Chile's Fiscal Rule

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1. INTRODUCTION

While the debate on fiscal policy in Europe focuses on how to facilitate the workings of automatic stabilizers while achieving fiscal consolidation, the discussion on fiscal policy in the Latin America and Caribbean region (LAC) concentrates predominantly on long term sustainability issues, largely ignoring the effects of the economic cycle (Perry 2002). This might come as a surprise as LAC economies are much more volatile than their European counterparts and have generally applied procyclical fiscal policies that may have exacerbated volatility. Some analysts and policymakers appear to think that countercyclical fiscal policies are a luxury that only developed countries can afford or, at least, that LAC countries need to address first their pressing adjustment and solvency issues before attempting to reduce the highly procyclical character of their fiscal policies. Perry (2002) argues that this is a major mistake because the costs of procyclical fiscal policies in LAC are huge in terms of growth and welfare, especially for the poor. Furthermore, procyclical policy tends to lead to a deficit bias and thus ends up being unsustainable and noncredible.

The procyclical bias in fiscal policy in LAC countries has been attributed to limited access to capital markets in downturns and lack of fiscal discipline due to the political economy of fiscal policy in the presence of weak budgetary institutions in upturns. Gavin et al. (1996), Gavin and Perotti (1997) and Talvi and Vegh (2000) show that fiscal policy in Latin America is procyclical. During expansions government consumption increases and taxes fall, while the opposite is true during recessions. While Gavin et al. relate procyclical fiscal policy in developing economies to imperfect access to capital markets during bad times, Talvi and Vegh predominantly blame the inability of domestic finance institutions to generate a large enough surplus during good times. Fiscal rules tied to the cyclically adjusted balance can help reduce political pressure for procyclical expenditure, ensuring that surpluses generated in good times are saved for bad times.

In an effort to eliminate a procyclical bias of fiscal policy, many countries have been implementing rule-based fiscal policies. The intention being, that rule-based fiscal policies allow automatic stabilizers to work freely during the cycle and help keep any surplus in good times out of reach from the political process in normal discretionary budgetary decisions.

In 2000, the government of President Ricardo Lagos introduced a fiscal rule based on a structural surplus of one percent of GDP to reaffirm and intensify Chile's commitment to

fiscal responsibility. Chile has established a reputation for fiscal discipline and running sustainable public sector deficits. Its public debt relative to GDP has been declining for some time. Thus, Chile's new approach to fiscal policy represents an attempt to structure and signal its policies over a medium term horizon; it is not an emergency effort to acquire fiscal policy credibility. The rule is supposed to allow automatic stabilizers in the budget to work uninhibited, while avoiding fine-tuning of fiscal policy to the phases of the cycle.

This paper describes Chile's new fiscal rule and tries to assess its implications for social expenditure. It is organized as follows. Section 2 discusses fiscal rules in some detail and introduces the concept of the structural balance. Section 3 describes Chile's new fiscal rule and offers some critical observations. Section 4 attempts to assess the implications of Chile' new fiscal rule for social expenditure within the insurance framework of Ehrlich and Becker (1972).

As Chile's fiscal rule targets a structural rathern than an actual balance, it is difficult to assess potential implications for the size and composition of future public or social expenditure. However it is possible to show that the fiscal rule helps smooth public and social expenditure over the cycle. As Chile's new fiscal rule has yet not stood the test of time , the analysis presented here has to be viewed as preliminary and can only rely on limited econometric evidence.

2. Fiscal Rules and the Concept of the Structural Balance

2.1 Fiscal Rules

The main motivation behind rule-based fiscal policy is that discretionary fiscal policy can harm macroeconomic stability. In a recent study of a cross-section of 51 countries, Fatas and Mihov (2002) provide evidence that discretionary fiscal policy amplifies business cycle fluctuations and reduces the rate of growth while rule-based fiscal policies help to lower output volatility and impact positively on growth.

The term fiscal rule is quite loosely defined. Fiscal rules in the widest sense refer to "budgetary institutions" (Alesina and Perotti, 1999), i.e. a set of rules and regulations according to which budgets are drafted, approved and implemented. Fiscal rules in a more narrow sense refer to legislated restrictions on fiscal policy that set specific limits on fiscal indicators such as the fiscal balance, debt, expenditure or taxation.

Fiscal rules differ according to whether they are legislated, specify numerical targets and apply to various definitions of the public sector.

Fiscal rules have been applied to:

- ensure macroeconomic stability (post-war Japan)
- enhance the credibility of the government's fiscal policy and help in debt consolidation (Canadian provinces)

- ensure long-term sustainability of fiscal policy (New Zealand)
- minimize negative externalities within a federation or an international arrangement (Maastricht Treaty)
- reduced procyclical bias in fiscal policy.

Fiscal rules *per se* are no guarantee for fiscal discipline. Milesi-Ferretti (2000) shows that if a government has a margin for "creative accounting", the imposition of a fiscal rule may entail a trade-off between costly "window-dressing" and real fiscal adjustment. Mattina and Delorme (1996) show that fiscal discipline imposed by market mechanisms can be just as effective as fiscal rules. They based their results on estimates of non-linear credit supply curves, where the deficit is modeled as a function of the yield spread and the debt/GDP ratio.

In order for a fiscal rule to be efficient, it should therefore be:

- not too rigid, i.e. provide some flexibility to legitimate countercyclical policy when needed,
- credible, i.e. the rule should be viewed as permanent,
- transparent, i.e. easy to monitor and difficult to manipulate.

There is an obvious conflict between flexibility and credibility. Credibility demands rigidity, however a rule that is too rigid may become nonviable, if it is perceived as unsustainable. Perry (2002) points further to a dichotomy in objectives between fiscal polices that exclusively focus on avoiding a deficit bias and those that exclusively focus on reducing a procyclical bias. A fiscal rule that place the emphasis on avoiding a deficit bias and ignores the potential effects of shocks and the economic cycle can be counterproductive, as it might accentuate the procyclicality of fiscal policies. On the other hand, a rule that attempts to support countercyclical fiscal policies but is not designed to achieve long term debt sustainability will equally be unsustainable and further non credible. A well designed rule should therefore attempt both to facilitate the operation of automatic stabilizers (or even permit a limited active countercyclical fiscal policy) and avoid a deficit bias.

Empirical evidence on the effectiveness of fiscal rules is quite mixed, as most rules have yet not passed the test of time. While Alesina et al. (1999) find a significant negative relation between the stringency of a rule and the size of the primary deficit for 20 LAC countries from 1980 to 1992, Kennedy and Robbins (2001) show that having a legislated fiscal rule is not a necessary condition for successful fiscal consolidation within OECD countries. Bayoumi and Eichengreen (1995) and Levinson (1998) show for the US that fiscal rules decrease the ability of governments to use fiscal policy to smooth the business cycle and therefore can lead to a significant increase in output volatility. Alesina and Bayoumi (1996), using similar data, find no significant relationship between GDP volatility and the stringency of fiscal controls. Fatas and Mihov (2002) using a cross-country analysis of 51 countries find that that the volatility of output induced by discretionary fiscal policy lowers economic growth by 0.6 percentage points for every percentage point increase in volatility, while automatic stabilizers tend to reduce output volatility.

2.2 The Concept of the Structural Balance

Traditionally, fiscal policy is seen as a stabilizer of the business cycle. Fiscal policy is typically designed to be expansionary during recessions and contractionary during expansions. Two instruments are used for this purpose: (1) automatic stabilizers and (2) discretionary fiscal policy. Automatic stabilizers are budget components that respond automatically to the business cycle without any explicit government action. Income tax revenues and unemployment benefit expenditures, for example, respond, respectively, positively and negatively to the business cycle. Discretionary fiscal policy consists of active policy measures meant to stimulate the economy during bad times.

