

Budnevich L., Carlos

Working Paper

Countercyclical fiscal policy: A review of the literature, empirical evidence and some policy proposals

WIDER Discussion Paper, No. 2002/41

Provided in Cooperation with:

United Nations University (UNU), World Institute for Development Economics Research (WIDER)

Suggested Citation: Budnevich L., Carlos (2002) : Countercyclical fiscal policy: A review of the literature, empirical evidence and some policy proposals, WIDER Discussion Paper, No. 2002/41, ISBN 9291902055, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki

This Version is available at:

<https://hdl.handle.net/10419/52877>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



United Nations
University

WIDER

World Institute for Development Economics Research

Discussion Paper No. 2002/41

Countercyclical Fiscal Policy

A Review of the Literature, Empirical
Evidence and some Policy Proposals

Carlos Budnevich L.*

April 2002

Abstract

For many emerging market economies, over reliance on monetary policy may bring worse macro results, when compared to a more balanced framework of countercyclical fiscal and monetary policy. The use of countercyclical fiscal policy requires as a precondition solvent and sustainable fiscal accounts and the re-engineering of fiscal institutions to increase the timeliness and flexibility of fiscal policy. A higher degree of tax or pension fund and/or unemployment insurance contribution flexibility may help in economies subject to significant external shocks. Automatic indexing rules to terms of trade or country risk spreads for pension contributions and interest payments on public debt may also contribute to the stabilization effort. If fiscal revenues are highly volatile, structural budget rules and commodity stabilization funds may provide the necessary framework to achieve saving (dissaving) during expansions (contractions).

Keywords: stabilization, fiscal policy, capital flows, taxation

JEL classification: E61, E62, E63

Copyright © UNU/WIDER 2002

*Universidad Finis Terrae, Chile

This study has been prepared within the UNU/WIDER project on Capital Flows to Emerging Markets since the Asian Crisis, which is co-directed by Professor Stephany Griffith-Jones and Dr Ricardo Ffrench-Davis.

Acknowledgements

A previous version of this paper was presented at a seminar held at WIDER in Helsinki, Finland, October 2001. I am indebted to Ricardo Ffrench-Davis for his excellent comments to improve this paper. I also wish to thank the very useful remarks made by Guillermo Larraín, Guillermo Le-Fort, John Hawkins, Carlos Massad and José Antonio Ocampo. Of course, all remaining errors are my own.

UNU World Institute for Development Economics Research (UNU/WIDER) was established by the United Nations University as its first research and training centre and started work in Helsinki, Finland in 1985. The purpose of the Institute is to undertake applied research and policy analysis on structural changes affecting the developing and transitional economies, to provide a forum for the advocacy of policies leading to robust, equitable and environmentally sustainable growth, and to promote capacity strengthening and training in the field of economic and social policy making. Its work is carried out by staff researchers and visiting scholars in Helsinki and through networks of collaborating scholars and institutions around the world.

UNU World Institute for Development Economics Research (UNU/WIDER)
Katajanokanlaituri 6 B, 00160 Helsinki, Finland

Camera-ready typescript prepared by Jaana Kallioinen at UNU/WIDER
Printed at UNU/WIDER, Helsinki

The views expressed in this publication are those of the author(s). Publication does not imply endorsement by the Institute or the United Nations University, nor by the programme/project sponsors, of any of the views expressed.

ISSN 1609-5774
ISBN 92-9190-204-7 (printed publication)
ISBN 92-9190-205-5 (internet publication)

Introduction

At the beginning of the 1990s, the United States experienced a recession. The large budget deficit of the US government did not allow the use of discretionary countercyclical fiscal policy to stimulate the economy. With the elimination of budget deficits in recent years, the use of discretionary fiscal policy has re-emerged. In fact, in the current economic downturn, the US recently enacted a tax reform that reduced tax rates. Similarly in Chile, a law to diminish personal income tax rates has been approved by the government on the basis of providing a stimulus to cool aggregate demand, and on efficiency grounds also. Both countries have considered expanding fiscal expenditures to accelerate their economic recovery. Discretionary countercyclical fiscal policy again appears to be a feasible option.

Over the last decade, many central banks in the world have changed their procedure for conducting monetary policy. Decisions on the stance of monetary policy have become more explicit, more transparent, more systematic and more sensitive to changes in inflation. In the case of the US, Chile and several other countries, experiences with these new policies have been very favourable for reducing inflation, although the effects on the stability of the real economy during downturns have been questioned.

The appropriate macroeconomic role of fiscal policy when monetary policy is systematically and strongly reacting to changes in inflation becomes evident: keep the sustainability of public accounts and play a countercyclical role.

The task of countercyclical monetary policy may be described as trying to keep real GDP near potential GDP, when inflation is on target. Of course, with the impacts of a change in monetary policy occurring with long and variable lags, the central bank might not be able to get aggregate demand back to potential GDP fast enough to prevent the incipient inflation from becoming an actuality.

There is some controversy about whether central bankers should be trying to adjust interest rates to move aggregate demand around in the way described here. This issue has brought to the debate the possibility of using fiscal policy as a countercyclical device.

When discussing fiscal policy issues, an important analytic distinction should be made between discretionary changes in taxes and spending, and changes in taxes and spending due to the automatic stabilizers, such as the increase in spending in programmes like unemployment compensation and the decrease in tax revenue caused by reductions in income during a recession. Both types of changes in taxes and spending impact aggregate demand, but the automatic ones may be more predictable and work more quickly than the discretionary ones.

In what follows, we will present a discussion on the role of discretionary countercyclical monetary and fiscal policy. In Section 3, we analyse the role of automatic stabilizers in fiscal policy. Section 4 will be devoted to review concepts, measurement and methodological issues to assess the stance of fiscal policy. Section 5 analyses fiscal policy reaction to external shocks, public and external finance and the economics of stabilization funds relevant to countries that concentrate exports in volatile

commodities. An analysis of empirical evidence for the role of fiscal policy in the case of Latin America is the subject of Section 6. The Chilean recent experience with fiscal policy is analysed. Next, some proposals for fiscal reform are discussed. The paper ends with concluding comments.

1 Macroeconomic role of discretionary countercyclical monetary and fiscal policy

Fiscal policy has two macroeconomic objectives, the sustainability of public accounts and the regulation of aggregate demand. It is more or less evident that policy efforts have concentrated on the first objective, leaving the stabilizing role to monetary policy.

Sustainability of public debt means to keep long-run solvency of the government to satisfy its intertemporal budget constraint. Public debt financing of continuous public deficits will be sustainable if interest rates are lower than the growth of the economy. When interest rates exceed GDP growth the persistence of a primary deficit leads to an explosive path of public debt, endangering the solvency of the public sector.

Under traditional Keynesianism, fiscal policy must run surpluses under full employment and allow for deficits during recessions. Macroeconomic stabilization requires a symmetric countercyclical regulation of aggregate demand. A difference with the neoclassical view is that, in this case, it is legitimate to adopt more active policies, having as a consequence more pronounced fluctuations in fiscal accounts, but always with a null result along the cycle.

A strict fiscal discipline in normal circumstances is required to preserve the ability to intervene under adverse economic events. Fiscal discipline and flexibility appear as two fundamental principles of the budget policy under economic globalization. Fiscal discipline is essential for macroeconomic policy credibility, while flexibility is needed to face non-anticipated shocks in a highly volatile economic environment.

