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Fiscal Policy for Commodity Exporting Countries:
Chile's Experience

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**FISCAL POLICY FOR COMMODITY EXPORTING COUNTRIES:
CHILE'S EXPERIENCE**

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Fiscal Policy for Commodity Exporting Countries: Chile's Experience *

Klaus Schmidt-Hebbel **

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Abstract

Fiscal policy regimes based on a developed fiscal institutions and fiscal rules are increasingly adopted by governments that aim at stronger fiscal policy sustainability, more output stability, and more resilience of public finances to political pressure. This paper describes and evaluates fiscal policy institutions and particularly the fiscal rule in Chile. This commodity-exporting country is unique by having in place since 2001 a cyclically-adjusted government balance rule that takes account of both GDP shocks and mineral export price shocks. The paper starts by assessing the overall institutional set-up for fiscal policy in Chile in international comparison. Then it focuses on the fiscal rule, its changes over time, and its budgetary consequences and macroeconomic effects. By and large, the rule is found to have contributed to fiscal sustainability and credibility, and to macroeconomic stability. Yet the rule also presents shortcomings in its institutional set-up and application to the budget. Therefore the paper presents proposals for reform, following the recommendations made by the Advisory Council for the Design of Fiscal Policy in early 2011. The final section of the paper draws policy lessons from international experience and the Chilean case on institutional reform of fiscal policy and adoption of fiscal rules in commodity-exporting countries.

JEL Classification: E61, E62, E63

Key Words: Fiscal regimes, fiscal stabilization, fiscal institutions

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1. Introduction

Chile, a small economy strongly integrated into world markets, is an important producer and exporter of commodities. Copper dominates: Chile's share of world copper production is one third copper represents more than half of Chile's total exports (Table 1). As a very open market economy, Chile's specialization in production of copper (and other commodities) is driven more by its rich resource endowments and private investments rather than by government decisions, abstracting from the fact that the largest copper-producing corporation is government-owned CODELCO.

Chile's export prices and volumes generally – and copper prices and volumes in particular - have major direct effects on government tax and non-tax revenue and, by affecting key macroeconomic variables such as GDP and the real exchange rate, exert additional indirect effects on government finances. As a small, open, and specialized economy, Chile also faces other external and domestic shocks that contribute to significant GDP (and consumption) volatility.

Over the last three decades, subsequent governments have gradually strengthened macroeconomic and financial institutions, regimes, and policies, motivated by two key objectives: to ensure government solvency and strengthen macro-financial stability. An independent central bank, inflation targeting, and a flexible exchange rate are the pillars for a prudent conduct of monetary policy that has yielded low and relatively stable inflation during the last decade. Strong banking regulation and prudential financial oversight have contributed to the development of deep and sound banks and capital markets.

Prudent fiscal management was reestablished after the resolution of the banking and debt crisis of the early 1980s and strengthened in the 1990s and 2000s, reflected in budget surpluses. Fiscal sustainability and government solvency were attained with declining government debt levels and rising government assets. Gross government assets (including sovereign wealth funds) stand at 17.6% of GDP while domestic and foreign government debt stands at 9.3% of GDP – hence the government is a net creditor.

Chile faces high and increasing government revenue volatility due to moderate GDP volatility and very large copper price volatility. The standard deviation of output growth declined from 3.5% in the 1990s to 2.2% in the 2000s, while copper price volatility exploded from US\$/lb 0.2 in the 1990s to US\$/lb 1.1 in the 2000s.

To deal with large output and even larger copper priced shocks, fiscal policy has focused increasingly on shielding government spending from large revenue shocks. Even in the absence of an explicit fiscal rule during the 1990s, short-term shocks in government revenue were reflected more by government saving than by government spending during the 1990s. In 2000 a new incoming administration decided to adopt an explicit fiscal rule that at the time was unique in the world. Partly consistent with a permanent-income approach, the rule restricts overall central government spending to an estimate of trend central government revenue consistent with trend estimates for GDP and the price of copper. The difference between government spending and the estimate for trend government revenue, termed cyclically-adjusted balance (CAB) of the general government, is bound to a numerical target,

set initially at 1% of GDP. The ex ante total government balance reflects ex ante estimates for GDP and the price of copper; it differs from the CAB by the estimated impact of the cyclical components of GDP and the copper price on government revenue.

Although the fiscal rule has been modified over the years to accommodate some changes in budget structure and policy objectives, it has largely remained in place and represents a major component of Chile's strong fiscal regime. Additional elements of the institutional framework for fiscal policy were added over the years, starting with the establishment of independent committees that were named to provide projections for future and trend GDP and copper prices, the 2006 enactment of a fiscal responsibility law that establishes institutional requirements on the fiscal framework (related to government commitment to a fiscal framework and the start of sovereign wealth funds), and the 2010 establishment of an independent commission that has evaluated the fiscal policy framework (including the fiscal rule) and has proposed further reforms in 2011.

This paper evaluates Chile's fiscal rule and fiscal policy framework, with a focus on the lessons that can be drawn from Chile's experience for the framework design and conduct of fiscal policy in commodity-exporting countries. Section 2 assesses Chile's institutional framework for fiscal policy in the light of international experience. Section 3 explains Chile's fiscal rule started in 2001 and the next section goes over its implementation, changes, and implications for government accounts during its first decade. Section 5 assesses its fiscal and macroeconomic impact. The shortcomings of the rule and recommendations for its improvement are discussed subsequently. The closing section draws fiscal policy lessons for commodity-exporting countries from Chile's experience.

2. Chile's Institutional Framework for Fiscal Policy in International Comparison

Many countries are designing and implementing major reforms of their institutional framework for fiscal policy and financial management. These reforms are motivated by different reasons. First, they reflect a growing global consensus among academics and policy makers about the economic benefits of procedures and rules that shape and limit planning and execution of fiscal policy. Second, they also respond to the political benefits of requirements on transparency and accountability in the exercise of fiscal policy in a democracy. Third, they respond to the failure of previous fiscal institutions and rules in many industrial countries, as is the case of the systematic violations of the fiscal rules of the Stability and Growth Pact by many member countries of the Euro Zone.

A modern institutional framework for the conduct of fiscal policy and financial management should aim at addressing the principal-agent problems that arise between voters and political authorities due to governments' impatience, lack of representation of future generations, electoral competition, sensitivity to special-interest lobbies, corruption, and use of asymmetric and biased information (von Hagen 2005, Wren-Lewis, 2010). To overcome these distortions and negative externalities, the academic literature and international experience suggests adoption of an institutional framework for fiscal policy based on the following components (Ter-Minassian 2010, IMF 2009, 2010, Debrun et al. 2009): a fiscal responsibility law, a modern financial management, a planning horizon that exceeds one year, a fiscal rule for

the budget, rules for government asset and liability management, requirements on accountability and public information on the government's financial management, effective external control and auditing, and establishment of a fiscal council and/or fiscal committees.

Next I review briefly the international evidence and describe Chile's development of the eight latter components of a modern institutional framework of fiscal institutions.

Fiscal Responsibility Law

Several countries have adopted fiscal responsibility laws, specifying budgetary procedures and rules to strengthen fiscal policy transparency, accountability, and stability. Fiscal responsibility laws establish requirements on the executive to state transparently its short and medium-term policy objectives, to set short and medium-term targets for fiscal flows and stocks, to provide transparent information on budget planning and execution to the legislature, to implement a fiscal policy conducive to fiscal stability and solvency, and to account ex-post for its fiscal policy execution and attainment of policy objectives (Lienert 2010).

However, fiscal responsibility laws do not necessarily spell out an explicit fiscal rule. Conversely, fiscal rules are often adopted in the absence (or outside) a fiscal responsibility law. For example, Germany adopted in 2008 a fiscal rule by constitutional amendment, not as part of a fiscal responsibility law.

Fiscal responsibility laws are often enacted as a legal tool in support of the consolidation of fiscal adjustment, which sometimes occurs under a stabilization program agreed with the IMF, so that its emphasis is on budgetary control rather than effective fiscal policy. However, in other conditions such laws are adopted with the aim of strengthening the institutional framework for fiscal policy, focusing on the above mentioned components of a modern institutional framework – like in Chile's case, discussed below.

A selective review of fiscal responsibility laws adopted by 13 developed and developing countries since 1998 shows that these laws specify an explicit fiscal rule in 9 countries, define escape clauses in 7 countries, set penalties for over-spending in 6 countries (IMF, 2009). The evidence of the success of the fiscal responsibility laws is mixed. When the targets are realistic and there is political will for taking necessary corrective measures to achieve them, they have been successful (Australia and New Zealand). However, in many emerging countries, they were unsuccessful in meeting their quantitative targets (e.g., in Argentina, Colombia and Peru). Caceres et al. (2010) find limited empirical evidence in support of the view that Fiscal Responsibility Law had a significant effect on fiscal performance.

Chile enacted Law No. 20128 on Fiscal Responsibility in 2006 to strengthen the institutional framework for its fiscal rule that had been adopted five years earlier by a previous administration. This law was not adopted to enforce fiscal adjustment but to develop the institutional framework required to strengthen the links between the fiscal rule, the use of government savings, and the establishment of two sovereign wealth funds. Its major provisions are the following (Rodríguez et al. 2006):

- (i) Legal requirement for a new government administration to define and publish the fiscal policy framework for its 4-year term and its implications for the government's structural balance.
- (ii) Legal requirement for the administration to issue an annual report on the financial state of the government, its fiscal sustainability, and the macroeconomic and financial implications of fiscal policy, as well as an estimation of its "structural" (i.e., cyclically-adjusted) balance.
- (iii) Requirement of yearly estimation of government contingent liabilities (required to determine the cyclically-adjusted balance target).
- (iv) Establishment of a Pension Reserve Fund (PRF) to finance future pension liabilities of the government. During its 10 first years of existence, the PRF accumulates funds at a yearly floor equivalent to 0.2% of GDP and a ceiling of 0.5%, where the actual figure within the aforementioned range is determined by the government. The funding sources for the floor are government revenues or government savings.
- (v) Establishment of an Economic and Social Stabilization Fund (ESSF), starting with the foreign resources accumulated in the former Copper Revenue Compensation Fund (which is abolished) and other foreign asset holdings of the government at the end of 2006. The budget surplus (after payment into the PRF) is transferred into the ESSF and resources are withdrawn from the ESSF to finance budget deficits (including payments into the PRF).
- (vi) Government option to execute annual capital transfers to the Central Bank of Chile (CBC) for the latter's capitalization during five years (2007-11), on an amount equivalent to a ceiling of 0.5% of GDP, subject to availability of a government surplus after payment into the PRF. The Government holds the right to decide how to allocate the budget surplus to the ESSF and to CBC capitalization, subject to the above mentioned conditions.
- (vii) International investment of the resources held in the two sovereign wealth funds – PRF and ESSF – can be executed directly by the Treasury (under the Ministry of Finance, MoF) or can be outsourced to the CBC or private fund managers hired by the CBC. The Law also establishes a new Advisory Financial Committee for Fiscal Responsibility Funds of the MoF to advice the Minister on investment regulations and decisions related to the two sovereign wealth funds.

Note that the latter law did not impose a particular fiscal rule on the government. It rather imposes a requirement to adopt and implement a fiscal policy aiming at fiscal sustainability and a distinction between actual and cyclically-adjusted balances. This provides sufficient flexibility to new governments to define the explicit formula for the fiscal rule they commit to at the start of their administration. In addition, the law defines new institutions – adopted in 2006-2007 – that strengthen operation of the fiscal rule.

Financial Management of the Budget

International best practice of budgetary management is based on the adoption of the following core elements for an efficient financial management by the MoF (Ter-Minassian 2010):

- (a) Strong constitutional and legal powers of the MoF regarding legal initiatives with budgetary impact,
- (b) Strong political power of the MoF in adopting and implementing the budget regarding other ministries, regional and municipal governments, independent government agencies and public enterprises,

- (c) High technical capacity for budgetary planning and ensuring its consistency with the government's fiscal policy objectives,
- (d) Adoption of modern accounting principles
- (e) Efficient process of legislative approval of the budget, limiting the possibility of legislative amendments that contradict government fiscal policy, and
- (f) High capacity for monitoring and obtaining early information on budget execution and budget corrections of observed deviations.

International evidence shows that countries that meet the latter requirements attain reach a better performance in budget execution, stability, and sustainability of fiscal policy (Alesina and Perotti 1996, Stein et al. 1998, Alesina et al. 1999, Ter-Minassian 2010).

Chile's strong presidential system empowers the government with budgetary initiative (not shared with congress) and strong control over budget design and negotiation of the budget with congress. The executive holds the sole power of tax initiative. Congress lacks line-item veto and is only entitled to vote for or against the Government's proposed budget bill. Congress also lacks in-house capabilities to assess and evaluate in depth current fiscal policy, projections in the budget bill, and underlying macroeconomic assumptions.

However, significant budget negotiations take place between the government represented by the MoF and Congress before the budget comes to vote. The latter negotiations tend to focus on budget (i.e., spending) composition rather than on taxation or the overall resource constraint, not the least because of the constraints imposed by the fiscal rule on the budget's overall resource envelope.

Budget Planning Horizon

Many countries are reforming their budget planning, shifting from a one-year horizon to a multi-year horizon. This change is aimed at different objectives: (i) achieving greater transparency, consistency and intertemporal sustainability of fiscal policy, (ii) reducing government short-term bias in public spending decisions, (iii) committing to a path of gradual correction of initially unsustainable fiscal positions.