As the actual balance reflects cyclical or transitory influences on the budget, as well as structural or permanent influences, a failure to distinguish between the two creates the risk that fiscal policy may be over- or underadjusted in response to budget developments. To overcome the limitations of traditional budget accounting, the concept of the structural balance has been proposed. It attempts to factor out cyclical components from the actual budget balance in order to provide less "noisy" indicators to guide fiscal policy. Within this concept, it is useful to think of the actual balance, B, as a composition of a structural, B^s, and a cyclical component, B^c:

$$B = B^s + B^c \tag{1}$$

Generally, the construction of the structural balance follows two steps. The first step involves the construction of a reference path for real GDP to obtain a measure of potential output in the absence of cyclical fluctuations. The difference between the actual and the potential output measures the output gap in a particular year. In the second step these output gaps, together with government revenue and expenditure elasticities are used to calculate the level of public revenue and expenditure if output would have been at the reference path level. The impact of automatic stabilizers and a progressive tax system are thus accounted for. The resulting cyclically adjusted or structural budget balance corresponds to the underlying budgetary position implied by the path of potential output.

The structural balance *per se* is not a fiscal rule, it is more a means to an end. The structural balance can be useful in defining a medium-term *fiscal target*. As the economy and fiscal balances are subject to transitory shocks, reference to the structural balance can help policy makers avoid unnecessary and often procyclical policy adjustments. Transitory shocks to fiscal balances require no adjustments to be made, as they will be reversed over the course of the business cycle, while permanent shocks need attention. The structural balance can also be interpreted as an *indicator for discretionary fiscal policy*. If the business cycle leads to non-discretionary changes in fiscal policy through automatic stabilizers, while the business cycle itself is partially driven by discretionary fiscal policy measures, the structural balance should be a better indicator of shifts in the discretionary fiscal policy stance. Finally, as in the case of Chile, the structural balance can also be the basis for a *fiscal rule* by setting budget target levels based on the structural rather than the actual budget balance.

While the decomposition in (1) seems intuitive, it has to be kept in mind that the structural balance unlike the actual balance is an *unobservable concept*. It represents the fiscal balance that would have occurred if all temporary influences on the budget had been absent. The biggest problem in the calculation of the structural balance is related to correctly identifying cyclical and structural components, such as cyclical and potential output. Although a variety of methods exist for calculating potential output and corresponding output gaps, all of them have major shortcomings (see e.g. Deutsche Bundesbank 1997). An additional caveat is that estimates of the structural balance are usually based on the assumption of constant revenue and expenditure elasticities over time. This is a less serious problem for mature economies, however, more of a concern to emerging economies that still face substantial structural changes.

The most commonly used approaches are a production function based approach, as applied by the OECD and the IMF and Hodrick-Prescott filtering, as applied by the European Commission. Brunila et al. (1999) show that when the main focus is on estimating the level of the structural balance, the production function approach provides a better measure than the HP filter-based approach. If the focus is, however, on changes in the fiscal policy stance, the choice of method matters less. Formulating a fiscal policy based on a specific level of the structural balance as opposed to a change in the structural balance is, therefore, more difficult.

Finally, the level of the structural balance is not only sensitive to the underlying estimation method but also sensitive to the accounting methodology, i.e. if a very narrow definition of the public sector is applied and too many accounts are excluded (e.g. state enterprises), the level of the structural balance looses meaning for fiscal sustainability, as the base for assessing fiscal sustainability becomes too narrow.

As such, the usefulness of the structural balance in formulating fiscal targets depends crucially on correct identification of temporary and permanent shocks. Shocks that are assumed to be permanent but later turn out to be transitory might cause unnecessary tightening of the fiscal stance. On the other hand, if a transitory shock turns out to be permanent necessary adjustments will have been delayed. The appropriateness of the structural balance as an indicator of discretionary fiscal policy additionally requires a correct distinction between discretionary and nondiscretionary fiscal policy.[1]

[1] When cyclically adjusting the budget, it is important to decide which expenditures and revenues fall into the automatic and discretionary categories. The assumption is that the business cycle causes automatic stabilizers to adjust, while the business cycle itself is caused by discretionary components. If all components of the budget were adjusted for cyclicality, the resulting structural budget would be, by construction, completely uncorrelated with the business cycle (Burnside 2000). Hagemann (1999) and others point out that the conceptual classification of fiscal policy in discretionary and nondiscretionary components is not unambiguous.

3. THE CHILEAN EXPERIENCE

3.1 Chile's New Fiscal Rule

In 2000, the government of President Ricardo Lagos introduced a fiscal rule based on a structural surplus of 1 percent of GDP to reaffirm and intensify Chile's commitment to fiscal responsibility. The new method of preparing the budget is believed to deliver indicators for identifying the fiscal stance, to avoid a procyclical policy bias in public finances, to allow an evaluation of the macroeconomic impact of fiscal policy and to ensure fiscal discipline and sustainability. The decision to implement a new approach to fiscal policy was taken after the structural balance for 1999 showed a deficit for the first time in 10 years. It was the intention of the government to reach the surplus target of 1 percent over a transition period of 2 years.

The fiscal rule in Chile does not qualify as a fiscal rule in the stricter sense, as it is not stated in law. It is a self-imposed measure by the present government to guide fiscal policy from 2001 to 2005. The rule is extremely rigid as a target value for the structural surplus is specified and no escape clauses are mentioned. Despite not being legally binding, due to Chile's good track record of fiscal discipline, it is perceived as highly credible.

The fiscal rule in Chile only applies to the central government, the following public sector flows are excluded from the new structural balance:

- the quasi-fiscal deficit of the central bank (about 1 percent of GDP over the last 10 years),
- the balances of nonfinancial public entreprises,
- the balances of the military sector (only funds transferred to the military from the central government are considered),
- the balances of municipalities.

The public sector flows excluded from the structural balance taken together are substantial. This does not necessarily imply a reduction in transparency or a dilution of incentives for fiscal discipline. The quasi-fiscal deficit of the central bank has been about one percent of GDP over the last 10 years, but has been declining recently. Municipalities are bound by borrowing constraints that imply an overall zero budget balance requirement. The quasi-fiscal deficit of the nonfinancial public sector has been around 0.5 to 1 percent of GDP and does not pose a direct threat to the solvency of the public sector. As long as figures from state enterprises are made public, transparency is provided (see IMF, 2001).

The calculation of the structural balance in Chile follows the IMF and OECD methodology.[2] Two adjustments have been made to capture particularities of the Chilean economy. First, only revenues and not expenditures are adjusted for the business cycle.

[2] For a detailed description of the calculation of the structural balance and the implementation of fiscal rule see Marcel et al. (2001) (http://www.dipres.cl/pdf/publicaciones/balance%20mh_1.pdf)

Second, given the high importance of copper revenues for public finances, structural revenues are also adjusted for fluctuations in copper prices. Finally, to better capture changes in the net-worth of the central government, some accounting adjustments are made to the actual balance, before the structural and cyclical components are calculated. On the revenue side, privatization receipts and other flows related to purchases and sales are subtracted, while deposits to the copper fund are added. On the expenditure side, adjustments are made to ensure accrual-based treatment of Pension Recognition Bonds.

The structural balance reflects the amounts of revenue and expenditure that would be achieved if the economy operated at full potential and the price of copper were at the long-term price. The structural balance therefore factors out the cyclical and random effects of GDP and of the copper price.

To summarize, the calculation of the structural balance in Chile consists of the following three steps:

- Adjustment of the actual balance according to the concept of net worth variation of the central government

- Estimation of the impact of cyclical budget components (tax revenues and price of copper). The cyclical component of tax revenues, T^c, is obtained by adjusting observed tax revenues, T, using an estimated output elasticity, ε, of 1.05:

$$T^c = T - T\left(Y^* / Y\right)^{\varepsilon}.$$

  Cyclical output is defined as the difference between actual, Y, and potential output, Y^*, where potential output is derived from a production function linking output to capital, labor and total factor productivity. Potential output is calculated as the level of output at which capacity utilization rates are at normal levels, labor input is consistent with the natural rate of unemployment, total factor productivity is at its trend level and the price of copper is at its long-term level.