If fiscal policy can shift aggregate demand and change real GDP in the short-run, how should this power be used? From a normative perspective, a reasonable countercyclical goal of fiscal policy would be the same as that of monetary policy: keep real GDP close to potential GDP when inflation is on target.

However, countercyclical fiscal policy may not be needed, if a central bank uses wisely the power to move the aggregate demand curve, to try to keep real GDP in line with potential GDP. It is questionable that this may be the case for emerging markets which are subject to sizable shocks to terms of trade and the capital account, and where external financing constraints may bind frequently. In fact, using both policies in complement may help distribute better the burden of their effects between different markets.

As argued by Taylor (2000) not all recent developments suggest a smaller role for discretionary fiscal policy. If monetary policy targets inflation at a rate near zero, there is a risk that the short-term interest rate would approach its lower bound of zero in a recession.¹

¹ This reminds the famous liquidity trap of Keynes.

What can and should central banks do to stabilize output and employment? Following King (1999), the uncertain effect of monetary policy on real variables, originated in transmission mechanisms neither sufficiently well understood nor sufficiently stable over time, represents an overriding constraint on the ability of central banks to target real variables. This leads to the conclusion that monetary policy should better focus on keeping inflation close to its target and not on fine tuning output.²

Following Taylor (2000), when monetary policy reacts to the state of the real economy, expectations that monetary policy is trying to exploit the Phillips curve may be developed, reducing its credibility and its scope to respond. To recover credibility, monetary policy should focus entirely and publicly on reacting to inflation, so that a central bank can create a fireproof reputation as inflation fighter, while fiscal policy should focus on the countercyclical job of keeping real GDP close to potential GDP.

Experience has shown that, with the exception of automatic fiscal stabilizers, implementation lags are much shorter for monetary policy than for fiscal policy, which puts legislated changes in fiscal policy at a disadvantage as a countercyclical tool. A central bank can make adjustments in interest rates relatively quickly – all that is needed is a board member meeting, vote and then to inform the decision to the trading desk, where the short-term interest rate is changed.

Furthermore, the use of traditional discretionary fiscal policy could potentially make the job of a fully autonomous central bank more difficult, because of the need to spend time forecasting the size of fiscal proposals and guessing the probability that such proposals would pass. This can be faced with strong day to day coordination and information exchange between both institutions.

A way to overcome the lack of timeliness and predictability of the current fiscal policy, is the possibility to delegate authority to the government to allow, in coordination with the central bank, fiscal policy flexibility to raise or decrease value added tax (VAT) rates, pension fund contributions, or to accelerate or decelerate certain public spending.

2 The role of automatic stabilizers in fiscal policy

Economic fluctuations exert a significant influence in public accounts. The fiscal automatic stabilizers are defined as those public earnings and expenses that are directly linked to the economic cycle.

Automatic stabilizers are those elements of fiscal policy that tend to mitigate output fluctuations without any explicit government action. Automatic stabilizers include any component of the government budget that act to offset fluctuations in effective demand by reducing taxes and increasing government spending in recession, and doing the opposite during an expansionary cycle. Perhaps the most commonly analysed automatic stabilizer is income tax, which reduces the multiplier effects of demand shocks through marginal taxation of income fluctuations. A progressive income tax with high marginal

² Normally, to reduce short-run volatility in output and employment, central banks will bring inflation back to target gradually.

tax rates could substantially reduce fluctuations in after-tax income and private spending, without the need for any explicit discretionary policy changes. Moreover, automatic stabilizers avoid the implementation timing problems that can cause discretionary policy to lag behind events.

Automatic stabilizers must be triggered by a shock that causes economic activity to fall or rise. As argued by Auerbach and Feenberg (2000), the effectiveness of an automatic stabilizer not only depends on how much of a change in disposable income it produces, but also on how significant the effect is on private consumption. Potentially, progressive income taxes, value added taxes, taxes on corporate profits, and unemployment insurance premiums and benefits may play the role of automatic stabilizers.

One of the most familiar measures of the sensitivity of taxes to income changes is the elasticity of aggregate income taxes with respect to changes in aggregate income. This elasticity serves as an indicator of the tax system's overall progressivity. For a given level of taxes, the higher the elasticity, the smaller the change in after-tax income that results from a given change in income before tax. However, for measuring the tax system's role as an automatic stabilizer, the income elasticity of taxes has a severe shortcoming: it is invariant with respect to whether the share of income taken as taxes is high or low. If taxes take a large share of the economy, they will be more able to act as an automatic stabilizer than if they take a smaller share. Key determinants of the magnitude of automatic fiscal stabilizers are the share of tax revenues, and the size of tax and expenditure elasticities, with respect to GDP.

For output to be stabilized it is necessary that the mitigating effect of taxes due to changes in before-tax income translate into lower volatility of household consumption. However, a high reaction of consumption to a short-run shock to current disposable income requires the presence of a liquidity constraint that depresses household current consumption below its desired level.

Any change in tax payments must translate into changes in aggregate demand for automatic stabilizers to succeed. For example, the effect of corporate income taxes on consumption could be tenuous, if ownership of corporate stock is highly concentrated among individuals who are very unlikely to face liquidity constraints.

In the case of unemployment insurance benefits, paid through state-operated programmes, it is important to mention that they fluctuate in response to the rise and fall in unemployment during the business cycle. The relationship between output fluctuations and changes in the level of unemployment benefits depends upon the relationship between output and unemployment, the extent of unemployment covered by unemployment insurance, the rate of demanded benefits by those eligible, and the fraction of lost wages replaced by unemployment insurance.

It is important to create room for the complete work of automatic stabilizers during recession, in order to complement the regulatory role of monetary policy. In Latin America, fiscal policy has not played a relevant countercyclical role. In recession, fiscal policy is typically oriented towards keeping financial solvency under control, while during booms, expenditure tends to expand with the cycle.

Probably, it is convenient to design an institutional framework that ensures the consistency of fiscal policy, such as stabilization funds of tax revenues.³ Those mechanisms may work countercyclically to allow savings during booms, and withdrawals for spending purposes during crises.⁴ Public spending management must follow clear long-run sustainability criteria. The main countercyclical components should be social safety net protection and the tax revenue stabilization fund.

3 Review of concepts and measurement issues in fiscal policy

Following Heller et al. (1985), we review existing techniques for assessing the stance of fiscal policy, with the purpose of characterizing the expansionary or contractionary nature of current fiscal policy.

The first approach, used by the IMF, calculates a measure of the total impulse or initial stimulus to aggregate demand arising from fiscal policy, whether discretionary or otherwise, during a given period. Conceptually, it identifies as a fiscal impulse any change in the actual budget not caused by the business cycle.

The idea is to obtain a new measure of the budget isolated from endogenous forces coming from changes in GDP. The IMF measure currently makes no distinction between a change in aggregate demand that results from a discretionary budget decision and one that results from automatic fiscal stabilizers.

