

Commodity Revenue Management

The case of Chile's copper boom

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Tackling Commodity Price Volatility

This paper is published as part of a larger project, sponsored by the Norwegian Government, on policy options to tackle the problem of commodity price volatility. More research and papers can be found at <http://www.iisd.org/trade/commodities/price.asp>

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Acronyms

COCHILCO	Comisión Chilena del Cobre
CNIC	Consejo Nacional de Innovación para la Competitividad
Codelco	Corporación Nacional del Cobre de Chile
Consudena	Consejo Superior de Defensa Nacional
DL600	Decreto Ley 600, Estatuto de la Inversión Extranjera
EVA	Economic Value Added
FCC	Fondo de Compensación del Cobre
FDI	foreign direct investment
FEES	Fondo de Estabilización Económica y Social
FIC	Fondo de Innovación para la Competitividad
FOB	free on board
FRP	Fondo de Reserva de Pensiones
GDP	gross domestic product
IADB	Inter-American Development Bank
R&D	research and development
ROA	return on assets
WPI	Wholesale Price Index

1. Introduction

Farsighted risk management is crucial to avoid the curse of natural resource endowments. This kind of management can yield substantial wealth for the countries that possess these resources, while controlling for undesirable externalities. The wealth can then be used to generate other kinds of capital, such as human and manufacturing capital. In the long-run, sustainable management ensures the prosperity of present and future generations.

There have been many historical instances in which the discovery and subsequent exploitation of a resource provided a window of opportunity for countries to prosper into the future. However, in many cases, momentum was lost due to pilfering or mismanagement. Mineral-rich countries like Saudi Arabia and Nigeria became vulnerable to Dutch disease,¹ and poverty and oppression thrived in the resulting economic contraction. In extreme cases, mismanagement has even fuelled civil wars. Such situations come to pass in the absence of a forward-thinking administration, one that sees beyond the short-term prospects of exploiting a given resource.

What complicates matters further is that there is not a single management formula that works in all scenarios. This is because the political and economic context is an important determinant of the failure or success of a policy or management strategy. Aspects related to the resource itself (such as available stock, extraction costs, etc.) will also weigh in. Still, lessons can be drawn from each case, regardless of the outcomes.

Chile's experiences managing its copper resources are often cited as a success, albeit a recent one. With Chile positioned as the world's largest producer of the metal, it remains the country's main growth driver. In 2005, copper mining was responsible for 13 per cent of Chile's nominal GDP.² By the end of 2006, copper comprised 56.6 per cent of all exports (worth US\$33,340 million FOB).³ Since this concentration can be harmful to the economy due to the volatility of copper prices, the Chilean government has taken measures to forestall the impacts of a sudden drop in prices. These measures also seek to address future economic downturns.

The aim of this study is to detail the steps Chile has taken to lessen its vulnerability to commodity shocks. Section 2 describes the evolution and current state of the copper industry in Chile, dating from 1971 to the present. Section 3 discusses the government's past and present efforts to collect and administer copper earnings. Section 4 analyzes the political, economic and social effects of these earnings and their administration, and Section 5 considers future scenarios that could potentially impact the current approach taken by the Chilean government and discusses some policy alternatives.

¹ Dutch disease is used to describe a situation where the exploitation of natural resources hinders the growth of other sectors. The main symptoms are a shift in labour to the booming sector, along with increased spending (fuelled by the boom's windfalls) and an appreciating currency (due to international demand for the natural resource in question). These factors combine to reduce the competitiveness of other sectors in the country; available labour decreases, capital is reduced and exports become more expensive for global consumers.

² Chile, Banco Central, *Base de Datos Económicos*; available at <http://si2.bcentral.cl/basededatoseconomicos/900base.asp?usuIdioma=E>

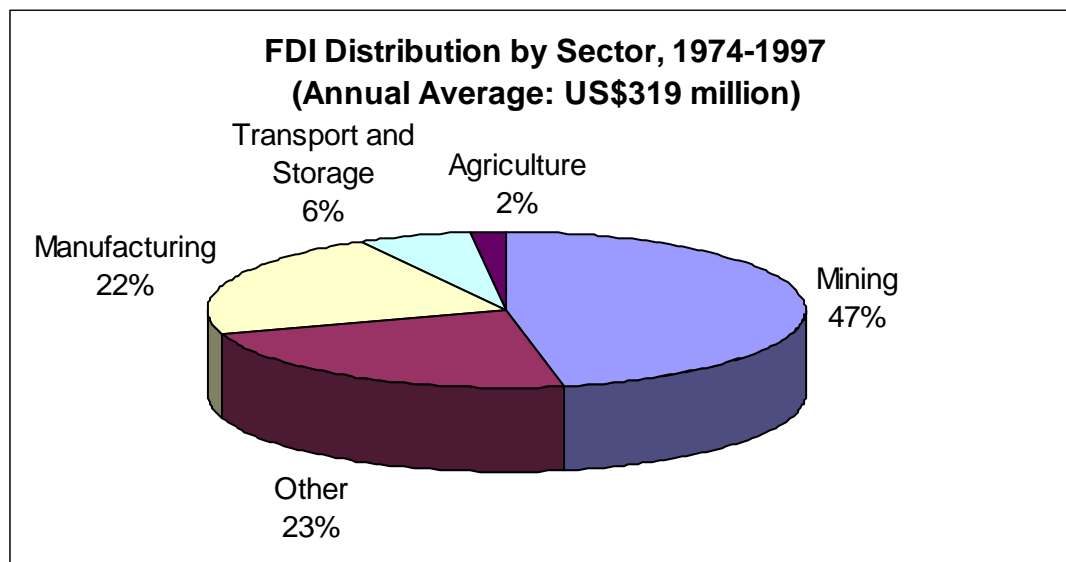
³ Chile, Dirección General de Relaciones Económicas Internacionales (DIRECON), "Comercio Exterior de Chile, 4to. Trimestre de 2006," January 2007, p. 10; available from http://www.direcon.cl/pdf/Correc_Inf_2006.pdf

2. Evolution and Present State of the Copper Industry in Chile

After decades of intense debate and political maneuvers, the nationalization of copper was completed on July 11, 1971, with the unanimous approval of Congress. Popular perception at the time was that the nationalization constituted the rightful recovery of Chile's most important source of wealth.⁴ According to President Salvador Allende, it heralded "the birth of Chile's economic independence."⁵ July 11 was subsequently declared the national day of "Dignity and Solidarity."

With the 1973 coup d'état led by Augusto Pinochet, the situation was reversed, and new laws sought to privatize the sector. The 18.097 Organic Law, known as "*Ley Orgánica Constitucional de Concesiones Mineras*," transformed mining concessions into whole concessions, treating them as private properties. With this, investors obtained full access to explore or exploit the resources without having to pay for them—they only had to pay for the access. The State, as prescribed in the Constitution⁶ and the Mining Code, remained the absolute owner of the mines.

Figure 1



Source: ECLAC, *La Inversión Extranjera en América Latina y el Caribe: Informe 1998*.

Additionally, the military junta provided further investment incentives to foreigners through Decreed Law No. 600 (DL600, *Estatuto de la Inversión Extranjera*). Among other

⁴ Two U.S. companies, Anaconda and Kennecott, controlled most of the copper mining in Chile. Kennecott Copper Corporation, the largest copper producer of the last century, possessed El Teniente, the largest underground mine in the world; 25 per cent of global copper production originated from that mine (1952). Although smaller, Anaconda controlled Chuquicamata, the largest copper mine in the world, and depended "on Chile for most (61 per cent) of its production and half of its earnings. The company reports that its profits from Chile totaled \$99 million last year [1968], about 17% return on its investment." This situation curtailed Chile's ability to reinvest related earnings in order to expand the mining sector, develop a processing industry and expand the economy. For more, see *Time Magazine's* "Clamor over Chilean Copper," <<http://www.time.com/time/magazine/article/0,9171,900952,00.html>>; "Kennecott Copper Corporation" at <http://www.library.hbs.edu/hc/>; and "Chilean nationalization of copper," *Wikipedia* <http://en.wikipedia.org/wiki/Chilean_nationalization_of_copper>.

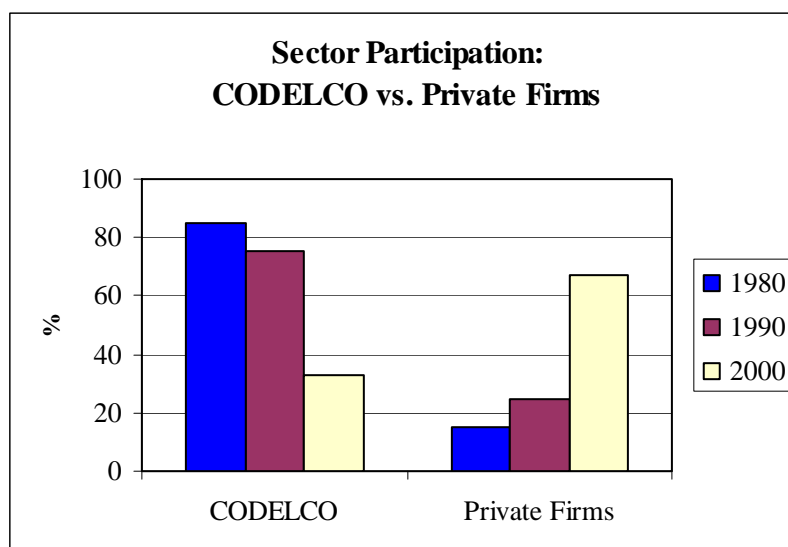
⁵ Salvador Allende, Address to the National Congress in Regards to the Constitutional Reform Project for the Nationalization of the Copper, July 11, 1971.

⁶ See Article 19, No. 24. Text is available at <http://www.foreigninvestment.cl/archivos/DL600ingles.pdf>.

things, this law granted national treatment to foreigners, allowing them free access to capital markets and the exchange system (thus facilitating capital repatriation), and established a dispute resolution mechanism. However given the political context (a dictatorship that could not entirely eradicate dissent and the strong nationalist sentiment attached to copper), many foreign investors abstained from entering the Chilean copper market.

The foreign investment which did come in to Chile during the dictatorship period (1974–1989) was still concentrated in the mining sector. Over this time, investment amounted to close to US\$2.4 billion.⁷ With the transition to democracy in 1990, the perception of risk eased and investment flows increased; from 1995 to 2005, these amounted to US\$13.2 billion.⁸ Privatization remains, and has left the State in control of 32 per cent of total domestic copper production,⁹ operated through the mining company it established in 1976, the *Corporación Nacional del Cobre de Chile* (Codelco).

Figure 2



Source: Patricio Meller, “Cobre: Dilemas Centrales,” presentation. Available from <http://www.hyd.org>

Although Codelco’s share of the copper deposits has significantly decreased over the past 15 years, it still controls around 20 per cent of the world’s copper reserves, including the world’s two largest mines (El Teniente and Chuquibambilla), making it the largest copper producer in the world.¹⁰

⁷ Economic Commission for Latin America and the Caribbean (ECLAC), *La Inversión Extranjera en América Latina y el Caribe: Informe 1998*, p. 108; available from <http://www.eclac.cl/publicaciones/xml/2/4262/capitulo1b:PDF>

⁸ See “Inversión Materializada según DL600” in <http://www.cochilco.cl/inversion/dl600.asp> and Banco Central de Chile’s *Síntesis Estadística de Chile, 2001–2005*, p. 49.

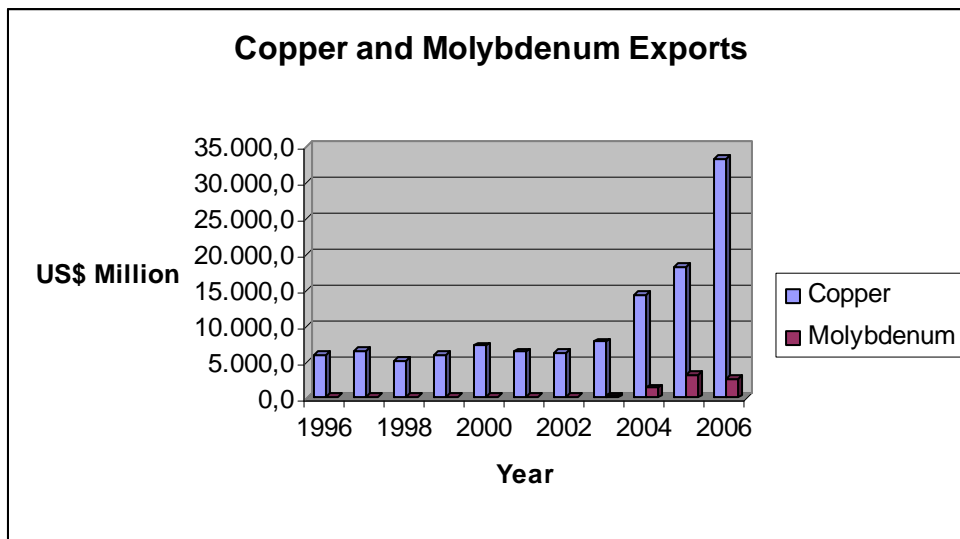
⁹ Mariana Martínez, “Chile y el ‘oro rojo,’” *BBC Mundo*, 7 August 2006; available from <http://news.bbc.co.uk>

¹⁰ Chile, Corporación Nacional del Cobre de Chile (Codelco), “La Corporación”; available from http://www.codelco.com/la_corporacion/fr_corporacion.html

Chile's copper market performance

In 1990, Chile was responsible for 15 per cent of the global copper production.¹¹ While a significant portion in its own right, the recent global economic expansion (averaging five per cent per year) and favourable terms of trade have further expanded Chilean copper exports. In 2005, copper exports comprised 45.1 per cent of all national exports.¹² By the end of 2006, they had increased to a record level of close to US\$59.0 billion—accounting for 57 per cent of all exports.¹³ Chile is now the world's largest producer, responsible for 37.5 per cent of the global supply.¹⁴ It is also the world's top producer of molybdenum, a copper byproduct used to enhance the properties of steel (with 28 per cent¹⁵ of global production).

Figure 3



Source: Based on statistics from Banco Central de Chile.

These increased revenues are largely explained by a price rise driven by growth in the demand for copper. Average copper prices per pound for the past three years were as follows: US\$1.30 in 2004; US\$1.67 in 2005; and US\$3.05 in 2006,¹⁶ peaking at US\$3.98 on May 12.¹⁷ “Each one cent increase in the average annual copper price means some US\$120 million in extra income for Chile.”¹⁸ According to some estimates, stocks will remain insufficient to meet increasing demand until 2010.¹⁹ Thus, copper prices are

¹¹ “Sólido Dinamismo en China e India Asegura Alto Precio del Cobre,” *Estrategia*, 8 January 2007, p. 8, 10.

¹² International Monetary Fund (IMF), “Copper windfall brightens Chile’s outlook but must be managed prudently,” *IMF Survey*, Vol. 35 No.19. 16 October 2006; available from <http://www.imf.org>

¹³ “Sólido Dinamismo en China e India Asegura Alto Precio del Cobre,” op cit.

¹⁴ Ibid.

¹⁵ Equivalent to US\$1,500 million. See Chile, Comisión Chilena del Cobre (COCHILCO), “Mercado Nacional e Internacional del Molibdeno,” August 2005, p. 3, 8.

¹⁶ Chile, COCHILCO, *Anuario 1987–2006*, p. 136; available from <http://www.cochilco.cl/desarrollo/estudios/anuario-pdf-final.pdf>

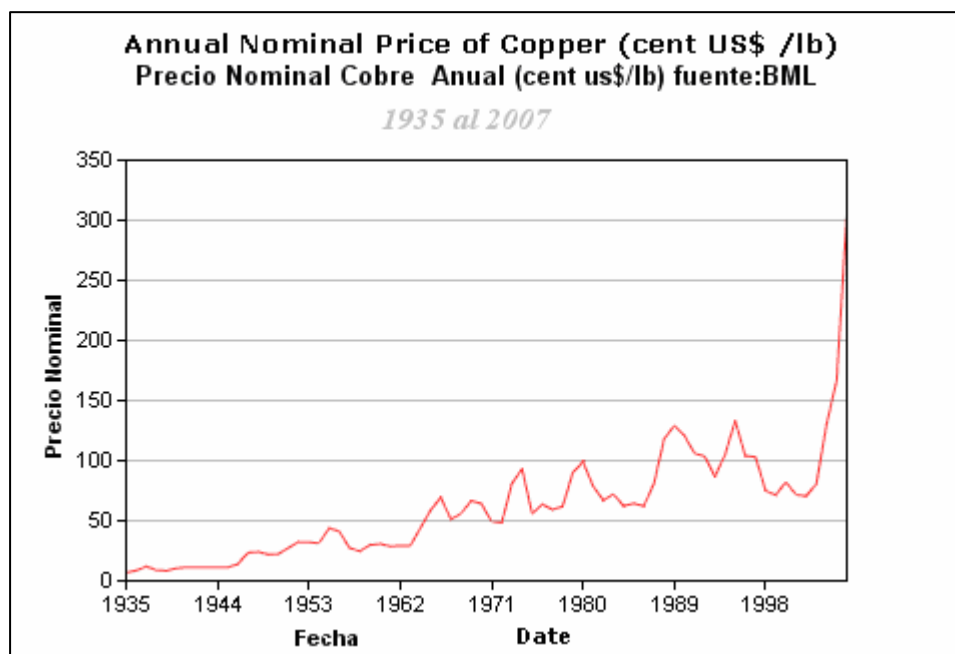
¹⁷ “Precio de commodities: Petróleo y cobre en su peor inicio de año de la historia,” *El Mercurio*, 10 January 2007, p. B1, B5.

