

# TIME FOR CHILE'S NEXT STEP IN ECONOMIC DEVELOPMENT

**BUILDING ON ITS PAST SUCCESS, HOW CAN CHILE NOW MOVE FORWARD INTO THE RANKS OF THE HIGH-INCOME COUNTRIES? IN THIS GUEST ARTICLE, PROFESSOR JEFFREY D. SACHS LOOKS AT THE CHALLENGES AND AT SOME OF THE POLICY SHIFTS THAT MAY BE REQUIRED.**

During the last few decades, the Latin American region as a whole has achieved little economic growth, attaining an average real income per capita growth rate of only 0.3% per year during 1980-2002. Despite the implementation of many pro-market policies, such as trade liberalization, privatization of inefficient state enterprises, and budgetary reforms, the region has been plagued by repeated crises, and the reforms have not resulted in sustained economic growth. Poverty rates are, quite surprisingly, on the rise. Something is holding Latin America back.

Despite the economic difficulties of its neighbors since the early 1980s, Chile has been a strong performer, reaching an average growth of 3.3% per capita during 1980-2002. The country undertook ambitious market reforms, resulting in Chile's rank as 13th in the world in the 2004 Index of Economic Freedom of the Heritage Foundation and Wall Street Journal. Chile certainly holds a big advantage over its regional neighbors in stability, rule of law, and institutional quality.

At the same time, Chile's successful private sector found a niche not only in the traditional mineral exports, but also in agribusiness, especially as an off-season supplier of fruit to northern hemisphere markets. Between 1965 and 1990, the total planted area for agribusiness increased 325%, with annual growth rates of roughly 10%, including the introduction of new



products such as kiwis. Chile now dominates large parts of the fruit market in the southern hemisphere, thanks in large part to the use of modern technology. The total volume of fruit and vegetable exports increased by more than 500% between 1980 and the 1990s.

This exemplary performance has carried Chile to the ranks of the upper middle-income countries of the world. By 2002, income had reached US\$9,820 in purchasing-power adjusted dollars, 37th in the world among large economies<sup>1</sup>, more than US\$2,000 above the Latin American average, and second only to Argentina in the region.

Chile now faces the challenge of joining the ranks of the high-income countries. The major policy question, therefore, is whether Chile's current engines of growth - exports of primary commodities in the mining and agribusiness sectors - can successfully double the country's current income per capita once again.

Chile's economy differs structurally from almost all of the high-income countries that enjoy sustained economic growth. Except for Saudi Arabia and Oman, both oil-exporting nations, all countries wealthier than Chile have a significantly higher ratio of manufactured exports to total exports. As of 2001 (the most recent available data), only 18% of Chile's exports were manufactures, while Latin America averaged 48%, East Asia 80%, and the high-income countries 81%.

These are worrisome numbers, because Chile remains heavily dependent on natural-resource exports. As the main copper producer in the world, it accounted for around 35% of world production and over one-third of proven reserves in 2003. Although the economy has partly shifted from copper to agriculture and forestry during the last 25 years, Chile still relies largely on natural resource exports, and copper alone was still 36% of merchandise exports in 2003.

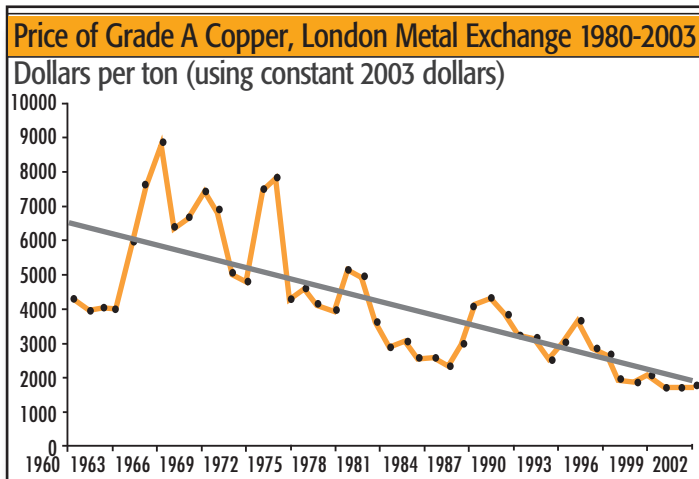
## Export Diversification

Economies dependent on natural resources tend to face profound long-term limitations, especially a