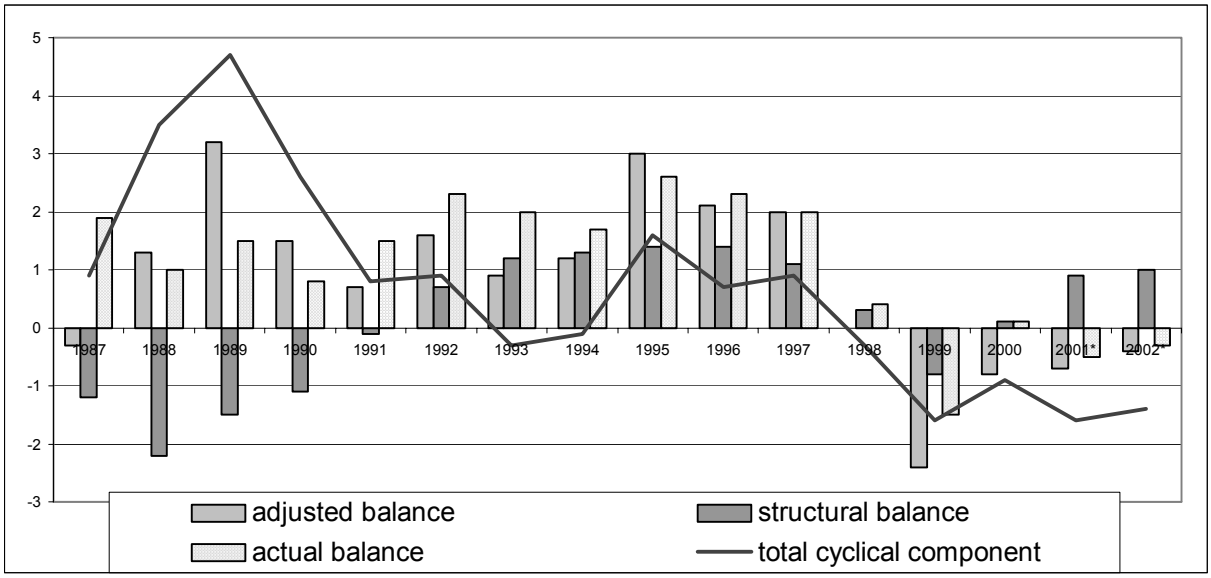
  The cyclical adjustment to the copper price is based on the gap between the actual export price reported by CODELCO and an estimated reference price, which is close to a long-term moving average.[3]

- Construction of the structural balance by subtracting the cyclical components of tax revenue and copper income from the adjusted balance constructed in the first step.

[3] While the CSF operated in tranches and as such was not able to fully exploit the cyclical fluctuations in the copper price, the copper price adjustment within the new fiscal rule captures cyclical variations of the copper price more efficiently from a fiscal point of view, as the structural balance is adjusted for the absolute difference between the copper price and the copper reference price.

Figure 1 displays the actual, adjusted, structural balance and the total cyclical component of the budget. During 1987 and 2000, the adjusted balance indicates an average surplus of 1 percent of GDP, while the structural balance averaged 0 percent of GDP. The total cyclical component measures the difference between the adjusted and structural balances, so it averaged 1 percent of GDP during 1987–2000. When comparing the different budget concepts, it is interesting to note that the actual balance showed a surplus of 1.5 percent in 1989, while the structural balance indicated a –1.5 percent deficit. The adjusted balance was 3.2 percent. The opposite occurred in 2000, when the structural balance showed a slight surplus of 0.1 percent and the actual and adjusted balance were in deficit. The large difference between the actual and the adjusted balance is due to the different treatment of the copper stabilization fund in the new accounting concepts. In the traditional accounting withdrawals from the copper stabilization fund (CSF) (during periods of lower copper prices) were treated as revenues, and deposits into this fund (during periods of higher copper prices) were deducted from revenues. This is no longer the case for the calculation of the adjusted balance. This causes the adjusted balance to be much more volatile than the actual balance and the smoothing of the balance previously accomplished by the CSF is now accomplished by factoring out the cyclical component of the copper price when calculating the structural balance.

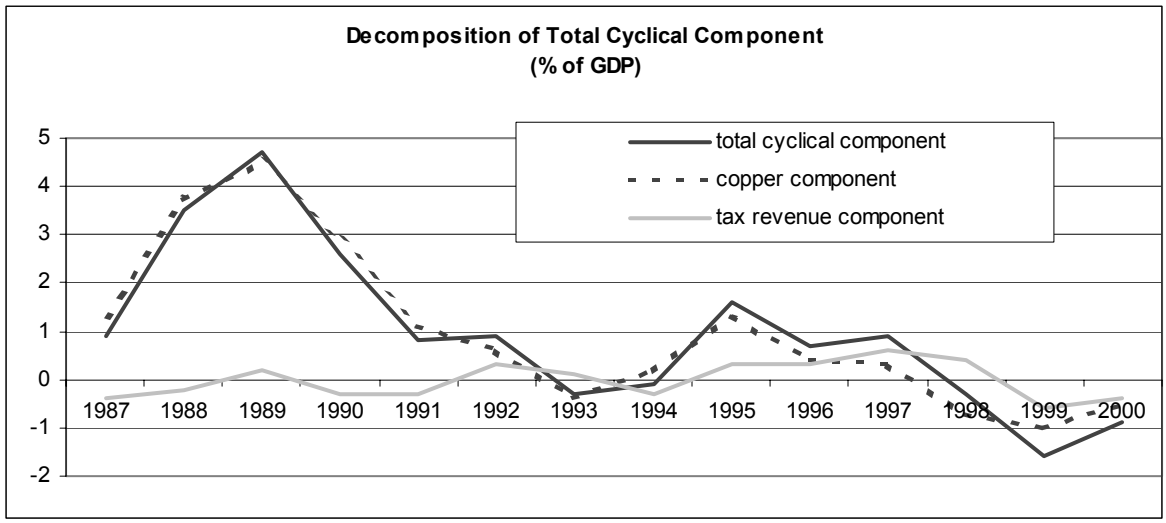
Figure 1: Actual, adjusted, and structural balance and total cyclical budget components as a percentage of GDP (values for 2001 and 2002 are estimates).



3.2. Some Observations about the New Chilean Fiscal Rule

Adjustment for the Copper Cycle. The copper-related adjustment to the structural balance is substantial and much larger than the tax revenue adjustment related to the output gap (see Figure 2). As such, the copper reference price is central for the derivation of the structural balance and the fiscal rule. Within the fiscal framework, the copper price is treated as mean-reverting. This justifies treating fluctuations in copper prices as temporary. Empirical evidence, however, does not lean towards mean-reversion in copper prices (Mainardi, 1998), suggesting that all copper price changes should be treated as permanent. While empirical evidence on mean reversion suffers from the usual problem of the low power of unit root tests, it is nonetheless true that even if copper prices are mean-reverting, the process of mean-reversion seems to take a rather long time, indicating a near-unit root process.[4] Engle and Valdes (1999) estimate a half-life of price shocks of four years, Cashin et al. (1999) report an even higher half-life of about 6.5 years, indicating that the actual copper prices could stay below the reference price for a substantial amount of time. [5]