¹⁸ Ruth Bradley, “Managing Chile’s Copper Wealth,” *Business Chile*, December 2006, No. 240; available from <http://www.businesschile.cl>

¹⁹ James West, “Investing in Copper Stocks – Exploration and Producers,” *ResourceInvestor.com*, 29 August 2006; available from <http://www.resourceinvestor.com>

expected to remain relatively high, a solid recovery from 2001, when copper demand reached its lowest level in 15 years.²⁰

Figure 4



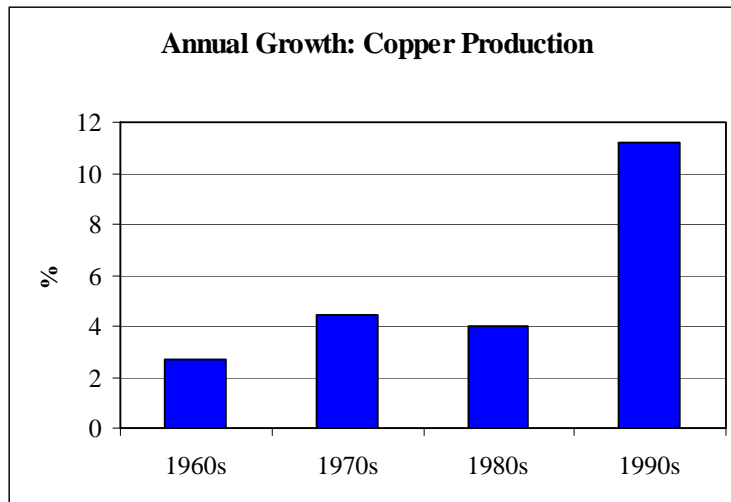
Source: Cochilco, LME

The poor performance of the Chilean copper industry from 1998 to 2003 is explained by several factors. Overproduction, caused by a jump in FDI flows into the mining sector after the transition to democracy, led to a significant drop in prices (see Figures 4 and 5), to well below US\$0.70 (close to a 30 per cent decrease). Demand was also curtailed by the 1997 Southeast Asian crisis. These factors provoked Chilean GDP growth to fall from seven per cent (the 1991–1997 average) to 3.4 per cent in 1998 and -1.1 per cent in 1999.²¹ Stringent monetary policies were implemented to avoid the effects of this volatility, mainly by adjusting the interest rates to control inflation and holding the exchange rate.

²⁰ Copper consumption was affected by a slowdown in global economic growth. See Consejo Minero, *Informe 2001 de la Gran Minería Chilena*, p. 10; available from <http://www.consejominero.cl/Biblioteca/informes.asp>

²¹ Chile, Banco Central, *Síntesis Estadística de Chile, 1995–1999*, p. 12, and IMF, *Annual Report of the Executive Board for the Financial Year Ended April 30, 1997*, p. 71; ; available from <http://www.imf.org/external/pubs/ft/ar/index.htm>

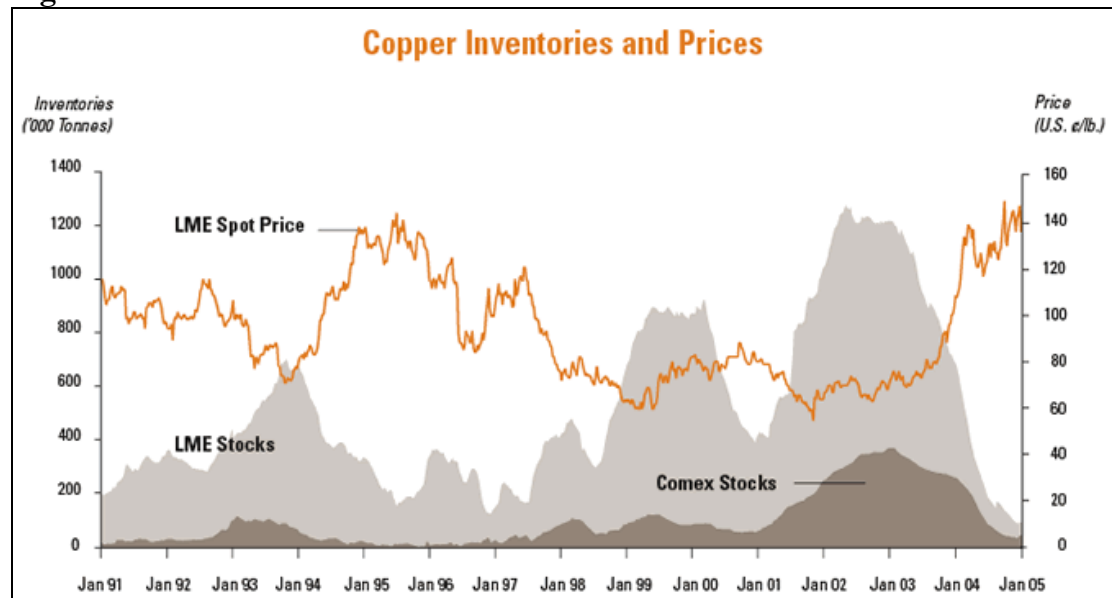
Figure 5



Source: Patricio Meller, *op. cit.*

Government intervention managed to put Chile back on the path to recovery,²² but it was incapable of shielding the mining sector from further shocks. The largest mining companies, including Codelco, suffered major setbacks in 2001: their utilities dropped from US\$1,145 million in 2000 to US\$278 million; a whopping 76.1 per cent decrease in the period of one year.²³ This was attributed to the drop in copper prices, from US\$0.82 per pound to US\$0.71, and to a global recession that led to negative growth rates of copper demand for the first time since 1985.²⁴

Figure 6



Source: Aur Resources Inc.

²² According to the World Bank, at 3.5 per cent, Chile's economic growth rate was the fastest in Latin America between 2000 and 2003.

²³ Consejo Minero, *op. cit.*

²⁴ *Ibid.*

Prices rebounded in 2004; at US\$1.30 per pound, they had increased 60 per cent from the previous year²⁵ and had reached their highest level in nine years.²⁶ The benefits of higher copper prices include a fiscal surplus of 4.8 per cent of GDP in 2005²⁷ and “public debt fell from 13 per cent of GDP in 2003 to 7.5 per cent in 2005.”²⁸ The return on assets (ROA) for the 10 largest private mining companies in Chile was 60 per cent in 2004, four times the average ROA registered in 1999–2003, making Chilean mining the most profitable in the world.²⁹

Demand from China is a major factor explaining the copper boom. Strong growth in Chinese cable production and construction explains its increasing demand for copper,³⁰ and has made the country the world’s largest consumer³¹—it now consumes 25 per cent of global copper production. India is also playing a key role; in 2006, its copper consumption rose 19 per cent, which, in turn, helps explain the 2.6 per cent increase in global demand experienced in the same year.³²

Chile’s proactive efforts to secure trade agreements with Asian countries have paid off.³³ In January 2007, Asia received 40.5 per cent of Chile’s exports, making it the country’s most important export market.³⁴ This figure represented a 76.1 per cent increase from the same month of the previous year.³⁵ Currently, 26 per cent of Chile’s copper exports are destined to China and another 20 per cent to India (a 163 per cent increase from the previous year), making them the largest consumers of these exports.³⁶

Riding the copper wave, Codelco signed 15-year supply agreement with China’s Minmetals,³⁷ in February 2006.³⁸ The agreement established a joint venture through which Codelco would provide 836,000 tonnes of copper to Minmetals. The deal was well publicized and widely commented on. The significance of securing a portion of the world’s largest copper market has not been lost on industry watchdogs. Chile’s copper exports will chalk up steady gains throughout the duration of the agreement. Added to this, economic forecasts indicate that China’s economy will continue to grow between

²⁵ Andrés Scherman, “Estudio: Cochilco asegura que minería chilena es la más rentable del mundo,” *El Mercurio*, 29 Dic 2004; available from <http://www.sii.cl>

²⁶ “Anticipan récord de inversiones y tributación minera en 2005,” *La Tercera*, 29 Dic 2004; available from <http://www.sii.cl>

²⁷ “Ante Presiones por Nivel del Dólar: Hacienda Anuncia Ajustes en Manejo de Excedentes del Cobre,” *Estrategia*, 21 April 2006; available from <http://www.estrategia.cl>

²⁸ IMF, “Copper windfall brightens Chile’s outlook but must be managed prudently,” op. cit.

²⁹ Andrés Scherman, op. cit.

³⁰ “Trends in Copper: Unprecedented price levels in 2006,” *International Cablemakers Federation (ICF)*; available from <http://www.icf.at/index.php?id=5756&type=1>

³¹ “Commodities: Celulosa Anotó Nuevo Récord y Cobre Vuelve a los US\$3 por Libra,” *Estrategia*, 20 December 2006, p. 7.

³² “Sólido Dinamismo en China e India Asegura Alto Precio del Cobre,” op. cit.

³³ A member of the Asian Pacific Economic Cooperation (APEC), Chile is the first Latin American country to sign an FTA with China.

³⁴ “Consigno Aduanas: Intercambio Comercial de Enero Llegó a US\$8.743 Millones,” *Estrategia*, 19 February 2007, p. 7.

³⁵ *Ibid.*

³⁶ “Sólido Dinamismo en China e India Asegura Alto Precio del Cobre,” op. cit.

³⁷ Minmetals is a large-size international producing and trading group of metals, minerals and electrical products. The corporation is controlled by the Chinese government.

³⁸ Chile, Government, “Codelco and Minmetals Sign Strategic Deal”; available from <http://www.chileangovernment.cl>

nine to 10 per cent, the highest in the world.³⁹ This means that its demand for copper will continue to grow, thus drawing down available stocks and keeping prices up. Since Chile is currently unrivalled in its mined output capacity, it will benefit from an expansion of its share of the Chinese copper market. This can also increase its potential output in the long run, particularly as new investments come in.

The above agreement is part of China's long-term strategy⁴⁰ to secure its access to the resources needed to maintain its position as "the world's factory."⁴¹ To meet its current copper deficit, China imports around 1.20 million tonnes of refined copper annually, a rate it is expected to maintain until 2010, when most of its domestic mining projects are set to materialize.⁴² Even then, domestic production will not be sufficient to meet internal demand; an estimated output of 3,834,000 tonnes will be 1,166,000 tonnes short of their copper requirements.⁴³ In this sense, the Codelco-Minmentals agreement is significant as it will provide China with a steady supply of copper: 55,750 tonnes of copper cathodes per year for the next 15 years.⁴⁴

While Codelco will benefit from an up-front payment of US\$550 million (with total investment capital worth US\$2 billion) and a technology transfer, Minmetal's option to buy a minority share in the Gaby copper mine (25 to 49 per cent) is a cause for concern. In Codelco's current portfolio, the Gaby copper mine (the subject of the agreement) is its most important project. It will be the first to perform operations according to Codelco's cost control plan and "will ultimately be a larger copper pit than Chuquicamata," capable of producing 150,000 tonnes of copper per year.⁴⁵ Initial mineral deposit assessments identified the availability of 618 million tonnes.⁴⁶ Yet, during the perforation process, a new layer of sulfur was discovered, indicating that the contents of the deposit are larger than initially estimated.

Union workers at Codelco firmly oppose the sale of any stake in the Gaby mine. According to the union's president, Raimundo Espinoza, this contradicts the current administration's stance regarding the privatization for Codelco—that it is not for sale.⁴⁷ Some observers point out that Codelco's public status limits its financing options; the

³⁹ DIRECON, "Comercio Exterior de Chile: Primer Trimestre 2007," May 2007, p. 7; available from <http://cms.chileinfo.com/documentos/Informe%201er%20Trimestre%202007.pdf>

⁴⁰ The "GO Out" strategy is part of a five-year plan that seeks to extend industrialization into the nation's interior. To make this grow possible, China needs to find external sources of raw materials. China is now funding mining operations in over 30 different countries. For further details, see "The New Chinese Engagement with Latin America: Understanding its Dynamics and the Implications for the Region" by Evan Ellis; available from <http://www.airpower.maxwell.af.mil>, as well as Scott Wright's article, "Copper Bull Market," available from <http://www.zeallllc.com/2005/copperpf.htm>

⁴¹ Jorge Heine, "China, Chile, and free trade agreements," *The Hindu*, 22 November 2005; available from <http://www.thehindu.com/2005/11/22/stories/2005112203881000-.htm>

⁴² Wang Ling, "Chinese Copper Supply's Current Status – A country hungers for copper," presentation, Santiago, Chile, 4 October 2006; available from http://www.cochilco.cl/anm/articlefiles/489_chinese_copper_suplly_situation_wan-ling.ppt

⁴³ Ibid.

⁴⁴ "China, Chile set up joint venture to mine copper," *Xinhuanet*, 22 February 2006; available from <http://www.theminingnews.org/news.cfm?newsID=1847>

⁴⁵ "Chilean copper duo," *Mining Magazine*, July 2006, p. 12–13.

⁴⁶ Gustavo Orellana, "Minería: Gaby tiene más cobre que lo previsto," *El Mercurio*, 16 March 2007, p. B3.

⁴⁷ Robin Bhar and John Reade, "Codelco workers oppose sale of Gaby mine stake to Minmetals," *UBS FXTrade*, 26 March 2007; available from <http://fxtrade.oanda.com/resources/ubsnews/newscontent/135570.shtml>

agreement with Minmetals kept it from incurring further debt.⁴⁸ In their opinion, granting the option to buy a stake in the mine was a fair trade-off. The real question, however, is not just how far the Chilean government will go in order to obtain investment funds, but also what implications does a heightened dependency on one large market (the Chinese) bring?

Spillover effects of mining

In addition to attracting FDI and inducing exports, copper generates significant tax revenues. This will be discussed in the following paragraphs.

Chile's economy has experienced steady growth since 1984,⁴⁹ growth primarily attributed to the neo-liberal policies implemented since the end of the Pinochet era. After the transition to democracy took place, the newly-elected government retained the same economic model⁵⁰ while introducing policies to improve socioeconomic equity. Absolute poverty dropped from 39 per cent in 1990 to 19 per cent in 2005, while the economy grew at an annual average of 5.7 per cent.⁵¹ Chile now has the second lowest poverty index in the region.⁵²

The unemployment rate appears to be improving. After hitting 10.1 per cent in 1999, the highest recorded since 1988, it was reduced to 7.8 per cent in 2006.⁵³ In contrast, the unemployment rate in 1993 was 4.7 per cent.⁵⁴ The mining sector currently employs 90,060 people, about one per cent of the working population.⁵⁵ It is the second lowest work provider after the utilities companies;⁵⁶ the sectors that employ more people are commerce, social services and industry (in order of relevance). Still, mining is the sector with the highest-paying jobs: monthly salaries of around US\$1,500 dwarf the average monthly salary in Chile of US\$670.⁵⁷

While the spillover effects of mining might be difficult to detect through the above indicators, the sector provided indirect relief to the Chilean economy during the period of stagnation it experienced in 1998–1999.⁵⁸ Whereas the central government registered a budget deficit of one per cent of GDP in 1999, this effect was partially counteracted by a credit balance in the capital account due to significant investments, particularly in copper

⁴⁸ Directorio Minero de Chile (Direcmin), *Informe Diremin 2006*, p. 249 ; available from http://www.direcmin.cl/informe_direcmin_2006/cap4.pdf

⁴⁹ United Nations Development Programme (UNDP), "Export-led Economic Strategies: Effects on Poverty, Inequality and Growth: The Case of Chile (Phase I)," 28 September 2001; available from <http://www.undp.org>

⁵⁰ The model was widely believed to be successful. Also, maintaining it was necessary to win the support of the private sector. See UNDP's 2001 paper for more details.

⁵¹ Osvaldo Sunkel and Ricardo Infante, "Hacia un Crecimiento Incluyente," *Foro Chile 21*, November 2006, p. 12.

⁵² World Bank Group (WB), "Reseña sobre Chile"; available from <http://www.worldbank.org>

⁵³ Banco Central de Chile, *Base de Datos Económicos*, op. cit.

⁵⁴ IMF, *Annual Report of the Executive Board for the Financial Year Ended April 30, 1997*, op. cit.

⁵⁵ 90,060 people out of 6,271,860. Data source: Banco Central de Chile, *Base de Datos Económicos*,..

⁵⁶ Ibid.

⁵⁷ Sociedad nacional de Minería (SONAMI), "Fundamentos para el Desarrollo Minero de Chile," January 2006, p. 9.

⁵⁸ This was the result of the implementation of a countercyclical fiscal policy to contend with undesired effects on demand and output growth stemming from the Asian crisis. Mainly, the fiscal budget was decreased and the interest rate adjusted to tighten credit conditions. These adjustments proved successful. For the first time in its history, Chile brought inflation down to 2.3 per cent (in 1999) and its growth resumed after 11 months of recession. For further details, see Aninat.

mining projects. The net flows of FDI averaged US\$2.2 billion per year between 1990 and 2000, with the highest flow recorded in 1999 (US\$6.2 billion).⁵⁹

In 2000, the Chilean government adopted a fiscal policy rule that aims to achieve a structural surplus of one per cent of GDP. This is based on a careful consideration of the real financial capacity of the government, including the potential growth of the economy and the long-term price of copper, without compromising it in the future (by avoiding debt). Due to the copper boom, the Chilean government registered surpluses averaging 3.5 per cent of GDP in 2004–2005.⁶⁰

⁵⁹ Ricardo French-Davis and Leonardo Villar, “The Capital Account and Real Macroeconomic Stabilization: Chile and Colombia,” Paper for ECLAC Seminar on Management of Volatility, Financial Liberalization and Growth in Emerging Economies, 24–25 April 2003, p. 31; available from <http://unjobs.org/authors/ricardo-ffrench-davis>

⁶⁰ IMF, “Copper windfall brightens Chile’s outlook but must be managed prudently,” *op. cit.*

3. Copper Revenue Management

To maximize value for Chile's population, the government collects a large share of the mining rents by taxation and other instruments. First category taxation is the same for all productive sectors, equivalent to 17 per cent on accrued income, and is one of the lowest rates in the world.⁶¹ In the case of foreign investors, there is an additional tax of 35 per cent on repatriated income, minus a 15 per cent credit on paid corporate taxes. The general tax regime is neutral with respect to factors that affect the economy and only levies taxes on the utilities, not the resource.⁶²

Under the DL600, foreign investors are given the option to submit to either the general tax regime (the aforementioned 35 per cent) or opt for an invariable tax of 42 per cent.⁶³ To encourage large investments (US\$50 million at least), as well as reinvestment of mining rents, Article 11 bis of DL600 allows investors to claim a significant tax deduction for depreciation. This option is valid for seven years, if they choose accelerated depreciation, or 20 years, in the case of normal depreciation.⁶⁴ Depreciation is a very attractive incentive as it allows foreign investors to claim a tax deduction, thus increasing after-tax cashflow while accounting for the asset's wear and tear. In the case of accelerated depreciation, it assumes that the asset wears down more in its earlier years of use and, consequently, allows investors to claim higher depreciation deductions in the first seven years.

