Chile’s fiscal policy and mining revenue
A CASE STUDY
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Preface

The African Natural Resources Center (ANRC) has commissioned a series of case studies to bridge the knowledge gap in natural resources project-driven SME development, supply chain based domestic linkages, extractives revenue management, public-private partnerships and fiscal policy formulation:

- Anglo American Corporation’s Anglo Zimele small business development initiative in South Africa;
- Angola’s Partnership with Total to implement national local content policy;
- AngloGold Ashanti Malaria and public-private partnership in Ghana;
- Botswana’s Mineral Revenues, Expenditure and Savings Policy;
- Chile’s mining revenue fiscal policy implementation;
- Debswana’s Diamond Company and Botswana’s HIV and AIDS public partnership program;
- Nigeria’s Local Content Board’s policy and institutional arrangements.

This report illustrates how implementing fiscal policies and revenue management from extractive projects can contribute to social development.

Foreword

In the natural resources sector, national governments perform a central role by acting as stewards in resources development. This requires a balance of policy, legal and institutional considerations. It also requires governments to consider the needs of various stakeholders. In the extractives sector, the importance of protecting inter-generational benefits is a particular challenge given the finite nature of resources. This places an extra burden on policymakers to increase the value obtained from extractives while giving investors a fair return.

Additionally, to increase development outcomes, governments must make informed choices while meeting public expectations to benefit more from extractives projects. A particular challenge facing both investors and governments is to ensure that the impact of extractives projects is felt as early as possible. Another is to ensure that countries begin to enjoy the benefits despite the time lag between project commissioning, production and payment of taxes.

Equally important is the need to stabilize the project environment such that, regardless of the project life cycle, commodity market conditions and level of profitability, projects continue to have a positive effect on human development. The answer in part lies in delinking revenue from human development strategies by assisting governments with other options for delivering tangible benefits.

Other important challenges facing countries include:

- Striking a balance between the impact on local and national economies;
• Making the correct trade-off between fiscal and non-fiscal benefits;
• Integrating projects into national economies to ensure local content while capitalizing on the global outreach of multinational corporation supply chains and related economies of scale;
• Ensuring that public-private partnerships increase human impact, promote small and medium enterprises (SMEs) and deliver social welfare services directly to those affected by extractives projects;
• Securing inter-generational value by investing revenue in productive assets.

Many resource-rich countries need to generate concrete solutions and knowledge to overcome these challenges they face and build their own capacity. In view of this the African Natural Resources Center (ANRC) has commissioned this series of case studies to benchmark best practices. Ultimately, through these studies, we want to offer countries practical solutions and a coherent policy foundation with which to improve development outcomes through natural resources projects.

Sheila Khama
Director, African Natural Resources Center

The African Development Bank established the African Natural Resources Center as a non-lending entity to build capacity to manage natural resources. The Center’s mandate is to assist African countries to maximize development outcomes from the continent’s natural resources. The Center advises governments on natural resources management, policy formulation and implementation to enable them to secure greater social and economic value from resource development. The scope of the mandate covers renewable (fishery, forestry, land and water) and non-renewable (minerals, oil and gas) resources.

The Center supports African governments in performing their custodial obligations by collaborating with regional institutions, private sector, civil society organizations and donors. The Center uses benchmarks and best practices from other countries to increase the capacity of governments.
Chile’s fiscal policy and mining revenue
1. Introduction

Chile’s economy relies heavily both on renewable and non-renewable natural resources. It produces almost one-third of the world’s copper, representing more than half of Chile’s exports. It is also the world’s second largest producer of salmon.

The mining industry in Chile has been a mainstay of the country’s development throughout its history. In recent decades, the industry has been a crucial catalyst of economic growth, driven by considerable increases in mining investment.

Resource-rich countries like Chile face the dilemma of how to manage this source of revenues. This is particularly the case when there are social and political pressures to spend more on public goods and distribute these revenues among different socio-economic groups. While subjective well-being and life expectancy in the country are near the OECD average, Chile ranks relatively low in a number of socio-economic indicators. In this context a transparent and efficient fiscal policy that responds to social demands is essential to avoid the potential harmful effects of natural resources exploitation.

The objective of this report is to analyze Chile’s fiscal policy implementation and mining revenue management, with an emphasis on the copper sector and its contribution to social development. The report focuses on the formal functioning of the rules and legal framework underpinning the policy.

The Chilean experience highlights several factors that resource-rich developing countries seeking to improve the development impact of their resource wealth should take into account. The first factor is that the development of the institutional and legal framework for the management of natural resources is often a long process, requiring continuous reviews and improvements to the framework.

