

Chile: The Unbearable Burden of Inequality

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Summary. — Chile has been cited as a successful case of development. Relatively fast economic growth over almost two decades has been accompanied by a significant reduction in absolute poverty. However, persistent economic growth and a mostly pro-poor structure of public expenditures have not been sufficient to reduce inequality in one of the most unequal countries in the world. We show that the key factors explaining this persistent inequality have been a low level of fiscal expenditures caused by low tax revenues that have not permitted enough public investment in human capital and knowledge generation and diffusion.

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1. INTRODUCTION

“Aquí hay dos Chile... y yo odio al otro” (Response of a young demonstrator to a reporter inquiring why he was vandalizing private and public property during one of the many violent protests in downtown Santiago in 2006)

While the first part of the above statement (“here we have two countries...”) by a young student protester may apply to many countries, in few of them it is so obviously apparent. This is reflected both in the ample statistical evidence and in the normal routine of daily life in Santiago or elsewhere in the country. Chile has one of the least equal wealth distributions in the world with an estimated household income GINI coefficient of the order of 0.57 according to the most recently available estimates (CASEN, 2003). The total (after tax) income of the richest 10% of the households is larger than the total income of the poorest 80% of the households. Income differentials among the lower 80% of the population are rather modest with average income differences among deciles two to eight in all cases below 25%. However, the average *per capita* income of decile nine is 50% higher than that of the decile eight and an even higher jump of 198% occurs between deciles nine and 10 (Figure 1).¹

The second part of the statement (“...and I hate the other one”) is a corollary of the first, presumably magnified in a context of frustrated

expectations. The key issue is that the two countries metaphor is not any less true today than it was at the beginning of democracy 17 years ago. Democracy followed, coincidentally, an also 17 year long regime that was arguably among the most politically repressive and pro-elite that any country in Latin America has ever experienced. As we show below, the profound wealth and income gulf existing today between the top 10% of the country and everyone else is not much different from that prevailing in the late 1980s.

The successive democratic regimes over 17 years have been unable and/or unwilling to reduce inequality. At the onset of democracy the unequal wealth distribution was regarded merely as a result of right wing policies enacted by the dictatorial regime which democracy promised to correct (“growth with equality” was a slogan often used by politicians in the 1990s). A failure to meet this promise is leading to rising social dissatisfaction and is perhaps

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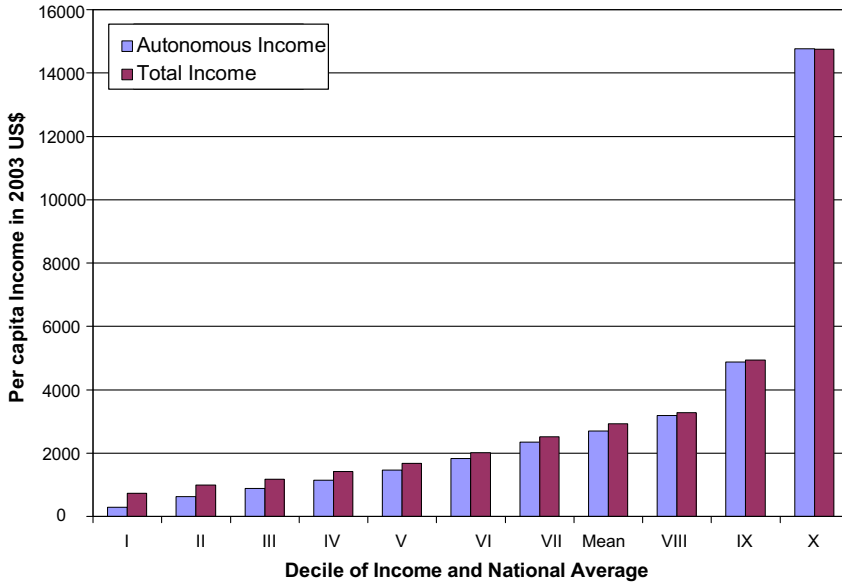


Figure 1. *Income per capita by decile. Source: CASEN 2003 and own calculations.*

the most important shortcoming of what has been considered the most successful development experience in Latin America.

This paper explores the sources of persistent inequality in Chile despite that the country has grown at a reasonably fast rate over an extensive period of time and despite that the structure or composition of public expenditures, more so than many other developing countries, is clearly tilted in favor of the low income classes. Furthermore, Chile represents a case where governments are relatively efficient and affected by little corruption with generally adequate institutions. Yet Chile has remained a highly unequal society which is a cause of social discontent as repeatedly shown by public opinion polls.² What then went wrong in Chile? In this paper we present an integrated hypothesis to explain this phenomenon based on the existing empirical evidence. We believe that there are important lessons emerging from this analysis that are relevant not only for Chile but also for many other developing countries especially in Latin America. The analysis is in general relevance to countries that experience reasonable growth, have relatively effective governments and yet high or worsening inequality that put in jeopardy the minimum social consensus needed for growth to continue.

2. PATTERNS OF GROWTH, INEQUALITY, AND GOVERNMENT INTERVENTION

Income distribution has remained highly unequal despite that the economy has performed well and that the government has devoted a high portion of its expenditures to the social sectors (education, health, public housing, and direct social transfers (Table 1)). The average annual *per capita* growth rate was about 4% per annum over the 1990–2006 period although it slowed considerably in the second half of this period. The government's modest but steady increase in social expenditures has apparently been insufficient to improve wealth distribution. The structure of public expenditures directed mainly to provide public and social goods rather than pro-elite subsidies (in contrast to many other countries) has been on the whole commendable especially when compared to other Latin American countries (López, 2003).

Figure 1 shows the pre-government social subsidy income (the "autonomous income") and the post-government subsidy income ("total income") by income deciles of the households. As can be seen the government social subsidies benefit the poorest deciles quite significantly as the gap between total and autonomous income is larger for the poorest

Table 1. *Government expenditure by function 1987–2005 (% of GDP)*

	1987–89	1990–97	1998–2005
Government and public services	3.0	2.0	1.4
Defense	2.9	1.7	1.6
Public order and safety	1.0	1.0	1.3
Economic affairs	2.8	2.6	2.8
Environmental protection	0.0	0.1	0.1
Housing and community affairs	0.2	0.2	0.2
Health	2.0	2.2	2.9
Recreation, culture, and religion	0.1	0.1	0.1
Education	2.7	2.5	3.7
Social protection	9.5	7.6	7.4
Total expenditure	24.2	20.0	21.4

Source: DIPRES (2006).

deciles.³ Moreover, Chile had by far the most progressive distribution of social expenditures among 17 countries in Latin America (ECLAC, 2005). In general, unlike other countries, the government in Chile has spent only a small portion of its revenues in unproductive subsidies directed to the elites (Soto, 2004).

