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Chile's Integration Strategy: Is There Room for Improvement?

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CHILE'S INTEGRATION STRATEGY: IS THERE ROOM FOR IMPROVEMENT? *

Mauricio Mesquita Moreira
Juan Blyde**

What are the main issues in Chile's trade agenda? This paper argues that the country's agenda does not lend itself to that traditional kind of policy advice usually given throughout Latin America. Protection is low and uniform, institutions that govern trade policy are strong and well protected from capture and the country has put a lot of effort in opening markets in the region and abroad. The important issues that come out of the analysis are to a great extent, "second generational". That is: export diversification, the regional distribution of trade gains, completion of the "multidimensional" trade strategy and transport costs. Whereas Chile has made progress in diversifying its exports away from copper, concentration is still high even when compared to other resource intensive countries. On the regional issue, it seems clear that Chile's export-led growth in the last two decades was not evenly distributed across the regions. On Chile's "multidimensional" trade strategy, Asia is clearly the missing link in the country's wide net of preferential agreements and the evidence available suggest that transport costs are these days a more important obstacle to Chile's trade than traditional trade barriers.

I. INTRODUCTION

When it comes to trade and integration policies, Chile seems to be approaching "the end of the story". The pioneer of trade liberalization in Latin America and the Caribbean (LAC) has probably gone far beyond any other developing country, be that in Latin America, Asia or Africa, in opening up its economy to trade and investment, with, perhaps, the exception of Hong-Kong in its days as a British colony. The journey to free trade, which began in 1974, was not without setbacks, but Chile's trade policies these days are as close to textbook recommendations as they can get. The country applies a uniform tariff of 6% (which can only be changed by Congress), with very few exceptions (e.g. sugar, wheat and seed oil), non-tariff barriers are negligible, the exchange rate regime is flexible and customs valuation is in line with the World Trade Organization (WTO) recommendations (WTO [2003], Fischer [2004] and Saez [2005]).

In a slight departure from standard free trade policies, the country has also taken integration one step forward by signing up free trade agreements with most countries in the Americas and Europe, and is on its way to do the same with countries in Asia. As of 2004, 66% of Chile's exports were carried out through preferential agreements and the effective trade weighted tariff had been

* Background paper for Chile's Country Strategy. This paper was written before Chile's January 2006 presidential elections as an input for IDB's country strategy for Chile.

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brought down to 2.4% (DIRECON [2005] and Servicio Nacional de Aduanas). The liberal approach was also extended to the capital account, and in particular to foreign direct investment (FDI). The investment legislation grants national treatment to foreigners with only a few exceptions and Chile has bilateral investment agreements with more than 60 countries. The country is also a member of a number of international organizations and signatory of a number of treaties related to the settlement of investment disputes.

This drive towards free trade and investment has brought impressive results. Trade as a percentage of Gross Domestic Product (GDP) has jumped from 29% in 1973 to 69% in 2004; exports of goods, evenly spread across the globe, grew at an annual average of 6%, above the LAC's average of 4.6%, and were the main driver behind an annual average GDP growth of 4.4% (2.9% for LAC) (WDI).¹ The liberal policies were also very successful in attracting large inflows of FDI, although heavily concentrated in the mining sector, and, as of 2003, Chile's stock of FDI as a percentage of GDP was the highest in LAC (UNCTAD [2005]).

Against this background, one wonders if there is much left on Chile's trade and integration agenda. In fact, when compared to most Latin American countries, Chile's agenda looks short. Yet, this agenda still carries a number of issues that are likely to play an important role in consolidating the gains from integration and, therefore, deserve a thorough consideration. There are at least four issues that fit this description: export diversification, regional distribution of integration gains, completion of the "multidimensional" trade strategy and transport costs. This paper looks into these issues and makes an attempt to identify the challenge and opportunities they may bring to the Chilean government in the years ahead. The paper is divided into five sections, including this introduction.

Section II looks at export diversification and discusses its implications and policy options. Whereas there is no doubt that Chile has made progress in diversifying its exports away from copper, concentration is still high even by LAC's lax standards. But, why should the government be worried? If so, what can be done about it? These are the main questions that this session tries to address. Section III takes up the regional issue. Chile has seen a decline in the level of regional disparity for most of the period of trade liberalization, apparently driven by the boom of mineral exports in the North and fishing exports in the South. Yet, some estimates (see e.g. Shankar and Shah [2001]) put Chile's level of regional disparity as three times as high as that of the US. Given that three regions account for more than 50% of total exports, there seems to be clearly room for spreading the benefits of integration more evenly and, therefore, improve the country's social cohesion. Section IV discusses the fine-tuning and completion of both the preferential and multilateral arms of the country's trade strategy. It focuses on the challenges and opportunities of the Doha Round and of the new agreements being negotiated in Asia. The latter offers not only market access, but also efficiency gains associated with lower preferences to all other preferential trade partners and, therefore, lower risks of trade diversion. The fifth section looks beyond the conventional tariff and non tariff-barriers to trade, and focus on the role of transport costs. Given Chile's low tariff and non-tariff barriers and its network of trade agreements, the reduction of non-conventional trade costs are bound to offer the best returns in terms of promoting trade and integration.

¹ As of 2004, the main markets of Chile's exports were: European Union (25%), Asian newly industrialized countries (20%), Latin America (18%), US (15%) and Japan (12%).

II. EXPORT DIVERSIFICATION

As with many other issues in economics, the assessment of Chile's export performance, particularly with respect to diversification, suffers from the "glass-half-full-glass-half-empty" syndrome. Some analysts are very enthusiastic about the growth and diversification of Chile's exports. Alvarez and Crespi [2000] p. 226), for instance, argue that Chile "has experienced a huge diversification process in exported products and markets." Likewise, Fischer [2004] sees Chile's foreign sector as basically "healthy", constrained only by the country's remoteness, and clearly successful in diversifying its exports and in creating domestic linkages. Yet, there are also analysts who acknowledge that export growth has been robust, but play down the scope of diversification, arguing that "Chilean sales abroad continue to rely heavily on natural resources (French-Davis [2002] p.145)" or that "in the past 20 years of rapid economic growth in Chile, there has been little evidence of diversification into manufacturing and services exports, though there has been a shift away from copper dependence towards agriculture and forestry" (Larrain, Sachs and Warner [2000] p. 33).