Chile's exemplary performance has carried it to the ranks of the upper middle-income countries, says Jeffrey D. Sachs.

vulnerability to international shocks and a tendency towards stagnation when a traditional export suffers a long-term decline in prices, as has happened for most primary commodity exports. The graph below shows the real decline in the price of copper since 1960.



Source: Calculated from UNCTAD Commodity Price Bulletin Online

Moreover, natural resource abundance tends to inhibit development of internationally competitive manufacturing and service sectors by increasing the value of the currency (the "Dutch disease"). Chile has become a leader in using modern technology to add value to its natural resources<sup>2</sup>, but the likelihood that the mineral and agribusiness sectors alone will make Chile a high-income country is slim.



Chile's fruit and vegetable exports increased by more than 500% between 1980 and the 1990s.

An analysis of future growth in some of Chile's main natural resource sectors (copper, fishmeal and pulp) shows that even under a best-case scenario, it is highly unlikely that these sectors can propel Chile into the high-income category<sup>3</sup>. In the overwhelming majority of high-income countries, manufactured exports constitute more than 50% of total merchandise exports.

The exceptions are Australia, New Zealand and Norway. Yet these three natural resource exporters have a more diversified export base than does Chile, dedicate a far greater proportion of their income to research and development,

and increasing share of manufactured exports in total exports, and rank among the highest in internet, cellular phone, and computer usage per capita. If Chile is to continue growing in the long term, it will need to diversify the economy from the current relatively narrow base of natural resource exports. For most countries

during the last few decades, successful economic development has been export-led, with exports becoming more diversified and knowledge-based over time.

The poorer economies tend to export labor-intensive products such as apparel (Bangladesh and the Dominican Republic) or electronics and appliances with standardized technologies (Korea, Malaysia and Thailand in the early stages of export-led growth). As countries become wealthier and the health, education, and productivity of the work force improve, exports shift into higher technology manufactures (Brazil, China and Mexico).

With enough learning by doing, countries become technological innovators, and the resulting continuous increase in productivity fuels their economies (Israel and South Korea are recent examples). Using an IT-base, high-tech service-sector exports (finance, entertainment, consulting services and computer software) can also provide a base for growth.

**The major policy question is whether Chile's current engines of growth can successfully double the country's current income per capita once again.**

If Chile hopes to increase its income per capita from about US\$10,000 today to US\$20,000 or higher, it will have to move upwards on this ladder of export-led growth. The country already has relatively good human development indicators (high life expectancy and a

high literacy rate), meaning that the labor-intensive industries dependent on cheap labor cannot be internationally competitive. In addition, the small population means that the domestic market cannot sustain heavy manufactures.

Finally, long distances and the Andes Mountains separate Chile from the larger regional markets of Argentina, Brazil and Peru and create high overland transport costs. The lack of a large local market and the distance from large world markets mean that Chile will likely never sustain heavy industry or manufacturing.

## Technology and Services

A better path would have Chile aiming straight for the high-technology manufacturing and service economy and becoming a technological innovator. A small home market and high transportation costs do not offer a huge obstacle to manufactures and services that rely on information technology. Finland has propelled itself to the front ranks of the world economy through Nokia's leadership in cell-phone technology and services.

Chile's current prowess in agribusiness could similarly propel Chile to a position of leadership in international agro-biotechnology development. One can envision Chilean firms employing scientists on the forefront of agricultural technological innovation. They would develop new crop strains, genetically engineer pestilence solutions, and engage in other activities



Although it has partly shifted from copper to agriculture and forestry, Chile still relies largely on natural resource exports.

that they would then sell to the rest of the world.