However, one issue has been that the *level* of expenditures in public goods has been insufficient as a consequence, as we shall see, of the rather narrow tax base which greatly constrained public revenues. The tax system has failed to feed the public sector with enough resources to enhance the scope of an otherwise almost exemplary public expenditure system despite high value-added and personal income tax rates. The low tax base is due mainly to a high level of tax evasion due to the existence of important legal loopholes and to a failure by the state to capture a significant share of the rents accruing to natural resources. Another issue is that this has meant that most of the government revenues used to finance the expenditures have to come from indirect taxes (such as the value-added tax set at 19%, one of the highest in the world) instead of from direct ones.

To a significant extent the pro-distribution effects of government expenditures have been undermined by their low scale and by the rather regressive nature of revenue raising due to an extreme reliance on indirect taxes. The total volume of government expenditure in social

public goods as a proportion of GDP has been below the average for Latin America in every two-year period for which it has been estimated over the period 1990–2003 (ECLAC, 2005), despite that the government devotes the bulk of its revenues to such expenditures. This is remarkable because Chile has a level of development well above the average of Latin America.

(a) *Conceptual issues*

Credit market failure is ubiquitous in developing countries (Haque & Montiel, 1989; Rothschild & Stiglitz, 1976). Low income households that have little equity to be used as collateral are particularly affected, making them financially constrained. Low income households are unable to invest not because the rate of return to the investments is low but because they cannot find financial resources (credit) to fund such investments (López & Galinato, 2007). One of the most important investments affected by financial constraints faced by households is human capital. But many other economic activities of low income households are also affected by financial constraints leading to insufficient use of purchased inputs by small farmers, low investments in micro enterprises, and so forth.

Government social expenditures whether in kind (education, health care, public housing, etc) or in cash (social transfers), that at least in part reach low income households, contribute to mitigate the effects of financial constraints affecting such households, thus allowing them to implement profitable investments that were restricted just by lack of funding. Such expenditures not only contribute to increase the income of poor households and thus to improve income distribution but also promote greater efficiency by decreasing the level of under-investment affecting low income households. Government expenditures in social goods are, therefore, pro-equity and also pro-efficiency. By contrast, for analogous reasons taxes such as the value-added tax (VAT) or other indirect ones that indiscriminately tax households tend to worsen financial constraints affecting low income households, thus reducing their investments. In addition to their obvious negative distribution effects, these taxes exacerbate the negative efficiency effects caused by imperfect credit markets. In conclusion, low levels of government social expenditures, especially when combined with a great reliance on

indirect taxes, cause the low income classes to under-invest in human capital and in many other assets.

In addition to credit market failure, other well-known market imperfections cause the private sector to under-invest in new knowledge and technologies (R&D) as well as in knowledge diffusion as a consequence of the inability of firms to fully capture the pay-off of such investments (Hoff & Stiglitz, 2000). In addition, the existence of negative externalities affecting the environment and natural resources is well documented (Dasgupta, 1996). These externalities cause the private sector to under-invest in environmental protection. Thus, the state needs to support investments in R&D, knowledge diffusion, and in protecting the environmental assets in order to mitigate market imperfections in these areas. In summary, a main role of the state is to compensate for market imperfections by spending in education, health, and other social programs in addition to R&D and environmental protection (plus, of course, investments in pure public goods). At the same time the state needs to have a low reliance on indirect taxes which tend to counteract the effects of social expenditures on equity and economic efficiency. We now evaluate the performance of the state in Chile keeping these considerations in mind.

(b) Education

The gradual but steady increase in education expenditures as a share of GDP (from 2.7% to 3.7% of GDP between 1987–89 and 1998–2005) has not been sufficient to induce greater access to good quality public education for the low income classes that are most dependent on the state for their human capital investments (and which constitute the majority of the population). This has condemned an important segment of the population, particularly the lower classes, to under-invest in human capital and has therefore been an important factor leading to the perpetuation of inequality. Additionally it has also been a factor that has conspired against economic efficiency and faster growth.

The failure of the government education efforts has been confirmed by the rather dismal performance of Chilean students in standardized international tests. If one controls for *per capita* income, Chilean students test scores are below the international norm by about 10%. Also, as shown in Figure 2 Chile is one of the countries that spends the least per student

(about 50% less than Korea, for example).⁴ Moreover, Figure 2 illustrates an important feature: Countries that spend too little and countries that spend too much in education tend to score below the international norm represented by the upward sloping line. By contrast, countries in the middle of the expenditure spectrum tend to over perform the international norm. Out of 17 countries that spend the mean expenditure level plus-minus one standard deviation (roughly between \$20,000 and \$60,000) only two (Italy and Portugal) have scores below the international norm. By contrast, six of the seven countries that spend less than \$20,000 per student score below the norm and all countries that spend above \$60,000 score below the norm as well. When the education budget is too high, technical efficiency is low because there is a tendency to spend resources in activities of a smaller and smaller marginal value. By contrast, when the budget is very low, as in Chile's public education system, there is a risk of low efficiency for the simple reason that there are too little resources left from purely operational activities to allow sufficient investments in adequate teacher training, special education facilities, and so forth. At low levels of expenditure per student, high levels of efficiency appear to be difficult to attain due to lack of resources to invest in efficiency.

Despite the low expenditures per student the efficiency of public spending in Chile is not low when compared to other developing countries according to recent studies. Herrera and Pang (2006) conclude that, within a sample of developing countries, Chile has by far the most efficient public spending in education as measured using a free disposable hull or data enveloped analysis. Thus, the low scores by Chilean students are mainly a reflection of the low expenditures per student. This means that Chile has plenty of room to increase spending in order to improve educational achievement. The argument that "we should not spend more in public education until efficiency improves" is likely to be fallacious for Chile.