A. How Diversified are Chile's Exports?

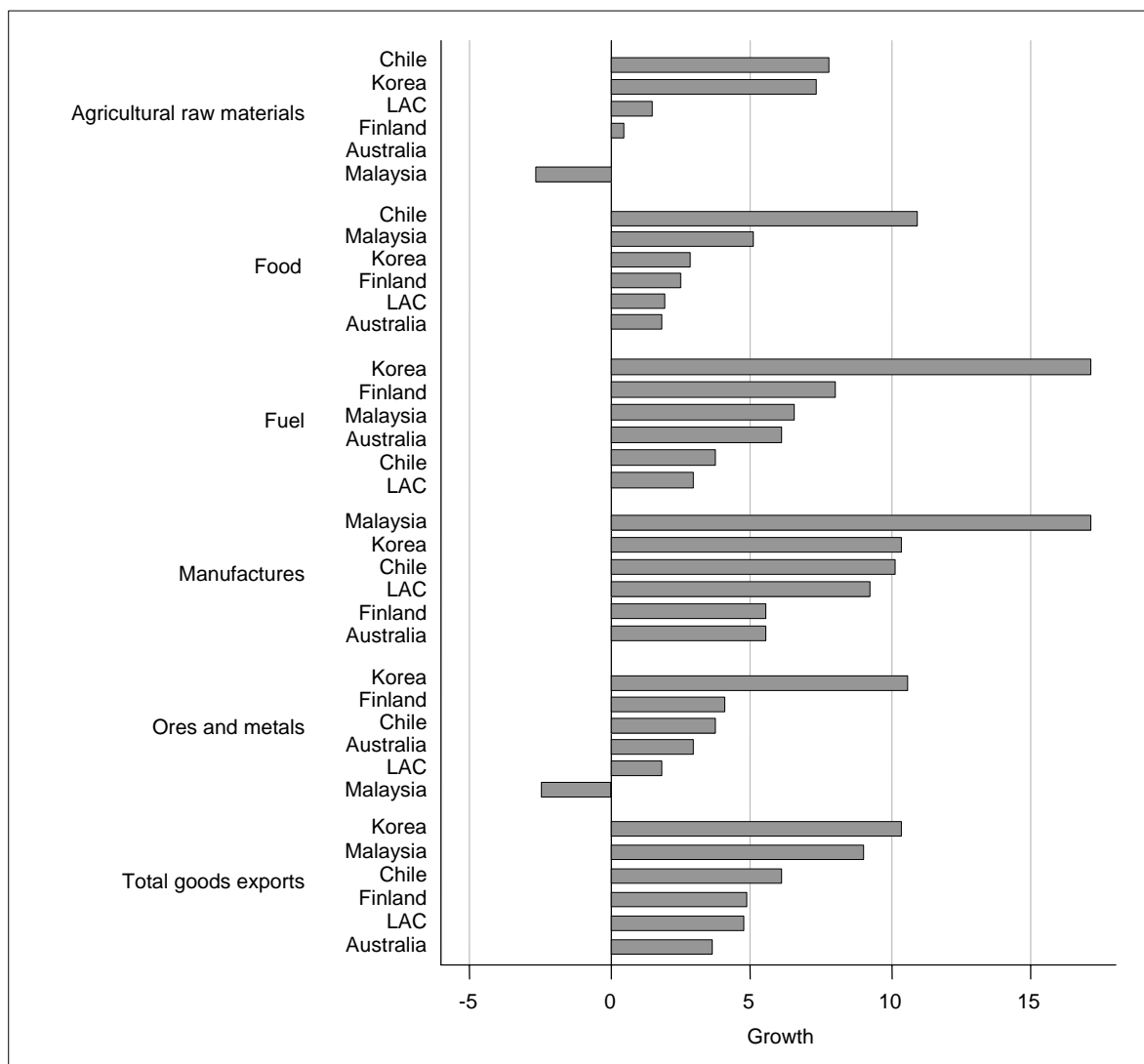
The data suggest that there are reasons for both enthusiasm and concern. Chile's export growth since opening the economy in 1973, and particularly after adopting a flexible exchange rate regime in the early eighties, *does* look robust. As shown in Figure 1, Chile's exports of goods in 1973-2003 grew at an annual average rate of 6%, which puts the country ahead not only of LAC, but also of other successful resource intensive countries such as Australia and Finland. Yet, a comparison with the usual suspects -the East Asians- suggests that, although robust, Chile's performance lags well behind those of countries such as Korea and resource-intensive Malaysia.

Figure 1 also shows a breakdown of goods exports by categories. It is evident that the country did extremely well in *food* and *agricultural raw material* and put up a strong performance in *manufactures*, comparable to Korea's, although not as good as Malaysia's. These figures, though, are partly explained by the fact that exports in all three categories started from a very small base. In 1973, *food*, *agricultural raw material* and *manufactures* accounted for only 3, 3.7 and 3.6%, respectively, of goods exports, which in, turn, accounted for only 8% of GDP. This limited base explains why, despite the robust growth of these categories, the less dynamic part of Chile's exports -*fuel and ores and metals*- still accounted for 46% of total goods exports in 2003.

A direct comparison between Chile and Malaysia's manufacturing exports is particularly revealing of the nuances of Chile's export performance. In 1973, the two countries had a strong natural resource base, which dominated most of their exports. *Ore and metal* accounted for 89% of Chile's and *food, agricultural raw material* accounted for 70% of Malaysia's exports. The two countries had virtually the same population, but Chile's GDP and area was roughly twice that of Malaysia (WDI). Despite the disadvantage in size and similarities in factor endowments, Malaysia's manufactures exports were 8 times higher than Chile's. Three decades later, after growing 7 percentage points faster than Chile's, Malaysia's manufacturing exports topped those of its South American counterpart by a factor of 22.