The second factor is that fiscal policies and fiscal rules must be supported by conducive monetary and exchange rate policies to maintain macroeconomic stability and avoid the Dutch Disease phenomenon. Although their influence was subtler than the fiscal policy, monetary and exchange rate policies were no less important. To begin, a credible inflation-targeting policy ensured an appropriate monetary policy reaction to significant deviations in output from its full-employment output level. Furthermore, the floating exchange rate contributed to stability, allowing adjustments of the real exchange rate to domestic economic conditions and minimizing adjustments in activity level.

Finally, a decisive contributing factor to the successful Chilean experience was the existence of an active and informed civil society and media that demanded mechanisms for external scrutiny and independent accountability.

While economic literature has often emphasized the potential negative effects of natural resources on development, Chile has been relatively successful in avoiding the so-called resource curse. This has been attributed to the country’s strong institutions. The construction of these strong institutions is a long and still-evolving process where the political economy has played an important role.
2. The role of mining in the Chilean economy

Chile is the world’s leading producer of copper, accounting for 32 percent of world production (Figure 1) and 28 percent of world reserves. The country is also an important producer of molybdenum, silver and gold. Copper is the main export product and an important source of fiscal revenue for government (Figure 2). The state-owned firm Codelco is the largest copper producer in the country. Its importance as a producer has decreased over the years due to vibrant foreign direct investment (FDI) in the Chilean mining sector (Fuentes 2009).

The main direct contributions of copper to Chile’s development have been as a source of foreign exchange from exports and as a source of government revenue. Its contribution to direct employment and even to GDP has been much more limited. (The copper mines created only 50,000 direct jobs. The contribution of copper to GDP averaged 6.2 percent over the 1980-2010 period. On the fiscal side, the contribution of Codelco since 1990 was equivalent to 13 percent of total tax revenues, exceeding 30 percent in some years. If taxation of large private mining is added, the contribution reached a record one-third of total tax revenue in 2006 and 2007, but was only 9.1 percent in 2014. The share of copper exports in total exports averaged 42 percent in the 1990-2010 period, exceeding 56 percent during the copper boom in 2010-2011.)
While the overall contribution of copper to the Chilean economy has been diminishing – in particular because of the diversification of the Chilean economy since the late 1980s, the mining sector remains highly profitable and continues to attract large FDI inflows.

Overall, the economic impact of the copper and mining industry has been very positive for Chile. However, dependency on copper revenues also introduced the challenge of managing volatility with global copper price swings that, historically, negatively impacted the Chilean economy and generated macroeconomic instability. This created serious difficulties for the emergence of other exports and contributed to instability in employment and inflation. Fortunately, despite copper price volatility since the 1990s, this instability has eased thanks to the policy framework described below.

3. The institutional and regulatory framework of the copper sector

Chile has a “mixed model” in which public and private mining coexists. This model is the result of a historical process during which the initial privatization of mining companies into a state-owned producer, Codelco, in the 1970s, saw the subsequent liberalization of the sector. This allowed private producers to operate on newer concessions side-by-side with state-owned enterprise (Fuentes, 2009).

The private sector has made possible the development of vast mineral resources that state-owned Codelco alone could not have exploited. Thus the sum of public and private production allows the country to have not only higher fiscal revenues but also the production base upon which the industry could develop goods and services to diversify and expand mining’s effect on the economy. The mixed model therefore offers the advantage of greater scale that amplifies the opportunities for development of industry suppliers. In the case of Chile, this was considered a better option than exploiting mining resources only through private or state companies. In addition, the co-existence of public and private mining increases the legitimacy of mining activities in the country. It also establishes an implicit comparison of the quality of the management between companies and the contribution each makes to the country.
3.1. Regulatory framework for the treatment of copper revenues in Chile

Tax revenues from copper sales stem from two major sources. One is the sale of copper and other minerals from Codelco through surplus transferred to the treasury and the taxes paid by the company. The second source corresponds to taxes paid by private mining companies, in particular, the so-called GMP10, a group of the ten largest firms. GMP10 production was, on average, 76 percent of private copper production in Chile between 2011-2013.

The tributary framework for the mining sector in general and Codelco in particular has changed over the years. Codelco’s fiscal revenue contribution consists of: the payment of income taxes, including the “first category” tax whose rate is 20 percent effective, a surcharge of 40 percent (common to public companies in Chile) and a Specific Mining Tax; statutory transfers of export earnings from Codelco to the armed forces (10 percent of total); and the distribution of liquid profits shown in the balance of the year, which are agreed between the company and the Ministry of Finance.