On one hand there are governments that lack fiscal rules but adopt multi-annual budgeting to enhance sustainability and credibility of fiscal policy. On the other hand, there are governments with one-year budgeting but that have adopted fiscal rules based on cyclical adjustments. The latter governments have an implicit multi-annual budget horizon by distinguishing between actual and cyclically-adjusted government accounts and balances. However, in the latter cases the dissemination of explicit multi-year budgetary and fiscal targets contributes to additional potential gains in fiscal policy sustainability and credibility, as well as macroeconomic stability.

Chile has in place a one-year budgeting framework. However, the aforementioned 2006 Fiscal Responsibility Law includes two items that require governments to adopt a fiscal policy that is at least in principle consistent with a horizon that exceeds one year: (i) the requirement imposed on new administrations to present their four-year fiscal policy framework and its implications for the cyclically-adjusted government balance, (ii) the requirement on the MoF

to submit annually, together with the draft budget law, a medium-term budget projection.

Moreover, by adhering to a cyclically-adjusted balance rule, governments are required to base next year's budget proposal on medium-term projections for GDP and the price of copper.

With one exception, Chile's governments are not required to produce or commission long-term projections for governments accounts and budgets, based on the systematic assessment of fiscal sustainability and regular evaluation of long-term consequences of fiscal decisions with budgetary implications, like those conducted by the U.S. Congressional Budget Office and other governments in the world.

The one exception is the commission of a technical study, required by the 2006 Law, to assess the funding needs of the Pension Reserve Fund to meet the government liabilities derived from the government pension subsidy ("Pilar Pensional Solidario").

Fiscal Rules

The number of countries with fiscal rules at national level has grown steadily over the past two decades, from a universe of 10 countries in 1990 to 30 in 2001 (the year of adoption of the Chilean fiscal rule) and 51 in 2009 (IMF, 2009). Countries with fiscal rules have adopted on average 2.5 active fiscal rules in 2009.

Fiscal rules are adopted to attain one or more of three objectives: sustainability of public debt, control of government size, and contribution to cyclical stability. Rules differ widely across countries in how they are defined. Two major categories are those that define numerical targets (targets, ceilings or floors) for government balances, overall revenues or expenditures that are fixed and hence independently of the business cycle. A paramount example of the latter rules is the Stability and Growth Pact ceilings on government deficit (3% of GDP) and debt (60% of GDP) for EU member countries that were systematically violated before 2008 and almost universally thereafter. A second category are the fiscal rules that aim at stabilizing cyclically-adjusted balances, allowing for cyclical changes in actual government balances, with the aim of implementing a counter-cyclical fiscal policy or at least avoiding pro-cyclical policy bias. According to the IMF (2009), some 10 countries (including Chile) had such a rule in place in 2009. Among them, only Germany, the UK, and Sweden had a fiscal rule in place that defines a numerical target for the actual budget balance throughout the economic cycle.

The cited study (IMF, 2009) reviews the relative advantages of different fiscal rules, their design and complementarity with other institutional changes, the institutional prerequisites and economic determinants, and the strength in design, execution, and correction of deviations. It also assesses positively the fiscal and macroeconomic effects of fiscal rules in the world.

Chile is among the 10 countries with a fiscal rule that aims at stabilizing cyclically-adjusted government balances. However, in contrast to the other 9 cases, Chile corrects not only for the cyclical influence of the business cycle as reflected by GDP deviations from trend

but also for the cyclical deviations of the price of copper from trend. Therefore Chile's experience is unique in the world and is exemplary for commodity-exporting countries, as highlighted by IMF (2009).

However, unlike other countries with fiscal rules in place, Chile has neither established ex-ante escape clauses from the rule that would apply under pre-specified conditions nor ex-post sanctions for violating the rule and ex-post regulations to correct deviations from the rule.

Rules for Management of Government Assets and Liabilities

As the commodity-exporting countries benefited from significant fiscal surpluses during the extended boom in commodity prices over the last decade, many of them have started to save their surpluses in sovereign wealth funds (SWFs) invested in internationally diversified portfolios. This is observed in countries with and without fiscal rules. Up to late 2009, 37 countries had SWFs in place, with outstanding aggregate assets of US\$ 3.8 trillion. In the case of Chile, the outstanding investments of its two SWFs added up to US\$ 14.7 billion at the end of 2009.

Countries with SWFs have committed to rules for saving in and dissaving from their funds. In the case of countries with a fiscal rule in place, accumulation into and withdrawal from their funds is determined by the rule. In addition, many countries have adopted legislation and institutions that define investment policies and management principles of their funds.

As mentioned above, in the case of Chile, its two SWFs were established by the 2006 Fiscal Responsibility Law. The latter also established the Financial Advisory Committee on Sovereign Funds of the Ministry of Finance, which advises the MoF on investment policies of these funds.

However, Chile (like most countries in the world) lacks both a policy and an institution focused on consistent management of government financial assets and liabilities, with explicit objectives including risk, return, liquidity, and benchmarking. Moreover, there is no comprehensive management of the government's total balance sheet, including financial and non-financial assets, as well as explicit and contingent financial liabilities.

Requirements on Budget Accountability and Provision of Information on Financial Management

World-wide efforts are observed by governments to improve accountability of their fiscal policy and transparency in the provision of financial information. This trend responds to the growing political and academic consensus about the democratic and economic efficiency gains of fuller accountability and transparency in fiscal policy. Although there is little empirical evidence on the benefits of high levels of accountability and transparency in fiscal policy, it seems legitimate to infer qualitatively from the evidence of accountability and transparency benefits identified in the case of monetary policy (e.g. Eijffinger and Geraats 2006, Geraats 2008).

The International Budget Partnership (2010) compiles “Open Budget Survey”, an international comparative database on partial and aggregate measures of global transparency and accountability of the budgets of central governments in the world. In its 2010 version, Chile ranks eighth among 94 countries (Figure 1 depicts ranking results for a selective sub-sample).

Transparency on the two key assumptions on the budget – future GDP growth and copper prices – was ensured almost from the start of the fiscal rule, as projections for the two latter variables made by two ad hoc Committees were made public (more on them below). However, mapping of the latter projections into the actual budget calculations could not easily be replicated, particularly after several changes to the rule that were introduced in 2008-2009. However, the 2010 Report of Public Finances for the Budget Law 2011 made significant improvements in the provision of information on the calculation of the cyclically-adjusted balance, which was coherent with the recommendations provided by the Advisory Committee on Fiscal Policy (2010, 2011).

Regarding SWFs, international heterogeneity in their management and investment accountability and transparency is very large. In the most recent international ranking of transparency in the management of sovereign wealth funds, published by the Sovereign Wealth Fund Institute (2010), Chile ranks first, together with SWFs of seven other countries, including Norway's Pension Fund (Figure 2).

In general terms, the current state of transparency and accountability of Chile's government accounts is varied, ranging from moderate to high.

External Control and Auditing

There are three levels of external control and auditing of government budgets and accounts: the legislature, the government's general comptroller or auditor, and fiscal councils and committees. In most countries, congress and especially the general comptroller exercise traditional accounting, financial, and managerial control of budget execution and government accounts. More recently, countries are adopting fiscal committees and councils, which are empowered to provide an economic assessment of fiscal policy design and execution, as discussed below.

Government accountability of budgetary compliance is largely limited in Chile to oversight and control by the General Comptroller's Office (Contraloría General de la República). The latter institution focuses on accounting, procedural, and legal compliance by the government in its implementation of fiscal policy and execution of the budget. This oversight and control function by the General Comptroller is exercised at all levels of Government. In this way the Comptroller's Office has contributed decisively – both in the past and today – to limit the extent of illegal government actions and government corruption.

However, there is almost nil substantive ex-ante, real-time or ex-post evaluation of fiscal policy implementation and its compliance with the fiscal rule, of government spending (either mandatory or discretionary), and of the efficiency and effectiveness of government programs and tax collection efforts. There are simply very few resources spent by congress,

political parties, think tanks or academia in conducting systematic evaluation of fiscal policy and its implementation, due to the absence of an independent fiscal council and/or a think tank or institute that focuses on fiscal policy. The only exception from this dearth of fiscal policy evaluation are some academic papers and some initiatives at the MoF to assess sporadically some partial aspects of fiscal policy.

Fiscal Committees and Fiscal Councils

Fiscal committees are temporary or permanent advisory bodies to the MoF, entitled with specific narrow tasks such as providing advice on institutional changes or investments of SWFs. Their recommendations could be binding or not for the government.

Independent fiscal councils (and budget offices) are permanent government or congressional agencies entrusted with much broader tasks. Their recommendations could be binding for governments – which is more often the case than it is for fiscal committees.

While fiscal committees and fiscal councils have different tasks, the latter may include the following (Debrun and Kumar 2007, Debrun et al. 2009, Ter-Minassian 2010, Calmfors and Wren-Lewis 2011):

- (a) Evaluation and validation of financial and macroeconomic assumptions for the budget,
- (b) Provision of independent projections for the budget and government financial conditions, both for the base scenario and risk scenarios, for the short term and the long term
- (c) Provision of policy assessments and recommendations on fiscal policy and budgetary management, based on ex-ante evaluation whether fiscal policy is likely to meet its targets,
- (d) Assessment and advice to the government and/or the legislature on the stance of fiscal policy, its long-term sustainability and optimality, and its macroeconomic effects,
- (e) Assessment of and recommendations on policies for government asset and liability management,
- (f) Monitoring of budget implementation and provision of recommendations on budgetary corrections when facing deviations in budget execution,
- (g) Analysis of fiscal transparency.

Some governments (like Chile's) have adopted advisory committees of the Ministry of Finance, which provide recommendations – which can be binding or not – on some aspects of the menu of possible tasks identified above.

Other governments have adopted advisory offices of the legislature to provide an independent analysis of the basis and consequences of fiscal policy and budgets of the respective governments. That is the case of the U.S. Congressional Budget Office, which began in 1974 (Rivlin 2010) and the Parliamentary Budget Office in Canada, founded in 2008 (Levy 2008), among other countries, like Japan, Korea and Mexico.

Among the countries with some kind of fiscal council are many members of the European Union (EU) (and several with more than one fiscal council), including Austria, Belgium, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Luxembourg, Netherlands, Portugal and the UK (Debrun et al. 2009). Outside the EU, Sweden and Japan

have in place fiscal agencies that provide tax advice. Debrun and Kumar (2007) provide some statistical evidence in support of the notion that fiscal councils in the 25 member countries of the EU have contributed to fiscal discipline, especially when such advice is provided by an agency mandated by an ad hoc law. Yet the more recent fiscal crisis in several Euro Zone member countries puts in doubt the latter findings.

More recently, and partly in response to fiscal crises, a rising number of countries (including France and the United Kingdom) have adopted or are adopting stronger fiscal councils, based on an ad hoc law, which grants them substantial degrees of government independence, strengthening their capabilities to provide independent assessment and advice. This new brand of fiscal council – and some of the existing councils – tend to exhibit the following features:

1. It is independent of the government,
2. created by a special law, which defines its mandate, functions, responsibilities, corporate structure, staffing, financing, accountability and transparency in the delivery of its studies and activities,
3. with board members chosen by congress among respected academics or people with significant fiscal policy experience, and
4. sometimes entitled with the authority to propose sanctions in case of significant deviations in budget execution.

Chile lacks an independent fiscal council. But it has in place independent fiscal committees or expert groups: the Advisory Committee for Trend GDP of the MoF (ACTG), the Advisory Committee for the Reference Copper Price of the MOF (ACRCP), and the Advisory Financial Committee for Fiscal Responsibility Funds of the MoF (AFCFRF). Their role is limited to a consulting or advisory function, as stipulated by the 2006 Fiscal Responsibility Law.

ACTG provides the MoF with projections for the rate of growth of capital, the labor force, and TFP, which are used by the MoF to generate projections of potential GDP growth and the output gap, based on a MoF methodology. ACRCP provides the MoF with projections of the international long-term or trend copper trend price. Current-year projections for next year's output gap and copper trend price are key inputs for the structural fiscal balance rule, which, as mandated by the Fiscal Responsibility Law, is key for budgeting the overall government budget envelope, i.e., to set the levels of government spending, structural and actual government revenue, and hence the actual and structural government balance.

The three individual projections made by each of the 16 members of the ACTG and the single projection made by each of the 12 members of the ACRCB are binding. For the budget. Each member provides projections which are averaged after elimination of the two extreme observations to generate MoF's official estimates for the four variables. However, the MoF maintains significant discretionary power in deciding the methodology – equations and parameters – to set how the structural fiscal balance rule and the four projected variables translate into budgetary projections. While the MoF has been increasingly transparent about the details of its method – as reflected in technical papers, the summary notes of the ACTG and ACRCB annual meetings, and the 2010 Budget Law for 2011 – this information also

reflects remaining discretion maintained by the MoF in defining the government's overall resource envelope.

Independent members of both advisory committees are invited by the MoF to serve for one budgetary exercise. Members are selected and designated by the MoF among the local communities of macroeconomists (for the ACTG) and copper market experts (for the ACRCB). They attend one technical meeting held at the MoF in July or August of each year and are then invited to submit their individual projections in the following weeks. The MoF publishes between August and October of each year two official notes, one for each advisory committee, that reports individual and averaged projections and, in the case of the ACTG, potential growth and output gap estimates. There is no formal or direct communication by any of the two committees with Congress or the press.