For its part, Codelco is subject to the general tax regime and an additional 40 per cent tax due to its public entity status.⁶⁵ On top of this, it is required to transfer 10 per cent of its export revenues (prior to taxes) to the armed forces (to be discussed shortly) and hand its residual surplus (anything earned in excess of the pre-established copper price) in to the government. The surplus boundary line (the pre-established copper price) is a market-based reference price and it is determined by the minister of finance, in consultation with a Committee of External Experts, as part of the budget-making process. It is a long-term forecast of copper prices and is adjusted every year.

Between 1971 and 1999, the total collected in taxes from the mining sector was US\$25 billion.⁶⁶ Total production for the same period was 27.1 million tonnes.⁶⁷ Further, the annual average tax contributed by the 10 largest private mining companies in 1991–2003

⁶¹ For a comparative analysis of global taxation, see James Otto et al., *Global Mining Taxation Comparative Study*, 2nd edition (Colorado: Golden, 2000), as well as Otto's "Mining Taxation in Developing Countries" paper from the same year. At the time of publication, the Chilean tax rate was 15 per cent. The current rate is still low compared to the one imposed in other mining countries.

⁶² Verónica Álvarez and Soledad Santa Ana, "Tendencias Regulatorias en el Manejo de la Riqueza Minera e Implicancias para los Proyectos de Inversión en Chile," COCHILCO, April 2005, p. 152.

⁶³ An invariable tax rate provides predictability and a safeguard against higher or additional taxes; it stays the same, regardless of the changes in the general tax regime, for up to 20 years. In other words, it is not subject to government discretion.

⁶⁴ See Article 11 of DL600.

⁶⁵ The latter taxation applies to all public entities.

⁶⁶ It is not clear how much of this is attributed to copper production. Source: "Evasión de Impuestos de Grandes Mineras Privadas: Secreto a Voces," *La Nación*, 1 October 2001; available from <http://www.sii.cl>

⁶⁷ Ibid.

was worth US\$164 million in total.⁶⁸ Codelco, on the other hand, paid a total of US\$751 million during 1991–2002.⁶⁹

In June 2005, the Lagos administration published the royalty law, or Law No. 20.026 (*Ley de Impuesto Específico a la Minería*). With this, the government corrected an oversight in the mining concession law and began charging a fee or tax for extracting mineral resources. This is in addition to the Mining Patents or taxes on exploitation concessions.⁷⁰ The royalty consolidates the right of all Chileans, the owners of the deposits, to be compensated for the exploitation of public resources. The royalty rate is 0.5–5 per cent on taxable earnings, depending on annual sales.⁷¹ The law came into force in January 2006. Foreign investments executed in connection to a DL600 contract before 1 December 2004, are exempted from paying the royalty, unless their DL600 terms have expired. Additionally, when calculating the revenues subject to the first category tax, the royalty can be counted as an additional deduction.⁷²

In 2006, private mining companies paid over US\$4.5 billion in taxes, a 61 per cent increase relative to 2005.⁷³ This is the result of high copper and molybdenum prices, the end of the regime for accelerated depreciation for most of the major mining projects financed with FDI (i.e., these projects are no longer qualified for significant tax deductions), and the implementation of the new royalty. Codelco's overall tax contribution was US\$8.3 billion in 2006.⁷⁴

Resource allocation and use

The Chilean government has designed a number of mechanisms for managing copper revenues. The following paragraphs describe these measures.

Ley Reservada del Cobre

Since 1942, a portion of Chile's copper revenues have financed the armed forces through various legal arrangements.⁷⁵ The military junta formalized Law 13.196 (1958), which assigned 15 per cent of the taxes levied on mining utilities to the armed forces, with the promulgation of the Decreed Law No. 1,530 or *Ley Reservada del Cobre* (1976). This was, in turn, modified in 1985, with the DL No. 18,445.

The *Ley Reservada del Cobre* stipulates that 10 per cent of Codelco's export sales are to be transferred to the armed forces. The expected minimum contribution is US\$180 million

⁶⁸ Víctor del Pino et al., "Desempeño Financiero y Tributario, Gran Minería del Cobre de Chile," COCHILCO, 2004, p. 227.

⁶⁹ Andrés Sanfuentes, "El 'Royalty' y las Reglas del Juego: Antecedentes del Conflicto," *Asuntos Públicos – Informe No. 393*, Economía, 14 May 2004; available from <http://www.asuntospublicos.org>

⁷⁰ This is an annual payment equivalent to a tenth of the value of the monthly taxation unit/whole hectare. As for exploratory concessions, these constitute a fiftieth of the value the monthly taxation unit/whole hectare. For more details, see Verónica Álvarez and Soledad Santa Ana, *op cit*.

⁷¹ For more details, see text (in Spanish) at <http://www.cochilco.cl/anm/articlefiles/164-ley-20026-impuesto-especifico-mineria.pdf>

⁷² This discount is a two-year transitional concession that expires in 2008.

⁷³ Chile, Dirección de Presupuestos (DIPRES), *Estadísticas de las Finanzas Públicas*; available from http://www.dipres.cl/fr_estadisticas.html

⁷⁴ *Ibid*. See also Codelco, "La Corporación: Cifras"; available from http://www.codelco.com/la_corporacion/cifras.asp

⁷⁵ The flow was interrupted in 1955, with the introduction of a new law, but was reinstated in 1958. See Codelco's "¿Cuál es el origen de la Ley Reservada del Cobre?"; in http://www.ftc.cl/home_archivos/temas

annually, to be adjusted according to variations in the Producer Price Index (PPI) in the United States.⁷⁶ In case the revenues are less than the stated amount, the Treasury must supply the difference. Only two such shortfalls have been recorded: in 1986 and 1987, the Treasury had to supply an additional US\$38 and US\$25 million, respectively.⁷⁷

The deposited amount is then divided into three equal parts for each division of the armed forces, and deposited in U.S. dollars by the Central Bank in a special or “reserved” account set up by the Treasury. The funds are administered by the National Defense Council (*Consejo Superior de Defensa Nacional – Consudena*).⁷⁸ Resources obtained from this arrangement are to be used solely for the purchase and maintenance of weapons.

This and other laws known as *Leyes Reservadas* were secret or reserved in nature—apart from General Pinochet, few officials were aware of them.⁷⁹ They remained in place after the transition to democracy because of the need to foster the flow of funds for the purchase of military equipment across time. Besides its inherent security motivation, this arrangement allows the armed forces to borrow from future anticipated resources to finance high-cost purchases.⁸⁰ Further, transitional leaders generally refrained from discarding many of Pinochet’s policies for the sake of stability; President Aylwin, who took office after Pinochet, dismissed proposals to transfer the military funds to other areas, such as health and education.⁸¹

The most recent modification to the *Ley Reservada del Cobre* took place in 2004, allowing the Ministry of Defense access to the funds in excess of the stipulated minimum amount.⁸² Other modifications to the *Ley Reservada* are currently under discussion. The idea is to allow the defense and finance ministries to determine the armed forces’ budget each year, as it is done in other countries.⁸³ The former minister of defense, Vivianne Blanlot, explained that this was necessary as the armed forces have been accumulating excess funds that go unused.⁸⁴ For their part, the armed forces are in favour of a budget review and allocation to be performed every five years.

In addition, more transparency is sought, a complicated task given the reserved nature of the law. Without such transparency, it is difficult to achieve accurate estimates of the funds in question. The Center for Copper and Mining Studies (CESCO) proposes a break between the management of Codelco and actual fiscal management as a necessary step to achieve overall, institutional order.⁸⁵ The fact that Codelco serves the interests of

⁷⁶ There have been variations in the specified amount across time. See Chile, Ministerio de Defensa Nacional, *Libro de la Defensa Nacional de Chile: Año 2002*, p. 221; available from <http://www.resdal.org/Archivo/d00001fd.htm>

⁷⁷ “Excedentes del Cobre: Bachelet se queda con el vuelto,” *El Periodista*, Año 3, No. 71, 24 September 2004; available from <http://www.elperiodista.cl>

⁷⁸ Codelco, “¿Cuál es el origen de la Ley Reservada del Cobre?”, op cit.

⁷⁹ With the advent of democracy, most of the secret laws were published, except the ones dealing with national security aspects. Those that are still in force became ordinary laws.

⁸⁰ Ministerio de Defensa Nacional, *Libro de la Defensa Nacional de Chile: Año 2002*, p. 222, op. cit.

⁸¹ “Excedentes del Cobre: Bachelet se queda con el vuelto,” op. cit.

⁸² “Gasto militar: Cambio en manejo de Ley del Cobre,” *El Mercurio*, 20 September 2004; available from <http://www.sii.cl>

⁸³ Giselle Concha, “Bachelet tiene en sus manos propuestas para modificar Ley Reservada del Cobre,” *La Nación*, 24 January 2007; available from <http://www.lanacion.cl>

⁸⁴ “Defensa espera amplio consenso político para reformar Ley Reservada del Cobre,” *Radio Cooperativa*, 9 June 2006; available from <http://www.cooperativa.cl>

⁸⁵ Juan Carlos Guajardo, “Ley Reservada del Cobre: La Opinión de Cesco”; available from <http://www.cesco.cl>

the armed forces is viewed as a serious impediment for a firm that strives to be a world-class mining company.

Fondo de Compensación del Cobre (FCC)

Also known as *Fondo de Estabilización* (stabilization fund), this fund was established in 1987 as part of a structural adjustment program prescribed by the World Bank.⁸⁶ Its goal was to stabilize the income generated by Codelco's copper exports. To do so, Codelco's surplus (what it earned in excess based on the pre-established reference price⁸⁷), in foreign currency, was to be deposited on a quarterly basis in the fund's Central Bank account.

More recently, the windfalls deposited in this fund were intended to cover budget spending in case of a drop in copper prices. If the copper price dropped more than four cents below the market-based reference price,⁸⁸ the fund was activated. If the quarterly average showed a 4–10-cent decrease, the equivalent of 50 per cent of the lost revenue is withdrawn from the fund and used to cover budget expenses that might otherwise be threatened and keep the economy afloat without having to borrow from abroad. The desired effect was to shield the economy from these price fluctuations. Likewise, when the copper price exceeded the reference price by more than four cents, 50 per cent of the difference was deposited into the fund. Any amount exceeding the 10-cent ceiling is deposited or withdrawn in full.

During the Pinochet era, close to US\$1.7 billion was deposited into the fund.⁸⁹ The succeeding democratic administration (1990–1994) saved more than US\$1.2 billion, an effort then further emulated by the Frei administration (1994–2000), until it was forced to withdraw some of the accrued savings to nurse the effects of a 70-cent per pound drop in copper prices in 1998.⁹⁰ By the time Ricardo Lagos was sworn as president in 2000, things had not improved. His administration continued to withdraw money from the fund in order to finance some of its activities. It resumed savings at the end of Lagos' term, when copper prices experienced a recovery.

Withdrawals could also be motivated by the need to fulfill debt obligations. Thus, the fund acted as a savings account, shielding the economy and the fiscal budget from the effects of price volatility, as well as other external shocks.

Table 1 displays the Fund's activity since its inception.

⁸⁶ Indeed, it was set up as part of the Loan Agreement No. 2625. For specifics, see Jorge Varas, “¿Qué es el Fondo de Compensación del Cobre?”; available from http://www.ftc.cl/home_archivos/temas/fondo_cu.htm

⁸⁷ Again, this is a market-based reference price established by the minister of finance, in consultation with a Committee of External Experts. While this procedure is part of the fiscal policy adopted since 2000, which aims to generate a surplus of one per cent of GDP, it was set up in 1981 by the Decree Law No. 3,653.

⁸⁸ As stated in the previous note, this price is adjusted every year.

⁸⁹ Tomás Flores, “Excedentes del cobre para cuando vuelvan los tiempos difíciles,” *La Tercera*, 18 March 2005; available from <http://www.lyd.com/noticias/opiniones/excedentes.html>

⁹⁰ *Ibid.*

Table 1: FCC Account Activity (in US\$ thousands)

Year	Contribution	Withdrawals	Balance
1987	23,361	0	26,361
1988	495,997	439,508	82,850
1989	1,202,962	1,260,064	25,748
1990	785,062	256,180	554,630
1991	289,669	200,000	644,299
1992	134,647	0	778,946
1993	9,810	38,991	749,765
1994	53,156	101,440	701,481
1995	664,256	0	1,365,737
1996	324,421	7,323	1,682,835
1997	117,640	0	1,800,475
1999	63,438	516,019	1,078,172
2000	0	404,766	673,406
2001	250,000	302,255	621,151
2002	203,944	548,043	277,052
2003	0	202,450	74,602
2004	864,322	731,101	207,823
2005	759,110	-	966,933
2006	3,909,724	2,312,919	2,563,738
Total	10,158,283	7,594,545	2,563,738

Source: Chile, *Tesorería General de la República*.

The precise manner in which the withdrawn FCC funds were used is unclear; a lack of transparency made it hard to keep track of account movements.⁹¹ Also, the FCC did not always operate according to the stipulations that defined it. In 2003, Codelco accumulated US\$606 million in windfalls,⁹² but none of this went to the Fund.

This fund was recently absorbed into the *Fondo de Estabilización Económica y Social*, to be discussed below.

Fondo de Estabilización Económica y Social (FEES)

The Economic and Social Stabilization Fund was created in response to the current copper boom. It differs from the previous fund in that it serves as a complement to the structural balance rule and provides greater stability to the Treasury by saving transitory windfalls for use in years of fiscal deficit.⁹³ Above all, it disassociates budget spending from copper price volatility, the main weakness of the FCC. Whereas savings through the FCC were determined by copper prices, the FEES' are conditioned by the fiscal surplus goal; they take place when surplus earnings exceed the one per cent goal. In addition, the FEES relieves upward pressure on the Chilean peso⁹⁴ by saving funds abroad.

In the first quarter of 2006, the boom generated a US\$3,000 million surplus,⁹⁵ equivalent to 2.2 per cent of annual GDP.⁹⁶ The current Minister of Finance, Andrés Velasco, sees

⁹¹ Juan Carlos Guajardo, interview by author, written notes, Santiago, Chile, 20 April 2007.

⁹² Chile, Codelco, "La Corporación: Cifras," op. cit.

⁹³ Chile, DIPRES, *Informe de Finanzas Públicas: Proyecto de Ley de Presupuestos del Sector Público para el año 2007*, October 2006, p. 68.

⁹⁴ This is caused by the inflow of dollars generated by copper exports.

⁹⁵ "Velasco: Vamos a dar el ejemplo en manejo de excedentes del cobre," *Radio Cooperativa*, 4 May 2006; available: <http://www.cooperativa.cl>

this as an opportunity for Chile to step up and become an example for the rest of the region by frugally managing the fiscal surplus generated by the copper boom.⁹⁷ To achieve this, he proposed a savings program that closely resembles Norway's oil-based Government Pension Fund – Global.

Created in 1990, this Norwegian stabilization fund has two primary objectives: it serves as a shield against external shocks and it encourages the savings of a portion of oil revenues to benefit future generations. “By law this Fund has one expenditure only: the annual transfer to the Fiscal Budget to cover the non-oil budget deficit.”⁹⁸ This deficit is estimated at four per cent per year, the expected real return of the Fund, which leaves the rest of the capital untouched.⁹⁹ During slow periods, more than the expected real return may be withdrawn and spent. All of the Fund's capital is invested abroad; 40 per cent in equities and 60 per cent in bonds.¹⁰⁰ The Fund is currently worth around 215 billion euros, the equivalent of 85 per cent of Norway's GDP.¹⁰¹

The Chilean government hopes to obtain comparable results with its own version of the above fund, the FEES.¹⁰² The creation of this fund was formally announced in *Plan Chile Compite* (Chile Competes Plan),¹⁰³ launched in July 2006, and made official with the promulgation of the Fiscal Responsibility Law (*Ley de Responsabilidad Fiscal*)¹⁰⁴ on 22 September 2006. The initial amount deposited into the fund was US\$6,000 million.¹⁰⁵ The FCC's remaining balance of US\$2,563 million was transferred into this fund.

The Fiscal Responsibility law maintains—or rather ties—the Fund to the structural fiscal surplus rule.¹⁰⁶ This means that the fiscal policy is countercyclical: savings take place when the surplus amount exceeds the one per cent of GDP goal (the residual amount is saved) and spending occurs when there is an effective deficit.¹⁰⁷ Hence, social spending is not tied to copper volatility,¹⁰⁸ which was the case with the FCC.

⁹⁶ Ruth Bradley, op. cit.

⁹⁷ “Velasco: Vamos a dar el ejemplo en manejo de excedentes del cobre,” op cit.

⁹⁸ Kristin Halvorsen, “The Norwegian Economic Model – prosperous and sustainable?”, speech, 5 February 2007; available from <http://www.regjeringen.no>. For full details, see <http://www.norges-bank.no> and <http://www.odin.dep.no/fin>, under “The Government Pension Fund.”

⁹⁹ Ibid.

¹⁰⁰ Ibid.

¹⁰¹ Ibid.

¹⁰² Unlike its Norwegian counterpart, the Chilean government's objective is not to compensate future generations for the eventual extinguishment of copper, but to use savings to counteract periods of hardship.