FIGURE 1
EXPORT GROWTH BY CATEGORIES: CHILE AND SELECTED COUNTRIES

Least squares annual growth rates. 1973-2003

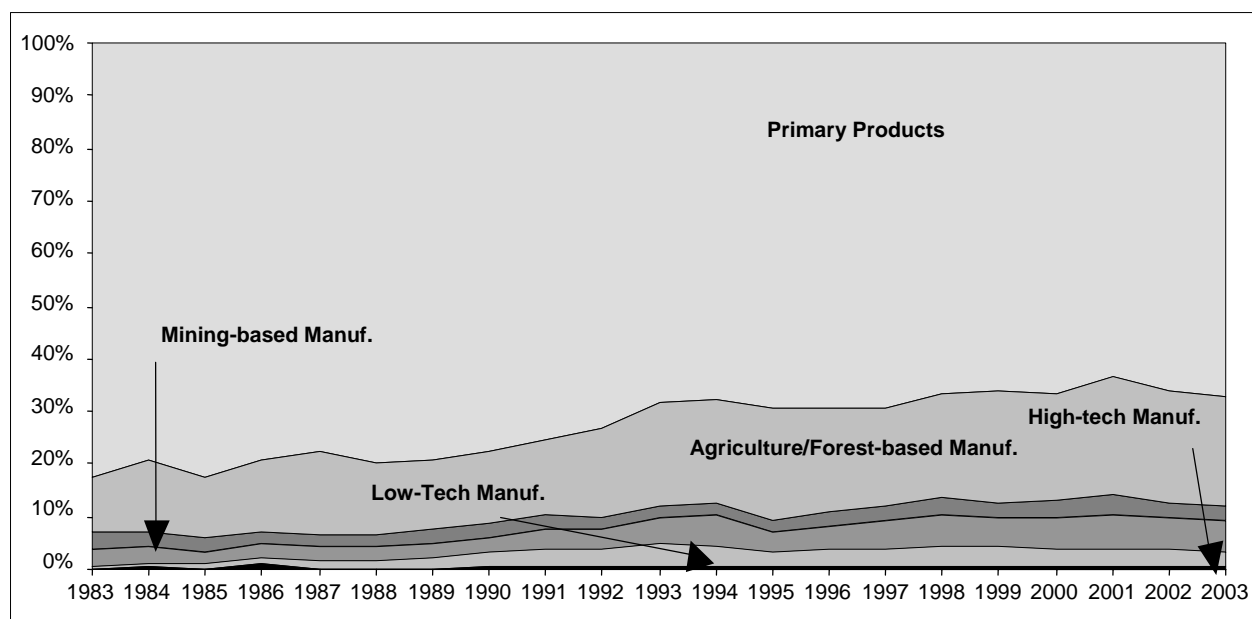


Source: Comtrade Categories defined as in WDI.

True, there are plenty of "omitted factors" in this story. Yet, it serves well to draw attention to the fact that even though Chile's export stance looks strong on a regional basis, and particularly when compared to the pre-1973 period, it looks less so when East Asia is the benchmark. The Malaysia story also suggests that the difference between Chile and East Asia star performers may lie on their ability to diversify away from their natural resource base. This hypothesis, though, raises a number of important questions: why export diversification would be key to export growth? Is it diversification *per se*, or does it really have to involve a move away from natural resources? Any policy initiative aiming at improving and consolidating Chile's export performance cannot avoid addressing those questions. But, before delving further into these issues, it would be helpful to have a finer and broader picture on how far Chile has managed to diversify its exports.

Figure 2 shows how the composition of Chile's exports has evolved in the last two decades, aggregating products by factor intensity.² The point made by Larrain, Sachs and Warner, mentioned earlier, about little evidence of diversification into manufacturing and a shift away from copper dependence towards agriculture and forestry comes out very clearly in the Figure. The biggest inroad into a more diversified export structure was made through gains in agriculture and forestry-based manufacturing (from 10% in 1983 to 21% in 2003). There were some gains in the non-resource categories of manufacturing (low, medium and high tech manufacturing), but their share remains small (9.4% in 2003). Primary products, dominated by copper, continues to have the lion's share of Chile's exports (67% in 2003) and if all resource-based categories are lumped together (primary products and agriculture/forestry and mining-based manufacturing), they still account for 91% of all exports.

FIGURE 2
CHILE'S EXPORT COMPOSITION BY FACTOR INTENSITY
(1983-2003)



Source: Comtrade.

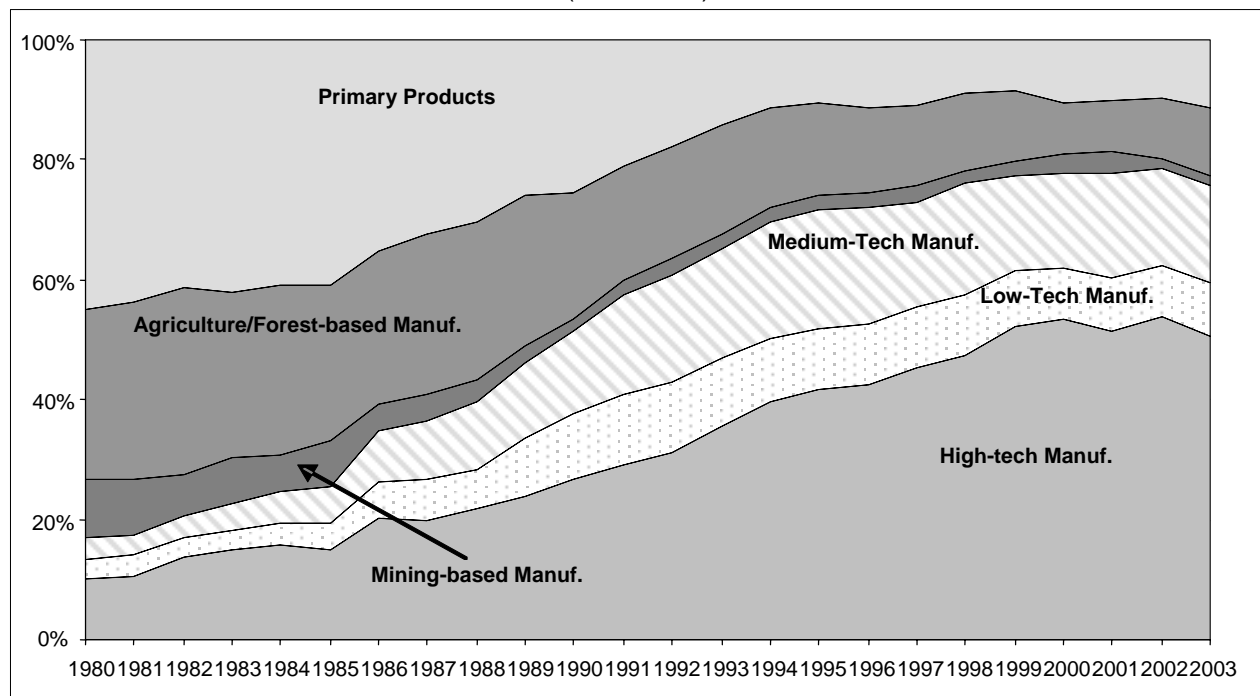
The comparison with other resource-intensive countries in Asia and elsewhere underscores the limits of this process of diversification. Figures 3 and 4 shows the cases of Malaysia and Australia. Malaysia, illustrates, again, very clearly how far a country can go in diversifying its exports, despite the limitations of its initial resource endowment. When judged by this country's standards, Chile's performance looks clearly disappointing. The picture is more favorable when the comparison is with Australia, but even then Chile appears as having a considerable catching up to do. The scope of Australia's diversification into non-resource manufacturing has been far larger than that of Chile. Non-resource manufacturing accounted for 28% of total exports in 2003 against 9.4% in Chile. Moreover, even within resource intensive sectors, Australia offers a far more diversified range of products than Chile, which, despite considerable progress in reducing "copper dependency", still depends on this product for roughly 40% of its exports (see

² See Lall [2000] for details of the classification.