In contrast to the two previous committees, the AFCFRF is based on a more formal institutional setup. The six independent members are selected by the MoF among the local community of macroeconomists and financial experts and their overlapping tenure is two years. The AFCFRF is comprised by its chair (a President), a Vice-President, and four additional members. The Committee meets on average every six weeks at the MoF. Members are remunerated for their attendance of Committee meetings. The Secretariat of the Committee is the International Financial Directorate of the MoF. Its Head acts as Secretary of the Committee and his staff (also present at Committee meetings) prepares technical reports on international financial conditions and financial performance of sovereign wealth fund investments at each meeting. Committee members discuss financial developments and their implications for the performance of the funds, evaluate fund management by the Central Bank of Chile and meet occasionally with Bank managers of the funds, and issue recommendations about fund investment policy and regulation to the MoF. It is very important to note that AFCFRF recommendations – in contrast to the projections submitted by the two aforementioned committees – are not binding for the Minister of Finance.

AFCFRF issues a press communiqué after each meeting and publishes an annual report on the funds' financial results and the Committee's investment policy recommendations to the Minister.

3. Chile's Fiscal Rule

The Rule

Chile's fiscal rule for the central government budget was developed in 2000 and implemented in 2001 by Finance Minister Nicolás Eyzaguirre and his main advisors. While the rule has been subject to several changes, its main features have remained unaltered. Therefore it is now in its twelfth year of operation, through three different administrations: the governments of presidents Lagos (2000-2006), Bachelet (2006-2010), and Piñera (since 2010), committed to its continuation through the 2010-14 term.

Chile's fiscal rule aims at contributing to two policy objectives: fiscal sustainability and fiscal/macroeconomic stability. Fiscal stability is ensured by committing to a target level for

the government's cyclically-adjusted balance (CAB) that is consistent with government saving needs (net of government investment). Fiscal (and possibly macroeconomic stability) is attained by committing to a government spending path that is consistent with cyclically-adjusted government revenue.¹ Therefore Chile's CAB rule combines a partial application of the permanent income theory to government spending with a target level for long-term government saving. Hence the rule's aim is to save during high-revenue periods in order to withdraw from the latter savings in bad times, over and above to save or dissave a fraction of government revenue over the cycle – the CAB.

Chile's largest sources of government cyclical volatility – i.e., the budget's largest sensitivity to cyclical variables – are non-mining tax revenue and mining tax and transfer revenue. The business cycle reflected in the cyclical component of GDP largely determines the cyclical behavior of non-mining tax revenue, while mining tax and transfer revenue is largely determined by the cyclical component of the prices of copper and molybdenum.²

Chile's government spending, compared to other OECD countries, is relatively insensitive to the business cycle because of the small size of automatic stabilizers on the expenditure side, such as government-financed unemployment benefits or institutionalized public employment programs during cyclical downturns. Hence the fiscal rule distinguishes between actual and cyclically-adjusted government revenue but not between actual and cyclically-adjusted government expenditure.

Therefore the fiscal rule is embedded in the following equation for the cyclical component of the government balance, i.e., the difference between the CAB and the actual balance of the central government. This difference boils down to the difference between cyclically-adjusted and actual government revenue, determined by the difference between cyclically-adjusted and cyclical non-mining tax revenue and social security receipts (driven by the output gap) and between cyclically-adjusted and cyclical differences in private mining tax revenue, CODELCO (the government-owned copper corporation) copper transfers to the budget, and CODELCO molybdenum transfers to the budget:

$$(1) \quad \begin{aligned} B_t^* - B_t &= (R_t^* - G_t) - (R_t - G_t) = \\ &= NMTR_t^* - NMTR_t + MTR_t^* - MTR_t + CR_t^* - CR_t + MR_t^* - MR_t \end{aligned}$$

where:

B_t^* = cyclically-adjusted central government balance (CAB)

¹ The rule is only partly consistent with a permanent-income approach, namely making government spending consistent with cyclically-adjusted government revenue. Therefore other sources of differences between temporary and permanent revenue – like temporary changes in taxes or interest rates – are not considered in adjusted revenue estimations due to the political and economic difficulty of doing so. This partial approach to permanent revenue estimation, limited to cyclical adjustments of government revenue and balance, is adopted by all other countries that compute adjust government accounts or adopt fiscal rules to account for temporary deviations of relevant budget variables.

² Copper dominates molybdenum tax and transfer revenue by far. Mining tax revenue is paid by private mining companies while mining transfers to the central government are paid by the large public mining corporation CODELCO.

B_t =	actual central government balance
R_t^* =	cyclically-adjusted central government revenue
R_t =	actual central government revenue
G_t =	actual central government expenditure
$NMTR_t$ =	net non-mining tax revenues and social security receipts
MTR_t =	actual tax revenue from private mining companies
MTR_t^* =	cyclically-adjusted tax revenue from private mining companies
CR_t =	actual transfers from CODELCO copper sales
CR_t^* =	cyclically-adjusted transfers from CODELCO copper sales
MR_t =	actual transfers from CODELCO molybdenum sales
MR_t^* =	cyclically-adjusted transfers from CODELCO molybdenum sales
t =	time period subscript.

Simple reordering of the identity part of equation (1) shows that the fiscal rule boils down to limit actual government spending to cyclically-adjusted revenue net of the CAB:

$$(2) \quad G_t = R_t^* - B_t^*$$

Cyclically-adjusted – i.e. trend or long-term – variables are non-observable and therefore their estimates are required for implementation of the fiscal rule. As discussed above 3.2, estimates of non-observables are outsourced annually to private-sector commissions in preparation of the budget law submitted and finally approved by congress. Implementation of fiscal policy during the subsequent budget (i.e., calendar) year abides by the budget law and the fiscal rule.

There are three key elasticities in the fiscal rule. The first one is the output gap elasticity of non-mining tax revenue, which is explicitly reflected in equation (1). Until 2008, the Ministry of Finance (MoF) fixed this parameter at a value of 1.05, which implicitly assumes that non-mining government revenue varies almost proportionately to cyclical GDP. This aggregate elasticity was replaced in 2009 by separate elasticities for different categories of tax revenue, varying between 1.0 and 2.4 (Rodriguez et al. 2009).³

The second and third elasticities are the copper and molybdenum price elasticities of the three mining revenue items in equation (1). There are no explicit values attached by the MoF to the three latter elasticities. Instead, the Budget Office of the Ministry of Finance (DIPRES) produces annual estimates for mining tax and transfer receipts at actual and trend prices for both minerals.

4. Rule Implementation, Changes, and Budget Performance

³ The new set of income elasticities is based on estimates reported by Rodriguez et al. (2009).

Now let's turn to how the rule was implemented, the changes that were introduced to its definition and implementation, and the budget performance under the rule.

While the fiscal rule has been in place since January 2001, several institutional and methodological changes additions and changes were introduced subsequently (Velasco et al. 2010, Advisory Committee 2011). During the initial phase, the following refinements were introduced:

- First Advisory Committee for Trend GDP (ACTG) of the MoF is invited to submit growth projections (August 2001)
- Methodology for CAB is published (September 2001)
- First Advisory Committee for the Reference Copper Price (ACRCP) of the MOF is invited to submit long-term copper price projections (August 2004)
- Government statistics are changed from cash basis to accrual basis in 2004, following the 2001 IMF methodology (February 2004).

The following methodological changes were introduced to the fiscal rule on the treatment of mining revenue:

- Inclusion of cyclical adjustment of private mining tax revenue (August 2005)
- Inclusion of cyclical adjustment of the price of molybdenum in the revenue paid by the state mining company CODELCO (December 2005)
- Inclusion of cyclical adjustment of the new royalty tax on mining ((January 2006)
- Inclusion of cyclical adjustment of the additional tax on mining (December 2006)
- Amendment to the cyclical adjustment of the royalty tax on mining (considering monthly provisional payments) (December 2007).

The following changes were introduced to the fiscal rule, extending the principle of cyclical adjustment to other variables (beyond GDP and prices of minerals) and to temporary tax changes:

- Inclusion of cyclical adjustment of interest revenue on government assets September 2008)
- Inclusion of adjustments to non-mining tax revenue considering temporary tax cuts (January 2009)
- Inclusion of cyclical adjustment to operational income and property income on non-financial government assets (January 2010).

On advice of the Advisory Committee (2010, 2011), the three latter changes were reverted by the government in 2010. Therefore the above mentioned partial attempt to extend the fiscal rule from a CAB rule to a structural rule based on an estimate of permanent government income – introducing adjustments to all variables with temporary components, including tax rates and, eventually, expenditure items – was reverted to the methodology that defined the rule in 2001-2007. Hence following international best practice adopted by the OECD, the IMF, and the European Commission (Ter-Minassian 2010), Chile's fiscal rule is limited to cyclical adjustments. However, in contrast to most other countries, the rule adjusts for the cyclical component not only of GDP but also of Chile's key commodity prices: copper and molybdenum.

The independent Advisory Committee for Trend GDP (ACTG) of the MoF provides annual growth projections (6 years ahead) for production factors, used subsequently by the MoF to generate potential GDP growth and output gap projections.⁴ The most recent (August 2010) potential GDP growth and output gap projections by the MoF – based in part on Committee input projections – are reported in Fig. 3. These projections determine the resource envelope for the 2011 budget. Note that these figures are ex post (August 2010) estimates of Chile's current and past output gap estimates and hence are not the actual output gap estimates used in implementing the fiscal rule in previous years (2001-2010). For example, 2010 backcasts of 2001-09 potential growth rates are significantly lower than MoF potential growth rates estimated in previous years, at 5% and above. This has implied, as time has passed, a significant upward correction of output gap estimates and hence a downward correction of budgeted government expenditure, i.e., *ceteris paribus*, a contractionary fiscal policy.

Figure 4 depicts for any given year current GDP growth, ACTP's long-term growth projection, and, to show implicit forecast errors, actual average future growth between the subsequent year and 2010. The gap between Committee growth forecasts and actual average future growth rates grows from 2005 through 2009.

The second committee, i.e., the independent Advisory Committee for the Reference Copper Price (ACRCP) of the MOF, provides a point estimate for the world (London Metal Exchange) copper price over the subsequent decade. Fig. 5 depicts for any given year the current copper price, ACRCP's long-term copper price projection, and to show implicit forecast errors, the actual average future price of copper between the subsequent year and 2010. As the actual copper price has risen over time, the Committee's future trend price estimate has been adjusted upward significantly – but the gap between projected and average actual future prices through 2010 (a measure of the forecast error) has remained roughly constant over the decade. Yet the major upward correction of the long-term copper price has an upward correction of budgeted government expenditure, i.e., *ceteris paribus*, an expansionary fiscal policy.

How much do current observations of GDP growth and the copper price affect the committees' forecasts? Certainly a lot, as reflected by the high correlations between current or lagged growth and growth projections, and between current or lagged copper price and copper price projections, which range from 0.63 to 0.77.

A key policy variable is the target value for the CAB (B^*). For the first seven years of the fiscal rule, the CAB was set at a positive 1% of GDP. The rationale behind this very conservative fiscal policy was the need for positive central government saving to finance government pension liabilities and recapitalize the Central Bank of Chile (CBC) and finance several government contingent liabilities, including the government pension subsidy.

⁴ The projection method and the variables projected by the Committee have been refined over the years. The most recent MoF actual and potential growth methodology (Ministerio de Hacienda 2009a) is based on a simple Solow-type growth decomposition equation, based on a Cobb-Douglas Harrod-neutral production function, with capital services (capital stock adjusted by utilization), labor services (hours worked adjusted by educational attainment of the labor force), and residual total factor productivity. Trend growth is generated by filtering actual growth projections. It is important to note that the MoF – not the independent Committee – estimates the levels of actual and trend output and hence the output gap.

For 2008 the CAB was reduced to 0.5% of GDP, based on recommendations of fiscal sustainability studies (Engel et al. 2007, Velasco et al. 2007). Facing in January 2009 a domestic recession due to the international crisis, the CAB was further reduced to a balanced (0% of GDP) CAB in 2009. Yet the two latter figures were based on the methodological changes introduced between September 2008 and January 2010, which were reverted subsequently.

Using the current methodology for the fiscal rule (returning to the principles applied between 2001 and 2007), the actual CAB ratios stood at -0.6% of GDP in 2008 and -3.0% of GDP in 2009. The new 2010 administration prepared a medium-term fiscal policy framework that implies a gradual correction of the large negative CAB recorded in 2009. The CAB was raised to -2.0% of GDP in 2010 and a budgeted -1.8% of GDP in 2011. The administration is committed to further fiscal adjustment toward attaining a CAB of -1.0% of GDP in 2014.

Fig. 6 depicts the CAB ratio to GDP, the actual balance ratio to GDP, and their difference (the cyclical balance ratio to GDP) during the 1990s (without a fiscal rule) and the 2000s (with the fiscal rule in place).⁵ The data supports the following policy conclusions:

- (i) cyclical shocks to the government budget (reflected by the cyclical balance ratio to GDP) are very large,
- (ii) cyclical shocks to the budget are dominated by the volatility of copper prices, not by the volatility of GDP, as reflected by the larger cyclical components recorded in the 2001-2010 period
- (iii) the fiscal rule allows for large government saving flows during cyclical booms,
- (iv) even without a fiscal rule, fiscal policy was conservative during most of the 1990s,
- (v) but during domestic cyclical downturns (the 1998 and 2009 recessions), the fiscal rule provides insufficient space for a stronger counter-cyclical policy, leading to significant downward adjustments of the CAB. In 2008 the fiscal rule was effectively suspended by substituting the 0.5% ex-ante CAB ratio to GDP by a -0.6% ex-post CAB ratio to GDP, reduced further to a -3.0% ex-post CAB ratio to GDP in 2009.