The taxation of private mining companies consists of three taxes. First, they pay the same income tax that applies to all companies. Second, they pay the so-called Additional Tax, a withholding tax for companies making remittances abroad. Third, they pay a specific mining tax (“royalty”) on mineral exploitation.

The tax on mining applies to operating income from the mining activity obtained by a mining operator. The tax rate is progressive. It is between 5 and 14 percent for annual sales exceeding 50,000 metric tons of fine copper; and between 0.5 and 4.5 percent for operators with annual sales between 12,000 and 50,000 metric tons of fine copper. Production below 12,000 metric tons of fine copper is tax exempt. The value of a metric ton of fine copper is calculated according to the average value in the respective business year recorded in the London Metal Exchange (LME).

Box 1
The spillover effects of copper to the Chilean economy

The importance of mining in the Chilean economy goes beyond direct economic impact. While the mining sector contributes to the economy substantially through copper, its production depends on inputs that are largely offered by the rest of the economy. Thus, increases in copper price trigger a series of demands that positively affect many other sectors of the Chilean economy. In quantitative terms, Fuentes and Garcia (2014) find that a 1 percent increase in the price of copper (with decreasing persistence) generates a 0.16 percent increase in GDP over five years. They also found that, between 2003-2013, the price of copper contributed to a 5.8 percent variance of GDP growth in the Chilean economy. This contribution is well above that provided by other external factors such as the risk premium, growth in developed countries, foreign interest rates and the price of oil. Arellano (2011) also recognizes the potential of copper to generate a multiplier effect to help develop para-mining activities that cater to domestic and foreign mining. This has been called a cluster around mining. Chile is currently trying to follow other resource-rich countries that have developed industries of capital goods, mining supplies and mining services.
3.2. Effective and structural fiscal revenues from copper

While in 2006 the contribution of the copper sector was 34.2 percent of total tax collection, in 2014 copper sector revenues (both Codelco and the GMP10) were only 9.1 percent of total tax collection (Figure 3). The difference in the relative contribution of the mining sector is mostly explained by the evolution of copper prices. In order to abstract from short-term fluctuations in copper prices when setting medium-term fiscal plans, it is important to distinguish between the effective and the structural fiscal revenue from copper. The existence of structural fiscal revenue is based on the idea that the effective copper revenues received by government have two components: structural revenues that are associated with the long-term price of copper and/or molybdenum; and a cyclical component – the product of ore prices above (or below) the long-term price, which may be called cyclical revenue. This can be described through the following identity:

\[
\text{Effective Revenue} = \text{Structural Revenue} + \text{Cyclical Revenue}
\]

Structural revenue is calculated by estimating the associated cyclical revenue coming from the difference between the current and the long-term price of copper. In so doing, structural revenues are calculated as the difference between actual revenue and cyclical revenue. The theoretical long-term price is constructed based on the forecast of an independent experts committee, with each member presenting their annual price forecast for the next ten years. The reference price, which corresponds to the simple average of the ten-year forecasts of each expert, excluding the minimum and maximum values, is then used as a basis for the fiscal projection in the national budget for the year ahead.

Figure 3 shows the evolution of mining revenue’s contribution to total revenue a) as a percentage of total revenue (Panel 1); and b) as a share of GDP (Panel 2).

1 Rodríguez et al (2015) present the estimation methodology.
The contributions of mining tax revenues have fluctuated significantly. They rose from no more than 5 percent of total revenues up to 2003, to 25.8 percent between 2004-2008, finally decreasing to an average 14.4 percent from 2010-2014. The high volatility of the contribution of effective revenues to total revenue contrasts with the relative stability of structural revenue that only increased significantly in 2006 and decreased in 2008. When comparing structural and effective revenues, the former are lower as a percentage of GDP for most of the years analyzed (Panel 2). This is because in the period considered, the actual price of copper has been above its long-term estimates. Overall the structural fiscal revenues from mining have not accounted for a significant proportion of GDP in any of the years analyzed, registering an annual average of 1.6 percent between 2001-2014. This indicates that, contrary to common belief, the Central Government of Chile has a rather limited level of dependence on the revenue originated from copper production not only in terms of effective revenue but also in terms of structural revenue.
3.3. Fiscal policy rules

The inter-temporal effects of fiscal policy have been a growing concern among researchers and policy makers, in particular in resource-rich countries where fluctuations in commodity prices can generate boom and bust cycles. This concern has prompted the parallel development of a large number of indicators to assess the inter-temporal sustainability of fiscal policy, and the design and implementation of fiscal policy frameworks. The adoption of fiscal rules provides a mechanism to create a reputation for fiscal discipline and overcome the “time-inconsistency” problem by binding the policymaker ex-ante to a certain course of action.