¹⁰³ The Chile Competes Plan is the Finance Minister's proposed program to enhance growth and employment. It is divided into four areas: Entrepreneurship, Technology and Competitiveness, Capital Markets, and Growth Institutionalization. The creation of FEES is contemplated in the last section. For more details, see “Plan Chile Compite” in <http://www.mindha.cl>

¹⁰⁴ This is also contemplated in *Plan Chile Compite*. This law is based on recommendations from World Bank, IMF and OECD. It seeks to increase transparency and guarantee good fiscal management. .

¹⁰⁵ “Ministro de Hacienda anuncia constitución de fondos de inversión del superávit fiscal en el exterior y política de inversiones asociada,” 23 November 2006; available from <http://www.mindha.cl>

¹⁰⁶ As noted in the previous section, the structural surplus fiscal policy requires that expenditures in the annual budget be set to achieve a surplus of one per cent of GDP based on the potential growth of the economy, as well as the long-term price of copper.

¹⁰⁷ “Paquete de Medidas: Hacienda opta por invertir hasta 100% de los excedentes del cobre en el exterior,” *Mineríaglobal.cl*, 3 May 2006; available from <http://www.mineríaglobal.cl>

¹⁰⁸ Ibid.

According to the fund's guidelines, when the copper price drops below its long-term, forecasted price, the government can withdraw the resources necessary to re-invigorate the economy. In the contrary case, saving is essential, particularly due to increased foreign currency inflows. High domestic spending (which requires buying pesos) can put pressure on the type of exchange rate (the value of peso, given the increased demand, goes up in relation to the dollar). To avoid this pressure, the money (dollars) is invested abroad. Accrued interest from these investments is then earmarked for social spending, which, for the Michelle Bachelet administration, is projected to cost US\$6 billion over the course of her four-year term.¹⁰⁹

Although the fund is currently managed by the Ministry of Finance and the Central Bank, that arrangement will change in the future when the bid procedure for external administrators is initiated in mid-2007. This is to ensure that the administration is independent and, therefore, not subject to political intervention. To guarantee transparency, all administrators are required to submit quarterly reviews on the state of the funds and submit to periodic, independent auditing—another improvement relative to the FCC. All reports must then be sent to the relevant committees in Congress.

Overall, the fund has three important implications: it shields public spending from external shocks and ensures its stability (thus anchoring the structural surplus policy); it promotes savings to weather tough times ahead; and it fosters export growth by controlling the boom's effect on the exchange rate (probably the most important goal/achievement).

The FEES is the centerpiece of a broad government strategy to effectively manage the projected surplus and, in the process, control the effect the boom is having on the exchange rate. The strategy's two remaining components are described below.

Fondo de Reserva de Pensiones (FRP)

The Fiscal Responsibility Law also seeks to improve the existing pension fund by backing up future pension payments. By guaranteeing a minimum contribution of 0.2 per cent of GDP each year,¹¹⁰ derived from copper windfalls generated in the previous year,¹¹¹ the government hopes to meet its pension obligations. Demographic estimates indicate that such obligations will be unmet after 2016 without an improved savings mechanism, like the FRP.¹¹² The startup amount was similar to that of the FEES: US\$6,000 million.¹¹³

Up to 30 per cent of the FRP's resources can be used to purchase bonds or debt titles from domestic firms and up to 70 per cent in titles or bonds emitted by financial institutions in Chile. Nevertheless, the Minister of Finance has re-affirmed his commitment to invest all assets abroad to avoid putting pressure on the exchange rate. Future administrations, however, will have the option to invest locally.

¹⁰⁹ Ruth Bradley, op. cit.

¹¹⁰ The maximum is 0.5 per cent of the previous year's GDP.

¹¹¹ Rodrigo Cárdenas, "Ministerio de Hacienda Publicó el Decreto que Regula la Inversión de estos Recursos: Instrumentos de firmas chilenas podrían captar hasta el 25% del fondo de pensiones," *Diario Financiero*, 15 February 2007, p. 26

¹¹² Chile, Ministerio de Hacienda, "Sala del Senado se pronuncia sobre proyecto de ley de Responsabilidad Fiscal," 18 July 2006; available from <http://www.mindha.cl>

¹¹³ Ibid.

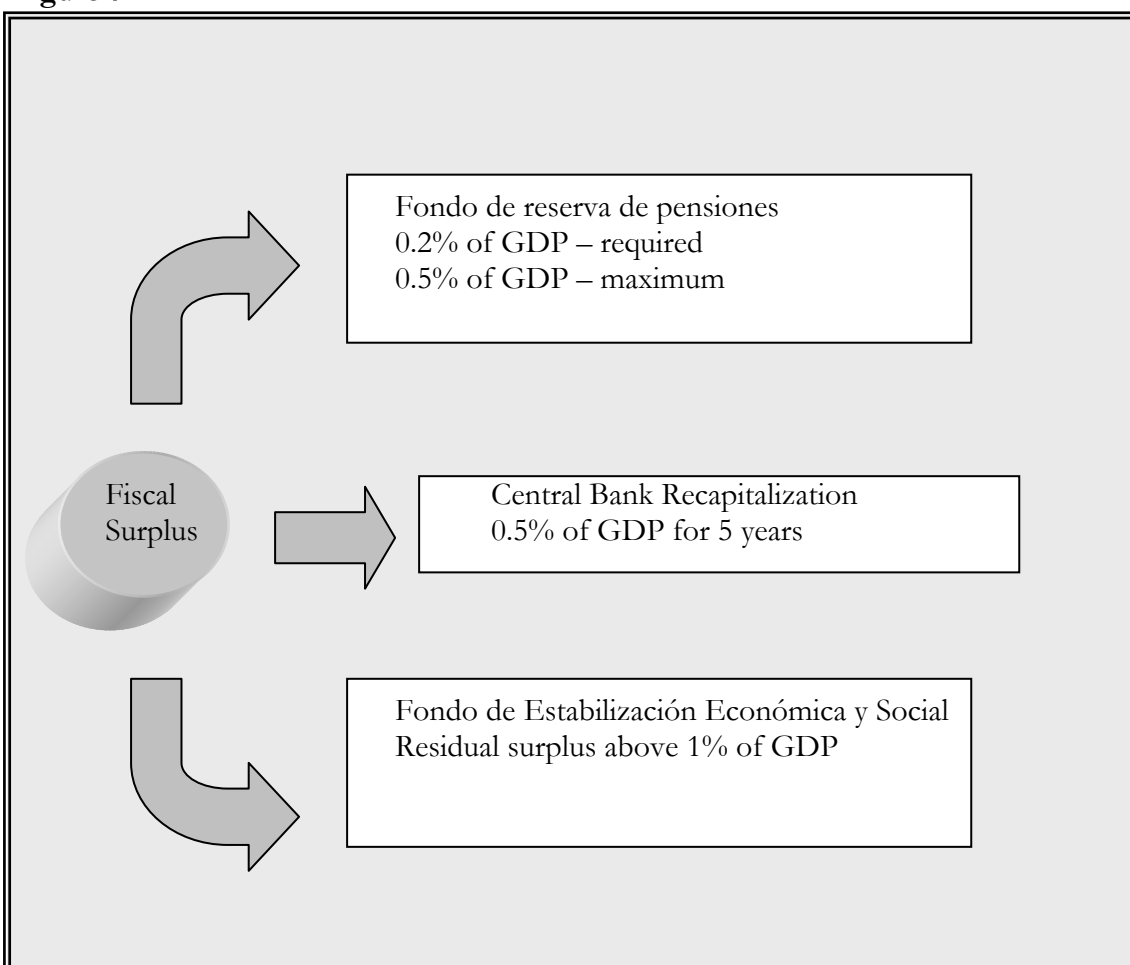
Given its intended purpose (to back up future pension payments), the funds channelled into the FRP will go untouched for 10 years. Therefore, the fund's administrators have the duty to seek those investments that will give the beneficiaries the highest interest returns in the long run.

Central Bank Recapitalization

In the next five years, the Central Bank will receive a sum worth 0.5 per cent of the GDP on an annual basis. These resources will be held as foreign exchange reserves and should enable the bank to meet its outstanding debt obligation (incurred mostly as a result of the 1980s financial crisis).

The figure below demonstrates the flow of Fiscal Responsibility funds.

Figure 7



Source: Rodrigo Cárdenas, “Ministerio de Hacienda Publicó el Decreto que Regula la Inversión de estos Recursos: Instrumentos de firmas chilenas podrían captar hasta el 25% del fondo de pensiones,” *op. cit.*

Fondo de Innovación para la Competitividad (FIC)

The Competitiveness and Innovation Fund was created with the express purpose of allocating the royalty payments to fund research and development activities. With it, the Lagos administration intended to double the amount of federal resources available for such activities.¹¹⁴ The expected outcome is an increase in human capital formation and

¹¹⁴ Lilian Duery, “Fondos del cobre agitan a la ciencia,” *El Mercurio*, 5 September 2005; available from <http://www.ceo.cl>

innovation that would, in turn, put the country on the path to diversification and sustainable economic growth.

The FIC was introduced into the budget process for the first time during the fiscal planning for 2006. US\$80 million was initially allocated to the FIC based on the estimated long-term price of copper¹¹⁵ and expected royalty revenue. The money was distributed according to recommendations from the *Consejo Nacional de Innovación para la Competitividad* (CNIC),¹¹⁶ the body in charge of identifying challenges and opportunities in the area of competitiveness and advising the President on the best way to implement the initiative. More money is expected to go into the fund each year as royalty collections increase.

Based on CNIC's assessment, there are six strategic areas of interest. These are: entrepreneurial innovation; human capital formation; science and technology promotion; internationalization of innovative efforts; public awareness on innovation; and innovation in the public interest. FIC resources will finance projects that address one or more of these areas, primarily those located in mining regions. The public agencies in charge of the selection process are also responsible for the periodic evaluations of participating programs and institutions.¹¹⁷

¹¹⁵ An independent panel of experts determines the price. "Velasco reitera que fondos del royalty van íntegros a innovación," *La Nación*, 10 May 2006; available from <http://www.lanacion.cl>

¹¹⁶ Created in November 2005 by virtue of the Supreme Decree 1408.

¹¹⁷ For more details, visit <http://www.consejodeinnovacion.cl>

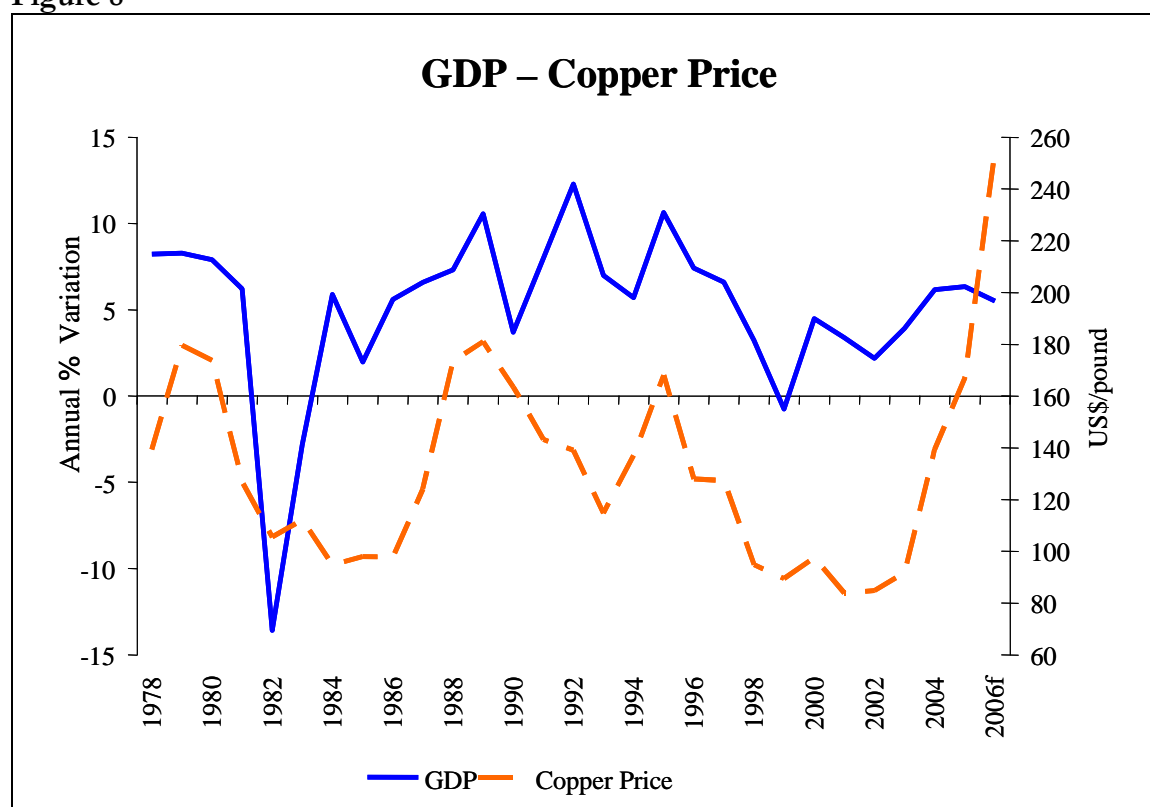
4. Management Outcomes

In addition to the above measures, it is important to understand how fiscal management acts to shield the Chilean economy from copper price volatility. Economic policy, not the resource itself (i.e., copper), determines the country's growth potential.

Elements of a Sound Economic Policy

During past booms, the Chilean economy typically fell into recession once the price of copper fell. The following graph illustrates this tendency.

Figure 8



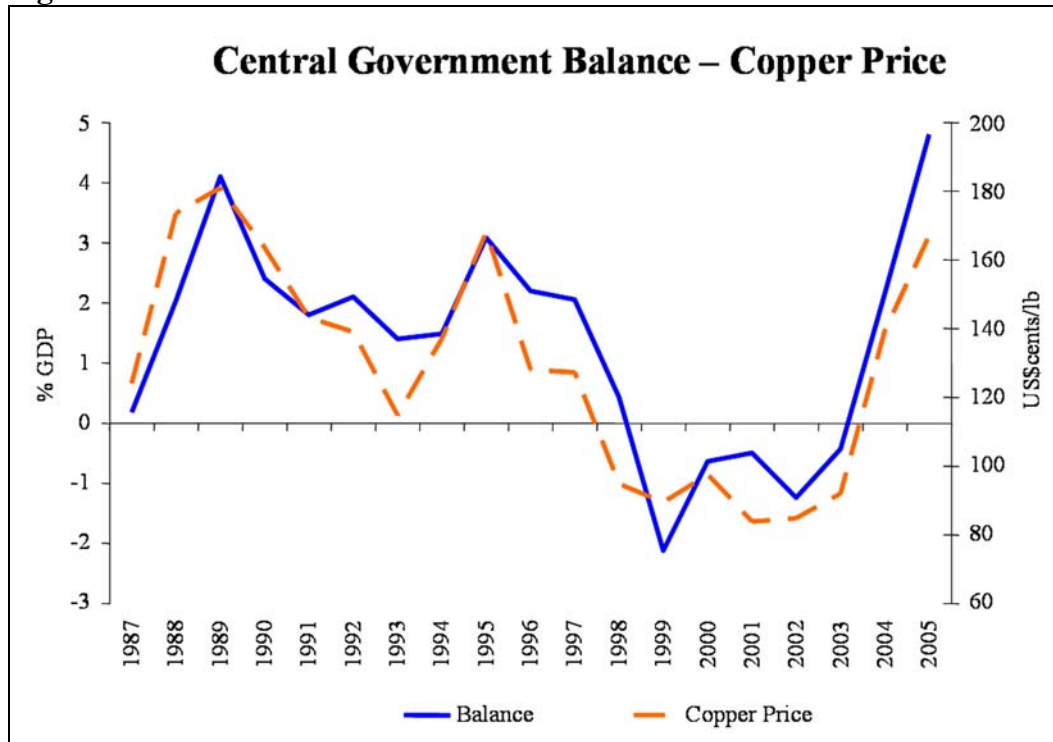
Source :: José De Gregorio, "La Bonanza del Cobre: Impacto Macroeconómico y Desafíos de Política," presentation, 30 May 2006.

As the graph indicates, this relationship recently ceased to be true. This reversal is attributed to changes in fiscal and monetary policy that were implemented in the aftermath of the Asian crisis.

Fiscal policy

Unlike most Latin American countries, Chile's fiscal policy is countercyclical and based on a structural balance target. This reduces its vulnerability to external shocks and serves to enhance its access to capital markets. When the copper price rises, the fiscal balance improves (see figure below).

Figure 9



Source: José De Gregorio, *op. cit.*

The structural surplus rule has resulted in extensive savings. For 2006, the surplus reached a record-breaking 7.9 per cent¹¹⁸—equal to US\$11,285 million.¹¹⁹ This significant surplus (the highest in 19 years) is the result of a budget plan based on a projected copper price of US\$1.25, instead of the actual average of US\$3.05.¹²⁰ Similarly, the long-term price forecast for molybdenum was set at US\$12, but in 2006, its real average was US\$24.8 per pound.¹²¹ Further, Codelco turned in US\$9,215 million in windfalls, the highest in its 30-year history.¹²² This constitutes an 88 per cent increase from the US\$4,901 it paid to the Treasury in 2005.¹²³ In the first quarter of 2007, the state company reported the highest revenues in the country.¹²⁴

The fiscal surplus also reached 2.4 per cent of GDP in the first quarter of 2007, the highest recorded for the same period in the last 17 years.¹²⁵ Indeed the government expected a 1–1.5 per cent surplus; this year’s goal is set at 4.4 per cent.¹²⁶ At the present rate, the surplus is likely to exceed these expectations.