Thus, it appears that low quality of education in Chile is not due to inefficiency of the government's education effort. Neither is it due to low potential rates of return to education in Chile. Several studies have shown that the rate of return to education for Chile is relatively high although they also show enormous disparities in such returns across income groups. According to Psacharopoulos and Patrinos (2002) the

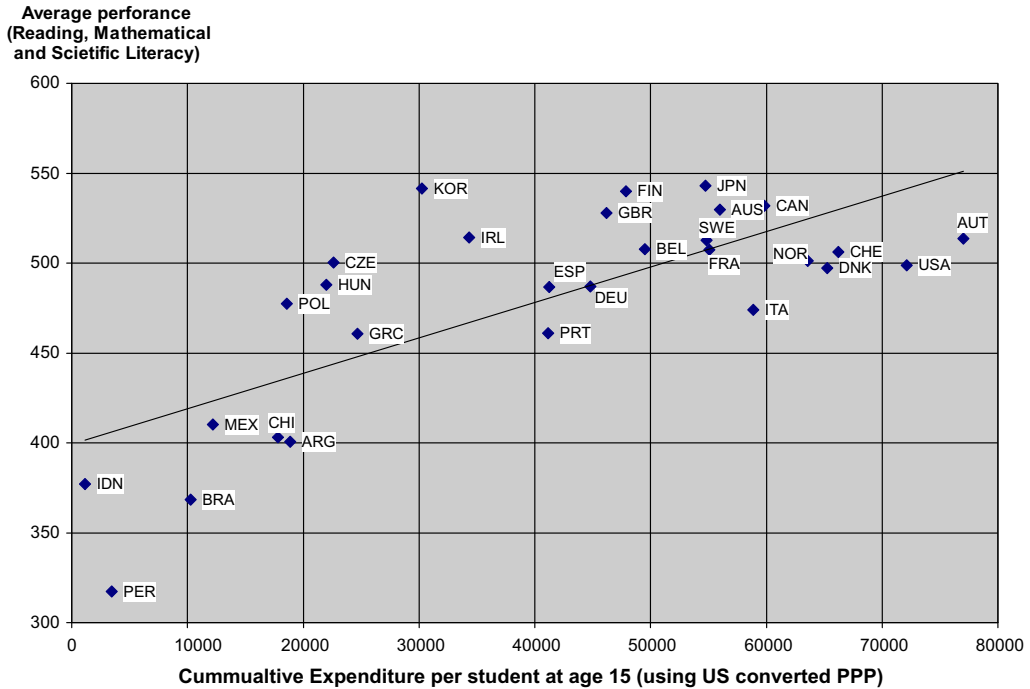


Figure 2. Score in PISA test 2000 and cumulative expenditure in education. Source: OECD and UNESCO, 2003. Table 3.3.

returns to education were about 12% in 1989, slightly above the average of 10% for all countries surveyed, an estimate that is roughly corroborated by Contreras, Melo, and Ojeda (2005).

The poor performance in international tests simply reflects insufficient levels of public expenditure in education that has prevailed for many decades. Over the last decade the government has increased expenditures in public schools significantly but still expenditures per student in the public sector are only a fraction of the expenditures per student in the private sector. The low level of expenditures in public education has been a key factor in preventing a significant expansion in the quality of human capital of the population, particularly of the poorest segments which are the ones most dependent on the state. This, in turn, has been one of the major factors explaining the permanence of high levels of inequality and also negatively affected the overall growth potential of the economy and biased the structure of production of the economy against knowledge-intensive activities.⁵

Increasing education has often been associated with higher inequality rather than with equality as the wage gap between high skill and low skill workers has rapidly increased. However, in Chile the low average levels of education are due to the fact that the public sector has not provided adequate education to the poorest 85% of the population that depends on public schools. Private education expenditures in the remaining (richest) 15% of the population are four times higher than in the public sector. It is the large gap between public and private education that tends to perpetuate inequality. Notwithstanding the fact that increasing skills in general tend to bring about inequality, increasing expenditures in public education can potentially make a significant contribution to reduce inequality as it would allow the bottom 85% of the population to catch up with the top 15% of the population. Thus, the first order effect of increasing resources to public education is to reduce inequality between the vast majority of the population that depends on it and the minority that does not. A second order effect is that inequality within

the bottom 85% of the population may increase as a consequence of the inherent skill disparities that necessarily emerge when education levels increase. The former effect is likely to dominate causing a net decrease in inequality.

Income inequality appears to be both a cause and an effect of the poor education performance reflected in the international tests. Figure 3 shows a significant negative correlation between test scores and the level of income inequality as measured by the GINI coefficient. High levels of income inequality (for a given average level of *per capita* income) mean that a high proportion of school children must be dependent on the state for acquiring education. If the quality of education provided by the state is below that of the private sector, the negative effect of inequality on the average test scores follows. This implies that for highly unequal countries the role of the state in providing good quality education is even more crucial than in more equal societies. So the failure of the Chilean state in providing enough resources to public education that would permit improving public sector efficiency is even more serious than in countries with a better distribution of income. Chile is right on the international norm in this respect (Figure 3). Spending too little in

public or semi-public education is thus a recipe to remain in a poor education-unequal income distribution-poor education trap.

In effect, in a simple econometric exercise we look at the effects of *per capita* income, income GINI, and cumulative education expenditures per student on international test scores using information from the 28 countries for which it is available (Table 2). These three variables explain more than 75% of the variance of test scores. Expenditures per student have a positive and significant effect while GINI income has a negative and significant effect on the test scores. Surprisingly, the *per capita* income appears insignificant once we control for cumulative expenditures in education. As can be seen in Table 2 this pattern of significance is maintained when we exclude three countries having very large GINI coefficients and showing poor performance in the tests; Brazil, Chile, and Mexico.

Apart from the direct implications for equity and for productivity, the low level of education affects the factor endowments of the economy; in particular the natural/physical capital to human capital ratio becomes higher. In an open economy such as Chile this is likely to cause an excessive specialization on sectors that are