It is useful to compare Chile to the fast-growing East Asian countries of the last few decades, especially to South Korea, which is now a high-income country. Without a doubt, moving into the knowledge economy will require a significant upgrading of Chile's scientific capacity. The table below compares Chile to South Korea and to the averages for Latin America, East Asia and the OECD countries.

Rows 2 and 3 in the table deal with research and development, where Chile is clearly lagging. Like Latin America as a whole, the country is spending only 0.5% of its GDP on research and development, far below the 3.0% in Korea and 1.1% in East Asia as a whole. Although Chile's income is more than twice the East Asian average, East Asia has a 40% greater number of researchers per million people!

Comparing Chile to South Korea in the number of phone subscribers and

computers per thousand people, as well as in the enrollment rate in tertiary education, reveals that Chile is relatively far behind in the mobilization of information technology (IT) in industry, education, and society at large. Chilean educational standards are among the highest in Latin America, but compare poorly with those of emerging countries in Asia, as demonstrated by the poor results achieved in mathematics and science in standardized international mathematics and science tests in recent years<sup>4</sup>. All in all, Chile remains relatively weak in education, science, and research and development, the areas most important for Chile's movement towards a broader-based, more diversified national economy that is more tightly integrated with the high-technology, rich-country economies.

These numbers capture a basic difference between Asia and Latin America as a whole. Asian governments relentlessly act to raise the scientific and technological capacities of their economies. In Latin America, the global technological revolution is much less discussed, and national policies rarely promote science and technology. Consequently, Latin America has failed to benefit adequately from the global technological revolution, while Asian developing countries now produce computers, semiconductors, pharmaceuticals, and software.

## Learning from Asia

In November, the Asia-Pacific Economic Cooperation meetings that Chile has hosted throughout the year will culminate. These meetings of ministers and high-level businesspeople are an opportunity for Chile not only to expand the market for its products into Asia, but more importantly to learn from Asia's experience in improving technological capacity.

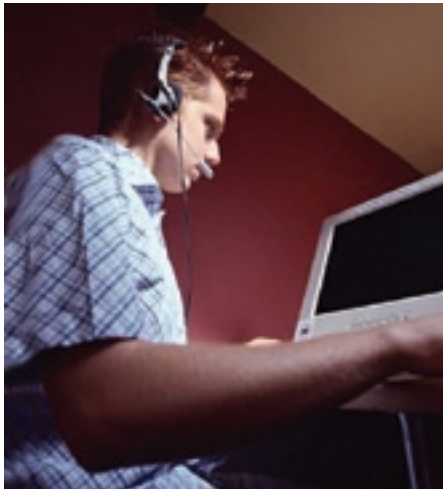
Chile should learn to roll out the red carpet for the high-tech multinational firms, just as Asia has. Chile's good economic performance and governance make it a highly attractive host. The large increase in manufacturing exports in Asia did not happen spontaneously as a result of

**Chile's current prowess in agribusiness could propel the country to a position of leadership in international agro-biotechnology development.**

World Development Indicators 2004					
	Chile	South Korea	Latin America & Caribbean	East Asia & Pacific	OECD
GDP per capita, current international US\$ (2002)*	US\$9,820	US\$16,950	US\$7,213	US\$4,341	US\$29,000
Research and development expenditure, % of GDP (2001)	0.54%	2.96%	0.52%	1.09%	2.63%
Researchers in R&D per million population (2001)	419	2880	n/a	584	n/a
Phone subscribers per 1,000 people (2002)	659	1168	294	155	1240
Personal computers per 1,000 people (2002)	119	556	67	26	473
Tertiary school enrollment (2000)	37%	78%	23%	14%	61%

Source: World Bank, World Development Indicators 2004

\* Adjusted for differences in purchasing power



According to Professor Sachs, Chile remains relatively weak in education, science, and research and development.