Figure 5).³ True, one can argue that Australia has a far bigger and richer economy than Chile and that diversification has been linked to size and income (Acemoglu and Zilibotti [1997]). Yet, one can also argue that part of the explanation behind Australia's wealth was its ability to diversify away from commodities such as wool (see Gillitzer and Kearns [2005]).

The issue of product rather than sector variety can be better measured by concentration indices such as the Herfindahl-Hirschman index (HHI) or by using the concepts such as the "extensive margin" suggested by Hummels and Klenow [2002].⁴ The former is presented in Figure 6 for world exports at the five-digit level, a measure perhaps too aggregate to capture all the nuances of product variety, but the one possible given the data classification constraints. The message that comes out is very clear and, by now, familiar: Chile has made progress, but still has a considerable export variety gap even when compared with other resource intensive countries. This very same message is also evident in Figure 7, where at a much more disaggregated, and therefore, accurate level of analysis -but restricted to the US market- the very same gap appears: Chile's extensive margin, i.e., the percentage of products imported by the US that are exported by the country, has been increasing, but remains well below other resource intensive countries. The difference with respect to Australia is particularly impressive.

FIGURE 3
MALAYSIA EXPORT COMPOSITION BY FACTOR INTENSITY
(1982-2003)

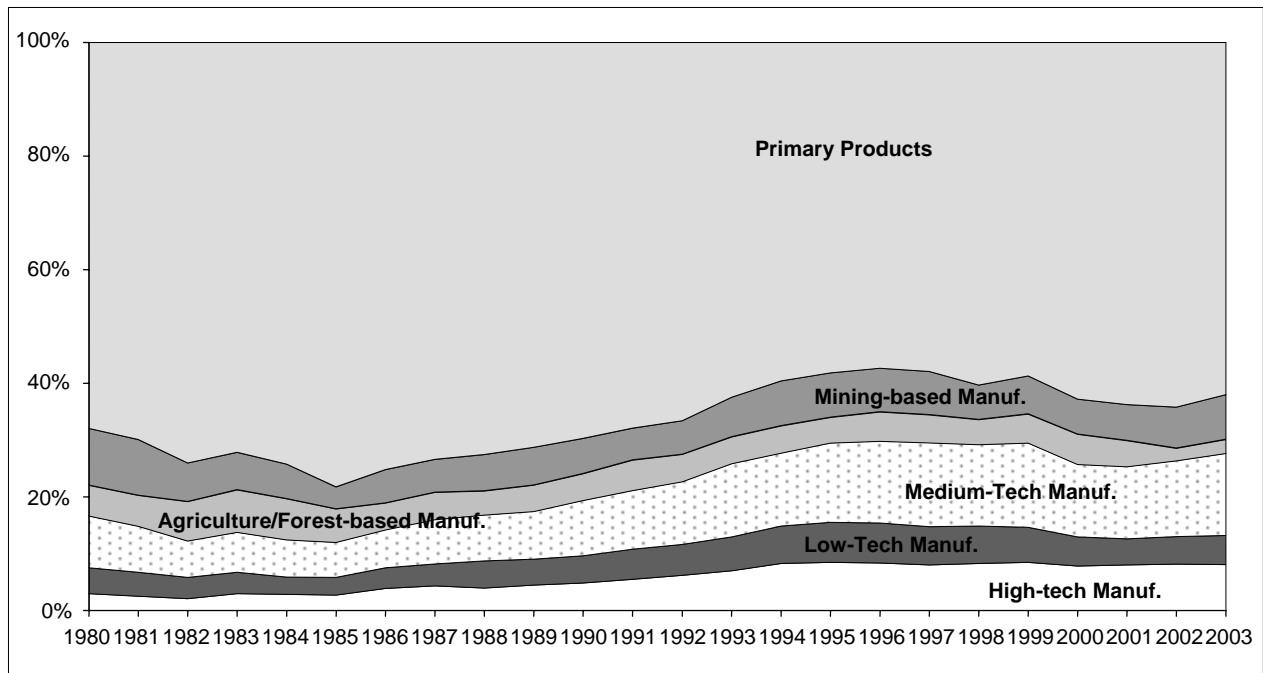


Source: Comtrade.

³ The average in the last three years (2002-2004) was 41%.

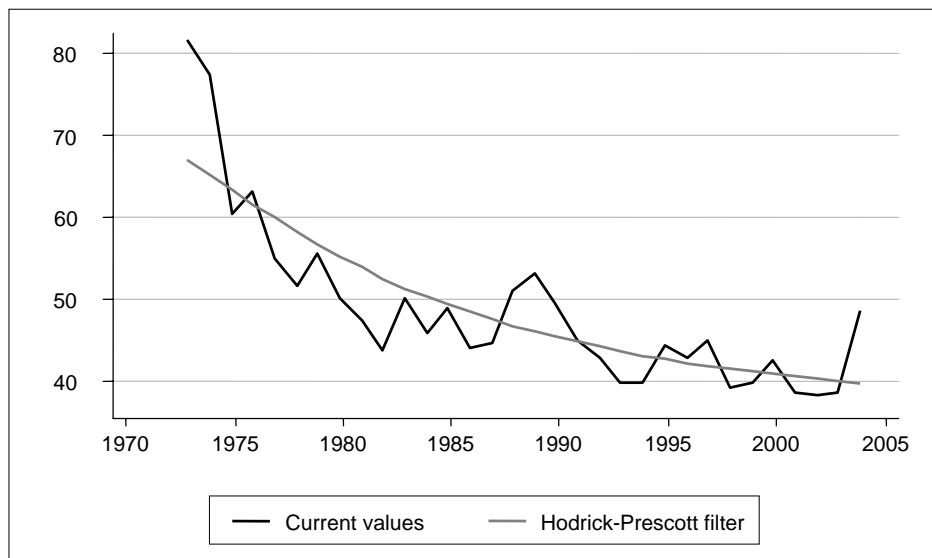
⁴ The extensive margin is the result of the decomposition of a country's market share in a particular market as the product of the intensive and extensive margin. The former measures the country's share of, say, the US market, in those products in which it exports. The latter measures the fraction of US market that occurs in those products that the country exports.