Figure 2



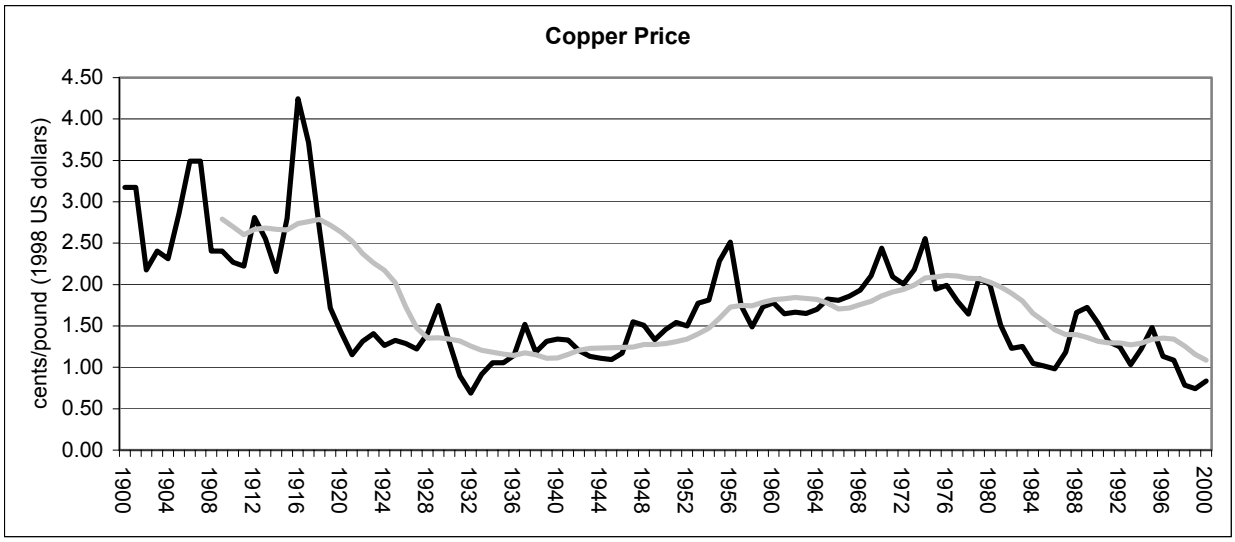
[4] Using data from 1990 to 2000, we find that an ADF unit root test cannot reject a unit root in the copper price series, while a Phillips-Perron test rejects non-stationarity:

ADF test: no constant, no trend:	-1.57 with critical value	-1.95
ADF test: constant, no trend:	-1.62 with critical value	-2.86
ADF test: constant, trend:	-1.88 with critical value	-3.41
PP test:		
PP test: no constant, no trend:	-2.04 with critical value	-1.95
PP test: constant, no trend:	-2.42 with critical value	-2.86
PP test: constant, trend:	-2.70 with critical value	-3.41.

[5] In a different context: if mean-reversion of commodity prices is slow, commodity-based stabilization funds need to be rather large in order to be effective.

Over the last 10 years the reference price of copper has been rather smooth compared to the market price. The calculation of the structural balance has therefore treated nearly all copper price fluctuations as transitory, i.e. nearly all copper price fluctuations have been removed from the fiscal balance. While this procedure yields a much clearer indicator of changes in fiscal discipline, it is uncertain to what extent this adjustment aids in assessing fiscal sustainability.

Figure 3

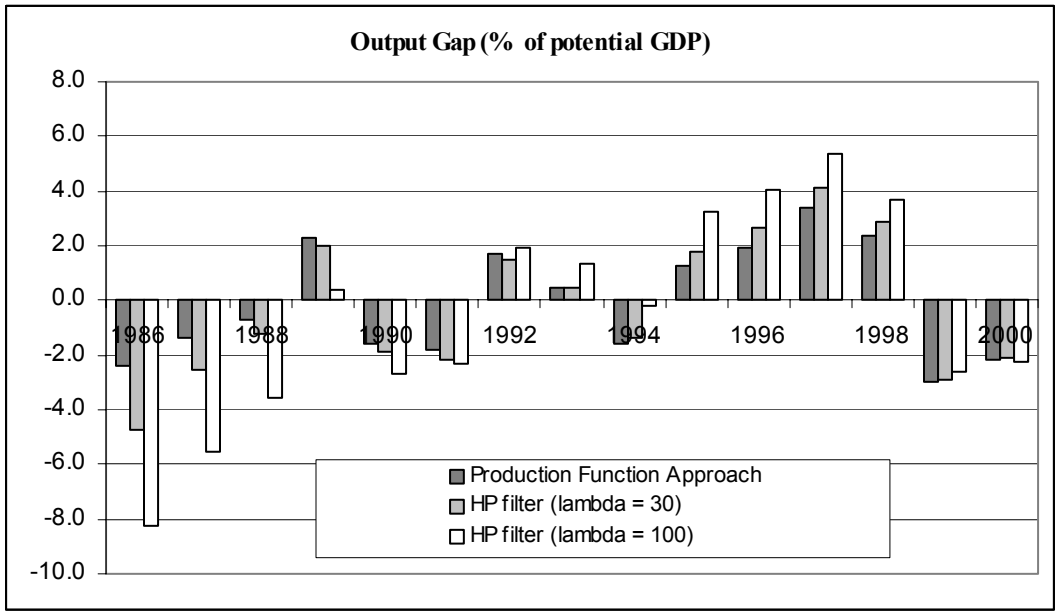


Lack of Adjustment on the Expenditure Side. As automatic stabilizers act both on the revenue and expenditure side, when calculating structural balances for OECD countries, cyclical adjustments are made on both sides of the budget. In the case of Chile, no cyclical adjustment is made to the expenditure side, as no significant relation between public expenditure and output has been established. The Chilean authorities explain that this is due to underdeveloped unemployment and severance benefit systems, which do not act as automatic stabilizers (see Marcel et al., 2001). As the structural balance is only adjusted for cyclical revenue fluctuations, there is, however, the danger that the scale of automatic stabilizers allowed by the Chilean structural balance target is limited. If, for example, the government introduces temporary employment programs or other types of social spending during an economic downturn, this additional expenditure has to be offset by tightening elsewhere (see IMF, 2001).

By construction, Chile's fiscal rule achieves a smoothing of expenditure over the cycle and the intention is to help create stable conditions for the development of long-term social and investment programs. De Ferranti et al. (2000) argue that social expenditure should at least be kept constant through the cycle and ideally it should be countercyclical. From a social protection point of view it might, therefore, be useful to introduce explicit automatic stabilizers on the expenditure side. This would enforce Chile's ability to run nondiscretionary countercyclical fiscal policy.

Calculation of the Output Gap is Sensitive to Methodology. As already mentioned, no generally accepted methodology of calculating the cyclically-adjusted budget balance exists. The results tend to be fairly sensitive to the method of calculation. This raises questions about the accuracy of the measure as well as the importance of estimation errors. The latter only become a problem if estimation errors are systematically related to the cycle. The Chilean authorities provide a sensitivity analysis using different output elasticities (0.7, 1.05 and 1.25) as well as a 10 percent confidence interval around the estimated output gap and show that their results are fairly robust. Nadal-De Simone using Hodrick-Prescott and Kalman filtering finds, however, substantially different estimates of the output gaps (see IMF 2001).[6] Below we contrast the production-function based output gap with two simple measures of output gaps derived from two different Hodrick-Prescott filters using a smoothing parameter of 100 and a smoothing parameter of 30. As can be seen from Figure 3, the level estimates of the output gap differ substantially, though they are not very sensitive to the choice of smoothing parameter for the HP filter. However, regarding directional changes all three methods identify the same pattern. As such, when evaluating the stance of Chile's fiscal policy, methodological differences seem to matter less—a result that is also found by Brunila et al. (1999) for Finland.