Figures 7 and 8 depict the behavior of government revenue and expenditure ratios to GDP and growth rates during the 1990s (without a fiscal rule) and the 2000s (under the fiscal rule). Government revenue growth reflects strongly the copper price domestic GDP cycles. The upward correction in long-term copper price forecasts (dominating the downward correction in trend GDP forecasts) and the downward adjustment in CAB targets explain the large rise of government expenditure growth, from 1.6% in 2003 to 17.8% in 2009. The average government spending increase attained 10% during the Bachelet administration (2006-2009), when GDP growth 2.7%. This large fiscal expansion was reflected in a 24.8% share of government expenditure in GDP in 2009, the largest ratio of government spending to GDP recorded in several decades. The current administration's commitment to raise gradually the CAB toward -1.0% in 2014, is likely to entail government expenditure growth below GDP growth, hence reducing the share of government spending in GDP, as observed in 2010.

⁵ In the absence of a fiscal rule during 1990-2000, the CAB and cyclical balance ratios depicted in Figure 6 for the latter years are counter-factual estimations based on the fiscal rule methodology applied since 2001.

Figure 9 reflects the mining and non-mining component of government revenue since 2005, confirming the larger volatility of mining revenue.

Finally I report correlations between budget variables and GDP growth and the price of copper for 1990-2010 and sub-periods before and during the fiscal rule. They reflect:

- (i) a large increase in the correlation between the price of copper and overall government revenue in the 2000s, due to the larger share of mining revenue and larger volatility of copper prices observed in the 2000s,
- (ii) a large increase in the correlation (using quarterly data) between the price of copper and the actual government balance,
- (iii) a reversal of a large negative correlation between the price of copper and net government assets (at -0.4 in the 1990s) to a large positive correlation between the two latter variables (at +0.9 in the 2000s).

The latter results suggest that adoption of the fiscal rule has made a difference for fiscal policy in Chile: a copper price shock is more likely to be saved and reflected in higher government assets than before the fiscal rule was adopted.

5. Evaluation of the Fiscal Rule and its Macroeconomic Impact

Several studies have provided qualitative arguments or quantitative estimates about the fiscal policy benefits and macroeconomic effects of Chile's fiscal rule. The main fiscal policy consequences of the CAB rule, which implies an a-cyclical government expenditure path, have been the following:

- (1) a reduction of pro-cyclical bias in fiscal policy, de-linking government expenditure from cyclical shocks and strengthening the role of government saving in buffering cyclical shocks (Larraín and Parro 2006, Rodríguez et al. 2006, Kumhof and Laxton 2009, Velasco et al. 2010, Frankel 2010, Marcel 2010, IMF 2010, Ter-Minassian 2010, Schmidt-Hebbel 2010, OECD 2010)
- (2) gains in fiscal sustainability and credibility, reflected in lower sovereign risk premiums (Fiess 2004, Larraín and Parro 2006, Lefort 2006, Rodríguez et al. 2006, Kumhof and Laxton 2009, Velasco et al. 2010, Marcel 2010, IMF 2010, Ter-Minassian 2010, Schmidt-Hebbel 2010, OECD 2010).

Simulation studies for Chile's fiscal rule show that:

- (1) the rule performs well if the policymaker puts a small weight on output volatility relative to inflation volatility in his objective function and a more aggressive counter-cyclical fiscal rule can attain a lower output volatility, but at the cost of a higher volatility in fiscal variables and in inflation (Kumhof and Laxton 2009, using a DSGE model for Chile);

- (2) the efficiency frontier derived from counter-cyclical government spending dominates the frontier attainable when spending is cyclically neutral, like it is under the current fiscal rule. The major welfare gain of a counter-cyclical rule is due to lower output volatility, while spending volatility rises (García 2011, using a DSGE model for Chile);
- (3) government spending volatility is increased by a broader government objective function that puts a positive weight on counter-cyclical spending and is lowered by a broader government objective function that puts a negative weight on large changes in government spending (Advisory Committee on Fiscal Policy 2011, using a generalized government objective function in partial equilibrium).

Other studies argue that the rule has implied or have measured the following macroeconomic effects of the fiscal rule:

- (1) generally, lower macroeconomic uncertainty and volatility (Fiess 2004, Larraín and Parro 2006, Rodríguez et al. 2006, Kumhof and Laxton 2009, Velasco et al. 2010, ;Marcel 2010, IMF (2010), Ter-Minassian 2010, Schmidt-Hebbel 2010, OECD 2010);
- (2) a reduction in GDP volatility by 32% (Larraín and Parro 2006);
- (3) lower interest-rate volatility (Rodríguez et al. 2006)
- (4) lower exchange-rate volatility and less RER appreciation during booms (Velasco et al. 2010)
- (5) Less dependence on foreign financing during downturns (Rodríguez et al. 2006, Velasco et al. 2010)
- (6) Better protection of social spending during cyclical downturns (Rodríguez et al. 2006, Velasco et al. 2010).

Has the response of fiscal variables and selected macroeconomic and financial variables to a copper price shock changed after the start of the fiscal rule? I respond to this question next by simulating impulse responses of key fiscal, financial, and macroeconomic variables to a copper price. For this purpose I estimate vector autoregressions (VARs) for the Chilean economy, using quarterly data for 1990-2010 for the variables (from most exogenous to most endogenous): copper price growth, change in EMBI Chile sovereign risk spread, real exchange rate growth, change in actual fiscal balance ratio to GDP, and GDP growth. VAR estimations are performed for the full 1990-2000 period and separately for the sub-sample before the fiscal rule (1990-2000) and since the start of the rule (2001-2010).

The impulse response functions for a temporary 10% copper price shock (that dies off quickly one quarter after it occurs) are depicted in figures 12, 13, and 14, for the three periods. I compare briefly the contrasting results for 1990-2000 and 2001-2010.

During 1990-2000, the copper price shock did not have any impact on the sovereign risk premium and the fiscal balance, but contributed to a temporary real exchange rate appreciation and a temporary decline in growth.

Very different results are observed for the same copper price shock in 2001-2010. Now it causes a decline in the sovereign debt premium by 20 bp, which is consistent with a rise in the government balance by an average 1 percentage point during 5 quarters, which leads to higher sovereign wealth funds (not included in the simulation). The real exchange rate appreciates by 3% for one quarter, which is consistent with the EMBI-induced reduction in the cost of foreign financing. GDP growth now responds positively, with a delayed increase by 0.7 pp in quarter 3 after the copper price shock.

Therefore the fiscal rule has made an effective and significant contribution to isolate government spending from cyclical copper price (and GDP) shocks. Government savings in SWFs has taken the role of the key buffer variable, contributing in this way to stabilize output and the exchange rate.

Last but not least, the fiscal rule has strengthened the political economy of fiscal policy and government spending, making budget management more resilient to pressures from lobbies and interest groups to spend cyclical government revenue stemming from temporary copper windfalls and domestic income booms.

6. Shortcomings of Chile's Fiscal Rule and Proposals for Reform

By and large, Chile's fiscal rule has proven to be a successful instrument for strengthening fiscal sustainability, reducing the pro-cyclical bias in fiscal policy and spending, contributing to macroeconomic stability, and strengthening the political economy of fiscal policy. Yet several shortcomings are still observed in the design and implementation of the fiscal rule, and in Chile's institutional framework that governs fiscal policy. Hence the Minister of Finance of the new Piñera administration, Felipe Larraín, convened an "Advisory Committee for the Design of a Fiscal Policy based on a Second-Generation Structural Balance or Chile" to assess shortcomings and propose reforms of the rule and the fiscal institutions. The Advisory Committee was formed in May 2010 and met through January 2011, delivering a preliminary report in August 2010 (Advisory Committee 2010) and a final report in January 2011 (Advisory Committee 2011). Next I summarize the main recommendations made by the Committee.

On the general methodology of the fiscal rule the Committee made the following recommendations:

- (1) Define a rule based on the definition of the cyclically-adjusted balance (CAB), limited to cyclical adjustments in revenue due to cyclical shocks of GDP and world prices of copper and molybdenum, without considering other sources of deviations of current revenue from permanent revenue. As discussed above, this recommendation has already been applied since 2010, reverting the changes in the rule that were introduced between late 2008 and early 2010.

- (2) Supplement the rule of the CAB with an expenditure component that allows for an ex-ante counter-cyclical policy. This expenditure component could be a negative function of the ex-ante projected output gap.
- (3) Supplement the rule with a partial-adjustment mechanism for expenditure in response to large changes in the projections of trend GDP growth and long-term copper and molybdenum prices, in order to avoid large changes in expenditure like those observed in 2006-2009.
- (4) Define ex-ante escape clauses to the rule, which apply in exceptional circumstances that require an exceptional fiscal expansion or adjustment that is not feasible without a temporary suspension of the rule. Invocation of such clauses would avoid a de facto suspension or ad hoc modification of the rule, as was observed in 2008-2009. Invocation of an escape clauses would proceed under certain institutional conditions and would require a policy commitment to converge back to full application of the rule in a reasonable time horizon.
- (5) Maintain institutional coverage of the rule to the CAB of the consolidated central government level, i.e., for practical reasons, not extending the rule to the general government. However, complement the rule with measures to prevent the risk of quasi-fiscal operations in support of government decentralized government agencies, public enterprises, and municipalities.
- (6) Maintain the rule for the overall balance of the central government (without adjusting for the interests on government financial assets and liabilities) in the short term. However, after a transition period in which both indicators are calculated, define the rule for the primary balance of the central government, which has the following benefits: (i) it avoids the effect of temporary changes in interest rate on the CAB, (ii) it eliminates the pro-cyclical bias caused by the accumulation into and withdrawal from net financial assets, (iii) and it establishes a direct link with the standard analysis of long-term fiscal sustainability.
- (7) Choose a target level for the CAB determined by long-term fiscal solvency objectives. This requires engaging in systematic assessments of the values of contingent liabilities of the government (pensions, health, education, etc.) over time. Similar studies should be devoted to the time profile of government assets (such as the decline in mining assets of state company CODELCO).

On the methodology for estimating the cyclically-adjusted revenue associated to GDP and the methods for estimating trend GDP, the Committee made the following recommendations:

1. Maintain the role of the Advisory Committee for Trend GDP (ACTG) but extend the minutes of the Committee to include explicitly its estimates for the level of trend GDP and the corresponding output gap measure.
2. Maintain the revenue elasticities to GDP at the values presented in Velasco et al. (2010), except the elasticity of health insurance contributions, set at 1.17.
3. Avoid any cyclical adjustments to revenues and to the CAB due to temporary tax measures, except for provisional payments of taxes that shift resources between years.

On the methodology for estimating the cyclically-adjusted revenue associated to mining prices and the methods for estimating long-term prices of copper and molybdenum, the Committee made the following recommendations:

1. Maintain the role of the Advisory Committee for the Reference Copper Price (ACRCP) but provide the members of the Committee with better information on world copper markets and prices.
2. Delegate preparation of molybdenum trend price forecasts (which are now prepared by the Budget Directorate) to a new Advisory Committee for the Reference Molybdenum Price Copper Price, ACRCP or Cochilco (the government copper analysis agency).
3. Simplify and make public the calculation of the cyclically-adjusted mining revenue, possibly in line with IMF (2010).

Regarding the institutional framework, international best practice in recent years suggests that fiscal policies and the adoption of fiscal rules are strengthened by the establishment of agencies that audit fiscal projections, assess the achievement of fiscal policy objectives, and promote policy transparency. In this regard, the Committee recommended adoption of a Fiscal Council (FC) with a mandate and tasks defined by a statutory law, supported by council members, staff, and consultants. The FC's main task would comprise:

- (1) assessing the methodology of the fiscal rule,
- (2) providing binding assumptions and projections for the cyclical adjustment variables, required to estimate the CAB, based on the forecasts made by ACTG and ACRPC
- (3) evaluating fiscal policy, including implementation of the fiscal rule and the sustainability of medium and long-term fiscal policy
- (4) issuing a technical report on any changes in accounting principles and methodologies used in preparation of the budget
- (5) evaluating the relevance of invoking escape clauses and the convergence strategy to the target level of the CAB, and
- (6) expressing an position on the government's report on contingent liabilities and the impact of the latter on the CAB target.

Finally, the Committee made recommendations to strengthen transparency, accountability, and consistency of fiscal policy in Chile, among which the following are the most important:

1. Communicate publicly any changes in the methodology used in calculating the CAB before their adoption,
2. Establish as legal requirement the convening of both ACTG and ACRPC and the publication of the minutes of their meetings,
3. Improve publication of information required in replicating or checking fiscal, macroeconomic, and mining-revenue calculations for the CAB,
4. Provide more detailed information in the annual presentation of medium-term financial projections for the budget,
5. Establish as legal requirement the publication of the Annual Report of Public Sector Financial Management and updating of fiscal projections, including assessment of expected budgetary deviations and discussion of actions for corrections,

6. Expand the coverage of information provided in the Annual Report on Contingent Liabilities.
7. Establish as legal requirement the regular delivery of actuarial long-term fiscal projections, and
8. Improving assessment and information provided in the financial reports of new laws.