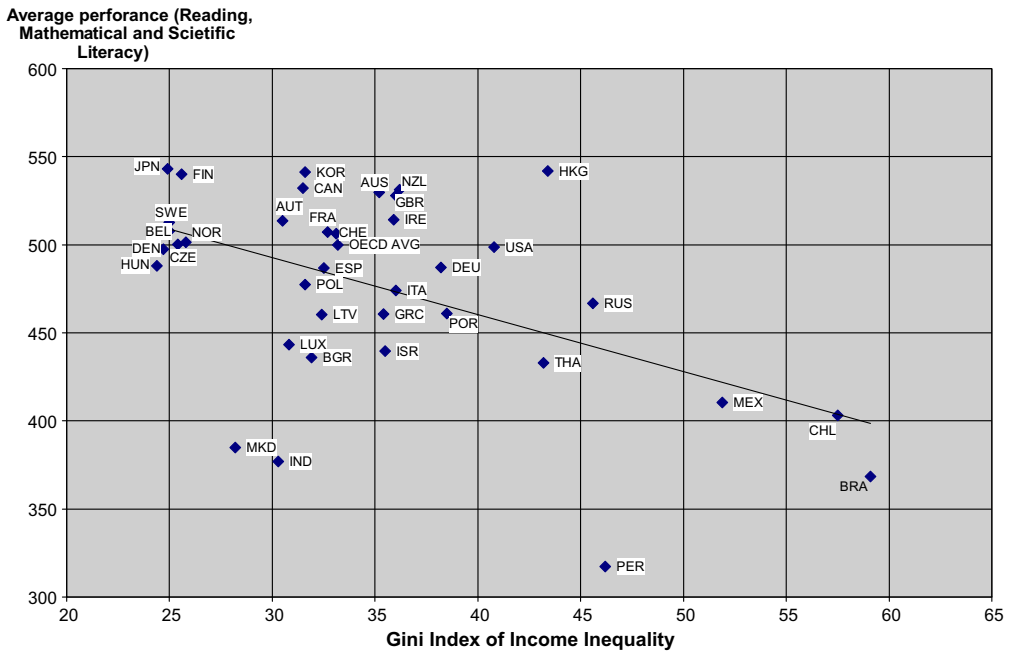


Figure 3. Score in PISA test 2000 and income inequality. Source: OECD and UNESCO, 2003. Tables 1.4 and 3.3.

Table 2. *Econometric estimates, dependent variable: average test score in math and science PISA 2000*

	Full sample	Without Brazil, Chile, and Mexico
GDP <i>per capita</i>	0.046 [0.041]	0.045 [0.044]
Cumulative expenditures per student in Education	0.066 ** [0.026]	0.066 ** [0.027]
Income GINI	-0.205 *** [0.050]	-0.211 *** [0.072]
Constant	5.759 *** [0.335]	5.781 *** [0.393]
Observations	28	25
R-squared	0.84	0.78

Standard errors in brackets.

Note: All variables in logs.

** Significant at 5%.

*** Significant at 1%.

mainly natural resource and physical capital intensive to the detriment of knowledge-intensive industries. This has contributed to keep the economy greatly dependent on natural resource industries which, in turn, may have contributed to reduce the long-run growth potential of the economy.⁶

(c) *Government expenditures to palliate the effects of other market failures*

The total levels of R&D investment in Chile are very low only reaching about 0.5% of GDP, which compares poorly with other developing or low income, developed countries such as Israel 4.5%, Korea 2.6%, Ireland 1.2%, and China, India, Brazil, Spain, and New Zealand, all close to 1% (OECD, 2003). The state spends less than 0.4% of GDP in R&D. Out of this roughly 55% is allocated toward basic research, as opposed to applied research (De Gregorio, 2005). The private sector does not compensate for the low public expenditures in R&D which is obviously detrimental for long-run growth.

Public expenditures on enforcing environmental legislation and public environmental investments have also been low. As we will discuss later, the low expenditures in enforcement has been a key factor behind the low degree of compliance with environmental regulations that studies have detected in Chile. According to DIPRES (2006) Chile spends just about

0.1% of GDP in environmental protection. This level of expenditure appears as clearly inadequate to cover even the most basic needs of environmental protection. It is about one-sixth of the lowest ranked OECD country in terms of environmental expenditures. Governments in OECD countries spend between 0.6% and 1.8% of GDP in environmental protection (OECD, 1999). Chile seems to be also quite behind most middle income countries, most of which spend more than 0.3% of GDP (World Bank, XXXX).

(d) *Remaining puzzles*

Despite the evident insufficiencies on the supply of important public goods as described above, the economy has been able to grow at reasonable rates mainly, as we shall see, on the basis of a constant expansion of the natural resource sector and a few other related industries. This adequate growth rate in combination with small but well targeted expenditures in social public goods has yielded an important social dividend: absolute poverty has declined significantly. In fact, as measured by head count poverty using a US\$2 a day poverty line, absolute poverty was cut in half from 38% in 1990 to 19% in 2003 (Table 3). But another 30% of the population is still within 40% of the rather modest official poverty line. One needs to go to the second richest quintile to find households with *per capita* incomes at least 100% above the poverty line. Thus while poverty reduction has been impressive, a large portion of the population still lives within a short margin of a rather low poverty line.

So why a reasonable rate of economic growth combined with a public expenditure structure mainly oriented to satisfy the provision of social services and other public goods has failed to yield the other dividend, a more equitable income distribution? We show below that the main reason for this is that the democratic regimes limited themselves to mainly minor changes to the *tax system* that they inherited from the military government. This has caused a narrow tax base which has severely restricted the scope of an essentially adequate pro-equality public expenditure policy and at the same time has allowed the elites to contribute very little to the development effort.

The conventional wisdom is that altering the tax level and structure are not effective mechanisms to affect income distribution. We argue below that, given the existing biased and gener-

Table 3. *Evolution of poverty and inequality (1987–2003)*

Year	Poverty (%)	Extreme poverty (%)	20/20 INDEX	10/40 INDEX	GINI Coefficient
1987	45.1	17.4	–	–	0.57
1990	38.6	12.9	14.0	3.5	0.58
1992	32.6	8.8	13.2	3.3	0.57
1994	27.5	7.6	14.3	3.5	0.57
1996	23.2	5.7	14.6	3.5	0.57
1998	21.7	5.6	15.5	3.5	0.58
2000	20.6	5.7	15.3	3.6	0.58
2003	18.8	4.7	14.3	3.3	0.57

Source: CASEN (several years).

ous (to the wealthy) Chilean tax system, this conventional wisdom is not likely to be valid for Chile. We show that the tax system, far from being distributional neutral is clearly regressive favoring a tiny fraction of the population, mainly among the very high income groups. Finally, we point out that a serious tax reform may go a long way to increase not only social equity but economic efficiency as well.

We focus on three features of the tax system which have attempted particularly against social equity, the environment, and, ultimately, against the long-run growth potential of the economy: (1) low tax revenues and an extreme dependency of government revenues on indirect taxes; (2) the preservation of a vast collection of tax loopholes (the so-called “gastos tributarios”) that in 2004 amounted close to 5% of GDP and almost 30% of tax revenues; and (3) the almost complete failure by the state to tax the rents from the raw natural resources (including ore resources, fisheries, lumber, water, and others) that are removed from the national patrimony.