This approach starts by establishing a base year in which the tax revenue to effective output ratio (t_0) and the public spending to potential output ratio (g_0) correspond to a period of macroeconomic stability, including balance between potential and effective GDP. The ‘cyclically neutral budget’ is derived from the actual budget by assuming that nominal tax revenues are unit elastic with respect to actual nominal output, and nominal government expenditures are unit elastic with respect to potential output valued at current prices. This represents a benchmark to know if fiscal policy is procyclical, neutral or countercyclical. A growth in expenditure above, equal to or below potential output (ypt) growth is respectively defined as expansionary, neutral or contractionary. Similarly, a growth in tax revenues above, equal to or below effective output (yt) growth is respectively classified as contractionary, neutral or expansionary, regardless of the source of the change in revenue (discretionary tax increase, progressive tax structure).

This simple IMF approach calculates the cyclically neutral budget under the assumption of unitary elasticities of expenditure and revenue with respect to potential and actual output, allocating therefore the contribution of automatic stabilizers to the fiscal impulse.

A change in the public deficit has a cyclical character when change is due to the difference between current and potential GDP. A structural deficit is equivalent to the difference between the effective deficit and the cyclical deficit. An effective deficit in excess of the cyclically neutral deficit is deemed expansionary, relative to the base year fiscal stance.

³ See Budnevich and Le-Fort (1997) and Martner (2000) for details of such proposals.

⁴ For example Ireland has an emergency fund of 0.7 per cent of GDP to face macroeconomic volatility.

The effective budget surplus (B_t) can be decomposed into two elements: the cyclically neutral budget surplus ($y_t - go_{ypt}$) and the fiscal stance (Fis_t), which represent the deviations between the cyclically neutral budget surplus and the effective budget surplus.

$$(1) B_t = y_t - go_{ypt} - Fis_t$$

Any increase (reduction) in the budget surplus above the cyclically neutral budget leads to a contractionary (expansionary) stance in fiscal policy. The fiscal impulse (FI_t) is defined as the change (first difference) of the fiscal stance measure.

$$(2) FI_t = Fis_t - Fis_{t-1} = dG_t - go_{dypt} - (dT_t - to_{dyt})$$

The fiscal impulse in a given period reflects the change in the fiscal stance. The fiscal impulse at best provides a measure of the magnitude of the initial stimulus to aggregate demand arising from the net changes of fiscal policy in a given period.

An advantage of this approach is the simplicity of the calculation and information requirements. To calculate the fiscal impulse, one only needs actual and potential output growth, a set of base year public expenditure and public revenue-to-output ratios, and the change in the actual budget balance. However, such a measure may miss the intensity and direction of the effects. In fact, the elasticity of tax revenue with respect to output is an empirical matter, likely to vary with the rate of inflation, and the effects of progressivity and administrative lags in collection. In particular, the elasticity of VAT depends upon the composition of private consumption between durable and non-durable goods, the elasticity of imports with respect to GDP and the cyclical behaviour of evasion. In fact, as durable consumption is more sensitive to economic activity than non-durable consumption, a higher proportion of durables may raise the income elasticity of VAT. The elasticity of government expenditures is also an empirical issue.

Additionally, this methodology suffers from the so-called balanced budget multiplier problem. The measure implicitly assumes that equal increases in government spending and taxes exert no additional stimulus to aggregate demand, whereas most conventional models have the implication that a change in government spending has a larger effect on income than an equivalent transfer or tax change. Therefore, this method must be combined in principle with an approach to measure expenditure in goods and services, transfers and taxes on a more disaggregated basis to reach a view on the different potential impact on aggregate demand.

Moreover, as this technique calculates the fiscal impulse residually, it will include the effect not only of changes in fiscal policy and the subsequent effects of automatic stabilizers, but also of structural changes in the economy.

Finally, the calculation of the fiscal stance only adjusts the budget for deviations of output from its potential level – a problem also encountered in other techniques. The effects of prices, interest rates – both real and nominal – and the exchange rate are ignored.

The OECD provides an alternative technique. There are two major differences from the IMF measure. First, the elasticities of cyclically neutral expenditure and revenue with respect to real output are not constrained to unity in the OECD method. Thus, the

OECD's fiscal impulse indicator is exclusive of automatic stabilizer effects. Second, in constructing its measure the OECD method effectively uses ratios of expenditure and revenue to potential and actual output, respectively, in the previous period, not to base period values.

The OECD approach involves larger data requirements than the Fund's method since it requires estimates of government expenditure and revenue elasticities. The elasticity of the public expenditure side is a function of the magnitude of the transfers considered in the law to give subsidies to unemployed. The relative importance of the cyclical deficit depends upon the size of the income elasticity of tax revenues, the output gap measured by the difference between effective and potential output and the proportion of tax revenues relative to the level of economic activity.

Another alternative method is the weighted standardized surplus measure. This approach provides a good measure of fiscal policy that is aimed at measuring discretionary action by the authorities. This method was first developed by Blinder and Goldfeld (1976) with US data. Simulation techniques are employed to decompose the budget into autonomous (exogenous) and induced (endogenous) components. The fiscal impulse is defined as the change in the exogenous component of the budget.

In the current fiscal impulse methodology of the IMF, the growth of government expenditures other than unemployment insurance benefits is regarded as cyclically neutral if it is equal to potential output growth. Unemployment insurance benefits are excluded from the base year expenditure ratio and from actual expenditure in a given period, implying that any changes in unemployment insurance benefits are treated as a fully cyclical phenomenon. As unemployment insurance benefits depend upon the state of the economy, this methodology implicitly assumes that an economic recovery will return the unemployment rate to the level prevailing in the base year.

It is important to clarify that depending on the policy questions, a certain measure of fiscal budget would be more adequate than others. If the policy questions center around the short-run financial pressures brought on by the financing requirements of the government, then a strong case exists for a budget balance measure, which accurately reflects these pressures. The cash base budget data dominates in this regard. However, if the major concern is to analyse the effects of government expenditure and revenue policy on aggregate macroeconomic variables, such as consumption and investment, then a strong case can be made for using national account data in constructing the fiscal impulse, so that the budgetary data is more systematically related to aggregate demand.

4 Stabilization funds, public and international finance, fiscal policy and external shocks

Commodity price risk is the risk that commodity prices may change rapidly, substantially and unpredictably. Governments typically bear two kinds of commodity price risk. First, many governments obtain substantial revenue from commodity production/exportation. Second, many governments also try to smooth some domestic commodity prices to mitigate the social, economic and political impact of large and frequent changes in prices.

In the absence of financing opportunities, when prices go down for a producer, or up in the case of a consumer, governments have to cut expenditure or raise other revenue. This is difficult to do quickly and efficiently. Increasing spending when export prices rise is easier but difficult to do efficiently. Reliance on commodity revenue leads normally to stop-go fiscal policy. It is also likely to make fiscal policy procyclical. Other problems include the difficulty of planning, basing a budget on commodity price assumptions that could turn out to be very wrong.

Developing countries typically concentrate their international trade on a few commodity exports and imports, which are subject to highly volatile market prices. An idea that has been extensively used in the past has been for governments to establish stabilization funds to reduce commodity price volatility, to make prices and revenues more predictable and to keep expenditure in line with permanent income flows.

For commodity producers, the fund will accumulate resources when the international spot price is above its reference price and vice versa. For commodity consumers, the fund would subsidize domestic consumption when the spot price is above its reference level and vice versa.