Since 2001, Chile’s budget policy has been based on a strong fiscal rule. The rule seeks to link public spending to long-term expected government revenue by imposing a target on the structural deficit/surplus level. In accordance with the fiscal rule, Chilean authorities aim to achieve a budget balance that is corrected for the business cycle and for fluctuations in copper and molybdenum prices. Between 2001 and 2007, a structural surplus target of 1 percent of GDP was established for fiscal policy. This amounts to a tight fiscal policy, implying the accumulation of public savings driven by three conjectural considerations.

First, there was a need to recapitalize the exposure of the Central Bank because of its rescue in the 1980s and the exchange rate policy of the 1990s. Second, there was the desire to build a buffer against exchange rate variations and limit government borrowing (particularly in domestic currency). Third, there was the existence of contingent liabilities, especially those related to the state guarantee of minimum pensions. The original target of 1 percent surplus was reduced to 0.5 percent in 2008 and later reduced to a 1 percent deficit to stimulate the Chilean economy out of the recession.

Structural budget policy was institutionalized in 2006 with the approval of the Fiscal Responsibility Law (No 20,128). The law created two funds, the Pension Reserve Fund (PRF) and the Economic and Social Stability Fund (FEES), to collect fiscal surpluses. The law did not establish a specific target for the structural balance but it did mandate each president to establish the bases of the fiscal policy during their administration and to inform Congress how its fiscal policy would affect the structural balance. The law outlined the savings rules for the fiscal surplus, which should be saved in the PRF (minimum of 0.2 percent of GDP, maximum of 0.5 percent of GDP), in the capitalization of the Central Bank (up to 0.5 percent of GDP during five years) and in the FEES (any surplus above 1 percent of GDP). Therefore the law provided a reference target for the desired amount of savings to be accumulated as liquid assets.

The 2008/9 crisis and earthquake of 2010 provided examples of the limitations of an approach that requires ex-post compliance to the fiscal rule. Despite a drive to apply the rule rigidly ex-post, the two events were a significant external shock that ultimately required a revision of the fiscal rule target.

Although the fiscal framework has worked very well, several changes were recommended by the Independent Committee on the Fiscal Rule in 2011 to improve it further. Many of these changes were implemented during the past two years (Larraín et al., 2011). For instance, the methodology used to calculate the cyclically adjusted balance rule no longer takes into account transitory changes in tax rates.
Box 2
Fiscal rules objectives

Fiscal rules seek:

• Certainty and confidence both internally and externally;
• Internal and external credibility of policymakers;
• To improve the accountability of public resources management;
• To create fiscal and budgetary discipline;
• To align fiscal policies with medium- and long-term objectives; creating continuity beyond the business cycle.

The positive effects of fiscal rules include:

• They are an important signal both internally (reduce spending pressure from domestic economic agents) and externally (cheaper loans);
• Increased access to international financial markets, with lower risk premiums;
• Minimized or avoided contagion;
• Increased stability in macroeconomic aggregates and fiscal accounts;
• Stability of public spending and public investment, with a stable fiscal policy;
• Increased economic growth, potentially improving welfare;

3.4. External scrutiny of fiscal policy

The development of independent institutions supervising the fiscal framework, Congressional oversight, and a strong civil society and media have contributed to the relative success of the fiscal framework. Easily accessible information on the application of the fiscal rule and on government performance against it form the cornerstone of such an accountability system.

The fiscal rule is associated with and reinforced by transparency provisions. Since 2003 interim reports have explained why actual outcomes deviate from projections and assess the implication for the structural deficit. The Chilean government has recently published a manual to help outsiders replicate the calculation of the cyclically adjusted fiscal balance. In addition, information regarding contingent liabilities and medium- and long-term projections is being expanded. Space for discretionary fiscal policy actions has been reduced. Further steps would strengthen the fiscal rule framework even more.

The establishment of an independent Fiscal Council in April 2013 strengthened the fiscal rule. The main objective of the Fiscal Council in Chile is to collaborate in the discussion, analysis and provision of recommendations to the Ministry of Finance on the application of the cyclically adjusted balance rule to the budget. However, there are some shortcomings to the arrangement, including that the Fiscal Council lacks institutional independence, staff and operational budget. The five members of the Fiscal Council are recruited among
local fiscal experts; the Ministry of Finance appoints them for four years, and the budget
director serves as its secretary. The Fiscal Council in Chile is not formally accountable to
Congress (Schmidt-Hebbel, 2014). Greater autonomy would allow the council to provide
a more objective and credible assessment of fiscal policy and government compliance
with the fiscal rule.