7. Fiscal Policy Lessons for Commodity-Exporting Countries

Fiscal policy and macroeconomic performance of commodity-exporting economies are often strongly affected by commodity price booms and busts. Weak government institutions, an under-developed fiscal policy framework, and the absence of a fiscal rule lead to pro-cyclical fiscal policy bias. Commodity-price booms lead to excessive public and private spending, under-saving and over-borrowing, excessive credit growth and leveraging, domestic asset-price bubbles, and exchange-rate over-appreciation. Conversely, when the international commodity-price booms is halted and ends in a price bust, fiscal and private-sector spending is curtailed, sometimes dramatically as a result of foreign and domestic lending reversals, leading into a domestic recession, firm bankruptcies, and job losses. The latter effects are compounded by a financial crisis, i.e., some combination of banking crisis, government and external debt default, and major nominal and real exchange-rate depreciation.

Weak political and fiscal-policy institutions have adverse effects that go well beyond Dutch disease and financial crises in commodity-exporting countries. Opaque budgetary management and external control, lack of transparent fiscal policies and budgets, and poor budgetary accountability lead to ineffective and inefficient government spending, misuse of government resources, and corruption.

Adoption of a modern institutional framework for fiscal policy can make a major contribution to lessen the adverse impact of commodity-price bubbles and strengthen efficiency and good use of government resources. Such a framework is instrumental for the dual goal of fiscal policy: attaining and maintaining fiscal solvency (or budgetary sustainability), and contributing to cyclical and macroeconomic stabilization.

A large body of empirical international research shows that fiscal (and monetary) pro-cyclicality is more likely in countries with poor fiscal governance, high levels of corruption, low fiscal credibility, domestic financial under-development, and weak integration into world financial markets (Ilzetzki and Végh 2008, Calderón and Schmidt-Hebbel 2008, Calderón, Duncan and Schmidt-Hebbel 2010).

One effective way to break out of fiscal pro-cyclicality – in both commodity-exporting and other economies – is to reform fiscal policy institutions, including adopting a fiscal rule. Certainly this is much easier than tackling domestic and external financial under-development, and means working at improving fiscal governance and fiscal policy, and, eventually, reducing corruption.

The international experience and the Chile's case suggest that both economics and the political economy of fiscal policy are strengthened by the following reforms of fiscal institutions and policies.

1. Strengthening the institutional framework of fiscal policy

Developing the institutional framework for fiscal policy and budget planning and execution comprises five components.

- **Fiscal Responsibility Law:** adopt a legal framework, specifying budgetary procedures and rules to strengthen fiscal policy transparency, accountability, and stability. Fiscal responsibility laws establish requirements for governments to state transparently their short and medium-term policy objectives, to set short and medium-term targets for fiscal flows and stocks, to provide transparent information on budget planning and execution to the legislature, to implement a fiscal policy conducive to fiscal stability and solvency, and to account ex-post for fiscal policy execution and attainment of policy objectives.
- **Financial Management of the Budget:** the core elements for efficient budgetary management by the MoF comprise granting strong powers to the MoF on legal initiatives with budgetary impact and in budget decisions regarding other ministries and government levels, commanding a high technical capacity for budgetary planning, adopting modern accounting principles, ensuring an efficient process of legislative approval of the budget that limits the possibility of congressional amendments, and developing a large capacity for monitoring budget execution.
- **Budget Planning Horizon:** extend budgetary planning from one-year to multi-year horizons.
- **Fiscal policy accountability and transparency of budgetary information:** both for economic efficiency and political legitimacy goals, accountability of fiscal policy and transparency in provision of information of government accounts should be improved significantly.
- **External Control and Auditing:** countries should strengthen external control and auditing functions of fiscal policy, budget execution, and government accounts at three levels: congress, the government's general comptroller or auditor, and fiscal councils and committees (more on the latter below).

2. Adoption of a Fiscal Rule

Adoption of a fiscal rule based on a cyclically-adjusted balance (CAB) is the key reform required to avoid a pro-cyclical bias in fiscal policy and government spending. While for non-commodity exporters cyclical adjustment may be limited to domestic GDP shocks, for commodity exporters it is key to add cyclical adjustments to price shocks of their commodities. Like is the case in Chile, for most commodity exporters the largest source of government revenue volatility is precisely the price volatility of their commodity exports, not domestic GDP volatility. Moreover, domestic GDP volatility is likely to be lowered (as is the case in Chile) by adoption of a rule that accounts for both GDP and commodity price volatility.

A successful fiscal rule will have a positive impact on the stability of government spending and government programs, fiscal policy sustainability and credibility, and overall macroeconomic stability. In order to achieve success, the fiscal rule should satisfy the following conditions:

- (i) Based on calculations and formulas that are relatively stable over time,
- (ii) Based on assumptions and calculations that should be made public, together with the relevant budgetary information, to be replicated by outsiders, and
- (iii) Part of an institutional environment that supports independent or unbiased provision of key economic and financial forecasts (such as independent committees or councils).

The actual formula of the fiscal rule will be country-specific, and so will be the budget balance for which it is defined (total or primary), the government level to which it applies (central or general government), the degree of spending a-cyclicality or counter-cyclicality, and the target level for the CAB.

3. Adoption of a Sovereign Wealth Fund (SWF)

Fiscal rules that target CABs require a SWF where government savings are deposited during booms and withdrawn during downturns. Such funds are particularly important in commodity exporting countries, where they are typically invested in foreign-currency investments that are held abroad, as government revenue comes also in foreign-currency from the revenue obtained by commodity-exporting firms.

SWFs should satisfy the following conditions:

- (i) Effective and transparent corporate governance,
- (ii) Transparent information on the transfers between the budget and the SWF,
- (iii) Portfolio composition determined by maturity concerns (determined by the length of commodity-price and GDP cycles) and the government's degree of risk aversion, and
- (iv) Efficient portfolio management set by transparent guidelines and closely monitored by the government and the public.

4. Establishment of Government Committees and a Fiscal Council

Specialized government or MoF committees set up with narrow tasks – such as provision of independent forecasts of key variables for the budget or a board for the SWF – and staffed by independent members is an efficient way to bring expertise and independence to the government, strengthening fiscal institutions.

Moving beyond the latter committees, several industrial countries have put in place or are starting independent fiscal councils that have broader mandates to improve the quality of fiscal policy assessment, budget planning, and monitoring its execution. To my best knowledge, no commodity-exporting country has started a fiscal council to date. However, they are particularly needed in countries with weaker fiscal institutions, where such councils could make a major difference. Among their potential tasks are the following:

- (1) Evaluation and validation of financial and macroeconomic assumptions for the budget,
- (2) Provision of independent projections for the budget and government financial conditions,
- (3) Provision of policy assessments and recommendations of budgetary corrections,
- (4) Advice on the stance of fiscal policy, its long-term sustainability and optimality, and its macroeconomic effects,
- (5) Recommendations on policies for government asset and liability management,
- (6) Monitoring of budget implementation and provision of recommendations on budgetary corrections when facing deviations in budget execution, and
- (7) Recommendations to improve fiscal transparency.

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Table 1
Central Government Accounts, Growth, and Copper Price, 1990-2010

	1990-2001	2001-2010	2010
<u>Central Government (% of GDP)</u>			
Overall Revenue	21.7	23.1	23.0
Copper Revenue (1)		6.0	4.7
Non-Copper Revenue (1)		18.2	18.3
Overall Expenditure	20.7	21.1	23.5
Government Balance	1.0	2.0	-0.5
Cyclically-Adjusted Balance	0.5	0.0	-2.3
Government Assets	13.7	12.6	17.6
Sovereign Wealth Funds		10.0	8.0
Government Debt	22.0	9.4	9.3
Net Government Assets	-8.3	3.2	8.3
<u>GDP Growth (%)</u>			
Average	6.2	3.7	5.2
Standard deviation	3.5	2.2	
Committee's average estimated future trend growth		4.7	5.0
<u>Copper Price (US\$/lb)</u>			
Average	1.00	2.04	3.40
Standard deviation	0.19	1.12	
Committee's average estimated future trend level		1.22	2.13
Copper Production (% of world production)	25.8	34.9	33.7
Copper Exports (% of Chile's exports)	38.6	46.6	56.1

Sources: author's calculations based on data from the Budget Directorate, Cochilco, and the Central Bank of Chile. (1) Copper related and non-copper related revenue for 2005-10.

Table 2
Correlations between Committee Projections and Actual Future Variables, 1990-2010

Actual Copper Price(t-1) and Projected Copper Price(t)	0.77
Actual Copper Price(t) and Projected Copper Price(t)	0.63
Actual GDP Growth(t) and Projected GDP Growth (t)	0.64
Actual GDP Growth(t-1) and Projected GDP Growth (t)	0.76

Sources: Committee reports and Chilean Central Bank.

Note: bold figures show statistically significant correlations.

Table 3
Correlations between Government Budget Variables, GDP Growth, and Copper Price, 1990-2010 and sub-periods

Quarterly Data	1990-2010	1990-2000	2001-2010
Total Revenue/GDP - GDP Growth	0.08	0.30	0.11
Total Revenue/GDP - Copper Price US\$	0.83	0.19	0.80
Total Expenditure/GDP - GDP Growth	0.00	-0.01	0.07
Total Expenditure/GDP - Copper Price US\$	0.47	0.02	0.34
Government Balance/GDP - GDP Growth	0.08	0.26	0.07
Government Balance/GDP - Copper Price US\$	0.60	0.15	0.57
Annual Data	1990-2010	1990-2000	2001-2010
Net Government Assets/GDP - GDP Growth	-0.36	-0.21	-0.19
Net Government Assets/GDP - Copper Price US\$	0.71	-0.41	0.91
Government Balance/GDP - GDP Growth	0.34	0.78	0.58
Government Balance/GDP - Copper Price US\$	0.59	0.77	0.57

Sources: Chilean Budget Directorate and Chilean Central Bank.

Note: bold figures show statistically significant correlations.

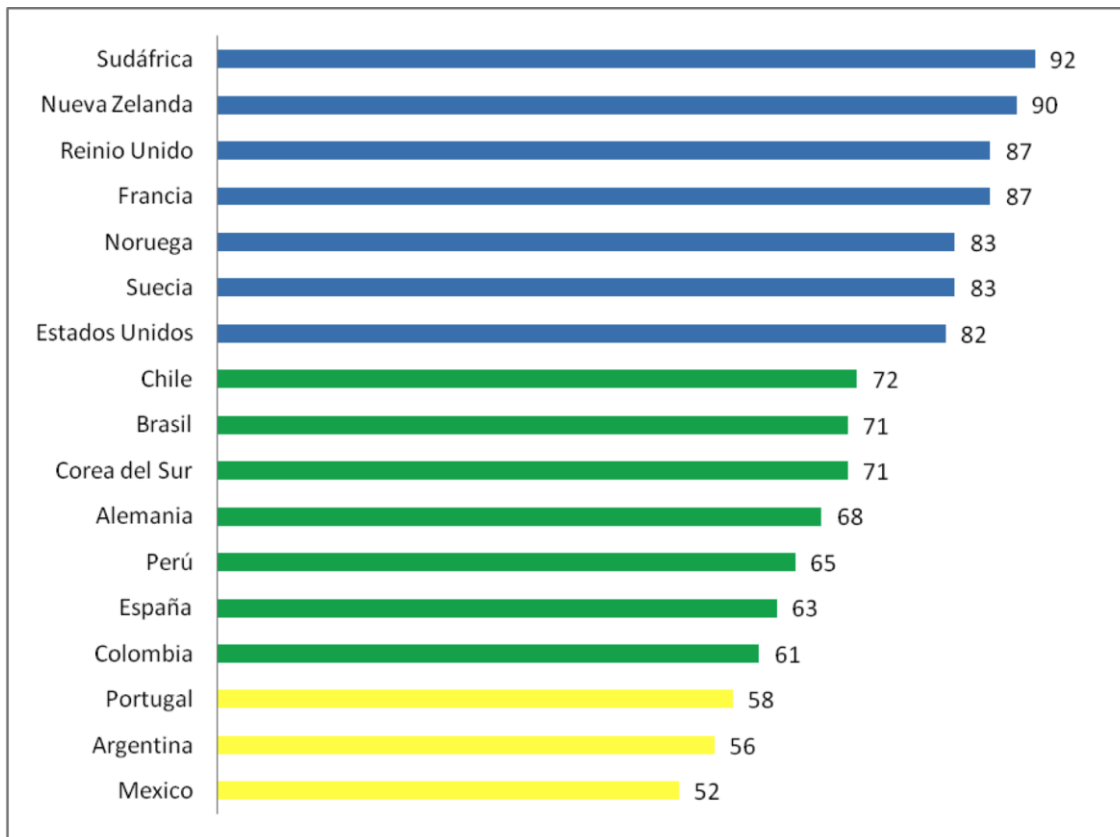
Table 4
Correlations between Macroeconomic Variables, 1990-2010 (quarterly data)

	Copper Price	EMBI	Real Exchange Rate	GDP Growth
Copper Price	0.33	-0.22	-0.47	0.59
EMBI	-0.44	0.37	0.24	-0.29
Real Exchange Rate	-0.61	0.46	0.3	-0.81
GDP Growth	-0.14	0	0.07	0.65

Sources: author's calculations based on Chilean Budget Directorate and Chilean Central Bank data.