FIGURE 4
AUSTRALIA'S EXPORT COMPOSITION BY FACTOR INTENSITY
 (1980-2003)



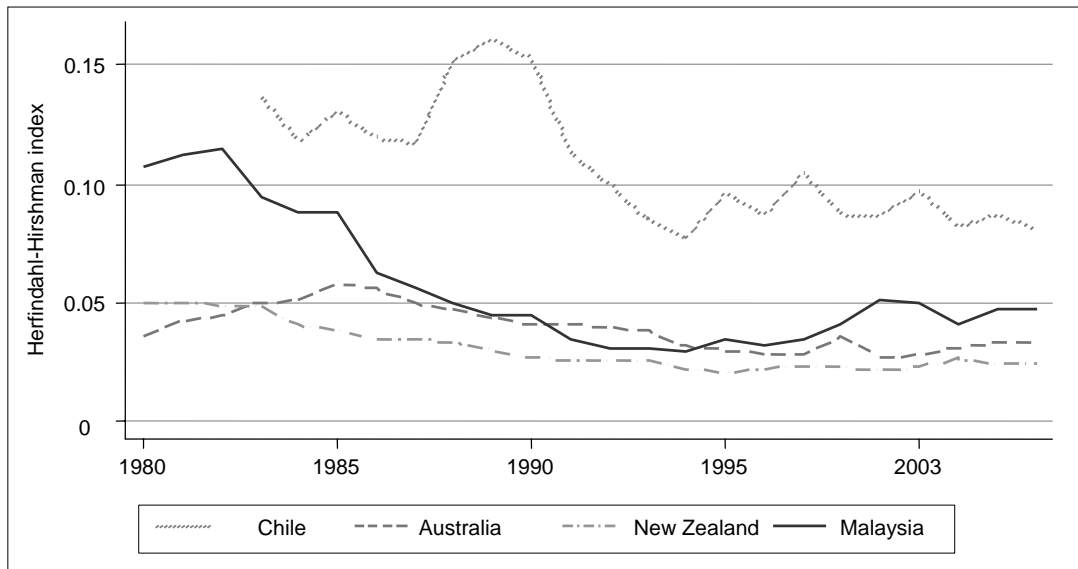
Source: Comtrade.

FIGURE 5
COPPER SHARE OF CHILE'S EXPORTS
 Chile 1973-2004



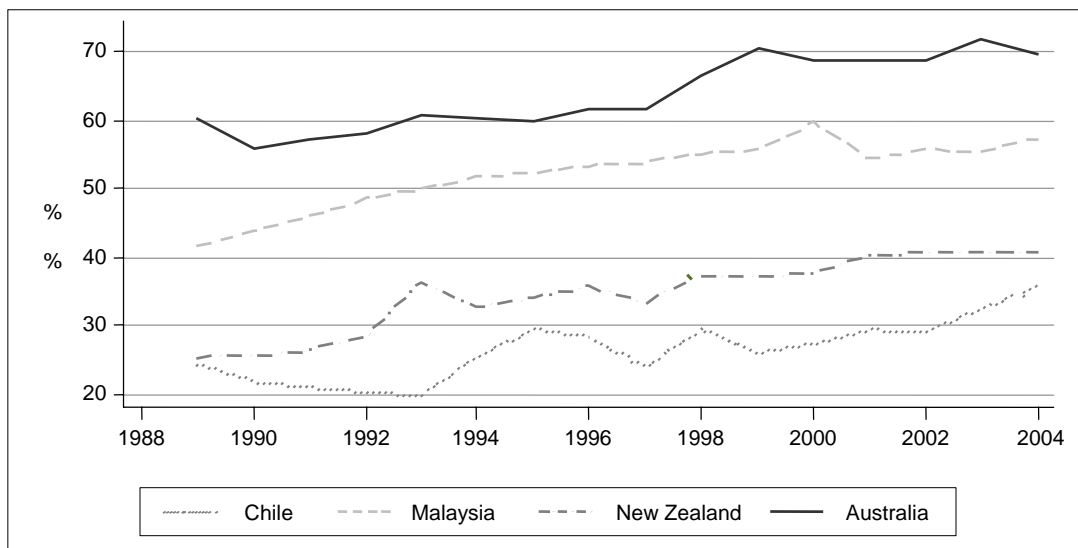
Source: Comtrade.

FIGURE 6
EXPORT CONCENTRATION IN THE WORLD MARKETS
 Chile and Selected Countries, 1980-2003



Source: Contrade, 5 digit SITC data.

FIGURE 7
EXTENSIVE MARGINS IN THE U.S. MARKET
 Chile and Selected Countries, 1989-2004



Note: Extensive margin measures the fraction of US imports that occurs in those markets (10 dig.) in which the country exports.

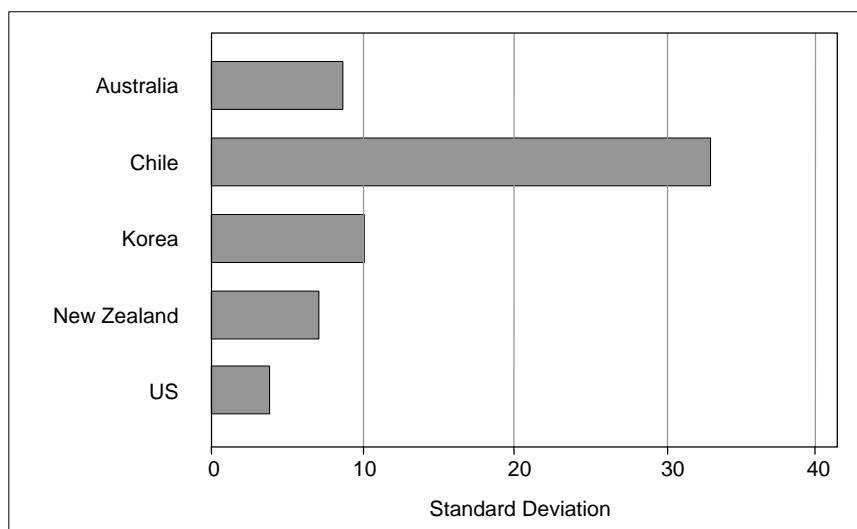
Source: US Department of Trade.

B. Why Diversification Matters?

This evidence begs an important question: So what? Why the Chilean government should be worried? Why export variety matters? The literature speaks of two sets of reasons. The first set covers the type of arguments that justify diversification *per se*. The arguments in this case are at least four. The most intuitive and arguably the most solid is the *portfolio* effect, which states that export diversification helps to protect countries from sector specific shocks and their deleterious effects on export revenue income and growth. A second argument is based on the assumption that consumers everywhere have a love for variety and, therefore, countries that diversify are more likely to export more (see e.g. Funke and Ruhwedel [2001]). Terms of trade effects are at the heart of the third argument, which is reminiscent of Bhagwati's [1958] immiserizing growth insight. That is, countries that expand their exports based only on a limited number of products risk driving down prices of these products, worsening their terms of trade (see e.g. Hummels and Klenow [2002]). Finally, the fourth argument tries to establish a direct link between export variety and growth, having as a channel the gains in productivity arising from either learning by exporting or a better resource allocation (see e.g. Agosin [2005], Feenstra and Kee [2004]).