3. LOW TAX REVENUES AND HIGH DEPENDENCE ON INDIRECT TAXES

At about 16% of GDP, the total tax burden of the Chilean economy over the last few years has been quite low by international standards. The OECD average is 36% and countries such as Mexico and Korea have a tax burden of 18% and 24%, respectively (Table 4).⁷ Corporate tax revenues (including taxes paid by the state copper firm, which is taxed at a much higher rate than the private firms) at 2.9% of GDP are one of the lowest in the world. Private corporations pay just 2% of GDP. The effective

private corporate tax rate as a proportion of the profits of the private corporate sector is estimated at less than 6% over the last ten years.⁸

Similarly, while the top personal income tax rates are 40%, the existence of important income tax loopholes means that the collected amounts of personal income taxes constitute less than 1.6% of GDP, by far the lowest among all OECD countries including middle income countries such as Mexico (5.2%) and Korea (3.2%). The obvious consequence of the unusually low income and profit tax revenues is that the state has to greatly rely on indirect taxes as a source of revenue. In fact, the share of indirect taxes in total tax revenue has been about 68%, by far the highest among all OECD countries; the second highest is Mexico with 49% and the average OECD rate is just 32%.

The VAT amounts to about 45–50% of government tax revenue.⁹ High VAT rates as in Chile are often justified by the incapacity of government to enforce income or profit tax collection (presumably it is easier to collect indirect than direct taxes) and by the idea that high income taxes may lead to reduced investment especially in a globalized economy. So the conclusion is often that a high VAT is good for distribution because otherwise the government would have even less resources for social expenditures. However, these arguments are rather moot in the case of Chile for several reasons: First, the government has the institutional capacity to enforce tax codes; in fact, the Chilean internal revenue service has been recognized as one of the most efficient in the world (Soto, 2004). So in Chile we cannot justify such a large VAT on the grounds of lack of tax enforcement capabilities. Second, as shown above, effective income and profit tax rates

Table 4. *International tax structure comparison, 2002*

	Total tax receipts (% of GDP)	Tax structures (as % of total tax receipts)					Highest rates of income taxes ^a		
		Personal income tax	Corporate income tax	Social security contributions		Taxes on goods and services	Other taxes	Personal income tax (%)	Corporate income tax (%)
				Employees	Employers				
Chile^b	16.6	10.0	17.8	–	–	67.8	4.6	40.0	17.0
Greece	35.9	14.0	10.4	12.7	15.5	37.3	10.1	33.6	35.0
Ireland	28.4	26.2	13.1	4.5	9.6	39.5	7.1	42.0	16.0
Korea	24.4	12.8	12.8	11.1	7.7	38.8	16.8	36.7	29.7
Mexico	18.1	28.9	–	17.9	–	49.0	3.5	35.0	35.0
New Zealand	34.9	42.3	12.1	0.0	0.0	35.2	10.4	39.0	33.0
Portugal	33.9	27.6	–	27.1	–	41.1	4.2	35.6	33.0
Spain	35.6	19.4	9.1	5.6	24.9	28.6	12.4	48.0	35.0
EU average ^c	40.6	25.8	8.6	9.1	16.3	30.8	9.4	44.6	32.4
OECD average ^c	36.3	26.0	9.3	8.3	14.6	31.9	9.8	42.6	31.2

Source: OECD Tax Database and DIPRES (2006).

^a International comparisons should also take into account differences among countries in the length of tax brackets, the amount of tax relief, and rates of social security contributions. The highest rate of income tax includes temporary special surcharges. All rates include rates of state and local income taxes as reported in the OECD Tax Database.

^b For Chile taxes on goods and services include VAT, taxes on specific goods, and tariffs. Other taxes include taxes over legal transactions and so on. Corporate tax rate does not include an additional tax rate of 35% for foreign investors.

^c Unweighted average.

are extremely low by international standards mainly due to loopholes in the case of income taxes and because of low rates in the case of profit and resource rent taxes. Thus, it is a fallacy to say that eliminating income and profit tax loopholes would cause a run away of investors to other countries which, as indicated earlier, generally have higher taxes.

There are three potential explanations for the low tax revenues of Chile: (1) low tax rates; (2) poor tax enforcement, or high evasion; and (3) tax loopholes. Looking at each of these we observe that, in fact, tax rates in Chile are not low. The highest marginal tax rate for personal income is 40%. VAT rate is 19%, in fact high compared to other countries; corporate tax rate at 17% although lower than other countries is not as low as, for example Ireland at 12.5%. Therefore we discard this as an explanation for low revenues.

Chile has also reached high levels of tax compliance. In 1993, estimates indicated that VAT evasion reached 23%, while other Latin American countries averaged over 30% (Barra & Jorjat, 1999). Other developed countries had both lower levels and higher levels of evasion. Over the last several years tax evasion has been reduced specially in VAT, which in turn accounted directly or indirectly for about 80% of total tax evasion in the country (Barra & Jorjat, 1999). This leaves us with only one possibility. As we show below legal tax exemptions including tax loopholes and untaxed rents of natural resources are in fact the source of low tax revenues in Chile.

4. TAX LOOPHOLES AND INCOME DISTRIBUTION

A recent study by the government's tax office shows that existing legal tax loopholes are very large and highly regressive (SII, 2006). Total tax loopholes amount to foregone fiscal revenues of the order of 4% of GDP and 25% of all state revenues. The most important tax loopholes are those affecting income taxes (3.3% of GDP) and the VAT (0.7% of GDP). According to this study, about 81% of the income tax loopholes benefits the wealthiest 5% of the population and 61% goes to the richest 1% of the population (Table 5). That is, the wealthiest 1% of the population receives a transfer equivalent to almost 2% of GDP through this mechanism. It is hard to imagine a more regressive public policy than this. A similar though less perverse conclusion arises from analyzing loopholes in the value-added tax (which constitutes almost 15% of all tax loopholes). The wealthiest quintile received more than 70% of the total value-added tax benefits.

Of all income tax benefits, tax deferments are an important component of forgone taxes. Tax deferments are mainly due to accelerated depreciation, and exemptions to retained and reinvested profits from businesses. An issue is whether and when the state would be able to recoup at least part of such deferred taxes.

Using the data from the SII (2006) study plus income share data from the 2003 CASEN survey we simulate the elimination of forgone in-

Table 5. *Distribution of forgone personal income taxes for highest 5 percentiles of income 2004*

	Subtotal ^f Millions US\$	P96 (%)	P97 (%)	P98 (%)	P99(%)	P100 (%)	Subtotal (%) ^g
Special Regimes ^a	58	0.4	0.7	1.3	3.2	38.0	43.6
Exemptions ^b	33	0.9	1.4	1.7	3.3	78.6	85.9
Deductions ^c	140	6.4	7.3	10.6	18.5	27.6	70.4
Tax credits ^d	121	1.6	2.1	3.6	5.5	57.4	70.2
Tax deferments ^e	1426	3.2	3.4	4.7	7.9	66.6	85.8
Total	1777	3.2	3.5	4.9	8.3	60.8	80.7

Source: SII, subdirection of studies, March 2006.