Recent empirical work on commodity prices shows that most commodity prices do revert eventually to their mean – a requirement for a stabilization fund to be viable – but only very slowly with an average reversal time measured in years, not in months. Thus, a commodity stabilization fund has to be very large to be effective. Furthermore, in the case of an export (import) stabilization fund, it is highly recommended to initiate it in a scenario of high (low) prices in comparison to long run or trend prices, so that the fund could actually finance subsequent negative price scenarios.

Many countries have abandoned them. Government intervention to stabilize commodity prices and to reduce uncertainty has often proven ineffective and costly. Nonetheless, there are some successful cases such as the Commodity Stabilization Funds in Chile (copper) and Colombia (coffee), which have been devoted to stabilize commodity-related government revenues instead of prices. When governments are collecting commodity-related revenues, those funds represent appropriate mechanisms to separate the terms of trade cycle from the fiscal cycle. Three elements characterize them: (i) a reference price of raw material determined in the budget formulation, based in conservative medium run projections; (ii) a fund which accumulates resources during booms and withdraw funds during adverse periods; (iii) operating rules that establish the relation between price fluctuations and contributions or withdrawals to the fund.

Instead of setting up a stabilization fund, governments can borrow or run down assets when the international price goes against them. The problem is that when the country needs the financing, it is likely to be least able to obtain it. Also, many countries do not have significant foreign assets. Further, it is politically difficult to generate the corresponding surplus to repay the debt when the situation is reversed, leading to solvency problems.

To hedge against commodity price volatility, policy makers could consider the use of derivatives. Using commodity derivatives markets present several advantages. They reduce uncertainty regarding future revenues, they rely on market prices rather than administrative prices, they shift the risk outside the country and they reduce the cost of commodity financing, increasing the creditworthiness of the commodity producer.

However, a disadvantage is that commodity derivatives will not prevent a persistent deterioration or sudden spikes in commodity prices.⁵ They typically mitigate the short-term effects on output of adverse price movements.⁶ As derivatives concentrate in the short-run, they are therefore unable to match the long productive horizon of some commodities.

In theory, if price shocks are of a permanent nature, it will be better to adjust rather than to use compensatory financing. However, the question is how quick to adjust to the new price conditions in order to minimize domestic adjustment costs, as no long-run derivatives market can be found to be operative.

Let us provide a formal framework to analyse a price stabilization scheme for consumption purposes.⁷ Suppose the government has an objective to minimize the cost coming from quadratic deviations of the domestic price from the international price $(p_t - p_t^*)^2$.⁸ The government also dislikes a quick adjustment of domestic prices over time $(p_t - p_{t-1})^2$, so it weights negatively quadratic deviations of current domestic prices from past domestic prices. As is well documented in the literature, if international prices follow a random walk process, a stabilization scheme is neither feasible nor sustainable without explicit fiscal support.⁹ If there are adjustment costs concerns by the government, there is a smoothing role for prices, even if shocks are of a permanent nature. If the government really attaches a negative weight to quick adjustments in domestic prices, it is better to provide a formal stabilization scheme such as a formal price band with rules, rather than an implicit band with no rules.

The optimization problem of the government is to minimize the following cost function:

$$(3) \text{Min } a E(p_t^* - p_t)^2 + b E(p_t - p_{t-1})^2$$

subject to the random walk process followed by international prices

$$(4) p_t^* = p_{t-1}^* + u_t$$

The optimal stabilization policy will lead to a smoothing process of internal prices based on the following rule:

$$(5) p_t = \frac{b}{b+a} p_{t-1} + \frac{a}{b+a} (p_{t-1}^* + u_t)$$

Intuitively, the higher the cost attached to the adjustment of domestic prices over time (b) and the lower the weight given to deviations of the local price with respect to international prices (a), more gradual the optimal process of adjustment for internal prices will be to new international conditions.

⁵ Such spikes have occurred in oil and grain prices.

⁶ Commodity derivatives can help governments and the private sector to gradually adjust to new trends in commodity prices. To deal with unfavourable longer-term price trends, developing countries need to improve productivity and continue the product diversification.

⁷ The intuition of this framework was suggested to me by Jorge Quiroz.

⁸ This is an approximation to the welfare loss associated to distortions in domestic prices.

⁹ See Cashin et al. (1999) and Varangis and Larson (1996).

During external booms, monetary sterilization must be performed through the generation of a fiscal surplus. In the presence of a commodity stabilization fund, a higher (lower) commodity export price is automatically transformed into a higher (lower) fiscal surplus by the rules of accumulation (deaccumulation) of the fund. Under such conditions, the adjustment effort does not rely on higher taxation or lower public expenditures.

If the ownership of a commodity export (such as copper or petroleum) is public (foreign), then a stabilization fund (FDI financing) will provide stabilization to the economy through an adequate response of public savings (profit repatriation). Typically, in the case of mining, projects mature in several years. The associated debt for project finance has to pay interest periodically, while amortization typically takes place after finishing construction of the plant. If there is an excess of cash flow generation, the last instalment of the loan is prepaid, while the opposite occurs under a deficit.¹⁰

International liquidity management is primarily an insurance problem with respect to shocks that trigger external crises. Contingent policies based on simple rules, easily verifiable, and a function of variables not directly controlled by the authorities can be of help.¹¹ The first step is to identify a small set of shocks that capture a large share of triggering factors. For example, positive indexation to the terms of trade and inverse indexation to an indicator of tightness in international financial markets such as the EMBI spread would probably suffice as indexation mechanisms for interest payments on public and external debt or for public expenses less costly and inefficient to stop. Indexation to the price of a commodity avoids manipulation and moral hazard problems, due to its exogenous nature. Several firms experimented with commodity-indexed bonds in the 1980s, but most seem to hedge commodity price volatility using the options markets.

With respect to contingent public debt management, private sector investment with public sector insurance is strictly pro-cyclical fiscal policy, as guarantees are freely given during booms, when the private sector invests, and come due during downturns. The general policy prescription should instead establish an explicit public sector fund financed with an insurance premium charged to the private sector – essential in countercyclical policies today. It is important to consider that unemployment insurance, public works guarantees, deposit insurance and minimum pension guarantees ought to be explicit and limited and be financed through taxes or premium charges.

Ex ante funding has a relative advantage, while ex post financing a relative disadvantage for smoothing cash flows along the cycle for improved stabilization. Flat rate premiums are better designed than risk adjusted premiums for smoothing and stabilizing along the cycles, as risk tend to be low during expansions and high during downturns.

In a small open economy, fiscal policy has to play a countercyclical role when external shocks occur. When capital inflows are a private sector phenomenon, fiscal accounts may not be strengthened enough. Thus, to perform the needed monetary sterilization

¹⁰ Project finance lending in mining is also stabilizing as debt payments accelerate or decelerate depending on cash flow behaviour, which basically reflects the price of the product sold. For more details see Budnevich et al. (2001).

¹¹ See Caballero (2000, 2001) for more details.

requires an increase in taxes or a reduction in public expenditures. In combination with tight monetary policy and restrictive fiscal policy, measures devoted to limit capital surges may be considered.