The portfolio effect has the most compelling empirical evidence so far. As can be seen in Figure 8, Chile's high copper dependency seems to translate into an equally high volatility of its terms-of-trade, whose effects on income are well summed up by Caballero [2002] p.7): "There is a very high correlation between Chile's business cycle and shocks to its terms-of-trade. This correlation is not observed in other commodity dependent economies with more developed financial markets such as Australia and Norway". The point about financial markets is well taken, yet one wonders if less volatile terms-of-trade, achieved as result of more diversified exports, would not play an important role in developing the financial instruments needed to smooth the shocks. That seems to be the path followed by Australia (see Gillitizer and Kearns *op. cit.*).

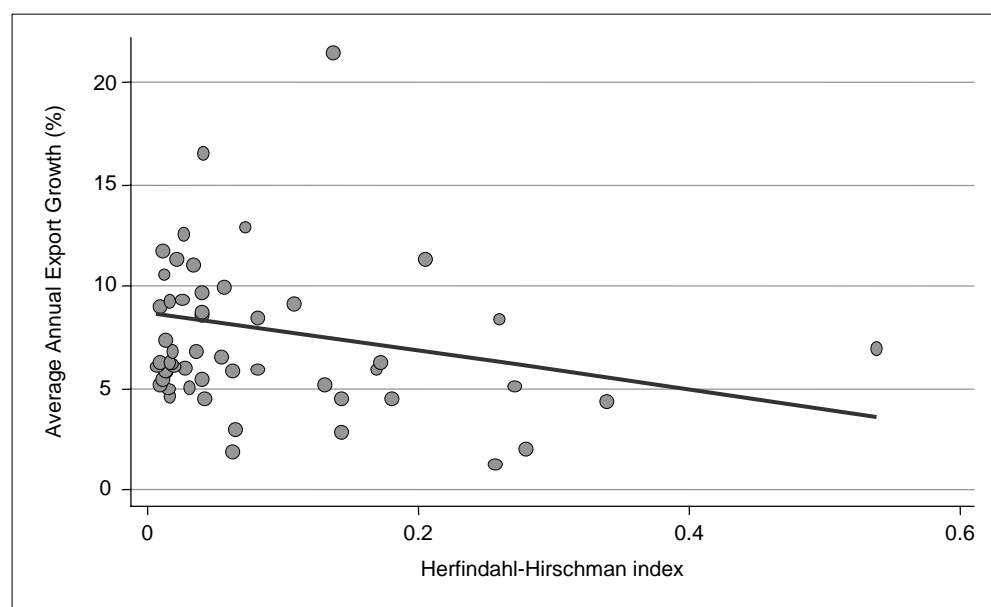
FIGURE 8
VOLATILITY OF THE GOODS TERMS OF TRADE
Chile and Selected Countries: 1981-2003



Source: IMF-IFS and CEPAL for Chile.

Evidence supporting the other arguments is mixed and in part reflects the ambition of their propositions. Yet, there are number of interesting and revealing results worth mentioning. For instance, Imbs and Wacziarg [2003] find that countries follow a pattern of increasing output diversification until high levels of *per capita* income. Likewise Hummels and Klenow [2002] reveal that big, wealthy countries export more because they export a larger set of goods. True, it is not clear if development brings diversification in output and exports or if it is the other way around. A number of other studies, though, go one step further and try to establish a causal relationship between export variety and growth of either exports or GDP. Lederman and Maloney [2003] and Agosin [2005] for instance, using respectively, panel and cross-country data, find preliminary evidence that export diversification promotes GDP growth. Herzer and Nowak-Lehman [2004] find similar evidence using time-series data for Chile. Feenstra and Kee (*op. cit.*), in turn, using data for 34 countries, provide evidence of a direct link between export variety and productivity, which ultimately affects growth. On the export side, Funke and Ruhwedel (*op. cit.*, p. 493) present results for 10 East Asian countries that suggest that "producing highly differentiated export goods gives a competitive advantage which allows to sell more goods". Figure 9 suggests that this pattern might hold for a wider sample of countries.

FIGURE 9
EXPORT GROWTH vs EXPORT DIVERSIFICATION: 1980-2003



Note: Data for 53 countries.

Source: Comtrade.

The second set of arguments pro-diversification is related to the so-called natural resource curse. The policy recommendation here is very clear: countries aiming for sustainable growth should not only diversify, but diversify away from natural resources. This case is built on economic and institutional grounds. The former can be summarized as follows:

"Natural-resource-rich communities invest their resources in land, permanent crops and extractive equipment and very little in human capital" (Leamer, Maul, Rodríguez, and Schott [1999], Blum and Leamer [2004]). Low investment in human capital, in turn, inhibits diversification towards more technology-intensive, increasing return activities, undermining growth.

Natural resource abundance appreciates the exchange rate, which in turn depress investment in other tradables, particularly in manufacturing - the so-called Dutch Disease argument. As Corden [1984] pointed out, this argument assumes that manufacturing has increasing returns to scale and/or generate externalities to the rest of the economy. Otherwise specialization in natural resource would not be a "disease".

The high price-volatility of natural resource intensive goods produces too much instability in the economy, which, in the absence of hedging opportunities, hurts growth (e.g. Larrain, Sachs and Warner *op. cit.*).

The institutional arguments are based on the idea that the rents accruing from natural resource activities promote weak institutions that eventually undermine development and growth. Ross [2001] and Isham, Woolcock, Pritchett and Busby [2003], review the main arguments and speak of *rentier*, delayed modernization and entrenched inequality effects. Governments in resource rich countries have access to revenue other than taxation and this would inhibit the development of a tax system. As a result, the population would be less likely to demand accountability from, and representation in, their *rentier* governments. The delayed modernization can be seen as an institutional version of the Dutch disease argument, i.e., states of resource rich countries would resist diversification of economic activities to prevent the creation of alternative sources of political power. Finally, the entrenched inequality effect would come from the negative impact on income distribution of certain types of natural resource exploitation - what Isham *et al.* (*op. cit.*) call "point-source" natural resources, i.e. those extracted from a narrow geographic or economic base such as oil, mineral and large scale crops. Inequality, in turn, would be conducive to clientelism and bad governance.