Overall, the Chilean public financial management framework is robust, but it could be
enhanced to improve transparency and accountability. For instance, government’s public
finance reports describe short- and long-term fiscal policy, including contingent liabilities
and growth and spending assumptions. These have proven useful to assess the fiscal
stance and should continue. Medium- and long-term fiscal projections have room for
improvement (OECD, 2013). The Fiscal Council could be enhanced if:

- It is adopted by law;
- Independent staff and budget are provided;
- Its mandate is broadened to include the assessment of yearly budget preparation
  and execution, long-term budget projections and estimation of the long-term impact
  of fiscal policy changes;
- It is made accountable to, but independent of, Congress.

Box 3
Fiscal councils

Although most fiscal councils are in advanced economies, particularly in
Europe, there is growing interest in them in emerging markets and developing
economies. Fiscal councils are independent public institutions aimed at
promoting sustainable public finances through various functions, including
public assessments of fiscal plans and performance, and the evaluation or
provision of macroeconomic and budgetary forecasts. By fostering transparency
and promoting a culture of stability, they can raise reputational and electoral
costs of undesirable policies and broken commitments (IMF 2013, Debrun and
Kinda 2014).

3.5. Fiscal rule and the stabilization funds

The use of a fiscal policy seeking to reduce volatility in mineral revenues led to the creation
of stabilization funds in Chile. Through the funds, “excess revenues” over the structural
benchmark can be saved either for future generations or to create a buffer if prices fall
below the reference price.

Copper Compensation Fund (FCC): 1987-2006

Copper price cycles traditionally affected Chilean public finances. To counteract the effect
of these changes, the Copper Compensation Fund (FCC) was created. The FCC operated
in Chile from 1987-2006 when it was replaced by FEES.

The FCC was an instrument for addressing economic fluctuations and changes in copper
prices and providing greater economic stability by maintaining spending plans in line with
forecasts. In particular, the purpose of the fund was to save resources when the price of
copper in a given year exceeded a long-term price and to use these savings when the price falls below the reference price.

The FCC helped manage good and bad times during copper price fluctuations. Before this mechanism existed it was common in the boom years to have pro-cyclical public spending that was difficult to reduce in times of lower prices. The fiscal framework avoided the expansion of spending levels beyond what was considered sustainable in the medium term and provided funding to continue spending when international prices for copper were lower (see Figure 4). In the boom years the resources accumulated in the fund were used to reduce debt. The operation of the FCC allowed Chile to use fiscal policy as a countercyclical tool to reduce the impact of swings in the business cycle. The FCC was a predecessor of the current structural fiscal balance mechanism.
The use of the FCC implied the incorporation of a sort of cyclical adjustment to one of the most important components of tax revenue. However, this mechanism imperfectly corrected the cycle because it was based on regulating the financing of fiscal policy rather than anchoring it to a given goal. For addressing this, in 2006 government enacted Law 20,128 of Fiscal Responsibility, which, among others, created FEES that took over the resources of FCC.

**The Economic and Social Stabilization Fund (FEES)**

Chile established two funds in 2006: the Pension Reserve Fund (FRP) to help finance pension and social welfare spending; and FEES to help overcome fiscal deficits when copper revenues decline unexpectedly. The funds are governed by a strong set of deposit and withdrawal rules underpinned by a fiscal rule that smooths spending over time.

FEES allows government to finance budget deficits and make repayments of the public debt, thus largely safeguarding fiscal spending against fluctuations both in the global economy as well as in revenues from taxes, copper and other sources. For example, in the case of a downturn affecting tax revenues, the national budget could be financed in part by FEES without needing to borrow, as was done during the 2008/9 crisis.

Every year FEES receives the positive balance resulting from subtracting the cash contributions to the FRP and to the Central Bank of Chile from the fiscal surplus. This is in accordance with the Fiscal Responsibility Law, subtracting, when applicable, debt repayments and anticipated contributions made during the previous year. Funds can be withdrawn at any time to fill budget gaps in public expenditure and to pay down public debt. However, withdrawals are subject to the structural balance rule. Funds can also be withdrawn at the discretion of the Minister of Finance to finance annual contributions to the PRF.

FEES funds are saved in highly liquid, low-risk assets to ensure resources are available to cover fiscal deficits and avoid significant losses in the fund’s value. Sovereign investments are made exclusively in foreign government bonds\(^3\) from the United States, Germany and Japan because of their low risk. Funds are allocated according to the following strategic asset allocation: 30 percent in money market instruments, 66.5 percent in sovereign bonds and 3.5 percent in inflation-indexed sovereign bonds.