When the accumulation of international reserves is attributable to an export boom, it is difficult to question what the higher generation of saving should be in an effort made by the sector that directly benefit from it. If the external surplus has its origin in the private sector, then it is more difficult to distribute with equity the saving effort.¹²

A reaction to capital inflows may be of use for a transitorily restrictive fiscal policy. In fact, although this type of policy would not stop capital inflows, it may contain the inflationary impact and reduce aggregate demand.¹³ As the need to issue public debt is reduced, it is also possible that a restrictive policy may help in lowering domestic interest rates. If tax changes are transitory and there are borrowing constraints, an increase in taxes may be effective in controlling absorption.

As corporate taxes, progressive income taxes, value added taxes and custom duty revenues normally have an output elasticity greater than one; strong capital inflows will help finance a growth in absorption above GDP, leading to an increase in tax collection. Following a structural surplus rule, the government should save more and obtain a higher effective surplus.¹⁴ However is that effort enough? Probably not. Therefore, in addition to the automatic stabilizers, policy makers might consider a policy package to increase VAT, payroll taxes, or contributions to the pension fund or unemployment insurance fund. This will distribute better the burden of monetary and fiscal policy to contain absorption.

If strong capital inflows generate an absorption exceeding potential GDP, a contractionary demand policy will be required. If the central bank applies a restrictive monetary policy, then quasifiscal losses and further capital inflows will take place. To cut such a vicious circle, it may be more desirable to apply a contractionary fiscal policy.

On the contrary, in a case where massive capital outflows take place and the economy is overheated, both contractionary fiscal and monetary policy may be recommended.

5 Public sector and the level of activity: theory and empirical evidence

Under Keynesian unemployment and the need to reduce the fiscal deficit and the public debt, fiscal adjustment measures will depress the economy. A public deficit under those conditions is expansionary in the level of activity.

¹² In fact with a fiscal surplus, it will be possible to reduce the monetary base and interest rates, by prepaying public external debt and reducing the demand for loans.

¹³ Our analysis of capital flows assumes no effect on demand for money.

¹⁴ This only takes place if the rule considers as cyclical tax revenue expansions above GDP growth.

Instead, under the neoclassical full employment model, the repercussion of fiscal policy would depend upon the nature of the fiscal adjustment. An increase in taxes that introduce distortions in market prices or an expansion in current expenditures expected to be financed by future taxes will have a contractionary effect in the level of economic activity. Both reductions in expenditures and taxes tend to expand the level of economic activity. A credible cut in expenditures, will bring expectations of reductions in taxes, producing positive supply side effects that will expand GDP in the short-run. Supply side models assume that fiscal adjustment is expansionary if based on expenditure reductions, while contractionary if taxes are raised.¹⁵

Other models describe macroeconomic behaviour depending upon the level of public debt. When the stock of public debt approaches a default level, an increase in the deficit raises significantly the probability of insolvency and interest rates in the economy, depressing the level of domestic activity.¹⁶

In the Latin American context, Gavin et al. (1996) found that the volatility of macroeconomic outcomes is greatly augmented by the highly procyclical fiscal response in the region. The procyclical fiscal response is most pronounced during recessions and it stems from the fact that access to international capital markets often vanishes in the face of adverse shocks, forcing a fiscal contraction in an already weakening economy. Thus, policy must be concerned in obtaining fiscal sustainability and solvency. But this weak relationship with international capital markets is itself due to the volatility of the macroeconomic environment in Latin America, and creates the need for fiscal adjustments that are so large as to raise doubts about government's ability to effect them, thus reducing creditworthiness and prompting investors to exit the region at the first sign of trouble.¹⁷

Gavin et al. (1996) found that deficits in Latin America measured with respect to the domestic financial system (or taxes) are three times as large as those of OECD countries. Furthermore, the tax base in Latin America is highly volatile and procyclical. Latin America relies more intensively on non-tax, indirect taxation and trade taxes.

With respect to spending patterns, the same authors find that Latin America spends a higher percentage in interest payments, capital expenditures and wages, and less in non-interest transfers, in relation to OECD countries. Moreover, Latin America exhibits less flexibility in times of crises as interest payments on debt tend to increase. Furthermore, they found that Latin America pays higher and more volatile country risk premiums than the OECD countries.

Gavin et al. (1996) found that the ratio of fiscal deficit to GDP in Latin America is twice as volatile when compared to OECD countries. Fiscal deficit with respect to the financial system is 5 to 10 times as volatile as in the OECD. Revenues and spending are much more volatile. When growth of GDP increases, the surplus in OECD countries increases, while in the Latin-American region they tend to stay stable or to fall. Tax

¹⁵ See Frenkel and Razin (1989) for more details.

¹⁶ For models explaining such behaviour, see Bertola and Drazen (1993) and Sutherland (1995).

¹⁷ This effect is in addition to the typical key price misalignments and unsustainable accumulation of public debt.

revenues are more sensitive in Latin America than in the OECD. This implies that public spending in Latin America is highly procyclical and fiscal outcomes are particularly contractionary during recessions.

International capital flows to Latin America can and often do disappear just when they are most needed to finance a countercyclical fiscal policy. Given the precarious access to international financial markets, the procyclical fiscal response was the best response available to fiscal authorities. Precarious creditworthiness is rooted in weak fiscal structures in the context of a volatile macro environment.

Talvi and Vegh (2000) provide a political explanation for the puzzling behaviour of fiscal policy in developing countries. Starting from the observation that fluctuations in the tax base are much larger in developing countries than in G7 countries, full tax smoothing would imply running large budget surpluses in good times and large budget deficits in bad times. However, due to political constraints, it may be impossible to run large budget surpluses in good times. The inability of a government to generate large enough surpluses during expansions forces them to borrow less during recessions in order to satisfy the solvency constraint.

The pattern of procyclical fiscal deficits in Latin America has been interpreted as a sub-optimal policy, and most likely the result of the financial constraints faced by government themselves. However, in the view of Caballero (2000, 2001), when external financial shocks are an important source of fluctuations, the economy should optimally distribute the scarce available international resources across domestic agents so as to smooth differences in financial distress.

Although in principle, it may be possible to follow a countercyclical taxation and/or fiscal spending policy that could completely eliminate the variance in GDP growth, the possibility of implementing such a degree of flexibility seems unrealistic. Tax smoothing considerations and difficulties to adjust and control wages, expenditures committed by law, and time to build constraints for public works, may restrict the ability of exercising the required degree of flexibility for countercyclical purposes. A stop and go process in investment is likely to generate waste, and therefore a more stable path may improve matters.

6 The experience of Chile

The role played by fiscal policy in Chile has been intensively analysed and debated. Its interpretation is not easy, since although an average surplus of 1.9 per cent of GDP was held in the period 1990–97, public spending grew strongly (6.5 per cent real). The increase in public spending allocated to higher expenditure in health, education and other social components, was financed through increases in tax rates and revenues linked to the strong economic growth, and contributed to a further expansion in aggregate demand.

Key developments in Chilean fiscal policy in the last 15 years have been the maintenance of a fiscal surplus since 1985 up until 1998, the creation of a Copper Stabilization Fund in 1985 and a Petroleum Stabilization Fund in 1991. The purpose of the first stabilization fund was to stabilize public expenditures, while the second fund

was to smooth the volatility of international prices in the adjustment path of domestic oil prices. In the case of the copper stabilization fund, at the beginning of each year the budget office sets a reference price; withdrawals and deposits are made quarterly as a step function of actual and reference prices. The finance minister decides the amount and the opportunity of withdrawals only for two precise purposes, to complement income when effective price is significantly below the budget projections or to prepay debt during booms.