¹¹⁸ Reuters, “Chile reporta superávit récord de 7.9 % en 2006 por altos precios del cobre,” *El Mercurio*, 31 January 2007; available from <http://www.economiaynegocios.cl/noticias/noticias.asp?id=100160>

¹¹⁹ Raúl Rivera, “Precio del cobre permite superávit fiscal histórico,” *La Nación*, 1 February 2007; available from <http://www.lanacion.cl>

¹²⁰ *Ibid.*

¹²¹ *Ibid.*

¹²² “Codelco entrega la fisco excedentes record, pero cae la producción y costos se disparan,” *El Mercurio*, 2 March 2007; available from <http://www.elmercurio.cl>

¹²³ *Ibid.*

¹²⁴ “Resultados de empresas al primer trimestre 2007,” *El Mercurio*, 30 April 2007, B10–12.

¹²⁵ Eduardo Olivares, “Superávit fiscal marca record en 17 años y en tres meses es la mitad del previsto para 2007,” *El Mercurio*, 28 April 2007, p. B7.

¹²⁶ *Ibid.*

Government spending is also determined by the fiscal policy. Estimated copper revenues, along with expected economic growth, determine the extent of such spending. For the 2007 Budget (or *Ley de Presupuesto 2007*), the Minister of Finance announced that the budget will be worth less than 10 per cent of the previous year's GDP—despite the surplus generated by copper revenues. While this decision generated much criticism,¹²⁷ the Minister stood by his decision, insisting that the boom is transitory¹²⁸ and that the funds are to be saved to withstand sluggish economic periods in the future. Spending the money today, moreover, would impact the exchange rate and the terms of trade (to be discussed below).

Despite the fact that the resulting budget is worth 8.9 per cent of GDP, considered low given the profit generated by the copper boom, it is still the most expansive of any post-dictatorship government.¹²⁹ Social spending grew 11.2 per cent in 2007, a larger rate than in 2006 which constituted 68 per cent of total public spending.¹³⁰

The budget was elaborated based on the goal of generating a budget surplus equivalent to one per cent of GDP.¹³¹ This way, the government fulfills its commitment to pursue responsible fiscal management, taking into account long-term sustainability, while maintaining macroeconomic equilibrium and enabling President Bachelet to carry out her social program. In this sense, the Law of Fiscal Responsibility, which sets out specific procedures for budget planning, has been seen as a great advancement. Overall, the IMF has hailed Chile's macroeconomic policies as rigorous, transparent and exemplary.¹³²

Policy Drawbacks

Dampened economic expectations

In addition to scoring fiscal surpluses, the decision to channel revenues into the copper reserve fund has allowed Chile to pull out of rough times. As explained in the previous section, the funds were used during economic slowdowns for both the Frei and Lagos administrations.

Nevertheless, the economic strategy is not entirely without faults. One of the expected outcomes of the current boom, stemming from previous experiences, was an acceleration of the economy's annual growth rate. As Figure 8 illustrates, the economy grew 8.1 per cent in 1978–1980; 8.9 per cent in 1988–1989; and 10.1 per cent in 1995, all years of boom.

¹²⁷ Critics believe the bonus generated by copper exports should be spent. A written proposal, "Aprovechemos la Oportunidad," by a group of 20 distinguished economists was perceived as an act of subversion, for it disregards the current administration's economic plan, as well as its decision-makers.

¹²⁸ Chile, Ministerio de Hacienda, "Ministro de Hacienda destaca posición de Chile como Economía más competitiva de América Latina," 28 September 2006; available from <http://www.hacienda.cl>

¹²⁹ Chile, Ministerio de Hacienda, "Congreso despacha Proyecto de Ley de Presupuestos del Sector Público para 2007," 16 November 2006; available at <http://www.hacienda.cl>

¹³⁰ Ibid.

¹³¹ For further details on the 2007 Budget, visit <http://www.dipres.cl/presupuesto/2007.asp?anno=2007>

¹³² Chile, Ministerio de Hacienda, "Ministro Velasco destacó que Chile ha sido exitoso en evitar que aumento del precio del cobre se traduzca en un tipo de cambio poco competitivo," 31 October 2006; available from <http://www.hacienda.cl>

In 2006, the forecasted growth rate was over five per cent. Instead, it grew by four per cent, its slowest growth in three years.¹³³ 2006's sluggishness can be explained by a number of factors: the rise in energy prices (particularly affecting industry); the drop in copper production due to delays and interruptions¹³⁴; a retraction of internal demand that, in turn, hit certain sectors, such as housing construction; and a drop in investment flows due to assets accumulated in 2005.¹³⁵

Competitiveness has also been affected by the inflow of U.S. dollars, putting pressure on the local currency in the exchange market (due to augmented U.S. dollar reserves). The average value of the dollar depreciated 5.3 per cent relative to the peso in 2006,¹³⁶ translating into an appreciated Chilean peso and a higher monetary value for non-copper exports.

More than 88 per cent of the US\$10,163 million in fiscal assets held by the Chilean Treasury are in dollars.¹³⁷ 85.9 per cent of this amount is invested abroad.¹³⁸ To limit the inflow of dollars, the Chilean government has also requested that future Inter-American Development Bank (IADB) loans be made in pesos instead of dollars.¹³⁹ It also made the decision to not issue sovereign bonds in 2008.¹⁴⁰ Instead, it will issue domestic debt in pesos to expand local debt markets.

By saving the windfalls and pursuing complementary measures, the above pressure is eased.¹⁴¹ Otherwise, spending incoming dollars would cause the value of the dollar to keep dropping. "Changes in the dollar's value quickly register in the spot price of all commodities, with rising currency driving away investment, and a falling currency attracting capital."¹⁴² An increase in internal demand, spurred by domestic spending, could also result in inflationary pressures.

Some observers believe that the peso can be allowed to appreciate further because the Chilean economy is stable and can support it.¹⁴³ Plus, it would allow increased spending and have an expansionary effect on the non-tradable sector (construction, services, commerce, etc.) and, consequently, augment employment.¹⁴⁴ Representatives from the export sector, on the other hand, believe that in order to generate utilities, the exchange

¹³³ "Imacec superó expectativas y registró crecimiento de 6,5% en marzo," *UPI.com*, 7 May 2007; available from <http://www.upi.com>

¹³⁴ Labour negotiations at La Escondida mine and a collapse at Chuquicamata were behind these.

¹³⁵ ECLAC, *Balance Preliminar de las Economías de América Latina y el Caribe 2006*, December 2006, p. 76–77.

¹³⁶ The average rate was \$530.3 pesos to a dollar. For further details, consult "Comercio Exterior de Chile, IV Trimestre 2006," op. cit., p. 50.

¹³⁷ Reuters, op cit.

¹³⁸ Ibid.

¹³⁹ Chile, Ministerio de Hacienda, "Ministro Velasco adelantó constitución de fondos de inversión del superávit fiscal para apoyar competitividad de la economía," 2 November 2006; available from <http://www.hacienda.cl>

¹⁴⁰ Normally, sovereign bonds were issued to finance the government's debt, as in the case of the Lagos administration. Given the fiscal surplus, this measure is currently unnecessary. See "Hacienda decidió no emitir bono soberano en 2008," *El Mercurio*, 4 June 2007, p. B4.

¹⁴¹ Chile floated its exchange rate in 1999.

¹⁴² John Tammy, "From Copper to Capital: The message of commodity-price volatility," *NRO Financiam*, 18 September 2006; available from <http://article.nationalreview.com>

¹⁴³ "Tomás Izquierdo: Debemos permitir que dólar baje para dinamizar la economía y el empleo," *Estrategia*, 30 October 2006, p. 10–11.

¹⁴⁴ Ibid.

rate must be set at \$600 pesos to the dollar.¹⁴⁵ Without this peg, production costs are less competitive. In May 2007, the average exchange rate was 522 pesos to one U.S. dollar, the highest in 12 months.¹⁴⁶

To reinvigorate the economy, critics have suggested that the one per cent fiscal rule needs to be phased out. Instead, tax breaks for the private sector should be implemented and spending in education and social programs increased to meet pressing needs. “We have to pay more attention to micro-economic problems but the government lacks ambition to carry out serious reforms in this area,” said Harald Beyer, a leading economist.¹⁴⁷ This view was initially rejected by the Bachelet administration.

Mario Marcel, one the creators of the one per cent rule,¹⁴⁸ believes that the rule was not meant to be a fixture as it was created to address several concerns during a time when there was a fiscal deficit and rising public debt.¹⁴⁹ The Central Bank had an operational deficit stemming from the 1982–1986 banking crisis, during which it was forced to borrow heavily from abroad. There were also contingent liabilities, including future pensions. The fiscal budget’s dependence on copper for funding was another source of concern. The rule, therefore, signalled the government’s commitment to achieve equilibrium.

Today, the situation has changed. The net public sector debt, including the Central Bank’s, has significantly decreased. It was reportedly worth 5.4 per cent of GDP by the end of 2006, down from 7.5 per cent in 2005.¹⁵⁰ Such a low debt has made the Treasury a net creditor and earned the country a good credit rating.¹⁵¹ The Fiscal Responsibility Law highlights the commitment to pay off the debt in no more than five years. The same law takes care of the aforementioned liabilities by creating the pension fund. Lastly, the mining royalty has injected new fiscal revenues. Therefore, the situation has changed and the government must make the necessary adjustments.

Unclear use of royalty funds and tax evasion

Private mining companies subject to the royalty tax can discount half of this tax from their income tax due to the special regime agreed upon for the first two years, as a transitional relief measure. This explains the public’s confusion when companies announced that they paid US\$527 million in royalties for 2006¹⁵²—due to the allowed deduction, the real turnover was worth half of this amount. Plus, DL600 contracts signed before 1 December 2004, are not subject to the royalty until the terms of the contract

¹⁴⁵ “Comercio Exterior: Exportaciones frutícolas crecerían cerca de 10%,” *El Mercurio*, 15 February 2007, p. B5.

¹⁴⁶ Banco Central de Chile, *Base de Datos Económicos*, op. cit..

¹⁴⁷ Richard Lapper and Benedict Mander, “Chile unbent by copper price volatility,” *FT.com*, 12 November 2006; available from <http://www.ft.com>

¹⁴⁸ Along with Nicolás Eyzaguirre, Finance Minister during the Lagos administration.

¹⁴⁹ Eduardo Olivares, “Marcel: ‘El 1% de la regla fiscal no esta escrito en la Biblia ni en la Constitución,’” *El Mercurio*, 14 dic 2006; available from <http://diario.elmercurio.com>

¹⁵⁰ Reuters, op cit.

¹⁵¹ Both Fitch Ratings and Standard & Poor’s gave Chile’s long term foreign-currency sovereign an A rating, the highest in Latin America. See <http://www.fitchratings.com> and <http://www.standardandpoors.com>

¹⁵² Nicole Keller, “Ex ministro de Hacienda Nicolás Eyzaguirre: ‘Gobierno no tiene obligación legal de destinar a innovación todo el royalty,’” *El Mercurio*, 20 April 2007, p. B1–2.

expire or when the investors voluntarily renounce those rights. In some cases, this means that investors are exempt from paying the royalty until 2024.

Since the government only expected to collect US\$90 million in royalties for 2006, the amount in excess (i.e., most of it) will be saved until its use is determined.¹⁵³ Yet several members of congress are decrying the management of these funds. Their main criticism is that there is no law governing these funds; they are being channelled to the CNIC, which itself is not a legally established entity.¹⁵⁴ The related legislative proposal has been stalled in Congress for more than one year because the congressional representatives believe it does not fulfill the commitments acquired by the Lagos administration.¹⁵⁵ In particular, they believe that mining regions are not getting sufficient support and that there is no concrete innovation policy or project.¹⁵⁶

The president of the CNIC, Nicolás Eyzaguirre, explains that because the law establishing the FIC has not been approved yet, the government is not required to invest all the royalty funds in innovation.¹⁵⁷ He adds that disagreements over the regional distribution of funds were to be expected. Sectors with highest potential are not necessarily in neediest regions or even in mining regions.

The royalty law itself was the result of public demand for proper compensation for the exploitation of copper deposits. This demand became more strident when actual tax payments were revealed. From 1991 to 2003, the 10 largest mining firms paid US\$2,136 million in taxes (an annual average of US\$164 million).¹⁵⁸ In reality, two of the firms, *La Escondida* and *Pelambres*, were largely responsible for these taxes.¹⁵⁹ The rest were exempted due to tax breaks facilitated by the DL600.¹⁶⁰ In contrast, Codelco paid an annual average of US\$809 million during 1991–2002.¹⁶¹

Besides deferring taxes, the DL600 has been turned into a tax avoidance instrument by some companies. For instance, transfer pricing¹⁶² allows foreign investors to sell copper concentrates to company headquarters at below-the-market prices.¹⁶³ This action reduces the income generated from sales. The most common way to avoid taxes is by obtaining loans from their headquarters' financial subsidiaries.¹⁶⁴ This amounts to excessive indebtedness as mining is a capital intensive activity.¹⁶⁵ The net effect is that companies end up paying a very low tax, as substantial interest charges reduce their taxable income.

¹⁵³ Gustavo Orellana and Nicole Keller, "Mineras revelan sus aportes de royalty sin saber aún su destino," *El Mercurio*, 19 February 2007, p. B1

¹⁵⁴ Ibid.

¹⁵⁵ Ángela Chávez, "Parlamentarios oficialistas y de oposición en pie de guerra por recursos del royalty," *Diario Financiero*, 21 March 2007, p. 25.

¹⁵⁶ Ibid.

¹⁵⁷ Nicole Keller, op. cit.

¹⁵⁸ Victor del Pino et al., op. cit., p. 227.

¹⁵⁹ "SII: Solo dos de diez empresas mineras pagan impuestos," *El Mercurio*, 10 October 2003; available from <http://www.emol.com>

¹⁶⁰ Note that the benefits under DL600 are valid for up to 20 years for project that are worth more than US\$50 million. Since a significant portion of FDI contracts under DL600 were formalized in the 1990s, many companies will enjoy these benefits until well into the next decade.

¹⁶¹ Directorio Minero de Chile (Direcmin), op. cit., p. 254.

¹⁶² Pricing arrangements between related companies.

¹⁶³ Osvaldo Castillo, "El Royalty Minero en Chile," July–October 2004; available from <http://www.monografias.com>

¹⁶⁴ "Evasión de Impuestos de Grandes Mineras Privadas: Secreto a Voces," op. cit.

¹⁶⁵ Osvaldo Castillo, op. cit.

Moreover, the tax rate for interests paid abroad is four per cent, whereas the tax rate for repatriated income is 35 per cent.¹⁶⁶

The Law on Tax Evasion and Avoidance, approved in 2001, attempts to correct these problems. Loans obtained from affiliated enterprises are now subject to a 35 per cent tax rate.¹⁶⁷ In the case of the accelerated depreciation mechanism, it is only applicable to the First Category Tax (17 per cent).¹⁶⁸ Prior to the introduction of this law, accelerated depreciation also applied to the Additional tax (35 per cent; levied on income remitted abroad) or Global Complementary tax (0–45 per cent; applies to tax payers with more than one source of earnings).

Although the Ministry of Finance has noted, with great regret, that some foreign investors have exempted themselves from the complying with the above law (pursuant to their rights under article 11 bis of the DL600¹⁶⁹),¹⁷⁰ the Chilean Copper Commission (Comisión Chilena del Cobre – COCHILCO) estimated that the number of companies incorporated into the general tax regime will increase beginning in 2004.¹⁷¹ As a consequence, tax revenues are on the rise.

Unacceptable funding of the armed forces

Some sectors of the population are unhappy that a portion of Codelco's revenues are still being channeled to the armed forces, in accordance to the *Ley Reservada del Cobre*. In 2006 alone, the armed forces received a record-breaking US\$1,266 million.¹⁷² There are pressing social needs that could be better served by these funds. The fact that the law was not changed once the transition to democracy took place is highly questioned; many believe that a continuation of Pinochet policies is not justifiable in a democratic context.

In practice, extracting the required contribution from sales rather than net income¹⁷³ can exert great pressure on Codelco's ability to meet its costs and finance its expansion plan.¹⁷⁴ It is hoped that the upcoming modifications (mentioned in Section 2) will correct this undesirable effect, while augmenting the copper profits that get to be saved. The former minister of defense estimated this savings to be worth US\$360million.¹⁷⁵

Above all, addressing the contradiction posed by the mere existence of this law in a democratic context will open the way to a fair distribution of copper revenues.

¹⁶⁶ Andrés Sanfuentes, op. cit.

¹⁶⁷ "46% menos que en 2000: Minerías pagaron US\$223 mills. en Impuestos de Primera Categoría," *Revista Minería Chilena*, September 2002; available from <http://www.editec.cl/mchilena/Sep2002/Articulo/mineras.htm>

¹⁶⁸ Ibid.

¹⁶⁹ Article 3, item a, guarantees the invariability of legal norms in effect at the time of the contract subscription.

¹⁷⁰ Chile, Ministerio de Hacienda, "En relación a la reciente discusión en torno a la tributación de las empresas mineras," Press statement, 13 January 2003; available from <http://www.hacienda.gov.cl>

¹⁷¹ Victor del Pino et al., op cit., p. 228.

¹⁷² Raúl Rivera, "Precio del cobre permite superávit fiscal histórico," op. cit.

¹⁷³ In 2004, Codelco reported US\$3,301 in utilities. Of these, US\$600 million went to the armed forces. See Tomás Flores, op. cit.

¹⁷⁴ Juan Carlos Guajardo, "La Ley Reservada del Cobre: La opinión de Cesco," op. cit. See also Chapter IV of *Informe Direcmin 2006*, op. cit.

¹⁷⁵ Giselle Concha, op. cit.