Several internal and external institutions perform the management and accountability of the funds. FRP and FEES are managed by the Central Bank, which outsources the management of about 35 percent of the PRF to external fund managers. The committee releases its own annual reports separate from those of the Ministry of Finance. An external auditor’s report is included in the report of the General Treasury. The Controller General performs an audit and reports to Congress and government. The Ministry of Finance also provides monthly, quarterly, and annual reports on the performance of the funds to Congress.

The funds are judged to achieve high levels of transparency. Information on fund managers, returns on specific investments and on how deposits and withdrawals are calculated is

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\(^3\) Investing in foreign assets only allows to “sterilize” the domestic economy from investment decisions of the fund. This avoids for example that in upswings in the cycle - when the domestic economy grows and the FEES has significant cash to invest, - ploughing the cash into domestic assets does not overheat the economy.
4. Expenditure policy and the impact of mineral rents on social development

All publicly available (Revenue Watch, 2013). Chile’s natural resource funds rank 4th out of 23 countries, and they received a score of 88/100 in the Resource Governance Index, indicating a “satisfactory” level of governance.

As a result of the application of this fiscal rule during years of very high copper prices, Chile accumulated significant resources in its two funds. This allowed fiscal policy to make a contribution to reactivating the economy during the 2008/9 crisis. It is important to note that despite the positive impact of the fiscal regime, since 2011 the country has had a negative net asset position due to the decline in copper prices.

The fiscal rule reviewed in the previous section determines the overall envelope for the budget. The rule does not, however, have a direct implication on how those resources are spent. Mining revenues are not earmarked for any specific public expenditure (except provisions for military equipment that were mentioned in Section 3.1). Public expenditure allocations are decided every year by the budget law that the president presents to Congress for its discussion and approval. In the Chilean context, the efficient budgetary process, with permanent monitoring and efficient public expenditure programs, rendered unnecessary any special provisions for social expenditures from natural rents.

Public expenditure as a share of GDP was 24.9 percent in 2014 (OECD, 2015). It is relatively high in per capita terms, reaching EUR2,781 per capita in 2014 (ranked 61 out of 188 countries included in OECD data). According to the last available data on Chile’s public expenditure, the country dedicated 19.3 percent to education, 15.4 percent to health and 8 percent to defense. Despite an increase of more than 25 percent since 2008, total social protection expenditure in Chile is the third lowest among OECD countries, amounting to 10.2 percent of GDP (OECD average is 21.9 percent).

While it is hard to quantify the impact of mineral resources on human development in Chile, most of the literature agrees that copper has greatly contributed to the development of the country and to the improvement of living conditions (see Meller, 2013, and Rodríguez and Flores, 2010). However, in practice it is hard to disentangle how much social progress is due to mining’s effect on economic growth and employment versus the indirect effect through social public expenditures.

A clear benefit of the fiscal rule based on the structural budget has been its effect on the sustainability of social expenditures. This stability has contributed to the effectiveness of social programmes (allowing for long-term planning of budget allocation) as well as to their credibility (by safeguarding their funding). Over the last decade, Chile has launched several new social assistance and development programs focused on extreme poverty, and social vulnerability and exclusion. Key programs include Chile Solidario (2002), aimed at overcoming extreme poverty; Chile Crece Contigo (2006), providing maternity and early childhood care, and education for poor families; and Pension Basica Solidaria (2008), providing non-contributory pensions to the old and disabled without social security.

In 2011, government created the Ministry of Social Development to serve as a coordinating
body of all social policies and to monitor their performance with the goal of eradicating extreme poverty by 2014 and poverty by 2018. To that end, government replaced Chile Solidario with a new cash transfer system, Ingreso Etico Familiar (2012), aiming to achieve better outcomes in employment and earnings for the poor. Moreover, the accumulation of fiscal resources during the boom allowed Chile to extend social protection and promote employment during the last financial crisis, reducing the vulnerability of the poorest Chilean households.

Chile has made significant progress in reducing poverty over the last two decades on the back of strong economic growth. During that period, the country’s GDP per capita doubled and is now the highest in Latin America. Poverty has also fallen: The share of the population living below the national poverty line has gone from 39 percent in 1990 to 14 percent in 2011, and extreme poverty from 13 percent to below 3 percent. There is also universal literacy, with 98% of the adult population able to read and write.

On average, young people spend 15 years in school from primary through tertiary education. However, the reduction in poverty has not led to a commensurate reduction in inequality, and intergenerational social mobility is low in Chile. Access to quality social services, i.e., health care and education, is unevenly distributed between the poor and the rich. Individuals with higher incomes typically rely on more expensive social services provided by the private sector in higher-quality private facilities while individuals with lower incomes typically rely on public social services, which are more affordable (in some cases free) but generally with lower quality (IMF, 2014).