comparative advantage - it was stimulated by government policies. Asian countries created appropriate institutions to foster collaboration among the public and private sectors in the development of an IT sector. They also used instruments such as industrial parks, institutions that bridged communication gaps between the public and the private sectors,

government-sponsored research institutions, IT education and training, venture capital funding for IT businesses, and foreign-local joint-ventures. Diffusion programs through civil service training and public sector IT plans were also important. Chile need not “pick winners” in industry, but it can learn from its Asian partners the expertise needed to attract multinational firms outside of the natural resource sector. In particular, Chile’s investment promotion agency should gain expertise on the role of the following in attracting high-technology international firms: tax policy, tax holidays and other tax inducements; seaport, airport, telecommunication and data transmission infrastructure; export processing zones, bonded warehouses, and industrial parks; laws governing property rights; laws governing strategic alliances, joint ventures, and foreign-owned firms;

**With investment in high-technology sectors, moreover, increases the human capital of the labor force (especially when training is necessary), leads to learning-by-doing in other sectors, and increases sophistication in other sectors as when, for example, just-in-time contracts with local companies are signed.**  
**With enough learning by doing, countries become technological innovators, and the resulting continuous increase in productivity fuels their economies.**

labor legislation; and the regulatory environment surrounding IT. The benefits of foreign investment are clear: the added capital improves the welfare of domestic residents and induces demand on upstream and downstream industries. Foreign investment in high-technology sectors, moreover, increases the human capital of the labor force (especially when training is necessary), leads to learning-by-doing in other sectors, and increases sophistication in other sectors as when, for example, just-in-time contracts with local companies are signed. In upcoming years, Chile should dedicate its skill, commitment and financing towards becoming a technological innovator. Such a push would entail committing a major increase in spending on research and development, up to around 2% of GDP (as in Asian countries), partly

## Aviso 1/2 página

# Colgate

through increased public support for laboratories and universities and partly through incentives for private-sector R&D.

Chile should also push to increase the focus on scientific and technological training and encourage a higher proportion of students to go on to university education.

Efforts to encourage English language proficiency should be greatly magnified so that Chileans interface better with world markets. Government stipends for tuition and for new and enlarged universities can play an important role, as can investment in computers and information technology in schools and communities.

In the end, Chile will have to do something that it has not done enough of: invest in its people. As measured by the Gini coefficient, Chile is one of the most unequal countries in the world, which translates most distressingly into a lack of educational access and

**Although Chile's income is more than twice the East Asian average, East Asia has a 40% greater number of researchers per million people.**

educational attainment for the poor. To make the breakthrough into becoming a knowledge economy, Chile will need to dedicate significant resources into top-quality education at primary, secondary, and tertiary levels in order to produce the numbers of scientists and engineers that the economy will need.

Due to the current weakness of public education and the high income inequalities in the country, much of the population cannot afford improved

education. The bulk of the financing for this educational investment will have to come from public sources, which in turn must come from the country's rich and powerful, as well as from philanthropic contributions by Chile's wealthy families - a U.S. tradition of giving that could well be emulated in Chile. These investments in the educational attainment of Chile's youth, however, may well be the difference between the middle-income Chile of today and the high-income Chile of tomorrow. **bUSiness CHILE**

<b>Jeffrey D. Sachs</b>	is Director of the Earth Institute at Columbia University.
<b>Gordon C. McCord</b>	is Special Assistant to Professor Sachs at the Earth Institute.

#### Footnotes

- 1.- Because of the idiosyncratic nature of small economies, we do not include countries with a population below two million in 2002.
- 2.- An example is the increase in the share of refined versus blister copper. Although refined copper does represent higher value added, the price of refined copper is highly correlated to the price of blister copper, meaning refined copper would also suffer from the volatility and secular long-term decline in copper prices.
- 3.- Larrain, Felipe B., Jeffrey D. Sachs and Andrew Warner, "A Structural Analysis of Chile's Long-Term Growth: History, Prospects and Policy Implications," January 2000, unpublished. Available online at [http://www.earthinstitute.columbia.edu/about/director/pubs/Chile\\_012000.pdf](http://www.earthinstitute.columbia.edu/about/director/pubs/Chile_012000.pdf)
- 4.- Economist Intelligence Unit. Country Profile 2004: Chile. [www.eiu.com](http://www.eiu.com)

# Aviso 1/2 página

## Dole