Popular rejection of policies

While some economists argue that Chile can afford to get rid of the surplus rule and spend more, most Chileans are straightforward with their opinions. According to a MORI survey, 75 per cent of Chileans do not know much about mining, but two out of three believe that the surplus should be spent today.¹⁷⁶ The pressure to increase spending is not out of place; while Chile's per capita annual income is US\$7,000,¹⁷⁷ the country is also home to the second highest level of socioeconomic inequality in the region.¹⁷⁸

Mine workers feel the same way. They have demanded that their salaries and benefits reflect the jump in copper prices. The strike at *La Escondida* mine, the largest private mine, lasted 25 days and cost owners US\$16 million in profit a day.¹⁷⁹ In the end, workers got a five per cent wage increase and a US\$16,600 bonus, about half of what they initially demanded.¹⁸⁰ The mine's owners (BHP Billiton, Rio Tinto and Mitsubishi) argued that the boom was temporary and that they need to protect themselves from future downturns.¹⁸¹

Such is the public pressure to spend copper profits that private sector leaders have vowed to shield the Minister of Finance, Andres Velasco, from it. They believe that protecting his austere fiscal policy is necessary to avoid repercussions on the business climate.¹⁸² Chileans, on the other hand, have been demanding—at the very least—improvements in the inefficient public education¹⁸³ and transportation systems.¹⁸⁴ These demonstrations have at times even turned violent.¹⁸⁵ The President's approval rating in Santiago (where approximately half of the Chilean population lives) dropped 12 points, a fact that is attributed to the failures of the city's new transportation system.¹⁸⁶ Overall, the political crisis is without precedent and it signals a potential power shift in the Chilean government, to the detriment of Bachelet's ruling coalition, the Concertación Democrática.¹⁸⁷

¹⁷⁶ “Dos de cada tres chilenos creen que excedentes del cobre se deben gastar ahora,” *Radio Cooperativa*, 10 May 2006; available from <http://www.cooperativa.cl>

¹⁷⁷ Ruth Bradley, op cit.

¹⁷⁸ After Brazil; a tenth of the Chilean population earns 47 per cent of the national income. See Mariana Martínez, “Chile: ¿milagro para todos?,” *BBCMundo.com*, 5 December 2005; available from <http://news.bbc.co.uk>

¹⁷⁹ Bloomberg News, “Copper strike brings mine closing in Chile,” *International Herald Tribune*, 18 August 2006; available from <http://www.iht.com>

¹⁸⁰ The Associated Press, “Mine strike in Chile ends,” *International Herald Tribune*, 1 September 2006; available from <http://www.iht.com>

¹⁸¹ “Third day for Chile copper strike,” *BBC News*, 9 August 2006; available from <http://news.bbc.co.uk/go/pr/fr/-2/hi/business/4775643.stm>

¹⁸² Eduardo Olivares, “Ministro de Hacienda: Empresariado activara operación ‘blindage’ sobre Velasco ante presiones para subir gasto,” *El Mercurio*, 3 March 2007, p. B2.

¹⁸³ Gabriela Perdomo, “The Misfortunes of Michelle Bachelet,” *Angus Reid Global Monitor*, 10 April 2007; available from <http://www.angus-reid.com/analysis/index.cfm?fuseaction=viewItem&itemID=15350>

¹⁸⁴ For further details, see <http://en.wikipedia.org/wiki/Transantiago>

¹⁸⁵ See Daniela Estrada, “Chile: Transantiago Shakes Up Transport and Politics,” *Tierramérica*, 7 April 2007; available from <http://ipsnews.net/news.asp?idnews=37267>

¹⁸⁶ “Encuesta Adimark: Aprobación de Bachelet registra una drástica caída en la capital,” *El Mercurio*, 7 May 2007; available from <http://www.emol.com/noticias/nacional/detalle/detallenoticias.asp?idnoticia=248232>

¹⁸⁷ The Economist Intelligence Unit, “Chile politics: Promising a better state of the nation,” 22 May 2007; available from <http://www.viewswire.com>. Raúl Zibechi, “Chile: Crisis in Neoliberal Paradise,” *La Jornada*, 21 May 2007; available from <http://frazer.rice.edu/~kriz/blog/?p=407>

5. Forecasts and Final Recommendations

Thanks to aforementioned safeguard measures and favourable market conditions, the short- and medium-term prosperity of the Chilean economy appears to be secure.

To begin with, the boom is not as transitory as some predicted. The price of copper is expected to remain relatively high as consumption continues to grow at the rapid pace of 4.8 per cent per year.¹⁸⁸ According to the panel of experts advising the Ministry of Finance, the average long-term price of copper (in the next 10 years) is a predicted US\$1.21 per pound, a 20 per cent increase from last year's estimate.¹⁸⁹ This positive outlook is encouraging more investment in the sector: in 2006, FDI flows increased by 48 per cent.¹⁹⁰

Somewhat less positive are recent IMF estimates, which see the real annual average price of copper will decline by 57 per cent by 2010. The IMF expects prices to decline as production increases and augmented stocks drive down prices.¹⁹¹ However the relationship between an overstock and a drop in prices is not always true. In February 2007, the price of copper dropped despite a 425 metric tonne decrease in the inventories held by the London Metal Exchange.¹⁹² This was deemed a technical adjustment and it came a week after agents influenced the price by adding to their short positions¹⁹³ in the copper market as the copper price recovered,¹⁹⁴ to increase their liquidity.¹⁹⁵ It was also attributed to the closing of the Shanghai Stock Exchange due to the Chinese New Year's celebration. Similar low-stock/low-price convergences have occurred subsequently in response to industry and economic news.

For 2007, prices are expected to fall and hover around US\$2 per pound. January's results more or less confirmed this. February, on the other hand, was the most volatile month since May 2006: daily price variations fluctuated between two and four per cent.¹⁹⁶ The average selling price reached US\$2.57.¹⁹⁷ The average price jumped to US\$3.52 the pound in April,¹⁹⁸ comparable to last year's high prices. This jump is the result of an unforeseen construction boom in the United States,¹⁹⁹ as well as Chinese imports. This prompted analysts to re-adjust their estimates for the average copper price for this year; they now

¹⁸⁸ IMF, *World Economic Outlook 2006*, p. 149; available from <http://www.imf.org>

¹⁸⁹ "Tomás Izquierdo: Debemos permitir que dólar baje para dinamizar la economía y el empleo," op. cit.

¹⁹⁰ United Nations Conference on Trade and Development (UNCTAD), "Foreign Direct Investment Rose by 34% in 2006," 9 January 2007; available from <http://www.unctad.org>

¹⁹¹ IMF, *World Economic Outlook 2006*, op. cit.

¹⁹² "Metal Rojo Cerró en US\$2,546 la Libra: Pese a menores inventarios cobre continua a la baja," *Diario Financiero*, 22 February 2007, p. 19.

¹⁹³ A short or short position allows sellers to profit from a drop in prices by selling a borrowed security, commodity or currency, and later buying it back at a lower price to make a profit out of the difference.

Source: *Investopedia.com*

¹⁹⁴ A seven per cent improvement relative to the average price recorded for the week of February 5–9, 244 cents/pound. Details in COCHILCO's "Mercado Internacional del Cobre" for the weeks of February 5–9 and 12–16, 2007; available from <http://www.cochilco.cl>

¹⁹⁵ Chile, COCHILCO, "Mercado Internacional del Cobre (Semana del 12 al 16 de febrero 2007)," op. cit.

¹⁹⁶ Karla Contreras, "Precio del cobre experimenta el mes de mayor volatilidad desde mayo," *Diario Financiero*, 9 March 07, p. 18.

¹⁹⁷ Chile, COCHILCO, "Informe Mensual del Mercado del Cobre: Marzo 2007"; available from <http://www.cochilco.cl/anm/articlefiles/598-BOLETINMARZO2007.pdf>

¹⁹⁸ Chile, COCHILCO, "Precios Diarios B.M.L. Cobre Grado "A"/London Metal Exchange Refined Copper Daily Prices," April 2007; available from <http://www.cochilco.cl/anm/articlefiles/607-Abril07.pdf>

¹⁹⁹ "La Libra del Metal Rojo Llegó a US\$3.03: Impulso inmobiliario en Estados Unidos empuja al cobre a nuevo máximo anual," *Diario Financiero*, 21 March 2007, p. 18.

expect it to be higher than 2006. Deutsche Bank, for instance, has set it at US\$2.86, six per cent higher than its initial estimate, whereas Goldman Sachs expects a price of US\$3.14, a three per cent increase relative to 2006's average price.²⁰⁰ Chilean officials and analysts remain cautious; their price forecast is set at US\$2.50 per pound.²⁰¹

Despite the improved expectations, copper exports dropped 20.2 per cent in March, the steepest decline since August 2002.²⁰² Copper exports in January and February managed to compensate for this loss; overall sector exports during the first quarter rose 11.7 per cent with respect to the same period in 2006.²⁰³ This and the above situations illustrate how predicting market results can be tricky.

Most analysts agree that, with their demand for copper, China and India will keep price uncertainty in check for some time.²⁰⁴ These countries are the principal drivers of copper demand and their use of the "red gold" is on the rise with industrial growth and housing demand (sparked by population increases).²⁰⁵ A major slow down of the U.S. economy is the only serious threat to their growth.

Threats and Opportunities

In the above context, the growth potential of Chile's mining sector is determined by several factors. Of these, the inflow of investment capital, along with improved trade arrangements, are positive signals.

Investment growth

Projected investments by the principal mining companies in Chile for the period of 2006–2010 are worth US\$11,126 million.²⁰⁶ Indeed, four of the top 10 mining projects in the region to materialize over the next 10 years are located in Chile.²⁰⁷ These investments are worth a total of US\$6,144 million.²⁰⁸

Investment is essential as the expansion of the sector does not necessarily depend on the availability of new deposits, but on the willingness to pay for new technology to explore and recover mineral resources.²⁰⁹

²⁰⁰ "Precio promedio del cobre en 2007 sería más alto que el año pasado," *El Mercurio*, 29 March 2007, p. B8.

²⁰¹ Ibid.

²⁰² "Envíos de cobre anotan baja de 20.2% en marzo, la mayor caída desde agosto de 2002," *Diario Financiero*, 17 April 2007, p. 27.

²⁰³ Worth US\$8,033 million. Ibid.

²⁰⁴ Although they tend to disagree over the duration of the boom. Merrill Lynch, for instance, expects overproduction to cause a drop in prices soon. For further details, see "Materias Primas: El cobre y el petróleo han logrado repuntar, pero ¿cuánto durará?" by Patrick Barta for *The Wall Street Journal of the Americas*, 2 April 2007.

²⁰⁵ At the same time, China is partly responsible for the aforementioned uncertainty; it continues to withhold information about its actual copper inventories.

²⁰⁶ This estimate is for copper mining only. See COCHILCO's study "Inversión en la Minería Chilena del Cobre y del Oro: Proyección Período 2006–2010," p. 4.

²⁰⁷ Nicole Keller, "Revista 'Ten' de Business News: Chile concentra proyectos mineros top de A. Latina en la próxima década," *El Mercurio*, 16 April 2006, p. B1, B7.

²⁰⁸ Ibid.

²⁰⁹ "Los Recursos Minerales" *MiningWatch*, available from http://www.miningwatch.ca/updir/Recursos_Minerales.pdf

Improved trade arrangements

With the signing of a partial trade agreement with India in March 2006, Chile expects to gain important advantages—in particular, a reduction in custom duties, as India currently applies a tariff of 25 per cent to refined copper.²¹⁰ Enhanced market access has been the hallmark to Chile's trade strategy, particularly in Asia—27 per cent of the country's exports go to the continent, making it the largest recipient of Chilean goods.²¹¹

The positive outlook can be marred by the higher costs associated with the following situations.

Higher cost of exploitation

As the mineral grade decreases, the cost of extraction increases as the process becomes more energy-intensive.²¹² High grade minerals require simpler extractive processes, but tend to be exploited first, as they generate a smaller cost per unit of metal obtained.²¹³

By the end of the present decade, Chile will have deposits with an average grade of 0.5 per cent.²¹⁴ The average grade of Chilean deposits currently hovers around one per cent. The Escondida mine, for instance, has reserves with an average grade of 1.59 per cent.²¹⁵ Codelco's mineral resources and reserves have a .74 per cent copper grade average.²¹⁶

Although porphyry copper deposits,²¹⁷ of the kind that exist in Chile, could contain up to two per cent copper, ²¹⁸ deposits with copper grades of more than one per cent are becoming a rarity.²¹⁹ As the grade continues to drop, more mineral tonnes need to be extracted in order to produce one tonne of copper.²²⁰ Thus, more energy has to be expended.

This is significant in an industry where 11 per cent of operational costs are attributed to energy expenses.²²¹ Hence, variations in the cost of energy have an impact on margins. Most mining companies have considered this threat; many have already made long-

²¹⁰ COCHILCO, "Impacto de los Acuerdos Comerciales en el Acceso a Mercados para los Productos Mineros Chilenos," June 2003; available from <http://www.cochilco.cl/desarrollo/estudios/aranceles.pdf>

²¹¹ Jorge Heine, op. cit.

²¹² Mineral degree is the percentage of pure copper that is obtained when removing one tonne of rock.

²¹³ "Los Recursos Minerales," op. cit.

²¹⁴ "Las Mineras con Mayores y Menores Costos en Chile," *Estrategia*, 13 Dic 2004; available from <http://www.estrategia.cl>

²¹⁵ See company website, under "Extracción Mineral."

²¹⁶ Codelco, *Memoria Anual 2006*; available from

http://www.codelco.com/la_corporacion/memorias/memoria2006/textos/home21.htm

²¹⁷ Copper deposits vary according to their geologic setting. There are three types of copper deposits: porphyry, strata-bound, and massive sulfide deposits. Porphyry deposits are the most common. For further details, see United States, Office of Technology Assessment (OTA), "Copper: Technology and Competitiveness," September 1988, p. 92; available from http://www.wws.princeton.edu/ota/ns20/year_f.html

²¹⁸ Ibid.

²¹⁹ See "Porphyry Copper Deposits of the World: Database, Map, and Grade Tonnage Models" by Donald Singer et al.; available from <http://pubs.usgs.gov/of/2005/1060/of2005-1060.pdf>

²²⁰ A one thousandth reduction in the mineral grade amounts to a loss of two pounds per tonne of copper produced. See "Plan de contención: Codelco fija meta para bajar sus costos al 2010," *El Mercurio*, 14 May 2007, p. B5.

²²¹ Ibid.

term arrangements with energy providers. With these in place, their energy needs are not at risk, even now that Chile faces an energy crisis.²²²

Water shortage and global warming

According to Diego Hernandez, president of BHP Billiton's Base Metals, water in the north of Chile—where most copper deposits are located—has likely reached its limits.²²³ Water is needed for various mining operations, including mining (quarrying and drilling), metallurgical processing (crushing for dust control, washing, and material flotation or separation), and transportation (through pipes). Future projects will have to consider using sea water, which is more expensive and will, therefore, affect the Chilean mining industry's competitiveness.²²⁴ Again, this is because a significant increase in costs has an impact on margins.

Additionally, the need to mitigate climate change could eventually force mining companies to curb their greenhouse gas emissions. As explained, copper production is energy-intensive; it releases substantial amounts of CO₂, particularly in the smelting and refining phase.²²⁵ Mitigation would require investing in fuel cell technology, which reduces such emissions. While this is actually an opportunity to upgrade technology and make the production process more sustainable, it could also become a burden for those companies that postpone such investment until the pressure sets in.

Supply disruptions

Strikes are a well known cause of supply disruptions. Their threat is not to be taken lightly, as it “makes markets nervous and can attract further attention from speculators, which may drive the price even higher in the short-term.”²²⁶ Unforeseen events, such as mine collapses, can also affect production rates. The collapse of the northeast wall of Chuquicamata's transfer stations in July 2006, for instance, required a four-month audit by an external contractor.²²⁷ In the meantime, Codelco had to rent equipment to transfer the ore from the mine to the storage areas; re-establishment of the mine's productive capacity was achieved in mid-September.²²⁸

²²² Chile depends on Argentina's gas to generate a third of its electricity needs. Argentina recently doubled up the price of natural gas exported to Chile in response to a domestic energy crisis. For more details, see Richard Laper and Benedict Mander, op cit.

²²³ Gustavo Orellana, “Diego Hernández, presidente de Base Metals de BHP Billiton: ‘La ley ambiental requiere ajustes y darle al Gobierno un perfil técnico,’” *El Mercurio*, 3 February 2007.

²²⁴ Ibid. Some companies, including BHP Billiton and Antofagasta PLC, have already invested in desalination facilities. Details in “Antofagasta approves development of Esperanza copper-gold project in Chile,” *Metals Place*, 2 July 2007, and “BHP Billiton Approves Escondida Sulphide Leach Project,” *Minerals Engineering International Online*, 6 April 2006.

²²⁵ Frank Messner, “Towards a Sustainable Copper Industry? Trends in Resource Use, Environmental Impacts and Substitution in the Global Copper Industry,” Helmholtz Centre for Environmental Research (UFZ) Discussion Paper (Economics, Sociology and Law Section), 1/2001, February 2001, p. 14; available from <http://www.ufz.de>

²²⁶ “Trends in Copper: Unprecedented Price Levels in 2006,” op. cit.

²²⁷ See Codelco's Press Release in <http://www.codelco.com/english/prensa/archivo/detalle.asp?id=20061214175602>

²²⁸ Ibid.