Notes: Although it refers to personal income it includes forgone corporate taxes. In Chile corporate taxes count as credits for personal income taxes.

^a This includes special regimes for small agriculture, mining, transportation and fishing industries.

^b Activities exempted from certain taxes such as free trade zones or special areas and educational institutions.

^c Donations to education and sport and political institutions.

^d Credits for donations, setting up in special zones and, special treatment to agriculture land and fixed assets.

^e Deferments due to accelerated depreciation, retained profits and, private pension savings plans.

^f Only tax forgone for highest 5 percentiles of income.

^g As a % total tax personal income forgone.

come taxes. These account for about 3.27% of GDP in 2004. Moreover, 98% of them are received by the highest quintile of income, and 80% is received by the richest 5% of the population. Roughly 90% of the total forgone taxes go to the top income decile. We then subtract this income from the top decile of income and distribute it in as a lump-sum transfer equal for all households (including the richest 10%). Then we try a proportional transfer using the same shares of monetary subsidies. We show that eliminating most tax loopholes can reduce inequality in a dramatic way reducing the ratio of income of the top quintile to the lowest one from 14.3 to 12.7, and that of the top to bottom deciles from 34 to 21; and the GINI falls by about 3 percentage points.

Are tax loopholes effective in promoting more investment and higher productivity? It is extraordinary that the cost-benefit evaluation of a government policy that allocates more than 4% of GDP and nearly 25% of government revenues to a variety of tax loopholes that directly benefit a tiny fraction of the population has not been implemented (especially in a country so well endowed with talented economists as Chile is). This forces us to refer to studies elsewhere to obtain some insights about the efficiency impact of tax loopholes. Since these tax loopholes are targeted to special interest groups or preferential activities and since they subtract massive public resources that could be used in increasing the provision of public goods or in across-the-board tax reductions, there is suspicion that may be counterproductive not only for social equity but for economic efficiency as well.

Many empirical studies around the world have consistently shown that these tax incentives tend, in fact, to be ineffective in promoting investment and employment. For Israel, [Bregman, Fuss, and Regev \(1999\)](#) using detailed firm-level data finds that production inefficiencies in the form of overinvestment from capital subsidies reach up to 15%. [Fakin \(1995\)](#) analyzes capital subsidies for Slovenia and other parts of former Yugoslavia and also does not find evidence that tax incentives similar to those used in Chile generate higher growth; [Lee \(1996\)](#) for Korea, [Bergstrom \(1998\)](#) for Sweden, [Estache and Gaspar \(1995\)](#) for Brazil, and [Harris \(1991\)](#) for Northern Ireland all reach similar conclusions. Crowding-out of private investment due to the subsidies also occurs. Though these studies focused on other countries, it is hard to argue that the tax incen-

tives may be any more effective in Chile than elsewhere.

5. RESOURCE DEPENDENCY AND ECONOMIC DISTORTIONS

Chile's economy is one of the most natural resource dependent in the world. The average share of natural resource exports in total exports exceeded 40% in the 1990–2004 period, and the estimated share of natural resource dependent industries in GDP was more than 20% over the same period ([Table 6](#)). The economy relies heavily on copper, other minerals, fishmeal, cellulose, salmon farming and agricultural products (wine, fresh fruit, and meat), all industries that use natural resources intensively. The issue is not whether resource dependency is bad or good for growth, which is an issue not yet fully resolved.¹⁰ The key point is that the resource based sectors in Chile obtain large indirect subsidies that distort the structure of incentives in the economy inducing it to be even more dependent on natural resource industries.¹¹

Resource industries generally do not pay fees or royalties for the use of the natural resource. In 2005 a small royalty was first applied only toward certain mining activity, but the rate is by far one of the lowest in the world. It applies to net profits with a rate up to 5%, but they can be deducted from taxable income. The net royalty payments effectively amount to less than 2% of profits and less than 0.6% of the value of sales.¹² Water resources and fishing rights are grandfathered toward users through property rights and are affected by no royalties or any other special taxes, so effectively they do not pay the social cost of use.

A conservative estimate puts the *in situ* annual value of the raw natural resources extracted (the resource rents) just by the private copper mining sector (that is, excluding the state mining corporation, CODELCO) at about 2% of GDP. As can be seen in [Table 7](#) this estimate is based on data for the period 1997–2002, which include the lowest real prices of copper in the last 50 years ([Svedberg & Tilton, 2006](#)). The rents over the period 2003–06 which covers two “boom” years are much higher than the previous estimate, perhaps as high as 6% of GDP or even more.¹³

It is difficult to estimate resource rents for the several other resource based industries. Over the period 1997–2002 average exports of

Table 6. *Percentage of exports of primary goods^a in GDP*

Primary exports/exports	1980–84	1985–89	1990–94	1995–99	2000–04	1980–2004
Argentina	14.5	9.1	8.6	11.9	19.4	12.7
Brazil	10.8	7.3	6.1	6.7	10.4	8.3
Chile	32.4	42.9	40.8	39.5	44.0	39.9
Greece	16.0	15.6	15.5	15.3	14.8	15.4
High income: OECD	8.1	6.0	5.5	5.4	5.8	6.2
Ireland	33.2	28.6	24.9	17.8	10.3	22.9
Korea, Rep.	5.8	4.6	3.3	4.5	5.2	4.7
Latin America and Caribbean	20.4	15.8	12.6	13.0	17.0	15.8
Mexico	19.6	18.2	11.4	10.5	9.5	13.8
New Zealand	36.4	31.0	31.7	30.2	31.4	32.2
Portugal	13.2	11.2	9.0	7.8	7.9	9.8
Spain	8.1	7.7	6.4	7.9	9.1	7.8
Upper middle income	28.3	n/a	14.8	18.5	21.7	21.5

Source: World Bank, XXXX.

^a Includes agriculture raw materials, food, fuels, and ores and mineral exports.

non-copper natural resources were almost 50% larger than total copper exports from private mines. If we assume that rents per dollar exported are half in the latter sectors *vis-a-vis* the mining sector, we would reach an estimated rent of 1.5% of GDP for the non-copper sectors. A conservative estimate would then put the average annual rents for 1997–2002 of privately owned resources at about 3.5% of GDP. This is probably the absolute lowest bound of the “normal” resource rents. For example, an authoritative source puts the value of rents for Chile in the year 2000 at 9% of GDP (Hamilton, 2006).