Figure 4

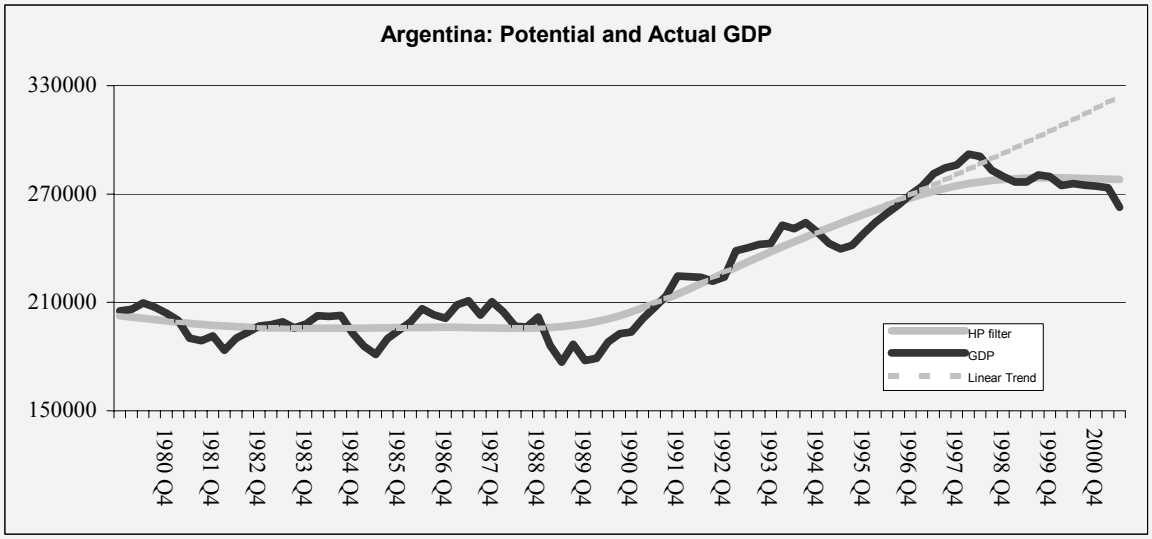


[6] Harvey (2001) shows a substantial difference between business cycle estimates based on the Hodrick Prescott filter, the Baxter-King filter and a structural time series model. Using structural time series modeling and quarterly GDP data from 1960 to 2000 shows that the preferred model for Chilean GDP has two cycles. The first cycle has a period of 10.66 years and the second has a frequency of just less than three years. The long-run cycle picks up the major recessions during this period. In monthly data from 1982 to 2001, Harvey only identifies the short cycle with a frequency of just less than three years.

Box 1: A Structural Balance for Argentina – Sensitivity to Methodology.

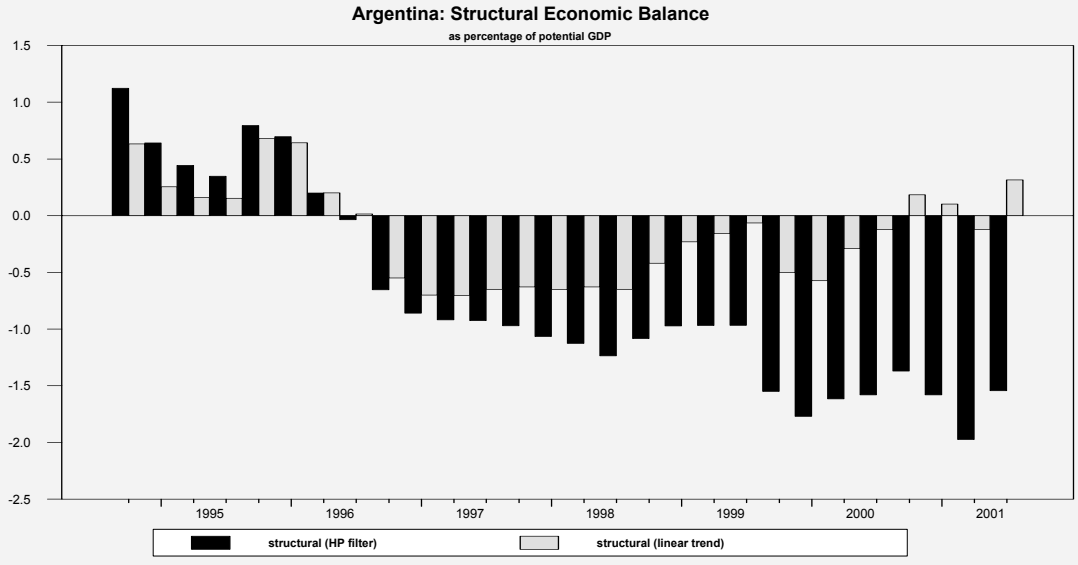
Perry and Serven (2002) present estimates of a structural economic balance for Argentina. Estimates of the structural balance are found to vary greatly with assumed time path for potential GDP. Figure B1 shows estimates of potential GDP based on an HP filter and a linear trend. The two different estimates express different views about developments in Argentina since 1998. According to the linear trend estimate, the Argentine economy was going through a pronounced recession in the late 1990s, while the HP filter would suggest a downward revision in potential output.

Figure B1



The different potential GDP estimates translate directly into different estimates of the structural balance. (Figure B2). These differences in the estimates would lead to starkly different interpretations with respect to the magnitude of the structural balance and the fiscal stance.

Figure B2

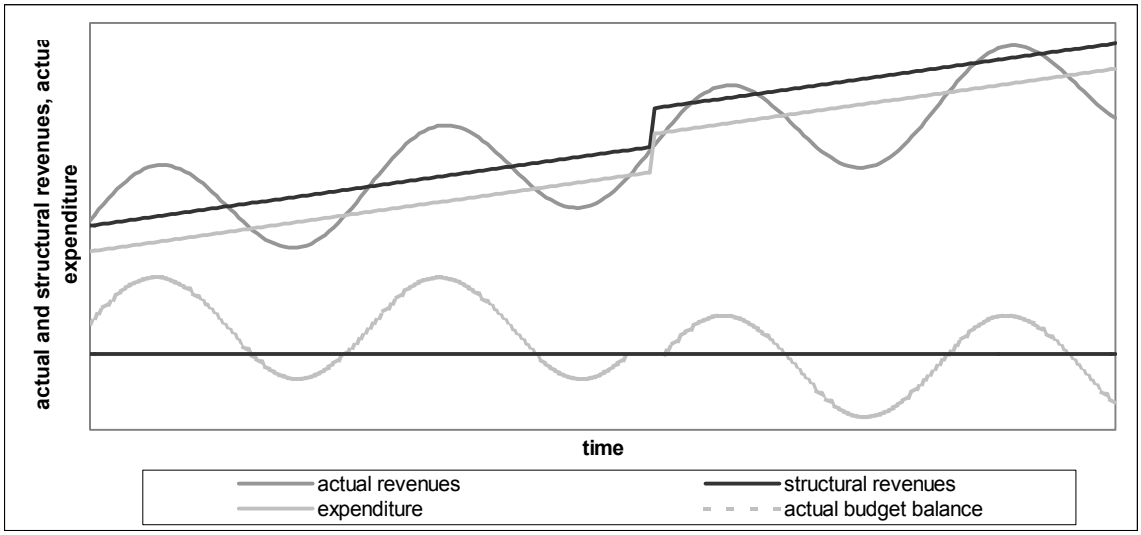


3.4. The Structural Rule: Countercyclical by Definition?

Chile's fiscal rule targets a maximum structural balance of 1 percent of GDP. The working of the rule is illustrated in a simplified way in the left half of Figure 5. While fiscal revenues fluctuate with the economic cycle (indicated by the upward-sloping sine curve), the government must set expenditure (lighter-colored trend line) in such a way that it follows the path of structural revenue (black trend line). The relative constancy of the structural balances implies that during a boom the actual surplus is high, while in a recession the actual surplus is low. The development of the actual balance over the cycle is represented by the horizontal sine curve (revenues minus expenditures).