Substitution and recycling

Copper recycling is on the rise. This is explained by the introduction of secondary copper processing plants, as well as the increasing availability of scrap.²²⁹ 2.1 million metric tonnes were recycled in 2005, comprising about 13 per cent of total global copper production.²³⁰

Besides a lack of extraction costs, one of the advantages of recycled copper is that the separation techniques employed during the recycling process are environmentally sustainable.²³¹ “Energy savings from recycling copper scrap compared to production of primary copper can range from 65 per cent to 95 per cent depending on quality and copper contents of the scrap.”²³²

Still, there are also drawbacks associated with recycling—namely, that it has contributed to a growth in copper theft. Copper cables, plumbing and metres are often snatched away and turned into scrap to be sold in the black market, where a kilo now sells for US\$7.60.²³³ Some observers speculate that the destination for most of the illegal copper is China.²³⁴

Copper theft in Chile increased fivefold in 2006.²³⁵ Electric companies spent at least US\$3 million to replace part of the missing 309 tonnes of copper cable.²³⁶ To deter thieves, Chilectra, the largest electric company, has been replacing stolen copper wires with aluminum ones.²³⁷ This type of criminal activity has serious repercussions, not just for the mining sector, but for the economy in general: power lines go down, interrupting the provision of basic utilities; some people have been left without phone service for months; and in cases of stolen water meters, homes have been flooded and owners have had to pay for a replacement metre.²³⁸

The Chilean senate is currently revising a proposal to reform the Penal Code, which does not take this crime into account. The proposal also considers expending tough sanctions of up to five years of prison.²³⁹ These would apply even for those who knowingly transport and/or buy stolen copper goods.²⁴⁰

²²⁹ Oleg Dziubinski and Ralph Chipman, “Trends in Consumption and Production: Selected Minerals,” United Nations DESA Discussion Paper No. 5. March 1999, p. 6; available from <http://www.un.org/esa/sustdev/publications/esa99dp5.pdf>

²³⁰ Phillip Crowson, “The Copper Industry,” p. 6; available from <http://www.zentrum-transformation.bundeswehr.de>

²³¹ Frank Messner, op. cit., p. 16.

²³² Oleg Dziubinski and Ralph Chipman, op. cit., p. 6.

²³³ “Se triplican robos de cables de cobre en Chile,” *La Voz*, 02 November 2006; available from <http://www.azcentral.com>

²³⁴ Juan Carlos Guajardo, interview, op. cit.

²³⁵ “Investigaciones prevendrá robo de cable de cobre junto a Chilectra y Telefónica,” *Radio Cooperativa*, 21 March 2007; available from <http://www.cooperativa.cl>

²³⁶ “Se triplican robos de cables de cobre en Chile,” op. cit.

²³⁷ Bernardita Aguirre, “Robo de cables de cobre: el delito económico del momento en Chile,” 1 December 2006; available from <http://capacitacionencostos.blogia.com>

²³⁸ Ibid.

²³⁹ Chile, Senado, “Endurecerán las sanciones de cárcel y multas en contra de quienes fundan metales robados,” 6 September 2006; available from <http://www.senado.cl>

²⁴⁰ Bernardita Aguirre, op. cit.

With regard to substitution, the International Copper Association estimates that 17 per cent of global copper consumption has the potential to switch to other alternatives, such as aluminum.²⁴¹ This is likely in a context for high copper prices. However, substitution would occur at a gradual pace, over the course of several years.

Increased dependence on copper

According to a recent study by Econsult, the top three companies in Chile are responsible for 92 per cent of the wealth created in 2006.²⁴² Codelco is one of these, and the other two are also mining companies. The same study concludes that this is not a desirable result, not just because the wealth is concentrated in one sector, but because it is attributed to external conditions (namely high copper prices).

Dependence on one export market can also carry risks. China's demand for copper and other Chilean commodities, such as cellulose, might result in overdependence on a single market. This, in turn, discourages diversification and makes the country more susceptible to external conditions.²⁴³

What is more worrisome is that most of Chile's economic indicators²⁴⁴ heavily depend on copper prices: for example, 34 per cent of the fiscal revenues are generated from taxes to the mining sector.²⁴⁵ While copper market trends indicate a somewhat stable demand until 2010, dependence on the commodity should be inversely proportional to its exports.

Final Remarks and Recommendations

In her most recent State of the Nation Address,²⁴⁶ President Michelle Bachelet made several important concessions. Fiscal spending will increase to address concerns raised by the public, especially in education. To augment budget funds, the fiscal surplus requirement of one per cent will be downsized to 0.5 per cent. This means that available funds will increase by US\$750 million per year.²⁴⁷

The decision to make these funds available has been applauded by a majority. In particular, channeling a significant portion to education is seen as a positive and necessary step to eliminate socioeconomic disparities and improve the quality of available human capital. The latter is essential to foster innovation and increase competitiveness.²⁴⁸

²⁴¹ Dorothy Kosich, "Merrill Lynch predicts 30% drop in copper prices next year," *Mineweb*, 10 November 2006. Available from <http://www.mineweb.net>

²⁴² Marta Lillo, "Cobre representa 90% de la creación de valor de las empresas en 2006," *Diario Financiero*, 18 May 2007, p. 21.

²⁴³ Tamara Trinh et al., "China's commodity hunger: Implications for Africa and Latin America," *Deutsche Bank Research*, 13 June 2006; available from <http://www.dbresearch.com>

²⁴⁴ Indicators such as exchange rate, number of exports, commercial balance, fiscal balance, etc.

²⁴⁵ DIPRES, *Estadísticas de las Finanzas Públicas*, op. cit.

²⁴⁶ The address was given on May 21, 2007.

²⁴⁷ This will come into effect during the preparation of next year's budget, which, contrary to analysts' expectations, will not exceed nine per cent of GDP. Details in "La Semana Económica," *El Mercurio*, 28 May 2007, p. A3, and "Ministro Velasco descarta aumento de dos dígitos en gasto público en 2008" by Eduardo Olivares.

²⁴⁸ According to the 2006–2007 Global Competitiveness Index, Chile ranks 27th, the highest ranking for a Latin American country (and the only one in the top 50). The Institute for Management and Development (IMD), on the other hand, ranks Chile 26th, three spots below its 2006 ranking and its lowest score since

Maintaining the fiscal surplus rule permits the country to keep its savings up without dismissing current societal needs. But sustaining the policy would come at a great political cost: it would be tantamount to complacency when the government should be taking advantage of the current boom to improve the country's prospects in the medium and long term. This would help reduce Chile's dependency on copper. A surefire way of achieving this is by investing in R&D and augmenting industrial potential.

The fact that investment in value-added, parallel industries such as refineries do not abound is explained by their low return on investment.²⁴⁹ This is more evident in the case of refineries that are not vertically integrated.²⁵⁰ Most FDI has been geared towards exploratory and production processes. Nevertheless, the level of current copper demand and production assuages the investment's risk as this is associated with the availability of copper concentrates to process.

In the case of R&D, a focus on mining could be beneficial to Chile, as it enhances the country's potential to export related technology and services. This strategy would not deviate too much from the country's comparative advantages. Still, a complementary strategy is needed, particularly one that does not rely on commodities for sustenance. To come up with such strategy, the government would need to identify a niche. Long-term financing of innovation programs will be made possible by surplus royalties, which will be saved in the FEES and withdrawn when royalties fall short of expectations.²⁵¹

Lastly, the Chilean government should follow the example of its Norwegian counterpart. According to its minister of petroleum and energy, Mr. Odd Roger Enoksen, successful resource management is based on the following principles:

1. Good resource management policies to ensure that the resources are efficiently extracted/produced.
2. Revenues must be disposed in such a way as to generate welfare.
3. The wealth must benefit all sectors of society.
4. Resources should pave the way to industrial development.²⁵²

Minister Enoksen warns that the above principles do not work in the absence of legitimacy. Successful resource management needs to be based on national consensus. It seems that the Chilean government has been taking notes as it is now more responsive to the will of the people, without neglecting the need to maintain its disciplined fiscal policy. Good governance is, after all, essential for sustainable development.

1994. See IMD's 2007 World Competitiveness Scoreboard at <http://www.imd.ch>; and "Chile cae a su nivel más bajo en ranking de competitividad" by Andrea Araya and Rodrigo Cárdenas.

²⁴⁹ Patricio Meller, "El Cobre Chileno y la Política Minera: una Síntesis," *Asuntos Públicos*, Informe No. 293, 27 February 2003; available from <http://www.asuntospublicos.org>

²⁵⁰ Ibid.

²⁵¹ Nicole Keller, "Excedentes suman US\$140 millones en 2007: Ahorros del royalty serán invertidos en fondo del cobre," *El Mercurio*, 4 June 2007, p. B7.

²⁵² Odd Roger Enoksen, "The Benefits of Transparency," speech, 17 October 2006; available from <http://www.regjeringen.no>

Bibliography

- Aguirre, Bernardita. "Robo de cables de cobre: el delito económico del momento en Chile." 1 December 2006. <<http://capacitacionencostos.blogia.com>>
- Allende, Salvador. Address to the National Congress in Regards to the Constitutional Reform Project for the Nationalization of the Copper. July 11, 1971.
- Álvarez, Verónica and Soledad Santa Ana. "Tendencias Regulatorias en el Manejo de la Riqueza Minera e Implicancias para los Proyectos de Inversión en Chile." COCHILCO. April 2005.
- Aninat, Eduardo. "Chile in the 1990s: Embracing Development Opportunities." *Finance & Development*. March 2000, p. 19–21.
- "Ante Presiones por Nivel del Dólar: Hacienda Anuncia Ajustes en Manejo de Excedentes del Cobre." *Estrategia*. 21 April 2006. <<http://www.estrategia.cl>>
- "Anticipan récord de inversiones y tributación minera en 2005." *La Tercera*. 29 Dic 2004. <<http://www.sii.cl>>
- "Antofagasta approves development of Esperanza copper-gold project in Chile." *Metals Place*. 2 July 2007. <<http://metalsplace.com/news/?a=13063>>
- Araya, Andrea and Rodrigo Cárdenas. "Chile cae a su nivel más bajo en ranking de competitividad." *Diario Financiero*. 9 May 2007, p. 27.
- Arrau, Patricio et. al. "Aprovechemos la Oportunidad." *El Mercurio Online* (EMOL), September 2006. <<http://www.economiaynegocios.cl>>
- The Associated Press. "Mine strike in Chile ends." *International Herald Tribune*. 1 Sep 2006. <<http://www.iht.com>>
- Aur Resources Inc. "Copper Fundamentals." <<http://www.aurresources.com/copper/fundamentals.htm>>
- Barta, Patrick. "Materias Primas: El cobre y el petróleo han logrado repuntar, pero ¿cuánto durará?" *The Wall Street Journal of the Americas* (published in *El Mercurio*). 2 April 2007, P B11.
- Bhar, Robin and John Reade. "Codelco workers oppose sale of Gaby mine stake to Minmetals." *OANDA FXTrade*. 26 March 2007. <<http://fxtrade.oanda.com/resources/ubsnews/newscontent/135570.shtml>>
- "BHP Billiton Approves Escondida Sulphide Leach Project." *Minerals Engineering International Online*. 6 April 2006. <<http://www.min-eng.com/commodities/metallic/copper/news/33.html>>
- Bloomberg News. "Copper strike brings mine closing in Chile." *International Herald Tribune*. 18 August 2006. <<http://www.iht.com>>

- Bradley, Ruth. "Managing Chile's Copper Wealth." *Business Chile*. No. 240, December 2006.
<<http://www.businesschile.cl>>
- Cárdenas, Rodrigo. "Ministerio de Hacienda Publicó el Decreto que Regula la Inversión de estos Recursos: Instrumentos de firmas chilenas podrían captar hasta el 25% del fondo de pensiones." *Diario Financiero*. 15 February 2007, p. 26
- Castillo, Osvaldo. "El Royalty Minero en Chile." *Monografías.com*. July–October 2004.
<<http://www.monografias.com>>
- Chávez, Ángela. "Parlamentarios oficialistas y de oposición en pie de guerra por recursos del royalty." *Diario Financiero*. 21 March 2007. p. 25.
- Chile. Banco Central. *Base de Datos Económicos*.
<<http://si2.bcentral.cl/basededatoseconomicos/900base.asp?usuIdioma=E>>
- Chile. Banco Central. *Síntesis Estadística de Chile, 1995–1999*
- Chile. Banco Central. *Síntesis Estadística de Chile, 2001–2005*.
- Chile. Comisión Chilena del Cobre (COCHILCO). *Anuario 1987–2006*.
<<http://www.cochilco.cl/desarrollo/estudios/anuario-pdf-final.pdf>>
- Chile. Comisión Chilena del Cobre (COCHILCO). "Impacto de los Acuerdos Comerciales en el Acceso a Mercados para los Productos Mineros Chilenos." June 2003. <<http://www.cochilco.cl/desarrollo/estudios/aranceles.pdf>>
- Chile. Comisión Chilena del Cobre (COCHILCO). "Inversión Materializada según DL600." 2004. <<http://www.cochilco.cl/inversion/dl600.asp>>
- Chile. Comisión Chilena del Cobre (COCHILCO). "Mercado Nacional e Internacional del Molibdeno." August 2005.
- Chile. Comisión Chilena del Cobre (COCHILCO). "Inversión en la Minería Chilena del Cobre y del Oro: Proyección Periodo 2006–2010." August 2006.
- Chile. Comisión Chilena del Cobre (COCHILCO). "Mercado Internacional del Cobre: Febrero 5–9, 2007." 9 February 2007.
<<http://www.cochilco.cl/anm/articlefiles/563-MERC09022007.pdf>>
- Chile. Comisión Chilena del Cobre (COCHILCO). "Mercado Internacional del Cobre: Febrero 12–16, 2007." 18 February 2007.
<<http://www.cochilco.cl/anm/articlefiles/568-MERC16022007.pdf>>
- Chile. COCHILCO. "Informe Mensual del Mercado del Cobre: Marzo 2007." March 2007. <<http://www.cochilco.cl/anm/articlefiles/598-BOLETINMARZO2007.pdf>>
- Chile. Comisión Chilena del Cobre (COCHILCO). "Precios Diarios B.M.L. Cobre Grado "A"/London Metal Exchange Refined Copper Daily Prices." April 2007.
<<http://www.cochilco.cl/anm/articlefiles/607-Abril07.pdf>>

- Chile. Consejo de Innovación. Home page. <<http://www.consejodeinnovacion.cl>>
- Chile. Corporación Chilena del Cobre (Codelco). "La Corporación." <http://www.codelco.com/la_corporacion/fr_corporacion.html>
- Chile. Corporación Chilena del Cobre (Codelco). "La Corporación: Cifras." <http://www.codelco.com/la_corporacion/cifras.asp >
- Chile. Corporación Chilena del Cobre (Codelco). "¿Cuál es el origen de la Ley Reservada del Cobre?" March 2005. <http://www.ftc.cl/home_archivos/temas>
- Chile. Corporación Chilena del Cobre (Codelco). Press release. July 2006. <<http://www.codelco.com/english/prensa/archivo/detalle.asp?id=20061214175602>>
- Chile. Corporación Chilena del Cobre (Codelco). *Memoria Anual 2006*. <http://www.codelco.com/la_corporacion/memorias/memoria2006/>
- Chile. Dirección General de Relaciones Económicas Internacionales (DIRECON). "Comercio Exterior de Chile, 4to. Trimestre de 2006." January 2007. <http://www.direcon.cl/pdf/Correc_Inf_2006.pdf>
- Chile. Dirección General de Relaciones Económicas Internacionales (DIRECON). "Comercio Exterior de Chile: Primer Trimestre 2007." May 2007. <<http://cms.chileinfo.com/documentos/Informe%201er%20Trimestre%202007.pdf>>
- Chile. Dirección de Presupuestos (DIPRES). *Estadísticas de las Finanzas Públicas*. <http://www.dipres.cl/fr_estadisticas.html >
- Chile. Dirección de Presupuestos (DIPRES). *Informe de Finanzas Públicas: Proyecto de Ley de Presupuestos del Sector Público para el año 2007*. October 2006.
- Chile. Dirección de Presupuestos (DIPRES). *Ley de Presupuestos del Sector Público 2007*. <<http://www.dipres.cl/presupuesto/2007.asp?anno=2007>>
- Chile. Government. "Codelco and Minmetals Sign Strategic Deal." <<http://www.chileangovernment.cl>>
- Chile. Ministerio de Defensa Nacional. *Libro de la Defensa Nacional de Chile: Año 2002*. <<http://www.resdal.org/Archivo/d00001fd.htm>>
- Chile. Ministerio de Hacienda. "En relación a la reciente discusión en torno a la tributación de las empresas mineras." Press statement. 13 January 2003. <<http://www.hacienda.gov.cl>>
- Chile. Ministerio de Hacienda. "Plan Chile Compite." <<http://www.mindha.cl>>
- Chile. Ministerio de Hacienda. "Sala del Senado se pronuncia sobre proyecto de ley de Responsabilidad Fiscal." 18 July 2006. <<http://www.mindha.cl>>

- Chile. Ministerio de Hacienda. “Ministro de Hacienda destaca posición de Chile como Economía más competitiva de América Latina.” 28 September 2006. <<http://www.hacienda.cl>>
- Chile. Ministerio de Hacienda. “Ministro Velasco destacó que Chile ha sido exitoso en evitar que aumento del precio del cobre se traduzca en un tipo de cambio poco competitivo.” 31 October 2006. <<http://www.hacienda.cl>>
- Chile. Ministerio de Hacienda. “Ministro Velasco adelantó constitución de fondos de inversión del superávit fiscal para apoyar competitividad de la economía.” 2 November 2006. <<http://www.hacienda.cl>>
- Chile. Ministerio de Hacienda. “Congreso despacha Proyecto de Ley de Presupuestos del Sector Público para 2007.” 16 November 2006. <<http://www.hacienda.cl>>
- Chile. Ministerio de Hacienda. “Ministro de Hacienda anuncia constitución de fondos de inversión del superávit fiscal en el exterior y política de inversiones asociada.” 23 November 2006. <<http://www.mindh.cl>>
- Chile. Senado. “Endurecerán las sanciones de cárcel y multas en contra de quienes fundan metales robados.” 6 September 2006. <<http://www.senado.cl>>
- “Chilean copper duo.” *Mining Magazine*. Vol. 195, No. 1, July 2006, p. 12–13.
- “Chilean nationalization of copper.” *Wikipedia*. <http://en.wikipedia.org/wiki/Chilean_nationalization_of_copper>
- “China, Chile set up joint venture to mine copper.” *Xinhuanet*. 22 February 2006. <<http://www.theminingnews.org/news.cfm?newsID=1847>>
- “Clamor over Chilean Copper.” *Time Magazine*. 27 June 1969. <<http://www.time.com/time/magazine/article/0,9171,900952,00.html>>
- “Codelco entrega la fisco excedentes record, pero cae la producción y costos se disparan.” *El Mercurio*. 2 March 2007. <<http://www.elmercurio.cl>>
- “Comercio Exterior: Exportaciones frutícolas crecerían cerca de 10%.” *El Mercurio*. 15 February 2007, p. B5.
- “Commodities: Celulosa Anotó Nuevo Récord y Cobre Vuelve a los US\$3 por Libra.” *Estrategia*. 20 December 2006, p. 7.
- Concha, Giselle. “Bachelet tiene en sus manos propuestas para modificar Ley Reservada del Cobre.” *La Nación*. 24 January 2007. <<http://www.lanacion.cl>>
- Consejo Minero. *Informe 2001 de la Gran Minería Chilena*. <<http://www.consejominero.cl/Biblioteca/informes.asp>>
- “Consigno Aduanas: Intercambio Comercial de Enero Llegó a US\$8.743 Millones.” *Estrategia*. 19 February 2007, p. 7.