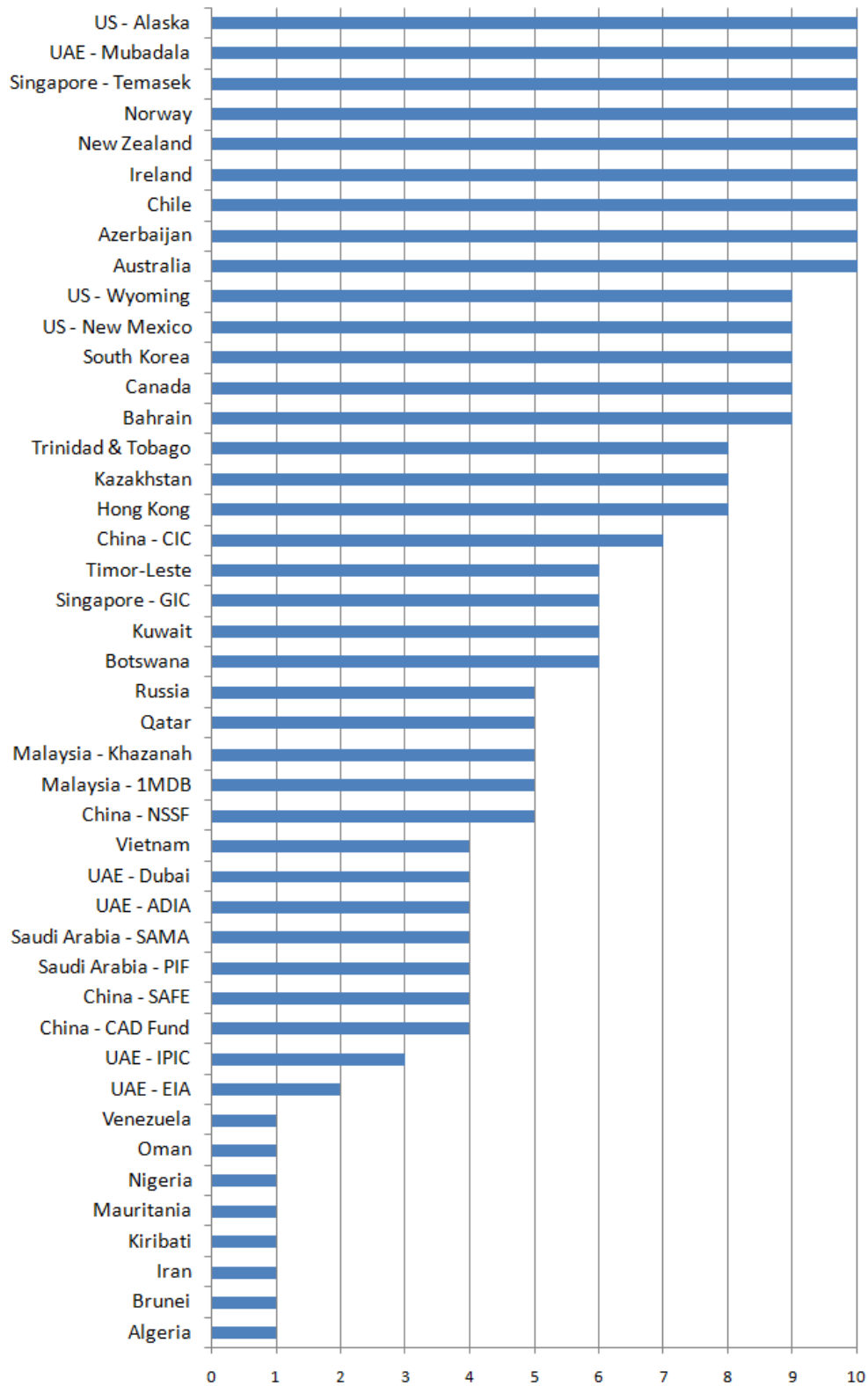
Notes: The upper triangular matrix reports correlations between HP-filtered series of the logs of copper price, real exchange rate, and real GDP, and HP-filtered EMBI. The lower triangular matrix presents correlations between growth rates of copper price, real exchange rate, and real GDP, and the change of EMBI. The diagonal reports correlations between HP filtered series and rates of growth or changes. Bold figures show statistically significant correlations.

Figure 1
Government Budget Transparency and Accountability, 2010



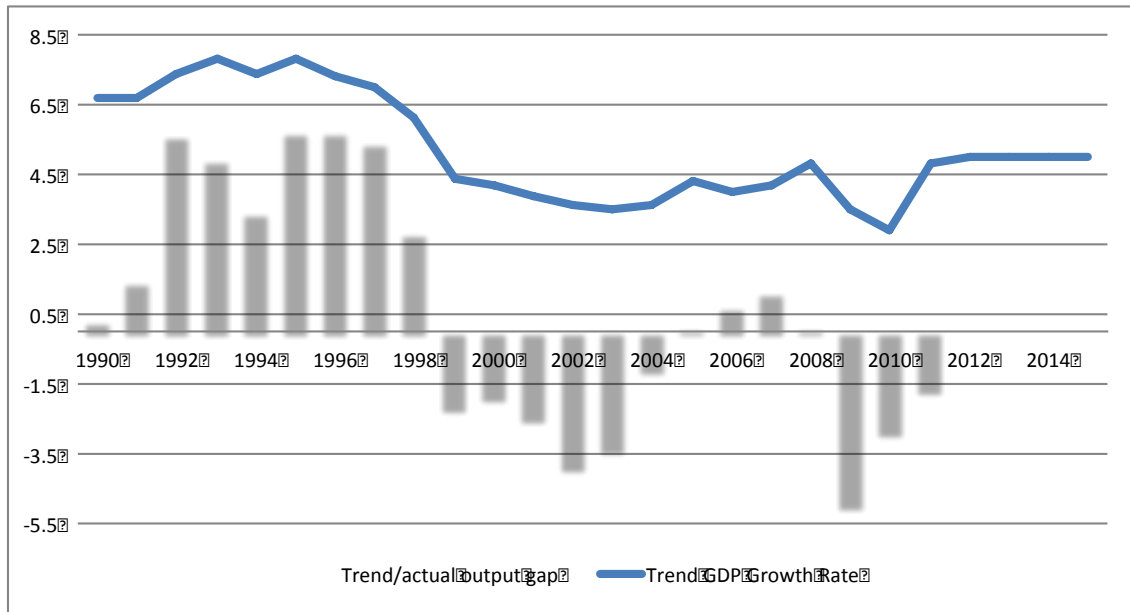
Source: Open Budget Survey, International Budget Partnership (2010).

Figure 2
Transparency of Sovereign Wealth Funds, 2011



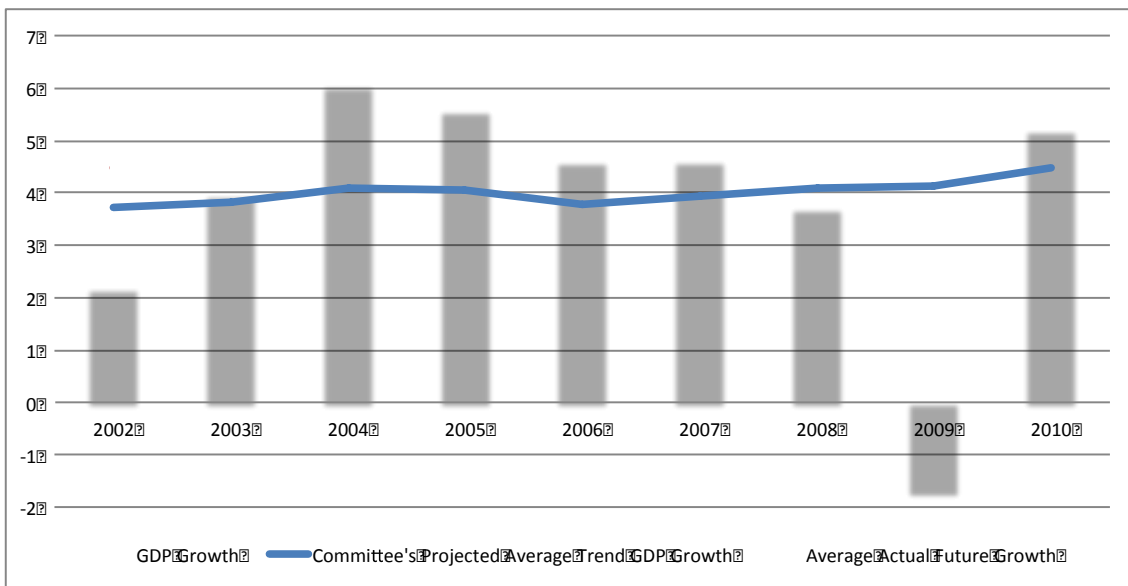
Source: Sovereign Wealth Fund Institute (2011).

Figure 3: Trend GDP Growth and Output Gap Projection by the MoF in 2010, 1990-2015 (%)



Sources: Committee's report.

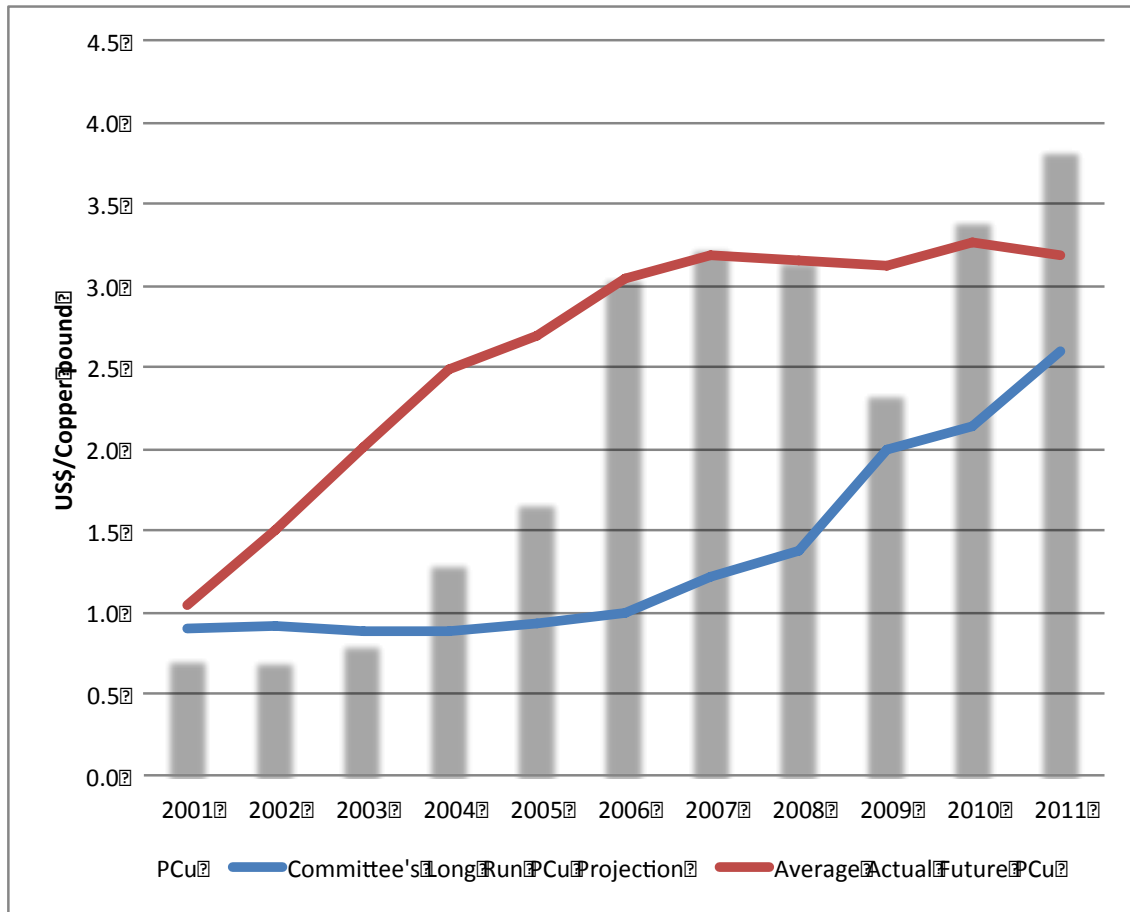
**Figure 4
Committee's Projections, Average Actual Future GDP Growth, and Actual GDP Growth, 2002-2010 (%)**



Sources: author's calculations based on data published by Committee report 2011.

Notes: Committee's projected average trend GDP growth is the average of all future projections made by the Committee at the corresponding year. Average actual future growth is average GDP growth from a rolling window from year t through year $t+4$.

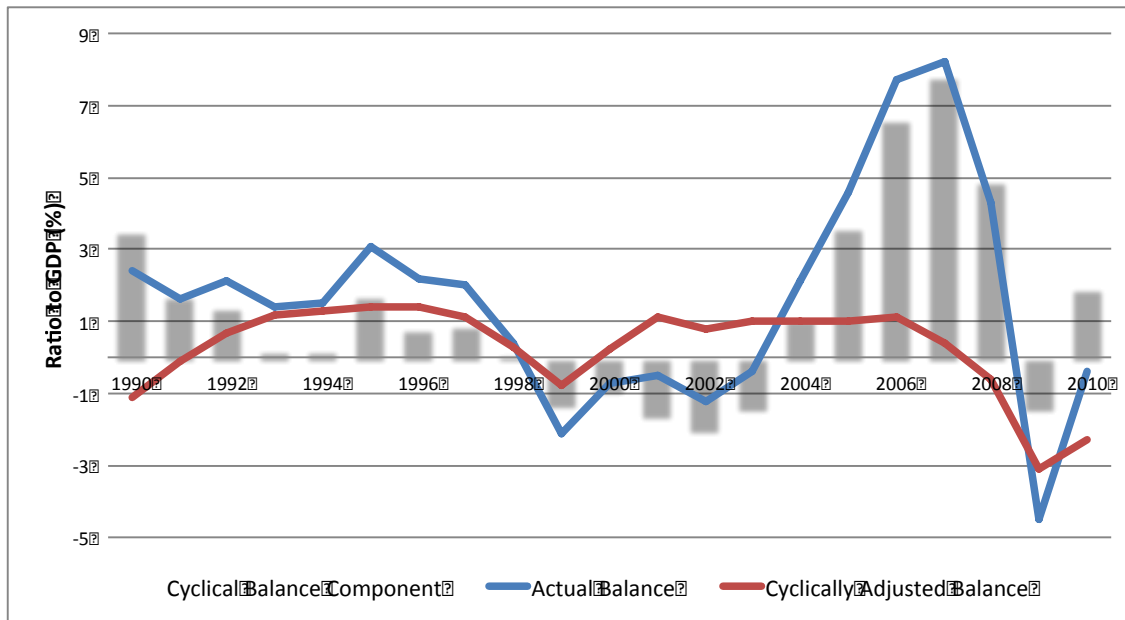
Figure 5
Committee's Projected Copper Price, Average Actual Copper Price, and Actual Copper Price, 2001-2011



Sources: authors' calculations based on data published by Committee reports and Central Bank of Chile.