The new rule implies that adjusted public expenditure grows with the same slope as structural revenues, however at a lower level. This is meant to enable Chile to generate large surpluses in good times and thus avoid a procyclical bias in fiscal policy, something that has been prevalent in the past. Talvi and Végh (2000) and Bergoeing and Soto (2000) provide estimates of procyclicality before the introduction of the fiscal rule. According to Talvi and Vegh (2000) the correlation coefficient of government spending and output in Chile during 1970 and 1994 was 0.59 (Latin American average: 0.53). Bergoeing and Soto (2000) report a correlation coefficient of 0.34, based on quarterly data from 1986 to 1998.

Figure 5: Deficit and Surplus Bias



The mechanism works well if structural revenues are estimated correctly. However, the right side of Figure 5 simulates the effect of a systematic overestimation of structural revenues, for example, due to an overestimated copper reference price or a larger output gap. The consequence is that projected structural revenues, which build the basis for the calculation of actual expenditure, will be overestimated. Overestimation of structural revenues accommodates more expenditure, and thus introduces a more expansionary fiscal stance. If structural revenues are overestimated systematically a *potential* deficit

bias in the actual balance is introduced. As public sector borrowing requirements need to be met on the basis of actual and not structural balances—and the same holds for debt sustainability—a financing problem might arise. This problem would be amplified for emerging economies where debt-sustainability and actual deficits have a great deal of relevance when evaluating country risk. Lagos and Costa (2000) therefore suggest that Chile's fiscal rule be modified by placing a restriction on the size of the actual deficit as well as on the number of consecutive deficits allowed before modification of the rule.

4. Self-Insurance and Self-Protection at the Country Level

Volatility leads to instability, uncertainty and risk. Macroeconomic volatility has long been a trademark of economies in LAC. Economic risk prevails at the aggregate as well as the individual level. For individuals, economic instability translates directly into risk of unemployment or loss of income. On the aggregate level, macroeconomic volatility has a direct negative impact on long-term growth (Fatas and Mihov 2002). It appears, therefore, to be only rational for individuals as well as governments to attempt to insure against risk. Within the comprehensive insurance framework developed by Ehrlich and Becker (1972), self-insurance, self-protection and risk pooling are different risk insurance mechanisms. These mechanisms have different implications for the ultimate probability of incurring a loss and for the extent of the loss itself. These implications derive from the decisions of economic agents regarding how much to insure against loss, and how much to lower the probability of loss.

Self-insurance and risk-pooling transfer income from good to bad states of the world, however, they do not reduce the likelihood that these transfers will be required, i.e. that the bad state will occur. Self-protection on the other hand reduces the probability of a bad state, however, does not limit the size of a loss. This section tries to assess how Chile's fiscal rule relates to the concept of self-insurance and self-protection at the country-level as detailed in De Ferranti et al. (2000).

Table 1: Chile's new fiscal rule within the Ehrlich-Becker Insurance Framework

Self-Insurance		**Self-Protection**
Micro Risk	*Macro Risk*	*Macro Risk*
- Public expenditure smoothing reduces pro-cyclicality of safety-nets	- Countercyclical fiscal policy - Surplus bias	- Sustainable debt management - Lower cost of external financing - Lower risk of financial contagion

4.1 Sustainable Debt Management and Reduction of Contagion Risk

Gill and Ilahi (2000) identify precautionary fiscal targets and contingent fiscal rules as self-insurance at the country level. According to this classification, Chile's new fiscal rule can be seen as a measure of country-level self-insurance. The fiscal rule adjusts for the business cycle and for cyclical fluctuations in the copper price, and thus, like a stabilization fund, transfers resources from good to bad states. By pursuing debt-sustainability and communicating a clear signal of fiscal discipline to the markets, the new fiscal framework should help to protect against fiscal crises and helps to lower the costs of external financing. By signaling fiscal discipline to the markets, the rule should also reduce the risk of financial contagion. The fact that despite an actual fiscal deficit sovereign bond spreads in Chile declined substantially during 2001 and the fact that the correlation with other emerging market spreads has been falling for some time provides some evidence that a credible and efficient fiscal rule can serve as a measure to self-protect against macroeconomic risk

4.2 Public and Social Expenditure Smoothing

De Ferranti et al. (2000) try to quantify the causes of excess volatility in LAC and find that nearly one third was due to exogenous shocks (terms of trade are more volatile in LAC due to concentration in a few commodity exports; capital flows are also more volatile—though not as much as usually thought); one third due to insufficient financial integration and development of domestic financial markets and one third due to procyclical volatility in macro policies (both fiscal and monetary). The importance of volatile monetary policy has been reduced over time, but that is not the case with fiscal policy. It remains highly procyclical, as found by Gavin et al. (1996), among others, and tends to accentuate the cycle.

Procyclical fiscal policies not only accentuate the cycle but also are especially harmful for the poor. De Ferranti et al. (2000) show that in LAC social expenditures as a percentage of GDP are at best held constant during downturns. Further the more targeted social expenditures tend to fall as a percentage of GDP, when they should expand as the number of poor increases. As a consequence, in a typical downturn social expenditures for each poor person are reduced by 2 percent for each 1 percent reduction in output. By contrast, social expenditures usually grow as a percentage of GDP in upturns, when they are less needed. This procyclicality of safety nets adds substantial policy risk to income risk for the poor. A fiscal rule that reduces procyclicality in social expenditure fits into the Ehrlich-Becker insurance framework as a self-insurance strategy at the country level that helps to reduce the income risk of the poor.

Chile has an outstanding track record in reducing poverty. Due to a combination of strong growth and well-directed social programs, poverty was cut in half during the 1987–98 period, from 40 percent to 17 percent (World Bank 2001). Social policies in Chile during the last decade also had a significant impact on reducing income inequality. As the reduction in inequality coincided with a general increase in social expenditure during the period, an interesting question is whether the new fiscal framework imposes a

limit on social expenditure and thus further equality and poverty reduction gains can only be achieved through better targeting of government programs.

In the following subsection, we attempt an evaluation of the potential impact of the new fiscal rule on social protection. As the Chilean fiscal rule has yet not stood the test of time and is still in a transition period, this exercise is extremely preliminary.

Potential Impact on Social Expenditure. Chile's fiscal rule is a structural *surplus* rule and not a structural *balance* rule, i.e. the rule does not target a specific budget level. If taxes are increased or the tax base is expanded, structural revenues will increase and, as the fiscal rule implies that expenditures follow the path of structural revenues, actual expenditures will increase also. As such, unlike fiscal rules that specify a specific budget balance target—e.g. a balanced budget rule or an expenditure ceiling—it is difficult to identify the implications on the size/composition of future public or social expenditures and therefore on poverty reduction and inequality.

As pointed out in section 3.4 any misestimation of structural revenues or the copper reference price can make fiscal policy more expansionary or contractionary than intended. This further complicates an *a priori* assessment of the size/composition of future public and social expenditures.

To be sure the fiscal rule implies that expenditure should follow the relatively smooth path of structural revenues. Public expenditure should therefore be less volatile and achieve a smoothing of social expenditure over the cycle.

Figures 6 and 7graph the cyclical component of GDP as estimated in Marcel et al. (2001) against the cyclical components of total and social expenditures. Both variables are expressed as percentage deviations from their trend components. A value close to zero implies that the cyclical component is close to its trend level. The cyclical components of the expenditure categories are derived using the Hodrick-Prescott filter. The focus is on the directional change and less on the size of the deviation from trend of the expenditure variables, which makes methodological differences in estimation less important. As can be seen from Figure 6 and 7, total expenditure has remained close to its trend level since the implementation of the structural surplus rule and the variance in the changes of expenditure has decreased substantially. This finding is even more evident for social expenditure. Figure 8 to 12 in the Appendix show the results for the different sub-components of social expenditure. The reduced volatility at aggregate level does not translate to the disaggregated level. The increase in expenditure on education, housing and social security was offset by a decrease in subsidies and other social expenditures. It is interesting to note that the cyclical deviation of the different expenditure categories from their trend levels has been decreasing since the implementation of the fiscal rule. The exception is subsides which show a strong decline. However, this can be explained by a declining importance of severance payments as the current severance system will be replaced in 2002 by an individual accounts-based severance insurance system, where the fiscal impact will be independent of the unemployment rate.

