Reply to comments by López, Jimenez and Cabello

First of all, we would like the reviewers their very helpful comments. We think that the new version of the paper and our replies below contemplate the most important points and concerns raised, although some of them are definitely beyond the scope of the paper.

We agree with the reviewers that some of the methodological choices have potentially a crucial effect on the cyclically-adjusted budget balances we estimate. To address this issue, we did three things in the revised version of the paper. First, we conducted a series of robustness checks related to the estimation of the output gap and elasticities outlined below. Second, we included a paragraph in the final section on conclusions regarding the issues that should be part of a more detailed research agenda to improve measurement and quantify key uncertainties. Finally, we changed the wording in several sections of the paper to reflect more the intrinsic uncertainty related to our estimates.

Reviewers' comment 1

Estimation of potential output, where the most used methodologies are the calculation of a production function and the use a filter to estimate the trend, being the most widely used Hodrick-Prescott filter. The authors use in this paper the estimation of a production function but they very appropriately highlight the uncertainty stemming from this estimation, due to large and simultaneous cyclical, temporary and permanent shocks in several Latin American economies.

We re-examined the cyclically-adjusted budget balances using the Hodrick-Prescott filter with the usual smoothing parameter of 100. Focusing on the 2009 figures, results do not vary significantly, except in the case of Argentina where the business cycle has been more volatile, and it is still not clear how much of the 2001/2002 crisis had a permanent versus transitory effect. However, even in this case, discretionary fiscal policy remains counter-cyclical in 2009. Results and calculus are available upon request.

	Adjusted primary balance		
	2009, % GDP		
	Original	HP Filter	
Argentina	-0,76	0,08	
Brazil	2,01	2,26	
Colombia	-1,11	-0,99	
Costa Rica	-0,24	-0,24	
Chile	-3,67	-3,67	
Mexico	-0,67	-0,75	
Peru	-1,94	-2,00	
Uruguay	-0,20	0,03	

We have included a footnote on this issue (footnote 20) and have also included an explicit reference to the need of more research on the nature of trend and business cycle characteristics in Latin American economies, as they could have a first-order effect on the cyclically-adjusted balances and should be extremely relevant from a policy viewpoint.

Reviewers' comment 2

Which kind of incomes and expenses are affected by the economic cycle? The authors adjust by the revenue side, the following items: personal income tax, corporate income tax, indirect taxes, social security contributions and commodity revenues. In contrast, by the expenditure side, no item is adjusted assuming that unemployment benefits are absent in many countries in the region. At this point it will be interesting to

analyze deeply the relation of the different budget items with respect to the cycle. The OCDE methodology assume that the items named above are the ones that have a cyclical component, but as Latin America does not share all the characteristics with the OECD countries, the budget items that are affected by the cycle could differ from the ones selected by this methodology. One exercise that is interesting to replicate is that of Marcel et al. (2001) where in order to determine the most significant cyclical components of the budget, they perform an analysis of the volatility of the different items, its relation with the cycle and its incidence on the fiscal balance.

We would like to point out that Marcel et al. (2001) results regarding the cyclical component of revenues are very similar to ours. However, their exercise responds more closely to the concept of "structural balance" used in the Chilean fiscal rule. This approach has the advantage of being comprehensive, since all the cyclical components of the budget, irrespective of their automatic or discretionary nature, are examined and adjusted accordingly. Alternatively, the focus of our paper and the OECD methodology is the measurement of the automatic stabilisers (and consequently of the "cyclically-adjusted balance").

According to the OECD definition,"[t]he budget balance can be decomposed into a cyclical and a non-cyclical, or structural, component. The decomposition is aimed at separating cyclical influences on the budget balances resulting from the divergence between actual and potential output (the output gap), from those which are non-cyclical. Changes in the latter can be seen as a cause rather than an effect of output fluctuations and may be interpreted as indicative of discretionary policy adjustments. It should be noted, however, that changes in resource revenues -- as a result of oil price changes, for example -- and in interest payments -- as a result of past debt accumulation or changes in interest rates -- are neither cyclical nor purely discretionary. Yet these changes are reflected in the evolution of the structural component of the budget balance". Our paper can be understood as a step in the direction of finding a more accurate methodology capable of assessing the fiscal policy stance in Latin America, by taking into account the influence of commodity-price cycles on fiscal revenues is several countries.