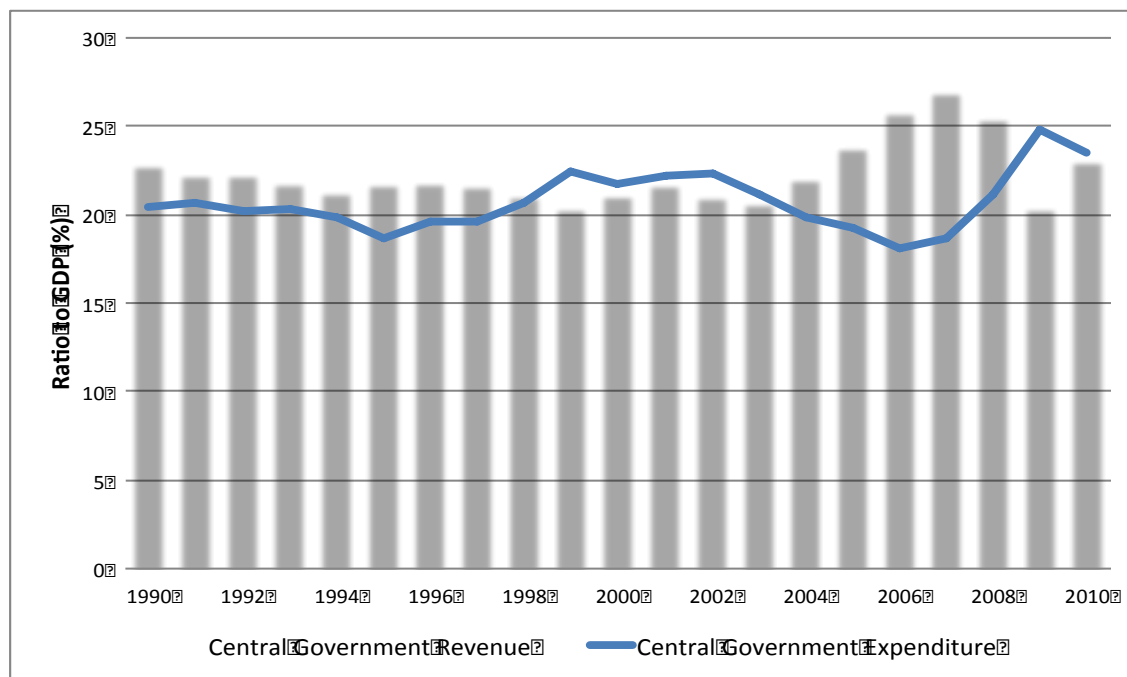
Notes: Committee's projected long-run copper price projection is the forecast made at the corresponding year. PCu is average copper price from the corresponding year through 2010, in the case of 2011 I use the actual average price from January through August, the I use a copper price of 3 Us\$/lb. Average actual future copper price is the average price from a rolling window from year t through year t+4.

Figure 6
Actual and Cyclically-Adjusted Central Government Balance Ratios to GDP, 1990-2010 (%)



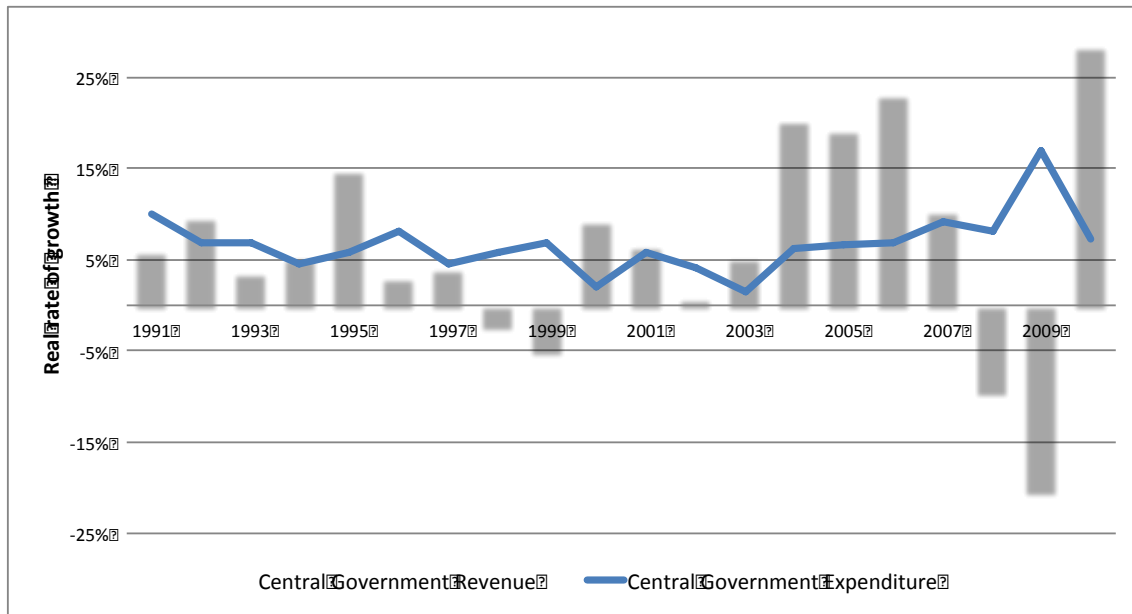
Source: Budget Directorate.

Figure 7
Central Government Expenditure and Revenue Ratio to GDP, 1990-2010 (%)



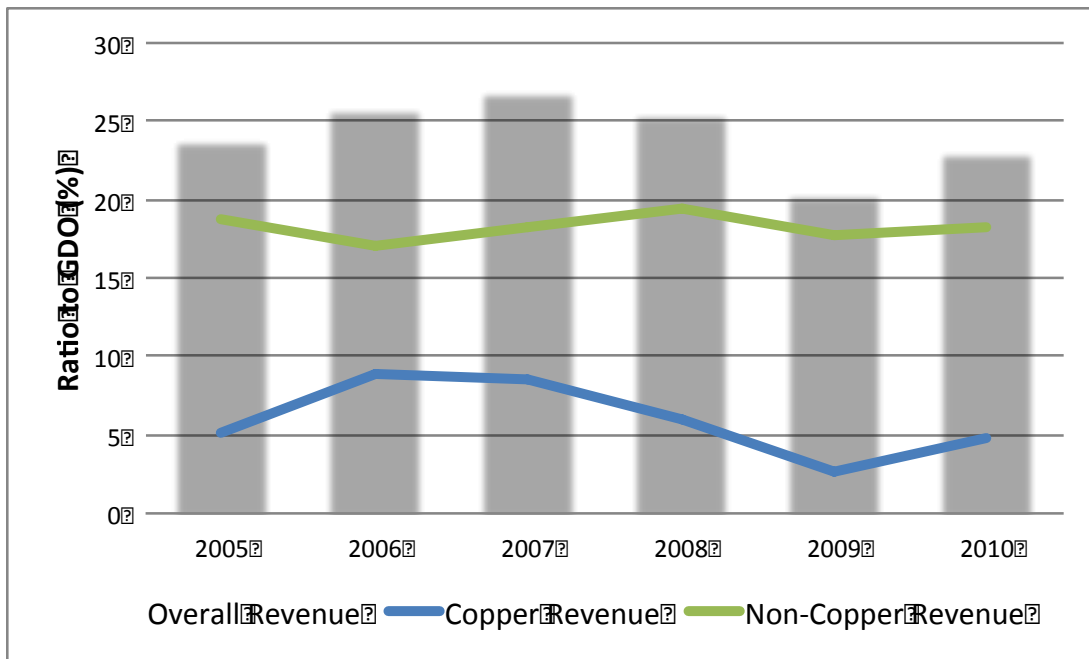
Sources: Chilean Budget Directorate.

Figure 8
Central Government Revenue and Expenditure Growth Rates, 1991-2010 (%)



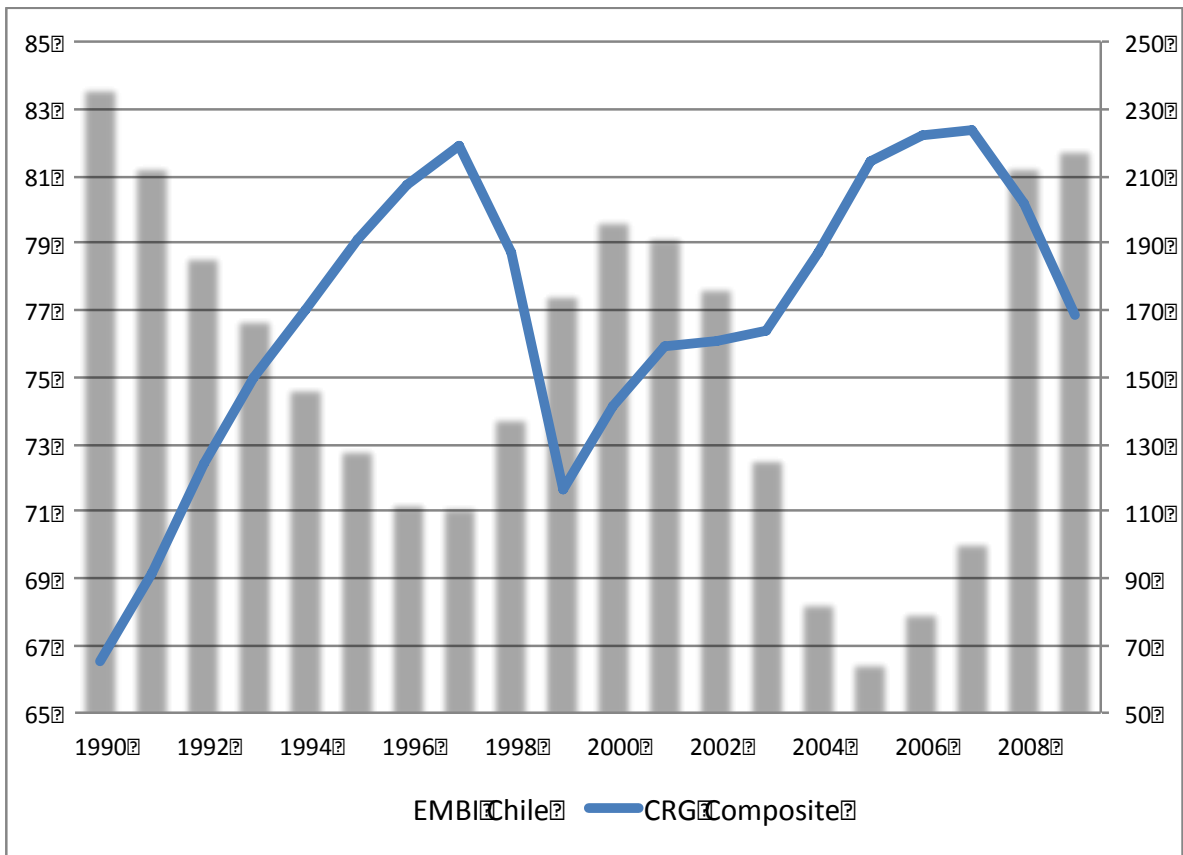
Sources: Chilean Budget Directorate.

Figure 9
Government Revenue Ratio to GDP, 2005-2010 (%)



Source: Chilean Budget Directorate.