Figure 6: Total Expenditure

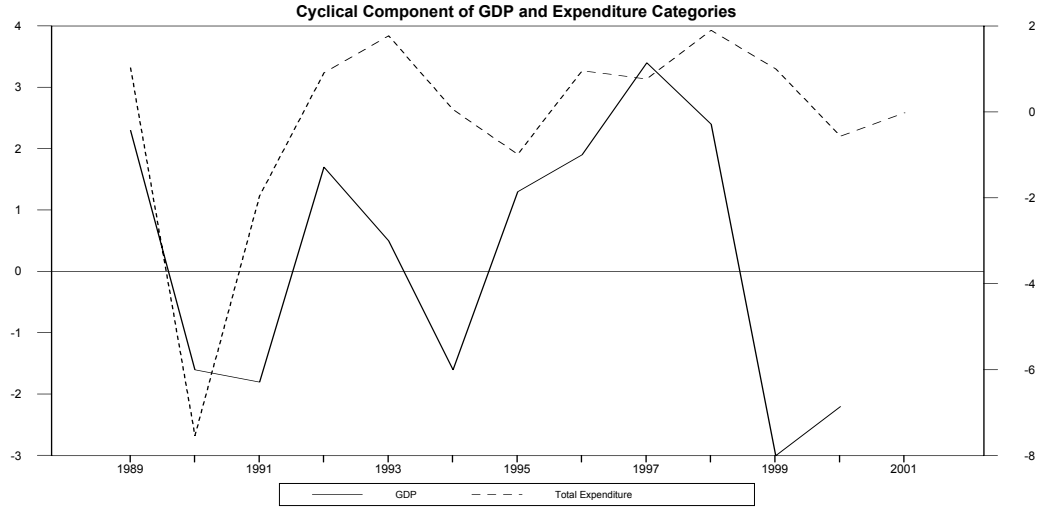
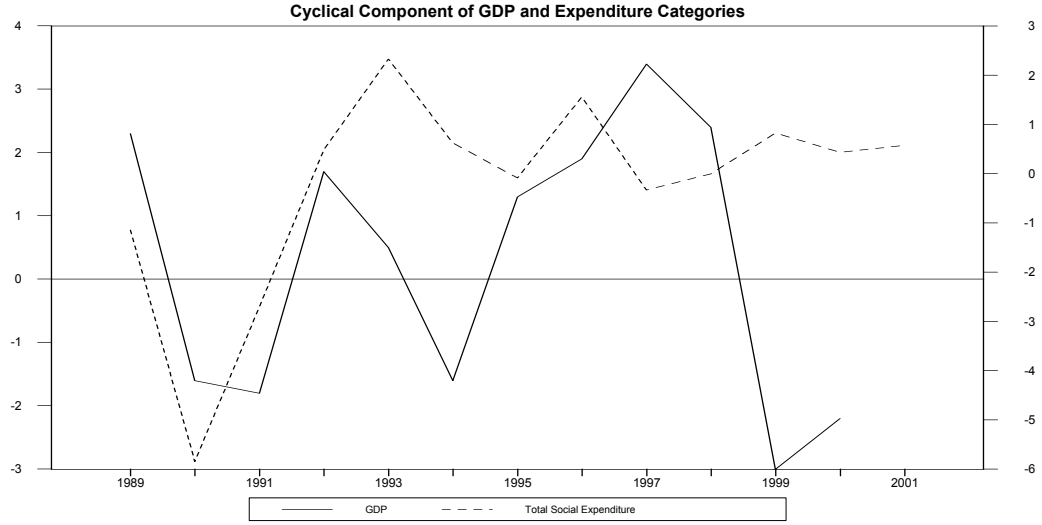


Figure 7: Total Social Expenditure



5. CONCLUSION

While it is too early to fully evaluate the impact of the new fiscal rule in Chile, the experience to date is positive. In 2001, Chile continued its fiscal consolidation effort, while pursuing at the same time countercyclical fiscal policy to the extent of the difference between the structural surplus of 1 percent and the realized balance of –0.3 percent.

Within the risk insurance framework of Ehrlich and Becker (1972), Chile's rule represents a successful attempt to self-insure against macroeconomic risk at the country level. The fiscal rule adjusts for the business cycle and for cyclical fluctuations in the copper price, and thus, like a stabilization fund, transfers resources from good to bad

states. By pursuing debt-sustainability and communicating a clear signal of fiscal discipline to the markets, the new fiscal framework should help to protect against fiscal crises and helps to lower the costs of external financing. To the extent that the Chilean rule signals credible fiscal discipline to financial markets, it also has the potential to serve as a self-protection measure against financial contagion.

Chile's fiscal rule is a structural *surplus* rule and not a structural *balance* rule, i.e. the rule does not target a specific budget level. While it is therefore difficult to assess potential implications on the size/composition of future public or social expenditure, it is possible to show that the fiscal rule will render public expenditure less volatile and as such achieve a smoothing of social expenditure over the cycle. This should help reduce aggregated macroeconomic volatility and foster long-term economic growth.

Within Chile's new fiscal rule, the concept of the structural balance takes center-stage. A fiscal rule based on the structural rather than actual balance is novel, but not without problems. Most importantly, it has to be kept in mind that the structural balance is a *latent* concept. The structural balance, as well as its main determinants (potential output and the long-run copper price), are not actually observable and hence there is no unique way to measure it. Different estimation techniques will result in different estimates of the structural balance.

Given the importance of the structural balance as a measure of the fiscal stance, the choice of the "correct" methodology is more than just a technicality and transparency in the calculation of the structural balance becomes vital. While the Chilean authorities have opted for a fairly transparent and simple rule, there is still room for discretion with respect to potential output and the copper reference price. Even though the Chilean authorities are delegating the calculation of potential output and the copper reference price to an independent panel of experts—which helps to increase transparency—it does not necessarily increase predictability, if the two variables follow random walks. This should be kept in mind when formulating lessons for other countries. An overestimate of potential output and/or an overestimate of the long-run copper price will facilitate a more expansionary fiscal policy, while at the same time not violating a set structural surplus target.[7] We have also argued that if structural revenues are overestimated systematically a potential deficit bias in the actual balance is introduced.

As public sector borrowing requirements need to be met on the basis of the actual and not structural balance—and the same holds for debt sustainability—a financing problem might arise, if actual deficits persist despite structural surpluses. This problem is amplified for emerging economies, where debt sustainability and actual deficits have great relevance when evaluating country risk. To avoid a potential deficit bias that leads public finances down an unsustainable path it might be worth considering inclusion of a time limit on how long an actual deficit is allowed, before the fiscal rule must be revised.

[7] If the long-run price of copper is assumed to be higher than the "true" price, estimated revenues will be higher and as estimated revenues are the basis for the actual expenditure, expenditures will increase, resulting in a higher actual deficit.