Chile also shows an interesting experience of partial flexibility for VAT in the recent past, where the government was allowed by law to set the VAT rate between the range of 16 and 18 per cent in 1996. In the end, the authorities decided to increase VAT from 17 to 18 per cent to help finance the educational reform programme.¹⁸

Ffrench-Davis and Tapia (2001) argue that fiscal policy in the period 1990–95 was very prudent. The increases in social expenditures were financed with new tax revenues and fiscal policy strictly followed the accumulation or decumulation rules of the copper stabilization fund.

In analyzing fiscal responsibility in the excess of aggregate demand that took place in the period 1996–97, fiscal expenditures grew 7.9 per cent above GDP growth (7.4 per cent). However, the fiscal sector in Chile only represents 20 per cent of the economy and therefore the main impulse behind aggregate demand growth (8.5 per cent) came from the private sector. An eventual fiscal contribution was clearly insufficient. The fiscal budget was showing a surplus and the government was not only rejecting new loans from the World Bank or the IDB but was also prepaying debt. Effective fiscal surplus was even higher as the copper stabilization fund was accumulating resources at the time.

In 1999, Chile ran a fiscal deficit for the first time since 1985. At the end of 1999 macroeconomic policies in Chile were shifted towards more rules and less a discretion framework, with monetary policy following an inflation target approach. The government authorities that took power in March 2000 formally proposed to recover the fiscal surplus, with the establishment of a structural budget surplus rule of 1 per cent starting in 2001.

The fiscal policy rule allows the operation of automatic stabilizers in the budget and avoids the exercise of fine tuning depending on the phase of the economic cycle, leaving this role to monetary policy. While some expenditures and revenues depend upon the evolution of the economy, an important fraction of expenses and revenues are not flexible because they represent legal commitments.

The new method of preparing the budget in Chile delivers indicators for identifying the stance of fiscal policy, avoids a procyclical bias in public finance, allows evaluation of the macroeconomic impact of fiscal policy, insures the stability and continuity of fiscal policy and reinforces fiscal discipline.

¹⁸ In fact, this tax rate flexibility was not used for countercyclical purposes.

In the construction of the structural balance indicator, the government has considered the existence of a strong revenue component originated in the production of copper that exhibits mean reversion in its price behaviour.

The structural balance excludes cyclical effects of GDP (gap between effective and potential output) and the random effects in the price of copper. The structural budget is not only explained by autonomous decisions of the government (discretion) but also reflects all the fluctuations of the fiscal balance due to reasons different from the cycle of GDP.

Taxes and copper revenues are believed to be cyclical. Spending is assumed to be non-cyclical. The methodology adopted by Chile for defining a structural budget surplus, follows the OECD method, allowing for a tax revenue elasticity with respect to GDP different from unity.

- (6) $\ln T_{pt} - \ln T_{pt-1} = 1,05 * (\ln Y_{pt} - \ln Y_{pt-1})$
(permanent tax revenue increases)
- (7) $\ln T_t - \ln T_{t-1} = 1,05 * (\ln Y_t - \ln Y_{t-1})$ (current tax revenue increases)
- (8) $\ln R_{cut} = \ln P_{cut} + \ln Q_{cut}$ (current revenues from copper)
- (9) $\ln R_{Scut} = \ln P_{cupt} + \ln Q_{cut}$ (trend revenues from copper)

There is clear separation between the structural component and the cyclical component of the effective balance that allows the operation of automatic stabilizers of the budget.¹⁹ Structural surpluses allow transitory fiscal deficits up to the desired levels and avoid an inefficient contraction of spending during recessions. They avoid as well an over expansion of expenditures using transitory windfall fiscal revenues.

This policy contributes to saving, allows financing contingent liabilities, compensates the central bank deficit, and saves financial resources for future generations that will not be able to benefit directly from non-renewable resources such as copper. The new policy framework brings together higher responsibility and transparency in the administration of public resources.

The level of total Chilean public debt is relatively small and reached 14.2 per cent of GDP in year 2000. Contingent liabilities do not compromise the fiscal balance in the short-run, although this may happen in the medium-run. Contingent liabilities linked to minimum pensions are estimated to be equivalent to US\$7.2 billions.²⁰ Thus, the Chilean government has proposed to accumulate the resources of the fiscal surpluses in a fund assigned to finance the fiscal liabilities associated to social security in the long run.

¹⁹ To measure the structural budget, an estimation of potential output is required. The first step in the calculation of potential output was to estimate a Cobb Douglas production function for the Chilean economy. The second step was to calculate potential output as the value of the production function evaluated at trend input levels.

²⁰ Estimation of the Ministry of Finance.

7 Some fiscal policy proposals

As stated by Massad (1998), with increasing capital mobility a higher degree of flexibility in fiscal policy is required to keep higher public savings in periods of strong capital inflows.

To reduce the procyclical behaviour of the Chilean GDP, Budnevich and Le-Fort (1997) proposed to limit the growth in public absorption (the macroeconomic relevant indicator) to potential output growth.²¹ They mentioned the need to rely on some escape clauses, in particular they find desirable to have some flexibility for public investment and emergency situations.

In the area of tax flexibility, these authors argue that VAT may be a useful tool because of its broad base, high revenue response, lower efficiency costs and its redistributive character. Furthermore it has several advantages such as helping to stabilize consumption, the quick collection response and the simplicity of its administration. VAT changes operate through adjustments in disposable income as well as in relative prices. Some costs of VAT flexibility would be to increase menu costs and to bring higher short-run inflation instability, which tend to limit the potential use of such a mechanism.²² An additional cost of using taxes as countercyclical devices is associated to the uncertainties they generate.²³

Budnevich and Le-Fort (1997) argue that, it may be useful to complement VAT flexibility with some income tax flexibility. Moreover, given that the profit base has a much higher cyclical fluctuation than GDP and the progressive structure of personal income taxes, both corporate and personal income tax represent automatic stabilizers.

The creation of a stabilization fund represent a complement to the countercyclical fiscal policy proposal, for the purpose of counting and accumulating the countercyclical responses of fiscal policy. The fund should accumulate (diminish) resources when additional (lower) revenues are obtained from increases (reductions) in the VAT rate with respect to its long-run level. Additionally, to insure the transitory nature of such a policy, Budnevich and Le-Fort propose some floor and ceiling levels for the stabilization fund of 0 and 8 per cent of GDP. If one of those limits is hit, Budnevich and Le-Fort propose to activate an automatic mechanism of correction to increase or reduce taxes, respectively.

In the Latin American context, Gavin et al. (1996) propose to make the fiscal budget consistent with a gradual movement towards desired debt levels – over the medium term. This means that fiscal surpluses should be accumulated and net public debt reduced during economic booms, and the fiscal balance allowed to move into deficit during contractions.

²¹ Alternative methodologies to calculate potential output growth may be found in Morandé and Vergara (1997) and Ffrench-Davis (2001).

²² In fact, Budnevich and Le-Fort propose a limited range of variation for VAT of ± 1 per cent.

²³ According to simulation exercises presented for Chile by Budnevich and Le-Fort (1997), a hypothetical countercyclical fiscal policy could reduce the variance of GDP growth in 24 per cent. This reduction in the variance of GDP growth is due in 58 per cent to the stabilization of public absorption growth, while the rest correspond to the operation of countercyclical stabilizing taxes.