- Contreras, Karla. "Precio del cobre experimenta el mes de mayor volatilidad desde mayo." *Diario Financiero*. 9 March 07, p. 18.
- Crowson, Phillip. "The Copper Industry." *Bundeswehr Transformation Centre*.
<<http://www.zentrum-transformation.bundeswehr.de>>
- Decreed Law No. 600 (DL600, Estatuto de la Inversión Extranjera)*. Adopted in 1974.
<<http://www.foreigninvestment.cl/archivos/DL600ingles.pdf>>
- "Defensa espera amplio consenso político para reformar Ley Reservada del Cobre."
Radio Cooperativa. 9 June 2006. <<http://www.cooperativa.cl>>
- De Gregorio, José. "La Bonanza del Cobre : Impacto Macroeconómico y Desafíos de Política." Presentation. 30 May 2006.
<<http://www.bcentral.cl/politicas/presentaciones/consejeros/2006.htm>>
- del Pino, Victor et al. "Desempeño Financiero y Tributario, Gran Minería del Cobre de Chile." COCHILCO. 2004.
- Directorio Minero de Chile (Direcmin). *Informe Diremin 2006*.
<http://www.direcmin.cl/informe_direcmin_2006/cap4.pdf>
- "Dos de cada tres chilenos creen que excedentes del cobre se deben gastar ahora." *Radio Cooperativa*. 10 May 2006. <<http://www.cooperativa.cl>>
- Duery, Lilian. "Fondos del cobre agitan a la ciencia." *El Mercurio*. 5 September 2005.
<<http://www.ceo.cl>>
- Dzioubinski, Oleg and Ralph Chipman. "Trends in Consumption and Production: Selected Minerals." United Nations DESA Discussion Paper No. 5. March 1999.
<<http://www.un.org/esa/sustdev/publications/esa99dp5.pdf>>
- Minera Escondida. "Extracción Mineral."
<<http://www.escondida.cl/escondida/web/Proceso/Extraccion/>>
- Economic Commission for Latin America and the Caribbean (ECLAC). *La Inversión Extranjera en América Latina y el Caribe: Informe 1998*.
<<http://www.eclac.cl/publicaciones/xml/2/4262/capitulo1b:PDF>>
- Economic Commission for Latin America and the Caribbean (ECLAC). *Balance Preliminar de las Economías de América Latina y el Caribe 2006*. December 2006.
- The Economist Intelligence Unit. "Chile politics: Promising a better state of the nation."
22 May 2007. <<http://www.viewswire.com>>
- Ellis, Evan. "The New Chinese Engagement with Latin America: Understanding its Dynamics and the Implications for the Region." *Air and Space Power Journal*. 3rd Quarter, 2006.
<<http://www.airpower.maxwell.af.mil/apjinternational/apjs/2006/3tri06/elliseng.html>>

- “Encuesta Adimark: Aprobación de Bachelet registra una drástica caída en la capital.” *El Mercurio*. 7 May 2007. <<http://www.emol.com>>
- Enoksen, Odd Roger. “The Benefits of Transparency.” Speech. 17 October 2006. <<http://www.regjeringen.no>>
- “Envíos de cobre anotan baja de 20.2% en marzo, la mayor caída desde agosto de 2002.” *Diario Financiero*. 17 April 2007, p. 27.
- Estrada, Daniela. “Chile: Transantiago Shakes Up Transport and Politics.” *Tierramérica*. 7 April 2007. <<http://ipsnews.net/news.asp?idnews=37267>>
- “Evasión de Impuestos de Grandes Minerías Privadas: Secreto a Voces,” *La Nación*. 1 October 2001. <<http://www.sii.cl>>
- “Excedentes del Cobre: Bachelet se queda con el vuelto.” *El Periodista*. Año 3, No. 71, 24 September 2004. <<http://www.elperiodista.cl>>
- Fitch Ratings. *Sovereigns*. <<http://www.fitchratings.com>>
- Flores, Tomás. “Excedentes del cobre para cuando vuelvan los tiempos difíciles.” *La Tercera*. 18 March 2005. <<http://www.lyd.com/noticias/opiniones/excedentes.html>>
- “46% menos que en 2000: Minerías pagaron US\$223 mills. en Impuestos de Primera Categoría.” *Revista Minería Chilena*. September 2002. <<http://www.editec.cl/mchilena/Sep2002/Articulo/mineras.htm>>
- French-Davis, Ricardo and Leonardo Villar. “The Capital Account and Real Macroeconomic Stabilization: Chile and Colombia.” Paper for ECLAC Seminar on Management of Volatility, Financial Liberalization and Growth in Emerging Economies. 24–25 April 2003. <<http://unjobs.org/authors/ricardo-ffrench-davis>>
- “Gasto militar: Cambio en manejo de ‘Ley del Cobre.’” *El Mercurio*. 20 September 2004. <<http://www.sii.cl>>
- Guajardo, Juan Carlos. Interview by author, 20 April 2007. Santiago, Chile. Written notes.
- Guajardo, Juan Carlos. “Ley Reservada del Cobre: La Opinión de Cesco.” *Centro de Estudios del Cobre y la Minería (CESCO)*. <<http://www.cesco.cl>>
- “Kennecott Copper Corporation.” Lehman Brothers Inc. Collection. Harvard Business School. <<http://www.library.hbs.edu/hc/>>
- Halvorsen, Kristin. “The Norwegian Economic Model – prosperous and sustainable?” Speech. 5 February 2007. <<http://www.regjeringen.no>>
- “Imacec superó expectativas y registró crecimiento de 6,5% en marzo.” *UPI.com*. 7 May 2007. <<http://www.upi.com>>

- Institute for Management and Development (IMD). “2007 World Competitiveness Scoreboard.” <<http://www.imd.ch>>
- International Monetary Fund (IMF). *Annual Report of the Executive Board for the Financial Year Ended April 30, 1997*. <<http://www.imf.org/external/pubs/ft/ar/index.htm>>
- International Monetary Fund (IMF). “Copper windfall brightens Chile’s outlook but must be managed prudently.” *IMF Survey*. Vol. 35, No.19, 16 October 2006. <<http://www.imf.org>>
- “Investigaciones prevendrá robo de cable de cobre junto a Chilectra y Telefónica.” *Radio Cooperativa*. 21 March 2007. <<http://www.cooperativa.cl>>
- Keller, Nicole. “Revista ‘Ten’ de Business News: Chile concentra proyectos mineros top de A. Latina en la próxima década,” *El Mercurio*, 16 April 2006, p. B1, B7.
- Keller, Nicole. “Ex ministro de Hacienda Nicolás Eyzaguirre: ‘Gobierno no tiene obligación legal de destinar a innovación todo el royalty.’” *El Mercurio*. 20 April 2007, p. B1–2.
- Keller, Nicole. “Excedentes suman US\$140 millones en 2007: Ahorros del royalty serán invertidos en fondo del cobre.” *El Mercurio*. 4 June 2007, p. B7
- Kosich, Dorothy. “Merrill Lynch predicts 30% drop in copper prices next year.” *Mineweb*. 10 November 2006. <<http://www.mineweb.net>>
- Heine, Jorge. “China, Chile, and free trade agreements.” *The Hindu*. 22 November 2005. <<http://www.thehindu.com/2005/11/22/stories/2005112203881000-.htm>>
- “La Libra del Metal Rojo Llegó a US\$3.03: Impulso inmobiliario en Estados Unidos empuja al cobre a nuevo máximo anual.” *Diario Financiero*. 21 March 2007, p. 18.
- “La Semana Económica.” *El Mercurio*. 28 May 2007, p. A3
- “Las Mineras con Mayores y Menores Costos en Chile.” *Estrategia*. 13 Dic 2004. <<http://www.estrategia.cl>>
- Lapper, Richard and Benedict Mander. “Chile unbent by copper price volatility.” *FT.com*. 12 November 2006. <<http://www.ft.com>>
- Ley No. 20.026 - Ley de Impuesto Específico a la Actividad Minera* (Royalty II Law – Specific Tax to the Mining Activity). Enacted on 16 May 2005. <<http://www.cochilco.cl>>
- Lillo, Marta. “Cobre representa 90% de la creación de valor de las empresas en 2006.” *Diario Financiero*. 18 May 2007, p. 21.
- Ling, Wang. “Chinese Copper Supply’s Current Status – A country hungers for copper.” Presentation. Santiago, Chile. 4 October 2006. <<http://www.cochilco.cl/prensa/ppt.asp>>

- London Metal Exchange (LME). *Copper Grade A*. Hub page.
<<http://www.lme.co.uk/copper.asp>>
- “Los Recursos Minerales.” *MiningWatch*.
<http://www.miningwatch.ca/updir/Recursos_Minerales.pdf>
- Martínez, Mariana. “Chile: ¿milagro para todos?” *BBCMundo.com*. 5 December 2005.
<<http://news.bbc.co.uk>>
- Martínez, Mariana. “Chile y el ‘oro rojo.’” *BBC Mundo*. 7 August 2006.
<<http://news.bbc.co.uk>>
- Meller, Patricio. “Cobre: Dilemas Centrales.” Presentation.
<<http://www.lyd.org/programas/economico/mineria/cobre.ppt>>
- Meller, Patricio. “El Cobre Chileno y la Política Minera: una Síntesis.” *Asuntos Públicos*. Informe No. 293, 27 February 2003. <<http://www.asuntospublicos.org>>
- Messner, Frank. “Towards a Sustainable Copper Industry? Trends in Resource Use, Environmental Impacts and Substitution in the Global Copper Industry.” Helmholtz Centre for Environmental Research (UFZ) Discussion Paper (Economics, Sociology and Law Section), 1/2001. February 2001.
<<http://www.ufz.de>>
- “Metal Rojo Cerró en US\$2,546 la Libra: Pese a menores inventarios cobre continua a la baja.” *Diario Financiero*. 22 February 2007, p. 19.
- Norway. Ministry of Finance. “The Government Pension Fund.”
<<http://www.regjeringen.no>>
- Norway. Norges Bank. “The Government Pension Fund - Global.”
<http://www.norges-bank.no/Pages/Article____41137.aspx>
- Olivares, Eduardo. “Marcel: ‘El 1% de la regla fiscal no esta escrito en la Biblia ni en la Constitución.’” *El Mercurio*. 14 dic 2006. <<http://diario.elmercurio.com>>
- Olivares, Eduardo. “Ministro de Hacienda: Empresariado activara operación ‘blindage’ sobre Velasco ante presiones para subir gasto.” *El Mercurio*. 3 March 2007, p. B2.
- Olivares, Eduardo. “Superávit fiscal marca record en 17 años y en tres meses es la mitad del previsto para 2007.” *El Mercurio*. 28 April 2007, p. B7.
- Olivares, Eduardo. “Ministro Velasco descarta aumento de dos dígitos en gasto público en 2008.” *El Mercurio*. 2 July 2007, p. B2.
- Orellana, Gustavo. “Diego Hernández, presidente de Base Metals de BHP Billiton: ‘La ley ambiental requiere ajustes y darle al Gobierno un perfil técnico.’” *El Mercurio*. 3 February 2007.

- Orellana, Gustavo. "Minería: Gaby tiene más cobre que lo previsto." *El Mercurio*. 16 March 2007, p. B3.
- Orellana, Gustavo and Nicole Keller. "Mineras revelan sus aportes de royalty sin saber aún su destino." *El Mercurio*. 19 February 2007, p. B1
- James Otto et al. *Global Mining Taxation Comparative Study*, 2nd edition. Colorado: Golden, 2000.
- Otto, James. "Mining Taxation in Developing Countries." November 2000. <<http://www.unctad.org/infocomm/diversification/cape/word/otto.doc>>
- "Paquete de Medidas: Hacienda opta por invertir hasta 100% de los excedentes del cobre en el exterior." *Minerialoglobal.cl*. 3 May 2006. <<http://www.minerialoglobal.cl>>
- Perdomo, Gabriela. "The Misfortunes of Michelle Bachelet." *Angus Reid Global Monitor*. 10 April 2007. <<http://www.angus-reid.com/analysis/index.cfm?fuseaction=viewItem&itemID=15350>>
- "Plan de contención: Codelco fija meta para bajar sus costos al 2010." *El Mercurio*. 14 May 2007, p. B5.
- "Precio de commodities: Petróleo y cobre en su peor inicio de año de la historia." *El Mercurio*. 10 January 2007, p. B1, B5.
- "Precio promedio del cobre en 2007 sería más alto que el año pasado." *El Mercurio*. 29 March 2007, p. B8.
- "Resultados de empresas al primer trimestre 2007." *El Mercurio*. 30 April 2007, B10–12.
- Reuters. "Chile reporta superávit récord de 7.9 % en 2006 por altos precios del cobre." *El Mercurio*. 31 January 2007. <<http://www.economiaynegocios.cl/noticias/noticias.asp?id=100160>>
- Rivera, Raúl. "Precio del cobre permite superávit fiscal histórico." *La Nación*. 1 February 2007. <<http://www.lanacion.cl>>
- Sanfuentes, Andrés. "El 'Royalty' y las Reglas del Juego: Antecedentes del Conflicto." *Asuntos Públicos - Informe No. 393*. Economía, 14 May 2004. <<http://www.asuntospublicos.org>>
- "SII: Solo dos de diez empresas mineras pagan impuestos." *El Mercurio*. 10 October 2003. <<http://www.emol.com>>
- Scherman, Andrés. "Estudio: Cochilco asegura que minería chilena es la más rentable del mundo." *El Mercurio*. 29 Dic 2004. <<http://www.sii.cl>>
- "Short." Def. 1. *Investopedia.com*. <<http://www.investopedia.com>>
- Singer, Donald et al. "Porphyry Copper Deposits of the World: Database, Map, and

- Grade Tonnage Models.” U.S. Geological Survey Open-File Report 2005–1060. <<http://pubs.usgs.gov/of/2005/1060/of2005-1060.pdf>>
- Sociedad nacional de Minería (SONAMI). “Fundamentos para el Desarrollo Minero de Chile.” January 2006.
- “Sólido Dinamismo en China e India Asegura Alto Precio del Cobre.” *Estrategia*. 8 January 2007, p. 8, 10.
- Standard & Poor’s. *Ratings*. <<http://www.standardandpoors.com>>
- Sunkel, Osvaldo and Ricardo Infante. “Hacia un Crecimiento Incluyente.” *Foro Chile* 21. November 2006, p. 12–14.
- Tammy, John. “From Copper to Capital: The message of commodity-price volatility.” *NRO Financial*. 18 September 2006. <<http://article.nationalreview.com>>
- “Third day for Chile copper strike.” *BBC News*. 9 August 2006. <<http://news.bbc.co.uk/go/pr/fr/-2/hi/business/4775643.stm>>
- “Tomás Izquierdo: Debemos permitir que dólar baje para dinamizar la economía y el empleo.” *Estrategia*. 30 October 2006, p. 10–11.
- “Trends in Copper: Unprecedented price levels in 2006.” *International Cablemakers Federation (ICF)*. <<http://www.icf.at/index.php?id=5756&type=1>>
- Trinh Tamara et al. “China’s commodity hunger: Implications for Africa and Latin America.” *Deutsche Bank Research*. 13 June 2006. <<http://www.dbresearch.com>>
- United Nations. Conference on Trade and Development (UNCTAD). “Foreign Direct Investment Rose by 34% in 2006.” 9 January 2007. <<http://www.unctad.org>>
- United Nations Development Programme (UNDP). “Export-led Economic Strategies: Effects on Poverty, Inequality and Growth: The Case of Chile (Phase I).” 28 September 2001. <<http://www.undp.org>>
- United States. Office of Technology Assessment (OTA). “Copper: Technology and Competitiveness.” September 1988. <http://www.wws.princeton.edu/ota/ns20/year_f.html>
- Varas, Jorge. “¿Qué es el Fondo de Compensación del Cobre?” *Federación de Trabajadores del Cobre (FTC)*. <http://www.ftc.cl/home_archivos/temas/fondo_cu.htm>
- “Velasco reitera que fondos del royalty van íntegros a innovación.” *La Nación*. 10 May 2006. <<http://www.lanacion.cl>>
- “Velasco: Vamos a dar el ejemplo en manejo de excedentes del cobre.” *Radio Cooperativa*. 4 May 2006. <<http://www.cooperativa.cl>>

- West, James. "Investing in Copper Stocks – Exploration and Producers." *ResourceInvestor.com*. 29 August 2006. <<http://www.resourceinvestor.com>>
- World Bank Group (WB). "Reseña sobre Chile." <<http://www.worldbank.org>>
- World Economic Forum (WEF). "2006–2007 Global Competitiveness Index/Top 50." <<http://www.weforum.org>>
- Wright, Scott. "Copper Bull Market." *ZEAL Speculation and Investment*. <<http://www.zealllc.com/2005/copperpf.htm>>
- Zibechi, Raúl. "Chile: Crisis in Neoliberal Paradise." *La Jornada*. 21 May 2007. <<http://frazer.rice.edu/~kriz/blog/?p=407>>