Finally, the "structural" approach demands to have an accurate estimation of the effective impact of changes in the tax codes, which are not easily available. These are precisely the conclusions of a more recent paper by Marcel et al. (2010) regarding the measurement problems. Furthermore, such a concept could be easily subject to manipulation and would therefore be a less credible indictor of the fiscal target if considered for policy purposes. In fact, our methodology is more in line with the reforms of the fiscal rule in Chile that are currently under discussion.

Reviewers' comment 3

In the case of the existence of revenues from the exploitation of natural resources, often affected by international price movements, it is necessary to determine the reference price in the long term. The most common methods are moving average, using long term prices published by international organizations or the use of trend filters such as the Hodrick-Prescott. As it is remarked by the authors, commodity cycles may be as relevant to countercyclical policy as economic cycles, because of the former's significance in total fiscal revenues and because of the high volatility of the international commodity prices.

As the reviewers stress, we use one of the most common method to set reference commodity prices. We now also highlight this point as an area of key further research (paragraph following immediately Table 4).

Reviewers' comment 4

The selection of the methodology for the estimation of the elasticities, where the most common methods are the ones used by the IMF and the OECD, although there are simpler alternative methods such as OLS estimates, OLS or recursive dynamic, error correction method, etc. The authors use the methodology

proposed by the OECD but they add some assumptions that could be discussed. For example, when calculating the elasticity of income tax and social security contributions with respect to the tax base, the marginal and the average tax rates of a representative household for an OECD country are calculated for several points in the earnings distribution: from 0.5 to 3.0 times the average production worker. By contrast, the authors, arguing the high levels of informality and income inequality in the region, cover an extended income interval from 0.05 to 6; while De Mello and Moccero (2006) used, for Brazil, an interval from 0.5 to 4.

The high levels of informality combined with the effect of tax exemptions and allowances determine that net tax payers, in particular in the case of the personal income tax, are those citizens with income levels well above the national average. In some cases, notably in Peru or Colombia, the income thresholds rise to 2 or even 3 times the average. For this reason, both the De Mello and Moccero (2006) for Brazil and us argue that the income span has to be extended. Nevertheless, as suggested by the reviewers, we re-calculated tax stabilisers for the personal income tax and social security contributions for the range 0.5 to 3.0 the average income, imputing the whole tax collection for these figures (which implies that results have an upwards bias). Results are robust in pointing out to the relative smaller stabilisers in the region: 0.16 in Chile (vs. 0.15 previously), 0.14 in Mexico (vs. 0.13), 0.29 in Uruguay (vs. 0.25), 0.30 in Argentina (vs. 0.27). Results and calculus are available upon request.

Reviewers' comment 5

Another example could be the assumed elasticity of 1 of the indirect taxes with respect to the output. If, as it is known in the region, the volatility of consumption is higher than the volatility of output, we could assume that the elasticity of the indirect taxes with respect to output could be different than one. Also, another discussion could be if this kind of taxes, or for example, import taxes, should be adjusted directly with respect to another variable different from output, as consumption or imports.

We also performed a robustness exercise, using the estimation of the cyclical response of indirect taxation available for two countries in the sample, Chile (1.06) and Colombia (1.98), both taken from official publications, (Marcel et al., 2010 and Lozano and Toro, 2007). Given the relatively high dependence of tax revenues on indirect taxes in Latin America the cyclical response of the budget increases. However, our prognosis holds. For instance, for the year 2009, the cyclical revenues are -0.51 p.p. of GDP in Chile (vs. -0.49 in the original version), and –0.14 p.p. in Colombia (vs. -0.09 p.p.). Results and calculus are available upon request.

Regarding import taxes, in our analysis they are included in the indirect tax aggregate. We include now a reference to the issue in the conclusions as an issue for future research.

New reference:

Marcel, M., M. Cabezas and B. Piedrabuena (2010), *Recalibrando la medición del balance structural en Chile*, Banco InterAmericano de Desarrollo. Documento de estudio de la Comité Asesor para el Diseño de una Política Fiscal de Balance Estructural de Segunda Generación para Chile.