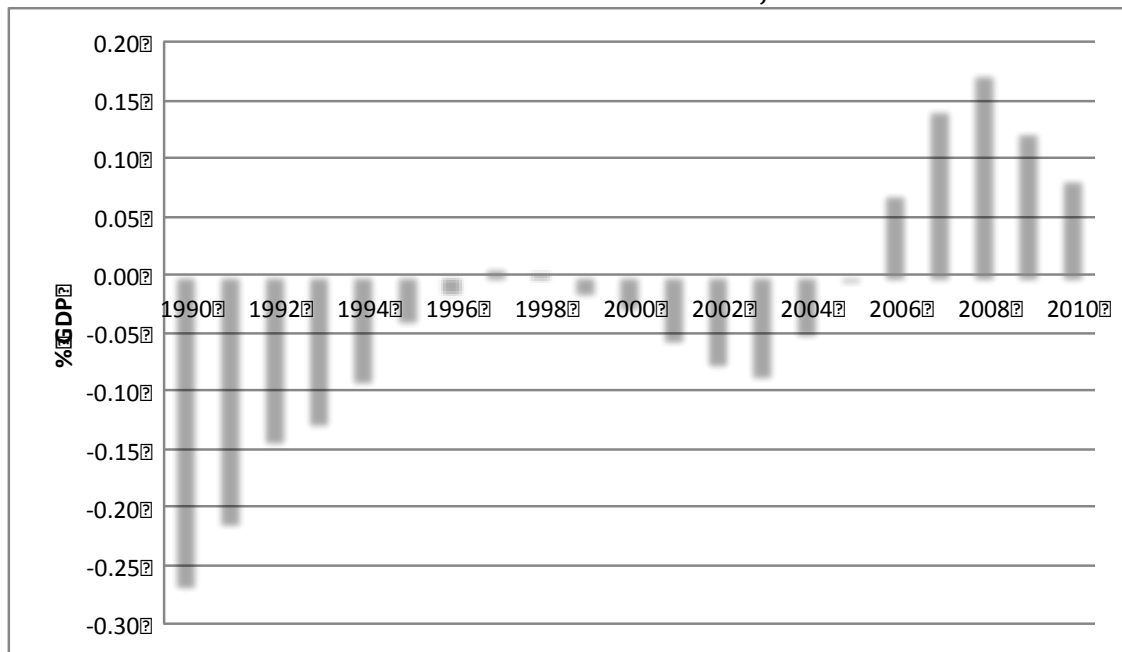
Figure 10: CRG Index and EMBI Chile, 1990-2009



Source: Chilean Central Bank and Credit Risk Guide.

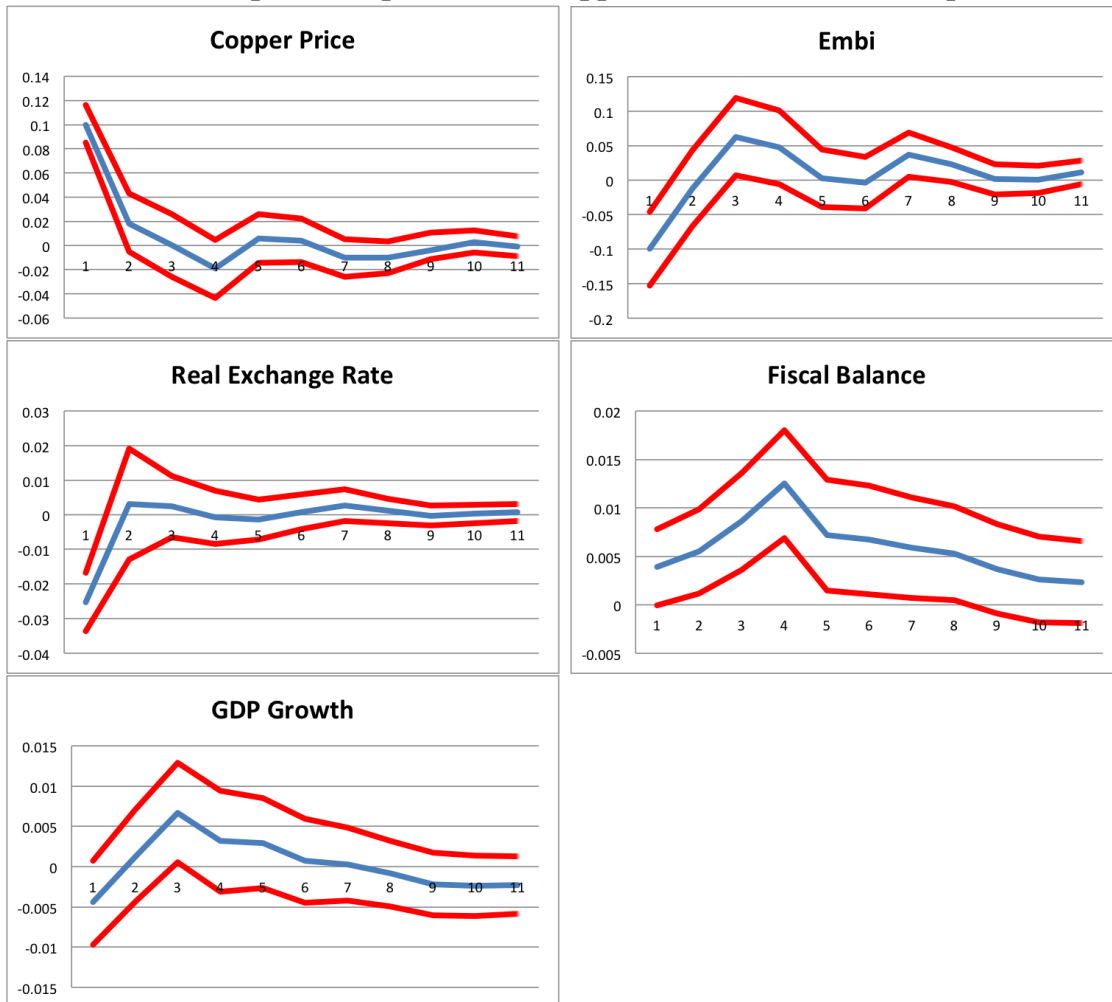
Notes: Left axis shows CRG Composite Index and right axis shows EMBI Chile. EMBI Chile was created in 1999, thus we use an estimated EMBI Chile from 1990-1998 using a backward prediction from a regression of EMBI on CRG.

Figure 11
Net Government Assets Ratio to GDP, 1990-2010



Source: Ministry of Finance

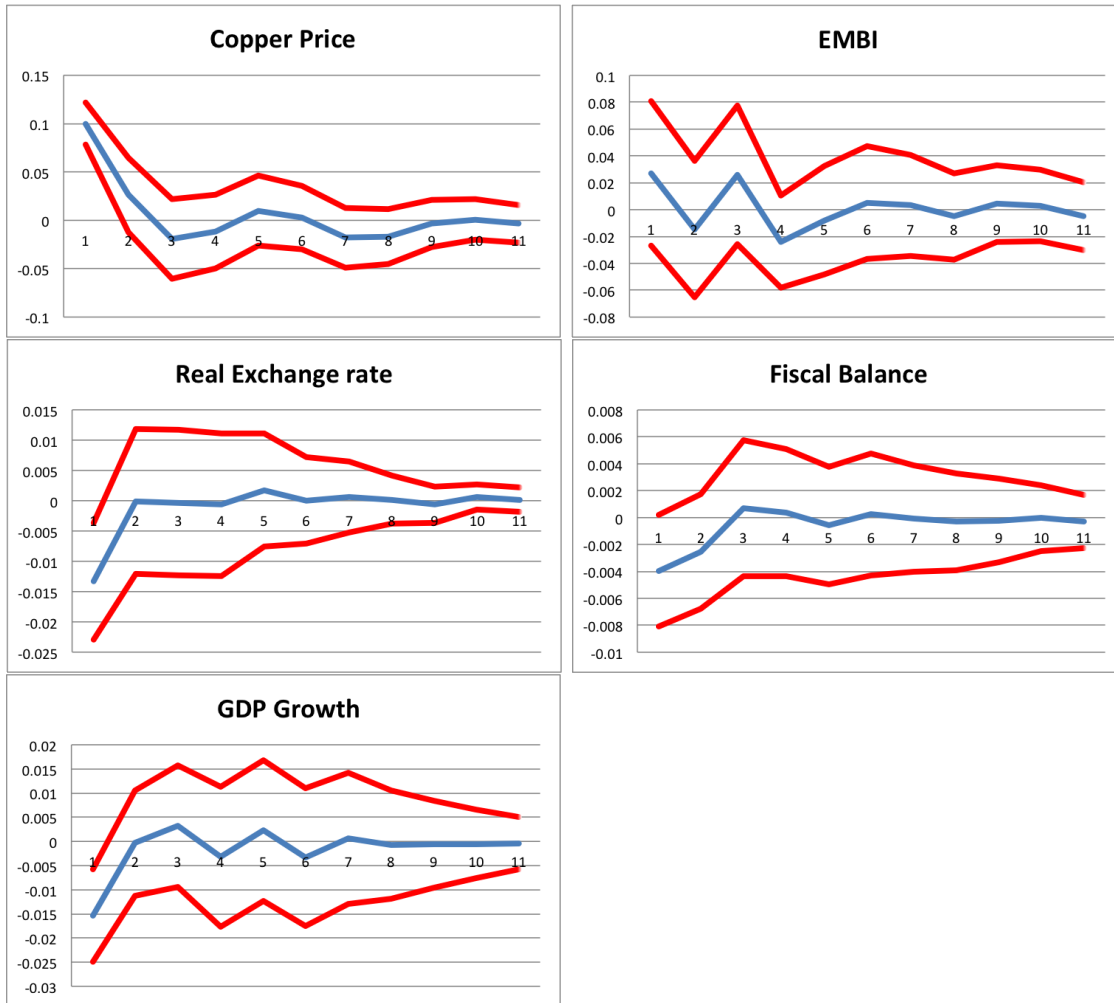
Figure 12
Estimated Impulse Responses to a Copper Price Shock, Full Sample 1990-2010



Source: author's simulation.

Note: the quarterly impulse response functions are based on VAR estimations described in the text. The temporary copper price shock is a 10% rise in quarter 1, which is partly reverted in quarter 2 (plus 2%), and statistically fully reverted from quarter 3 onwards. The figures show impulse response functions and their corresponding 90% confidence bands.

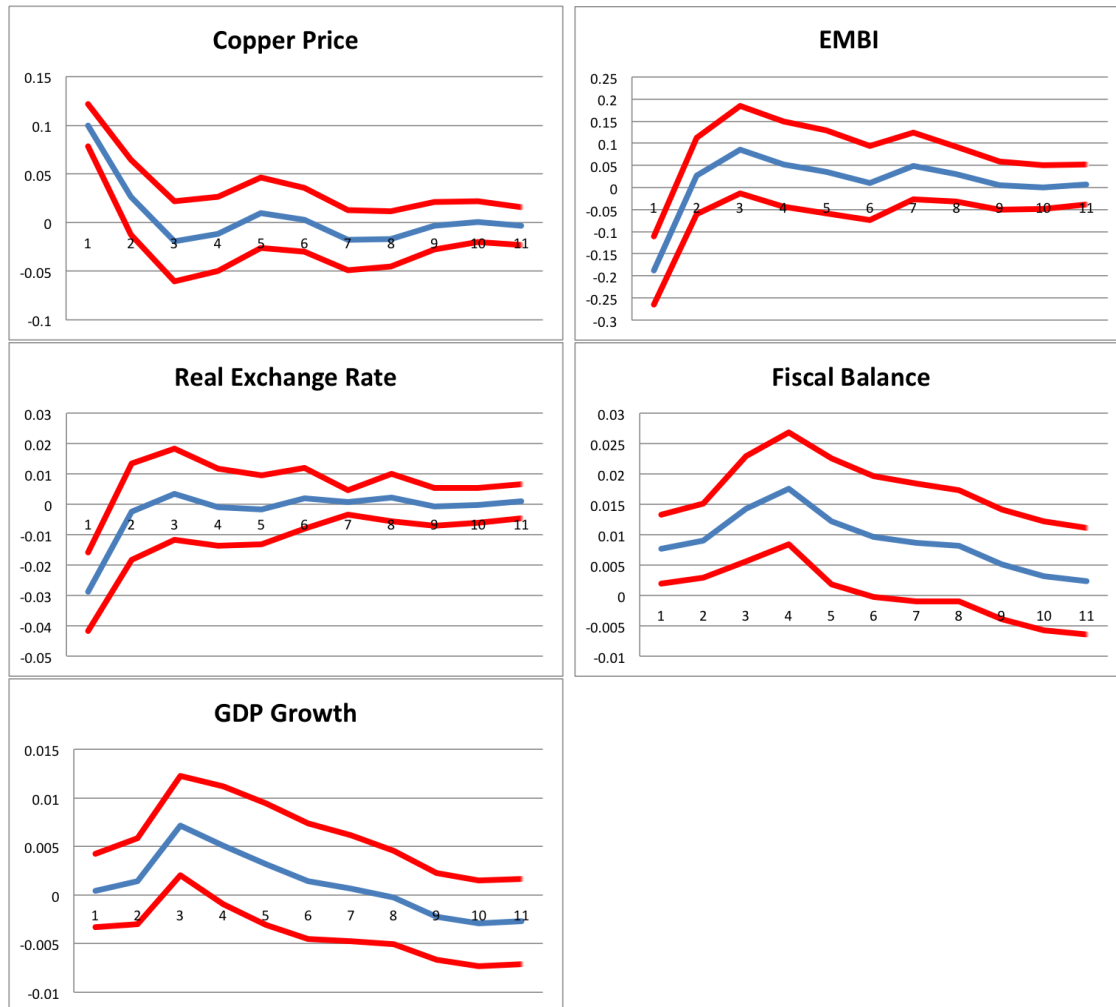
Figure 13
Estimated Impulse Responses to a Copper Price Shock, 1990-2000 (before Fiscal Rule)



Source: author's simulation.

Note: the quarterly impulse response functions are based on VAR estimations described in the text. The temporary copper price shock is a 10% rise in quarter 1, which is partly reverted in quarter 2 (plus 2%), and statistically fully reverted from quarter 3 onwards. The figures show impulse response functions and their corresponding 90% confidence bands.

Figure 14
Estimated Impulse Responses to a Copper Price Shock, 2001-2010 (during Fiscal Rule)



Source: author's simulation.

Note: the quarterly impulse response functions are based on VAR estimations described in the text. The temporary copper price shock is a 10% rise in quarter 1, which is partly reverted in quarter 2 (plus 2%), and statistically fully reverted from quarter 3 onwards. The figures show impulse response functions and their corresponding 90% confidence bands.

