosened in upturns. This leads one to wonder if, contrary to general wisdom, downturns do not provide more opportunities than upturns when it comes to fiscal consolidation. From a public policy-making perspective it is very significant. Some countries experiences in that matter, namely Finland, Sweden and Canada in the 1990s tends to support these observations.

In addition, the analysis of structural fiscal developments is a very useful tool for policy-makers with regards to determining policies appropriate to the position in the cycle and to the measures, automatic or not, already in place. However, most of the work in this field has been undertaken at the total government level. This may be suitable for unitary countries, but the interpretation of the results for federal countries could be ambiguous given the interactions between policies implemented at the federal level and those at the sub-national levels, which are often uncoordinated. Therefore, it would be useful to highlight the contribution of various government levels to the structural balance, as they sometimes explain many important fiscal policy developments as suggested by the Brander *et al*. paper.

And finally, as was demonstrated in Session 4 by the paper of Boije and Fisher, there are various ways to estimate cyclically-adjusted budget balances and as a result there are a wide array of estimations of the CABB for the same country/year. Therefore, it might be useful in the future to evaluate the uncertainty surrounding cyclically-adjusted budget balance estimates. It would provide a margin of error around the estimations, which in turn would help assess the breakdown of the structural balance and its related changes through time.