These authors noted that it is hard to reverse changes in public spending commitments and propose to move tax rates basically in response to changes in long-run fundamentals. Fiscal deficit and debt should adjust in response to transitory shocks. They proposed as an operational fiscal target a cyclically adjusted fiscal deficit, taking into account differences between current and long-run expectations of: (i) level of output; (ii) level of domestic absorption; (iii) terms of trade and the real exchange rate.

On the other hand, the Business Council of Australia (1999) has explored the scope to re-engineer Australian institutions to increase the timeliness and effectiveness of fiscal policy.

When there is a sharp and serious deterioration in national income, for instance as brought about by a sudden decline in terms of trade, it is likely that the most appropriate economic response would be a small and temporary nominal wage cut.

If the need for short-term wage flexibility is constructed before the occurrence of shocks, an ability for rapid adjustments can be built into wage setting institutions, for example by allowing a portion of wage to be paid in the form of bonuses linked to profits.²⁴ Profits would be less volatile and booms and busts would be moderated. Impacts on labour costs and firms incentives to hire and fire would be countercyclical.

Bonuses can have procyclical effects on employee's consumption. Empirically, however, countercyclical effects dominate strongly. Although receiving a greater share of wages as bonuses can increase the volatility of earnings or financial risk, there is an important way in which profit sharing lowers risk, because it makes firms less prone to lay off workers during downturns.²⁵ Fiscal incentives may be provided to stimulate the adoption of such a scheme.

Latin American countries should allow for a contingent relaxation of temporary contracts constraints, fostering this form of hiring during crises. When crises have severe financial implications for firms, indexing labour costs such as contributions to unemployment insurance and future severance accounts, minimum wages and temporary contracts as well, to terms of trades and external financial conditions, may be sound as well.²⁶

Caballero (2000, 2001) proposes to have a component of fiscal policy indexed to the terms of trade. When the terms of trade are low, expenses that are less costly and inefficient to stop should be reduced according to some pre-established rule. Interest payments on public debt could similarly be indexed to the terms of trade or to Embi spreads in order to free financial resources to the private sector during those times.

Building a buffer in the tax system that may be used as a means of short-term fiscal management can be of help. In the view of the Business Council of Australia, greater

²⁴ This type of system is widespread in countries such as Japan, Taiwan and Korea.

²⁵ A simulation of the Business Council of Australia (1999) suggests that a bonus system operating at the time of the last major recession would have led to a much more moderate fall in Australia's employment than in fact took place.

²⁶ See Caballero (2000, 2001) for more details.

flexibility in the management of fiscal policy is required, to give statutorily appointed officials some responsibility to make small across the board adjustment to tax rates within some pre-legislated band. At the beginning, it might well be appropriate to constrain tax changes within fairly narrow bands. As the community becomes more comfortable with the arrangements, discretion could be expanded as appropriate.

This new fiscal policy framework needs to be coordinated with monetary policy. One institutional alternative is to establish a macro policy committee that would have the power to vary tax rates. Membership of the committee would include both the secretary to the treasury and governor of the central bank. Another option is to establish an independent fiscal board which may enhance fiscal discipline and credibility. However, this arrangement may be criticized because of its anti-democratic nature.

Let us analyse the alternative potential flexible tax instruments. In the case of VAT, the disadvantages (inflationary movement in the short-run when taxes are changed) must be weighted against the advantages (broad tax base).²⁷ Its redistributive character among different individuals over time may increase its effectiveness in adjusting consumption. VAT adjustments will not bring significant misallocation of resources, and may help provide right signals to the markets. However, it is likely to involve transaction costs. Despite the disadvantages, VAT seems to be a good candidate for countercyclical fiscal management.

Flexible corporate taxation may help stabilize the economy, but at the cost of increasing financial planning uncertainty for firms. Personal income tax flexibility will increase tax revenue volatility on lower brackets and diminish already low saving propensities. In addition, such a policy may be unfair.

Another potential policy tool to consider is to allow some short-term variation in compulsory pension fund or unemployment insurance contributions. To work as an instrument of short-run macro policy, temporary changes in compulsory pension fund contributions need to be reflected in employees take home pay, rather than in employer costs. Changes in the level of compulsory pension fund contributions would enable the management of aggregate demand in the economy with minimal budgetary changes for a government.²⁸

The community will have greater acceptance of the policy tool, because the contributions are seen to ultimately directly benefit the contributor. There may be some equity concerns when using such a policy, as the burden may be concentrated on lower income classes and dependent workers. Furthermore, if the funds saved are acceptable as collateral, then there will be no effect in consumption.²⁹

²⁷ However such inflationary bias do not affect underlying inflation, relevant for policy decisions.

²⁸ On occasion, in addition to traditional instruments of macroeconomic management, Singapore has used its compulsory savings vehicle, the Central Provident Fund, with some success.

²⁹ Typically compulsory pension fund systems prohibit using the accumulated funds as collateral for obtaining loans.

It is important to consider that doing countercyclical fiscal policy through spending may be very inefficient. In the 1980s stop-and-go public spending in Latin America helped destroy some of the state sector. General tax stabilization policies are more advisable. If specific taxes are used, it should be taxes on the source of the disturbance. It is important to bear in mind that VAT flexibility is not necessarily the first-best policy.

Tax flexibility will increase policy choices. Less weight may be placed on monetary policy, therefore reducing undesirable effects on firm investment and competitiveness.

8 Concluding comments

For many emerging market economies, there is a need to improve macro performance because of their vulnerability to global economic downturns. Over reliance on monetary policy may bring worse macro results, when compared to a more balanced framework of countercyclical fiscal and monetary policy. The latter scheme may help in reducing the extent of cycles as well as in keeping current account deficit under control. The use of countercyclical fiscal policy requires as a precondition solvent and sustainable fiscal accounts. Additionally, a more active role of countercyclical fiscal policy may emerge when monetary policy is relatively impotent, or when transmission channels of monetary policy to output gap show significant lags, when countries are vulnerable to capital flows and also when current account objectives are pursued. Moreover, to spread the adjustment burden between fiscal and monetary policy may bring better macroeconomic results. Fiscal policy institutions are currently less developed and as a direct result less effective than monetary policy institutions. To re-engineer fiscal institutions, it is important to increase the timelines of fiscal policy. Furthermore, the existence of significant shocks to the capital account requires a higher degree of flexibility in fiscal policy that allows keeping higher public savings in periods of strong capital inflows.

Arguments in favour of countercyclical fiscal policy may be reinforced in the case of a developing country, where an external constraint on the current account deficit binds and where the external sector may be very relevant in macroeconomic behaviour.

For taxes to work as automatic stabilizers of consumption fiscal policy needs to concentrate on taxes on liquidity-constrained people, where the revenue is quickly collected (VAT, payroll taxes). Progressive income taxation is not an effective automatic stabilizer device if evasion predominates in higher income-brackets. Based on the size of corporate tax and VAT revenue fluctuations, corporate income and value added taxes are potential sources of automatic stabilization if proceeds are saved during booms and dissaved during contractions. In fact, under volatile tax revenues and inflexible expenditures, a structural budget balance rule demands further saving (dissaving) when an expansion (contraction) takes place.