The current policy agenda seeks to provide universal, free university education modeled on European systems. The financing of likely increases in spending on education and social services in the long run may introduce pressures on current targets for the fiscal rule. Table 1 shows consistent improvements in development indicators between 1970 and 2014.
### Table 1
Chile public services provision and development indicators (1970-2014)

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<tbody>
<tr>
<td>GDP per capita, PPP (constant 2011 international $)</td>
<td>n/a</td>
<td>n/a</td>
<td>9,244</td>
<td>14,888</td>
<td>19,357</td>
<td>21,800</td>
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<td><strong>Education</strong></td>
<td></td>
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<td>Government expenditure on education as % of GDP (%)</td>
<td>n/a</td>
<td>4.4</td>
<td>2.4</td>
<td>3.7</td>
<td>4.2</td>
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<td>Gross enrolment ratio, pre-primary, both sexes (%)</td>
<td>22.3</td>
<td>70.4</td>
<td>78.8</td>
<td>77.9</td>
<td>105.8</td>
<td>119.8</td>
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<td>Gross enrolment ratio, primary, both sexes (%)</td>
<td>112.5</td>
<td>116.3</td>
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<td>100.0</td>
<td>102.2</td>
<td>99.7</td>
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<td>Gross enrolment ratio, secondary, both sexes (%)</td>
<td>46.1</td>
<td>62.4</td>
<td>77.9</td>
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<td>89.1</td>
<td>99.0</td>
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<td>Gross enrolment ratio, tertiary, both sexes (%)</td>
<td>9.1</td>
<td>11.8</td>
<td>n/a</td>
<td>37.2</td>
<td>65.9</td>
<td>78.7</td>
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<td>Percentage of students in primary education who are female</td>
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<td>48.6</td>
<td>48.7</td>
<td>48.5</td>
<td>48.4</td>
<td>48.3</td>
</tr>
<tr>
<td>Percentage of students in secondary education who are female</td>
<td>51.6</td>
<td>51.7</td>
<td>50.7</td>
<td>49.7</td>
<td>49.9</td>
<td>49.4</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life expectancy at birth, total (years)</td>
<td>62.0</td>
<td>69.1</td>
<td>73.5</td>
<td>76.8</td>
<td>79.1</td>
<td>79.8</td>
</tr>
<tr>
<td>Maternal mortality ration (per 100,00 live births)</td>
<td>n/a</td>
<td>n/a</td>
<td>57</td>
<td>31</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>Adolescent fertility rate (births per 1,000 women ages 15-19)</td>
<td>87.9</td>
<td>69.0</td>
<td>64.4</td>
<td>57.0</td>
<td>50.7</td>
<td>48.1</td>
</tr>
<tr>
<td>Number of infant deaths</td>
<td>19,429</td>
<td>7,162</td>
<td>4,703</td>
<td>2,345</td>
<td>1,815</td>
<td>1,687</td>
</tr>
<tr>
<td>Immunization, DPT (% of children ages 12-23 months)</td>
<td>n/a</td>
<td>93</td>
<td>95</td>
<td>91</td>
<td>92</td>
<td>92</td>
</tr>
<tr>
<td>Immunization, measles (% of children ages 12-23 months)</td>
<td>n/a</td>
<td>94</td>
<td>97</td>
<td>97</td>
<td>93</td>
<td>94</td>
</tr>
<tr>
<td>Hospital beds (per 1,000 people)</td>
<td>3.8</td>
<td>3.4</td>
<td>3.2</td>
<td>n/a</td>
<td>2.1</td>
<td>n/a</td>
</tr>
<tr>
<td>Physicians (per 1,000 people)</td>
<td>0.46</td>
<td>n/a</td>
<td>1.10</td>
<td>n/a</td>
<td>1.03</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Energy, water and sanitation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to electricity (% of population)</td>
<td>n/a</td>
<td>n/a</td>
<td>95.0</td>
<td>98.8</td>
<td>99.0</td>
<td>n/a</td>
</tr>
<tr>
<td>Electric power consumption (kWh per capita)</td>
<td>n/a</td>
<td>917.6</td>
<td>1,250.2</td>
<td>2,527.6</td>
<td>3,316.2</td>
<td>n/a</td>
</tr>
<tr>
<td>Improved sanitation facilities (% of population with access)</td>
<td>n/a</td>
<td>n/a</td>
<td>84.8</td>
<td>91.7</td>
<td>97.7</td>
<td>99.0</td>
</tr>
<tr>
<td>Improved water source (% of population with access)</td>
<td>n/a</td>
<td>n/a</td>
<td>90.4</td>
<td>94.9</td>
<td>98.2</td>
<td>99.0</td>
</tr>
</tbody>
</table>