The jury is still very much out on the empirical validity of the natural resource curse, yet one could risk saying that the bulk of the evidence available suggests that the arguments reviewed above cannot be readily dismissed. The literature on this issue is too long -it stretches as far back as Prebisch [1950]- to be reviewed in any detail here, but one could argue that the modern version of this debate was triggered by a couple of papers by Sachs and Warner [1995 and 1997], with results that pointed to an inverse relationship between natural resource and growth.

These papers were followed by a number of studies challenging or supporting their findings. Lederman and Maloney [2003], for instance, present some evidence that what hurts growth might not be specialization in natural resources *per se*, but high concentration of exports in any item. Manzano and Rigobon's [2001] results, in turn, suggest that in the period analyzed by Sachs and Warner (1971-1989) the problem might have been the "debt-overhang" and not specialization in natural resources. None of these studies, though, deals satisfactorily with the fact that natural resource specialization might be behind both concentration and over borrowing. The link to concentration, for instance, is evident in Stijns [2003], whose findings point to a substantial crowding-out of manufacturing by energy exports. Gylfason [2001] Gylfason and Zoega [2002],

in turn, present evidence of a negative impact of natural resource rents on investment in physical and human capital, which are key determinants of diversification and growth. The institutional impacts are examined by Easterly and Levine [2003] and Isham *et al. (op. cit.)* and they both find that export concentration on "point-source" natural resources are strongly associated with weak institutions which are, in turn, strongly associated with weak growth. Finally, just to show that the debate is still far from settled, Alexeev and Conrad [2005] using a different specification for their growth equation, which does not include the usual initial GDP *per capita* as a control variable - seen as reflecting the natural resource endowment- do not find any evidence of a negative impact of natural resources on growth or institutions.

C. What Strategy to Follow?

When seen through the light of these arguments and evidence, Chile's pattern of specialization invites, at the very least, a careful consideration about the risks involved and the cost and benefits of policy intervention. The more so, because copper is a non-renewable resource and, according to some estimates, reserves could be exhausted well before 2020 (Larrain, Sachs and Warner, *op. cit.*). True, one can still argue, as Villafuerte [2004] does, that Chile has not shown the most obvious and acute symptoms of the natural resource curse, notably the crowding out of other tradable sectors by copper exports and signs of increasing institutional weakness (quite the contrary). Yet, even analysts with this more optimist perspective acknowledge that diversification has been "slow", the technological content of exports "still not very high" and "there would seem to be benefits from developing new comparative advantages" (Villafuerte *op. cit.*, p. 72, 78, 77, respectively).

The booming demand and the rising prices for copper in the world markets, driven particularly by the breakneck growth of China and by the limited pipeline of new mining projects worldwide (Grupo Mexico [2005]), do not make a conducive environment upon which an earnest discussion about diversification could be carried out. Yet, it is exactly at periods of boom that risks such as the Dutch Disease are particularly high. The sharp upturn seen in 2004 (Figure 5) in the copper share of Chile's total exports might only be temporary, but might also be the onset of a tendency which might cost Chile dear in terms of future growth.

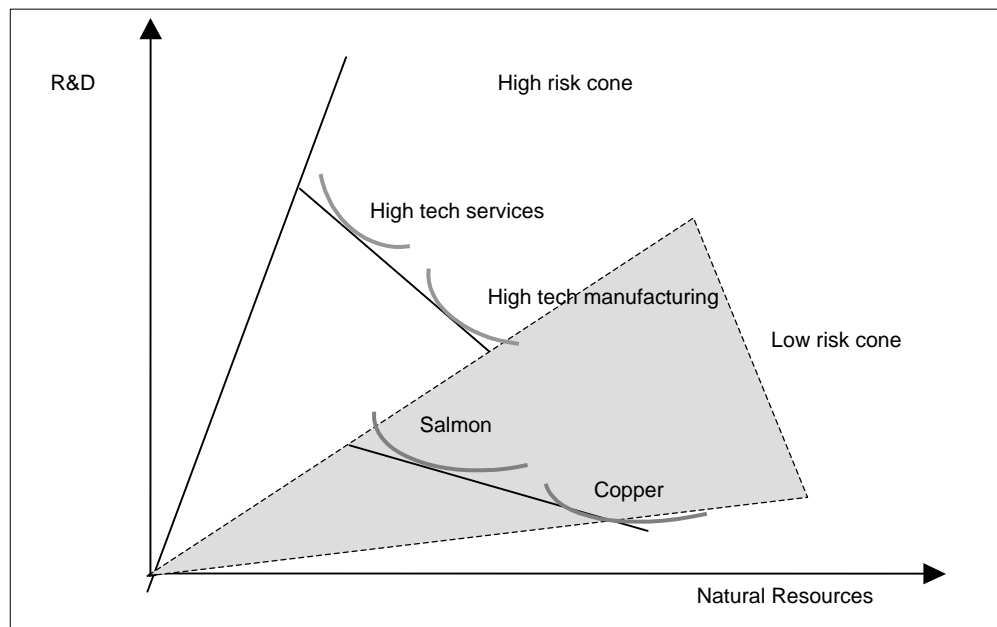
To acknowledge the need to deepen diversification beyond the levels achieved by markets forces is, however, just the first, and in many ways, easiest step. Thornier questions arise when one tries to confront the issues of how to do it and in which direction. Even if one accepts the evidence that natural resources hurt growth, that does not necessarily mean that the country should turn its back to these activities. The realities and constraints of a country's endowment cannot be ignored without risking undermining resource allocation and diminishing welfare.

One way to look at this issue is to think of a trade-off between short-term welfare and long-term growth. Some people would argue that prices bring enough information for firms and consumers to maximize their welfare intertemporally, i.e., to incorporate the future in their decisions about the present. Yet, in a world where information is not always complete and externalities are often relevant, myopic behavior, herd mentality and socially inefficient private decisions are something to reckon with. Governments, though, don't have all the information either and are vulnerable to special interest groups, so a hasty intervention to shore up the future with resources of the present might end up comprising both.

The diversification dilemma confronting governments such as Chile's can, perhaps, be better understood with the help of "cones of diversification" (see Leamer [1984]) shown in Figure 10. One could argue that Chile's diversification so far has been restricted to products that are within its cone of diversification (the gray area), i.e., a set of goods whose factor requirements -intensive in natural resources and low in Research and Development (R&D)- reflects very closely Chile's current factor endowment. Given the obvious comparative advantages, the risk of diversification was low and required little government intervention, although one can argue that, both in the case of salmon and forestry, public policy was an important catalyst (see Agosin [1999]).