These rents correspond to the *in situ* value of the ore that private mining firms extract as well as the water and biological resources removed from the country’s natural patrimony. Yet the natural resource based industries have been allowed to appropriate this patrimony for free. Or, equivalently, the natural resource based industries do not have to pay for one of their most important inputs, the raw natural resource that they extract and process.

This discrimination in favor of resource-intensive industries is extended to environmentally dirty industries as well. While environmental norms are generally adequate in theory, its enforcement has been weak due to lack of monitoring, low budget for the environmental agencies, and lack of political clout of such agencies. Powerful business sectors have used their considerable political connections and control of the media to pressure toward relaxing environmental standards arguing that environmental protection reduces economic growth. A recent report by the OECD (2005) has concluded that

the absence of environmental enforcement and policy coordination is perhaps the biggest problem in this respect. With just 0.1% of GDP devoted to environmental protection it would be illusory to expect much environmental enforcement by the government.

As a consequence the environmental indicators show mixed results. Chile shows some improvement in certain environmental indicators, such as air quality in Santiago and treatment of water discharges around the country (Universidad de Chile, 2000). But mineral mining in the north, extensive industrial fishing in the coast, and forestry activity and salmon farming in the south generate harmful long-term environmental impacts which do not seem to be adequately mitigated. Moreover, there is little hard data on the extent of the environmental damages that these industries are inducing. This lack of interest in collecting environmental data reflects the seemingly low priority that the government gives to environmental degradation. The lack of enforcement of environmental regulations constitutes yet another benefit that resource and environment intensive industries receive.

Thus, in an economy where the role of markets is pervasive, clean non-resource (and non-polluting) dependent sectors pay the full market value for all their inputs while the dirty and resource dependent industries are able to get away without paying for a key input, the resource value and the pollution damage that they cause. Needless to say, requiring firms to pay for the inputs that they use, as a resource rent tax does it, is not likely to cause any distortion, rather on the opposite it reduces dead-

Table 7. *Private mining rents as % of GDP 1997–2002 (in millions of current US\$ and % of GDP)*

	1997	1998	1999	2000	2001	2002
Sales	4,263	3,367	4,167	5,207	5,141	4820
Operating costs	2,235	2,279	2,741	2,907	2,896	2,856
Depreciation	1,290	1,093	848	566	698	597
Financial costs	86	181	235	309	305	579
Taxes due	306	99	134	167	117	86
Rents (net profits)	1636	808	1057	1824	1823	1299
Rents as % of GDP	2.0%	1.0%	1.4%	2.4%	2.6%	2.0%
Average rent 1997–2002	1.9%					

weight losses. Three obvious economic consequences follow from this implicit subsidy to the resource intensive and environmentally dirty industries:

(i) *Efficiency effect 1*: By failing to tax the resource rents the state deprives itself from an important relatively non-distortionary source of potential tax revenues. If these rents were taxed the state could either reduce VAT rates that do cause deadweight losses and/or increase the provision of public goods without having to raise taxes. The net effect would be efficiency enhancing.

(ii) *Efficiency effect 2*: The fact that the resource based (and pollution-intensive) industries do not pay for part of their inputs effectively means that the structure of economic incentives is biased against the non-resource and environmentally clean activities (including services, high technology industries, and so forth) which have to pay market prices for every input that they use, thus causing misallocation of resources which leads to obvious deadweight losses for society. Moreover, allowing the resource industries to retain almost all rents and failing to internalize the environmental costs imposed by dirty industries on the rest of the economy may at least in part explain the excessive dependence of the country on natural resource and environmentally demanding sectors. It may also smother the emergence of alternative clean, often human capital-intensive industries with greater potential for productivity growth.¹⁴ Whether or not resource dependence is deleterious for economic growth, the key issue is quite obvious: *If resource dependency is created or exacerbated by distortions that bias the structure of economic incentives in favor of such industries resource dependency is bad for efficiency and presumably bad for economic growth as well.*

(iii) *Equity effects*: Society effectively is transferring a large volume of wealth in the form of natural capital to a handful of mostly rich entrepreneurs. This contributes to exacerbate the highly unequal wealth distribution prevailing in the country and perhaps also contributes to deepen the perception of Chile as an unjust society.

6. CONCLUSION

Unlike many other countries, public expenditure in Chile has not been the mechanism used by the state to favor the elites. Most pro-elite biases are instead channeled through a tax policy which allows for large tax loopholes and for the rents of the resource industries to go untaxed. In the end, however, the pro-elite biases manifested through the tax system as in Chile have analogous negative impacts on equity and long-run growth as the more obvious public expenditure biases prevailing in other countries. Composition and targeting of public expenditures in Chile has been commendable. However, such a policy by itself has been insufficient to improve income distribution and to allow for a growth rate that is sufficiently high to lead the country into genuine economic development.

The general low income and corporate tax revenues as shown by international comparisons have greatly restricted the scope of public expenditures. In addition, the low levels of income and corporate tax revenues have forced the government to rely mainly on socially regressive indirect taxes. This has greatly undermined the pro-distribution effects of government expenditures. By mainly benefiting the elites, the direct impact of the tax policies has been to exacerbate existing inequality.

The indirect effects of the tax policies have probably been even more important as a source

of inequality and also of economic inefficiency: (1) the low tax revenues have constrained the government's budget leading to under-investing in human capital among the low income classes, which are almost solely dependent on the public sector for these investments. (2) The tax policies have also distorted incentives in favor of resource-intensive industries that receive an implicit subsidy, therefore reducing incentives to invest in more knowledge-intensive industries, which could in turn increase the demand for human capital. The end result is low investments in human capital among the poor and semi-poor and an economy excessively dependent on resource-intensive industries. Low human capital investments among the low income classes prevent their incomes to grow faster than the country average and have created distortions in favor of resource (and environmentally dirty) industries. The excessive dependence on resource-intensive industries causes further inequality due to the tendency of these industries to be capital-intensive and to concentrate resource rents in a few hands. Thus, both the direct and indirect effects of the tax policies point in the direction of consolidating and even worsening economic inequality and compromising economic efficiency.

Why has not the government raised the tax level and reduced its reliance on indirect taxes? One immediate cause of this has been partly due to lack of a consistent majority in congress necessary to push through a reform of this kind, and in part due to lack of decision within the government coalition itself. The underlying causes of this, however, are more complex. We can only offer here certain plausible hypotheses that have not yet been empirically tested.