Commodity stabilization funds work under the same principle of saving when times are good and dissaving for the rainy days. Recent empirical work shows a very slow mean reversion process for most commodity prices, so that a stabilization fund needs to be very large to be effective. Without clear and strict rules for the work of those stabilization funds, and without starting-up in a favourable cycle, those devices may be unfeasible. In cases where long-run price stabilization is required, such schemes provide a formal framework for adjusting prices even under permanent shocks.

The suggestion to create a fiscal committee with the purpose of managing countercyclical fiscal policy may be interesting to explore. To enhance coordination and restrict further overhead expenses, one might think about creating a macroeconomic policy committee composed of the authorities of the treasury and the central bank to decide upon the use of countercyclical fiscal policy. At the beginning, it might well be appropriate to constrain pre-legislated tax flexibility within fairly narrow bands. As the community becomes more comfortable with the arrangements, discretion could be expanded as appropriate.

The choice of a flexible tax instrument together with the institutional framework design to accumulate or dissave funds are key issues to be decided upon. Obviously there are costs and benefits of such decisions. A flexible VAT may destabilize inflation in the short-run. Corporate taxation flexibility may increase financial planning uncertainty, while personal income tax flexibility may be unfair and against saving incentives for people belonging to lower income brackets. Taxes ideally should be devoted to help adjust consumption rather than productive investment.

Alternatively, introducing flexibility to compulsory contribution to the pension fund or unemployment insurance fund might be considered. This measure will have minimal budgetary impact. Additionally, it will have the advantage to ultimately benefit the contributor, with no need of creating an additional stabilization fund. However, it might be ineffective if funds can be taken as collateral. An additional problem is that such a scheme may be unfair to lower income people and dependent workers.

To reduce lags in the operation of flexible fiscal policy, it is important to rely on taxes that are collected periodically within a short time span, such as VAT, pension and/or unemployment insurance contributions, payroll taxes.

A vulnerable, small and open economy requires saving more in boom periods of commodity exports and big capital inflows, because tax revenues will significantly increase due to increases in absorption, profits and in the value of the domestic currency, increasing the associated tax collection. More generally, if the revenue base has a high variability, there is a need to save even more when times are good. This should be recognized in a structural budget rule as higher saving (dissaving) during expansions (contractions). Moreover, the structural budget methodology requires some adaptations in the case of introducing unemployment insurance benefits paid by the government.

Although commodity stabilization funds as well as the structural budget surplus rules, and the extent of FDI investment financing in a country are all stabilizing devices for an economy, a higher degree of tax or pension fund and/or unemployment insurance contribution flexibility may be required as countercyclical tools, specially under strong capital inflows. Automatic indexing rules to terms of trade, profits or country risk spreads for wages, pension contributions, public expenditures less costly and inefficient to stop, and interest payments on public and external debt could also be desirable. Charging *ex ante* premiums and limiting contingent debt exposures may also contribute in this respect.

Finally, once a policy maker decides to adopt more fiscal flexibility, it is key to avoid jeopardizing credibility gains coming from a well-reputed current fiscal framework. Therefore, the timing for introducing such a device should be carefully analysed and decided upon.

References

- Auerbach, A. and D. Feenberg (2000), 'The Significance of Federal Taxes as Automatic Stabilizers', *Journal of Economic Perspectives*, Vol.14, No.3, summer, pp.37–56.
- Bertola, G. and A. Drazen (1993), 'Trigger Points and Budget Cuts: Explaining the Effects of Fiscal Austerity', *American Economic Review*, Vol.83, No.1, pp.11–26.
- Blinder, A. and S.M. Goldfeld (1976), 'New Measures of Fiscal and Monetary Policy, 1958–1973', *American Economic Review*, Vol.66, No.5, December, pp.780–96.
- Budnevich, C., F. Larraín and J. Quiroz (2001), Sector Minero y Mercado de Capitales en Chile, Instituto de Economía, Pontificia Universidad Católica de Chile, Informe preparado para el Ministerio de Economía, Minería y Energía.
- Budnevich, C. and G. Le-Fort (1997), 'La Política Fiscal y el Ciclo Económico', *Revista de la Cepal No.61*, ECLAC, Abril.
- Business Council of Australia (1999), 'Avoiding Boom/Bust: Macroeconomic Reform for a Globalized Economy', Discussion Paper 2, October, pp.1–76.
- Caballero, R. J. (2000), 'Macroeconomic Volatility in Latin America: A View and Three Case Studies', LACEA meeting, May.
- Caballero, R. J. (2001), 'Coping with Chile's External Vulnerability: A Financial Problem', mimeo, Banco Central de Chile.
- Cashin, P., H. Liang and C. J. McDermott (1999), 'How Persistent are Shocks to World Commodity Prices', International Monetary Fund Discussion Paper 99/80.
- Ffrench-Davis, R. and H. Tapia (2001), 'Three Varieties of Policies to Face Capital Flows Abundance in Chile', in R. Ffrench-Davis (ed.), *Financial Crisis in Successful Emerging Economies*, Brookings Institution, Washington DC.
- Ffrench-Davis, R. (2001), *Economic Reforms in Chile*, University of Michigan Press, Ann Arbor.
- Frenkel, J. A. and A. Razin (1996), 'Fiscal Policies and Growth in the World Economy', 3rd Edition, MIT Press.
- Gavin, M., R. Hausmann, R. Perotti and E. Talvi (1996), 'Managing Fiscal Policy in Latin America and the Caribbean: Volatility, Procyclicality and Limited Creditworthiness', Interamerican Development Bank, Office of the Chief Economist, Working Paper 326, March, pp.1–23.
- Heller, P. S., R. Haas and A. Mansur (1985), 'A Review of the Fiscal Impulse Measure with Estimates of the Structural Budget Balance', Departmental Memoranda, Fiscal Affairs and Research Department, International Monetary Fund.
- King, M. A. (1999), 'Challenges for Monetary Policy: New and Old', *Bank of England Quarterly Bulletin*, Vol.39, No.4, November, pp.397–415.
- Martner, R. (2000), 'Estrategias de Política Económica en un Mundo Incierto: Reglas, Indicadores, Criterios', *Cuadernos del Ilpes* 45.
- Massad, C. (1998), 'La Política Monetaria en Chile', *Economía Chilena*, Vol.1, No.1, Agosto.

- Morandé, F. and R. Vergara (eds) (1997), *Análisis Empírico del Crecimiento en Chile*, Centro de Estudios Públicos e Ilades, Georgetown University.
- Sutherland, A. (1995), 'Fiscal Crises and Aggregate Demand: Can High Public Debt Reverse the Effects of Fiscal Policy?', CEPR Working Paper 1246, London.
- Talvi, E. and C. Vegh (2000), 'Tax Base Variability and Procyclical Fiscal Policy', NBER Working Paper 7499, January.
- Taylor, J. (2000), 'Reassessing Discretionary Fiscal Policy', *Journal of Economic Perspectives*, Vol.14, No.3, Summer, pp.21–36.
- Varangis, P. and D. Larson (1996), 'Dealing with Commodity Price Uncertainty', Policy Research Working Paper 1667, International Economics Department, Commodity Policy and Analysis Unit, World Bank, October, pp.1–43.