(1) Out of 143 countries
(2) Out of 188 countries
### Human Development Index trends

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2014</th>
<th>1990&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>2014&lt;sup&gt;(1)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>0.636</td>
<td>0.704</td>
<td>0.753</td>
<td>0.832</td>
<td>48</td>
<td>42</td>
</tr>
</tbody>
</table>

**Selected Latin American countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2014</th>
<th>1990&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>2014&lt;sup&gt;(1)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>0.665</td>
<td>0.694</td>
<td>0.753</td>
<td>0.836</td>
<td>45</td>
<td>40</td>
</tr>
<tr>
<td>Bolivia</td>
<td>0.494</td>
<td>0.554</td>
<td>0.615</td>
<td>0.662</td>
<td>97</td>
<td>119</td>
</tr>
<tr>
<td>Ecuador</td>
<td>0.605</td>
<td>0.643</td>
<td>0.658</td>
<td>0.732</td>
<td>64</td>
<td>88</td>
</tr>
</tbody>
</table>

**Selected copper producing countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2014</th>
<th>1990&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>2014&lt;sup&gt;(1)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>0.841</td>
<td>0.866</td>
<td>0.898</td>
<td>0.935</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>China</td>
<td>0.423</td>
<td>0.502</td>
<td>0.591</td>
<td>0.727</td>
<td>103</td>
<td>90</td>
</tr>
<tr>
<td>Congo, Democratic Republic of the</td>
<td>0.336</td>
<td>0.319</td>
<td>0.274</td>
<td>0.433</td>
<td>128</td>
<td>176</td>
</tr>
<tr>
<td>Peru</td>
<td>0.595</td>
<td>0.615</td>
<td>0.682</td>
<td>0.734</td>
<td>79</td>
<td>84</td>
</tr>
<tr>
<td>United States</td>
<td>0.825</td>
<td>0.858</td>
<td>0.883</td>
<td>0.915</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Zambia</td>
<td>0.422</td>
<td>0.407</td>
<td>0.423</td>
<td>0.586</td>
<td>117</td>
<td>139</td>
</tr>
</tbody>
</table>

Source: World Development Indicators and Human Development Index
5. Summary and Policy Lessons

A robust macroeconomic framework is essential for natural resources-rich countries to reduce vulnerability to fluctuations in prices of raw materials; to offset Dutch Disease effects; and to ensure an equitable balance between consuming resources today and saving them for future generations either as long-lasting capital or as financial savings. Chile successfully implemented a countercyclical fiscal policy that is based on a rule of structural fiscal balance. A key element is to build a mechanism to estimate the long-term price of copper independently and transparently, as well as to determine accountability rules on the use of resources to deal with deviations from that benchmark. Thus fiscal policy has contributed for more than 20 years to the stability of the economic cycle of Chile. Chile’s experience in the design, implementation and results of a structural balance rule can serve as an example for other developing countries. Indeed there are a number of important and applicable lessons:

1. A fiscal rule needs to be underpinned by a clear policy objective, be it to insulate the economy from price fluctuations (as in Chile); maintain a given spending pattern; or to ensure a determinate amount of savings for the future. Clarity in the objectives helps explain and justify the rule, and it cements a national consensus on its relevance.

2. Government needs to have the will and political support to commit to a rule that, in the short term, may limit government spending. Central to building and sustaining political will is locking in external scrutiny and a role for independent institutions in the implementation of the rule. Rules need to be simple, clear and able to be monitored.

3. Where elements of the implementation of a rule can be open to discretion, insulate them from political short termism by setting up strong independent technical bodies as in the case of Chile’s advisory committees on copper prices and GDP trends, and the Fiscal Advisory Council.

4. The implementation process to arrive at a fiscal framework matters – and often is gradual. In a first stage, the Chilean government began following a rule of structural budget, self-imposing goals and fulfilling them. However, there was no institutional framework behind these commitments. It was only six years after the application of the self-imposed rule that law institutionalized it.

5. The fiscal rule needs to balance a demanding trade-off between building a credible track record while allowing for flexibility in the face of major shocks. This flexibility needs to be built-in and explained in a way that its use can be scrutinized and not opened to abuse. In the case of Chile, the international financial crisis of 2008/09 was an important test of the usefulness of the rule and the maturity of government in its implementation.

6. There must be a robust environment of accountability for fiscal rules and management of stabilization funds, with comprehensive reporting requirements that empower oversight bodies, media and civil society to hold government accountable.
Case Study

Chile's fiscal policy and mining revenue
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