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Appendix:

Figure 8: Housing

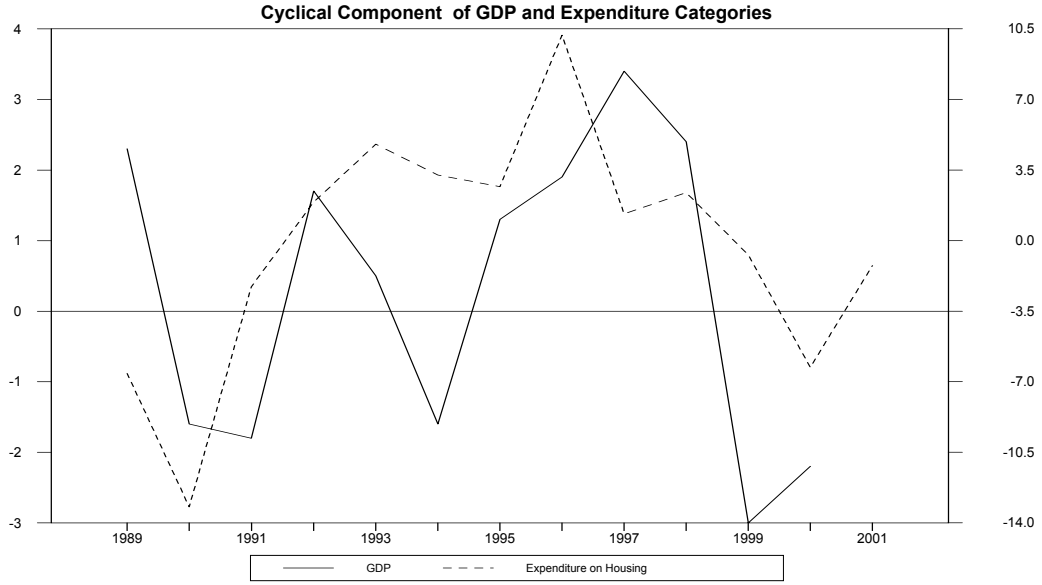

Figure 9: Social Security

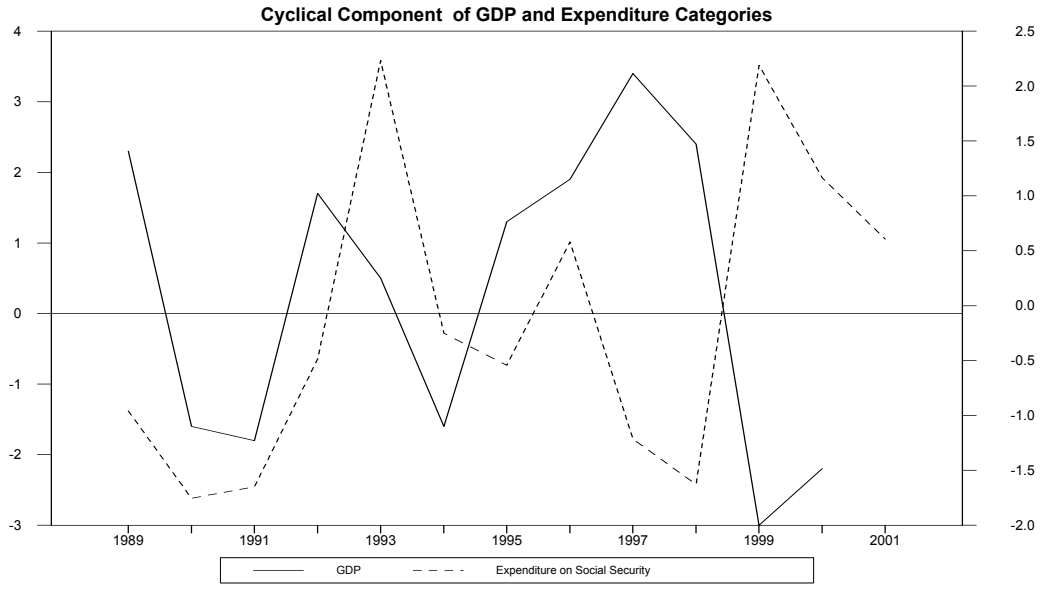

Figure 10: Education

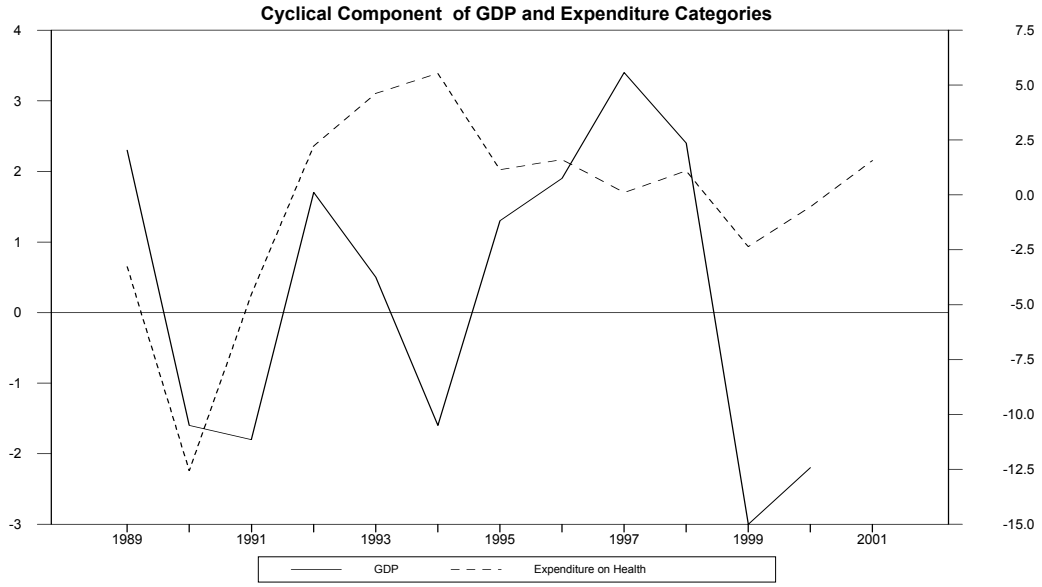

Figure 11: Subsidies

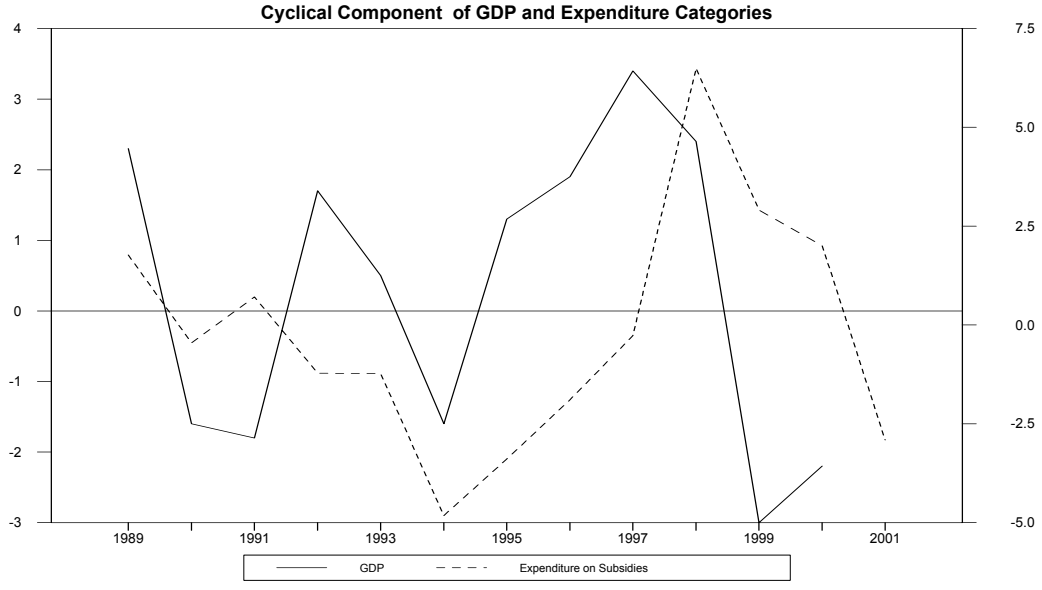

Figure 12: Other Social Expenditure