We hypothesize that these underlying causes have been partly related to the power of the elites and their lobbying capacity to influence public policies. History matters: The historically high concentration of wealth (which was greatly aggravated by the military government) allows for a very small portion of the population to be not only economically powerful but also to have great political clout. Unlike other countries

where bribery and political contributions are the main vehicles used by the elites to "buy" policies, in Chile the key instrument has been both more subtle and more effective: The creation of a pro-elite ideology. It appears that the elites have used their control of the mass media as well as of certain key think tanks and universities to instill a pro-elite ideology. This ideology emphasizes that enforcing existing income or profit taxes and removing their loopholes is a bad idea because it would promote less investment and the exiting of capital out of the country in search of lower taxes. Hence, in lieu of taxing income, profit, and resource rents, policy makers are advised to maintain one of the world highest VAT which effectively shifts the burden of taxation from the elites to the rest of society. The fallacy of this ideology is that while the potentially negative investment effects of income or profit tax rates on investment may in principle exist, this risk in the Chilean case is minimal given the extremely low effective tax rates on profits and income and the almost zero taxes on resource rents.

The emphasis of this paper on fiscal budget constraints might seem quite irrelevant today for Chile which is currently enjoying an abundance of fiscal resources brought about by an unusually large bonanza on copper prices. If the government wanted, it could now substantially increase expenditures in social goods and maintain the same degree of generosity of its tax policy toward the elites. Of course, given that the copper price bonanza is unlikely to be permanent, the government will not spend the temporary surpluses arising from such bonanza. The temporary nature of the current period of surpluses gives full validity to the emphasis on budget constraints that we follow in this paper.

We started this paper by quoting the dramatic words of a young student demonstrator. We conclude it by quoting an equally dramatic appeal from a highly respected Chilean Catholic Bishop, Monsignor Alejandro Goic:

"...si no se resuelve el tema de la equidad el conflicto social va a venir." (El Mercurio, December 23, 2007), which translates as: *"...if the issue of social equity is not resolved, social conflict will arise."*

NOTES

1. Figure 1 is based on the latest fully available national household survey (CASEN), which corresponds to 2003. WIDER (2007) and Chen and Ravallion (2004)

provide a value of around 0.55 over 1990–2004 for Chile. Another indicator of persistence in inequality is the fact that according to Chile's Central Bank data, average real

wages have increased by 38% during 1993–2005, while real *per capita* GDP has increased by 76% over the same period.

2. The latest *Latinobarometro* (2007) poll reports that only 10% of Chileans believe that income distribution is fair or very fair. Within the sample of Latin American countries only Peru and Paraguay have higher perceptions of unfairness. Also, a poll by CEP (2007) found that the three most important problems to Chileans concern crime, health and, poverty, not unrelated with the feeling of an unjust society.

3. This figure also shows how important are the social subsidies for the income of the poor and how little a significance they have for affecting the overall income distribution.

4. The figures on expenditure per student include the private sector, which spends about four times more per student than the public sector. That is, the expenditure per student in public and semi-public schools, which account for 85% of the total student population in the country, is much less than what appears in the Figure 2. Cumulative expenditure per student in the public system is about US\$11,000 in PPP, *versus* around 40,000 in the private sector.

5. Based on the recent rather disappointing performance of Chilean students in international tests it appears that the modest increases in education that started in the mid-1990s are unlikely to be sufficient to address neither the equity nor the efficiency issues arising from poor access to quality education by the low income groups. Sapelli (2007), however, argues that labor income distribution among younger cohorts of employed workers is improving, a phenomenon that could be attributed to the increased priority that public education began to receive in the 1990s.

6. Bravo-Ortega and de Gregorio (2005) find in a cross-country regression that natural resource dependence is “bad” for growth. However when interacting natural resources with human capital they also find that this could overturn the result; hence countries that rely heavily on natural resources but have high human capital can in fact perform better. Similar conclusions are reached by De Ferranti, Perry, Lederman, and Maloney (2002).

7. Since Chile has a private social contribution scheme for pensions, we may want to remove these from the OECD calculations. In this case the OECD average tax burden would be reduced to 26% of GDP.

8. We divide the share of corporate tax revenues in GDP by the share of capital income in GDP to obtain

the effective corporate tax rate. According to National Accounts the share of capital in GDP is 0.54 but some studies (e.g., De Gregorio, 2005) suggest using a capital share of 0.35. Using the corporate tax revenues of 2.9% of GDP and the latter estimate for the share of capital income in GDP yields an effective corporate tax rate of 8.3%. However, if we only consider “private corporate taxes” taking out state-owned companies this value is reduced to 5.7%.

9. Personal income and profit taxes account for another 25%; a significant portion of the latter, however, include the taxes paid by the highly profitable government-owned copper enterprises which are taxed at 40% of profits, a rate that is about two and a half times the rate at which private firms are taxed.

10. There is controversy regarding the disadvantages for economic growth and inequality that natural resource dependency entails (Barbier, 2005). What is quite clear, however, is that the potential for productivity growth is greater in knowledge-intensive industries than in resource and pollution-intensive industries. Resource rich countries apparently need high levels of human capital to achieve fast growth (Bravo-Ortega & de Gregorio, 2005).

11. It is possible that part of the resource dependency may arise from external shocks driven by high commodity prices. However, Chile’s dependency on natural resources has not changed significantly in the past three decades.

12. By international standards this is very low. For example, Canada royalties vary by province with a minimum of 8% of “mine mouth value” (IDRC, 2004); Australia also varies by region with the lowest rate of 2.5% of the sales *ad-valorem*. Also, the normal corporate taxes rates in these countries are much higher than in Chile. Even developing countries have also much higher rates. “Mine mouth value” rates in Argentina are 3%, Colombia 1–12%; Peru 1–3% of gross sales (IDRC, 2004).

13. In 2006, for example, admittedly a year of high copper prices, profit by private mines was US\$14.4 billion (10% of the total country’s GDP) out of an estimated total initial investment (mainly implemented over the 1990s) of about \$12 billion (Soto, 2004) and paid just US\$3.3 billion in taxes, including royalty! (El Mercurio, May 31, 2007).

14. This distortion of the public incentives against human capital-intensive industries may constitute a second blow to the development of such industries, the

first one being the low endowment of human capital caused by the low investments in human capital by the state. Additionally, it may also constitute a second blow to the expansion of human capital itself as the slow

development of human capital-intensive activities causes a sluggish demand for human capital and hence lowers the incentives to invest in human capital.

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