The comparison with countries such as Australia suggests that Chile may still have a long way to go in finding new products within its cone of diversification, yet the relatively limited size of its territory and natural resource endowment on a *per capita* basis may prove otherwise. Australia's territory and the amount of pasture, cropland and forest *per capita* exceed Chile's by a factor of 10 and 7, respectively (WDI and Antweiler and Trefler [2002]). In any event, if Chile wants to minimize the risks of a export portfolio highly concentrated on natural resources, this would involve moving resources towards products in the "high risk" cone, whose factor requirements are at odds with Chile's current endowment and where "market failures" stemming from externalities (e.g. technological spillovers) or missing markets (e.g. underdeveloped capital markets) are likely to be more important binding constraints. The potential benefits would be a more stable terms-of-trade, greater potential for export growth and diversification and, given the higher technological content of these goods, a greater scope for productivity and overall economic growth. The risks would be resource misallocation, rent seeking and welfare losses.

FIGURE 10
CHILE'S CONES OF DIVERSIFICATION



The further away from the low risk cone, the higher are the risks and how much risk a country is prepared to take depends ultimately on the preference of politicians and policy makers. East Asians, in general, adopted high-risk policies, involving high degree of government interventions which eventually paid off (or at very least, they did not generate crippling corruption and resource misallocation). It could have easily gone wrong were it not for the endowments and institutions that supported these policies (World Bank [1993]). Chile may prefer a more conservative strategy with less government intervention that will probably achieve a degree of diversification narrower than that of the East Asians -perhaps closer to Australia's and New Zealand's- but that will not risk major resource misallocations and would not put democratic institutions at risk. That is for Chile's politicians, policy makers and, ultimately, citizens to decide.

Whatever strategy they may pursue, though, it seems to be clear that Chile has binding constraints in at least two of the main fundamentals of any diversification policy, particularly if the aim is to produce goods and services with higher technological content, as announced recently by the Chilean government (Grupo de Acción Digital [2004]). Analysts are almost unanimous in portraying Chile's education skills and investments in science and technology (S&T) as lagging well behind those of East Asians and successful resource-intensive countries (see e.g. World Bank [2003], Eyzaguirre, Marcel, Rodriguez and Tokman [2005]).

It is worth noting, though, that the fact that the main constraints are exactly there may be in itself a powerful reminder of the limits and risks of natural resource specialization. As economists like to say, these constraints are possibly "endogenous", i.e. investment has been low in these areas precisely because, as Leamer *et al.* suggested, there has been little demand for it from natural resource activities. If that is the case, the key for a successful diversification policy may lie on breaking this "vicious" circle whereby there is not much investment in education and S&T because there is little demand for it, and there is little investment in non-resource intensive activities because the educational and technological endowments do not generate comparative advantages.

The Chilean government and politicians seemed to subscribe, at least in part, to this view when they introduced in June 2005 a specific tax to mining activities to fund innovation (Gobierno de Chile [2005]). How exactly these resources are going to be used is still a matter for debate and the options range from sector specific incentives to more neutral horizontal schemes (see Larrain [2005] for a R&D tax exemption proposal). The specifics of a diversification or innovation policy is beyond the scope of this paper, yet it seems clear that this initiative addresses exactly the type of concerns expressed in this note, i.e., that Chile, given its current pattern of specialization, should not leave export diversification to market forces alone.

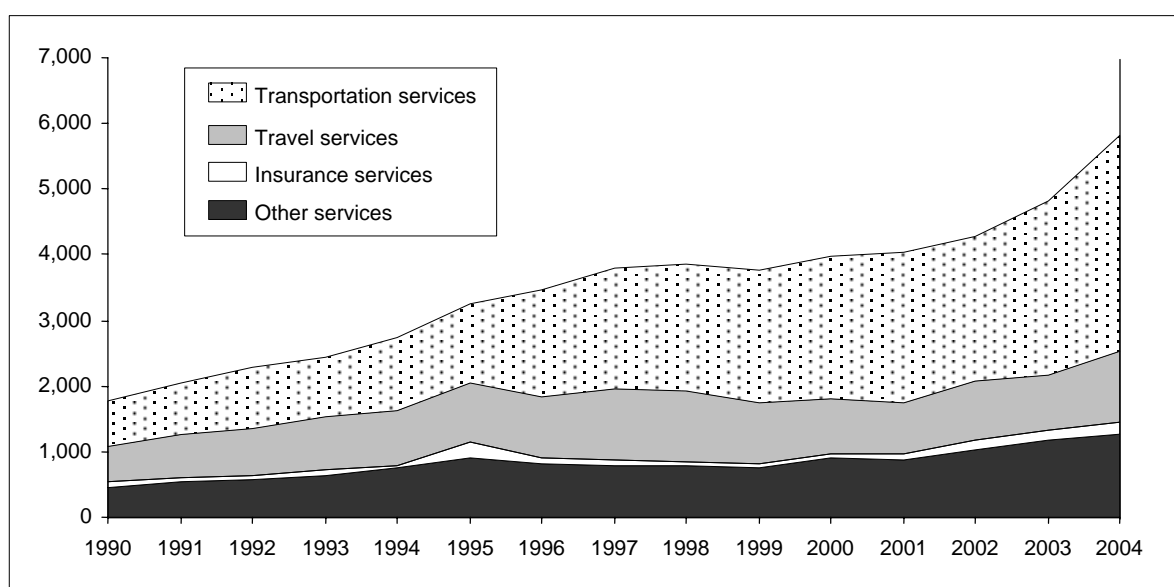
D. Are Services an Option?

The debate on export diversification has been traditionally focused on goods, mirroring the almost negligible role that services have played, at least until recently, in the developing countries' exports. The progress made in information and communication technologies throughout the nineties and the emergence of countries such as India as major exporters of information services (US\$ 8 billion in 2002) have changed the perception of academics and policy makers alike. Services, particularly high tech services, are seen today as an important opportunity to expand and diversify exports and Chile's policy makers are no exception. This sub-section looks into the performance of Chile's

services exports and discusses existing comparative advantages in this area and the requirements and likelihood of developing new ones, particularly in the high- tech sector.⁵

Chile's exports of services amounted to \$5.8 billion in 2004, which represents more than 3 times the exports recorded at the beginning of the 1990s (see Figure 11). Although remarkable, this dynamism has barely been enough to keep up with the growth in the exports of goods. In fact, the ratio of exports of services to total exports of goods and services remained on average close to 18% throughout this period, but at times when the exports of goods surged dramatically -like in 2004- this ratio fell to lower levels (15% in 2004). Out of the four main service categories of the Balance of Payments, the exports of transportation services have recorded the largest expansion.

FIGURE 11
SERVICE EXPORTS
US\$ millions



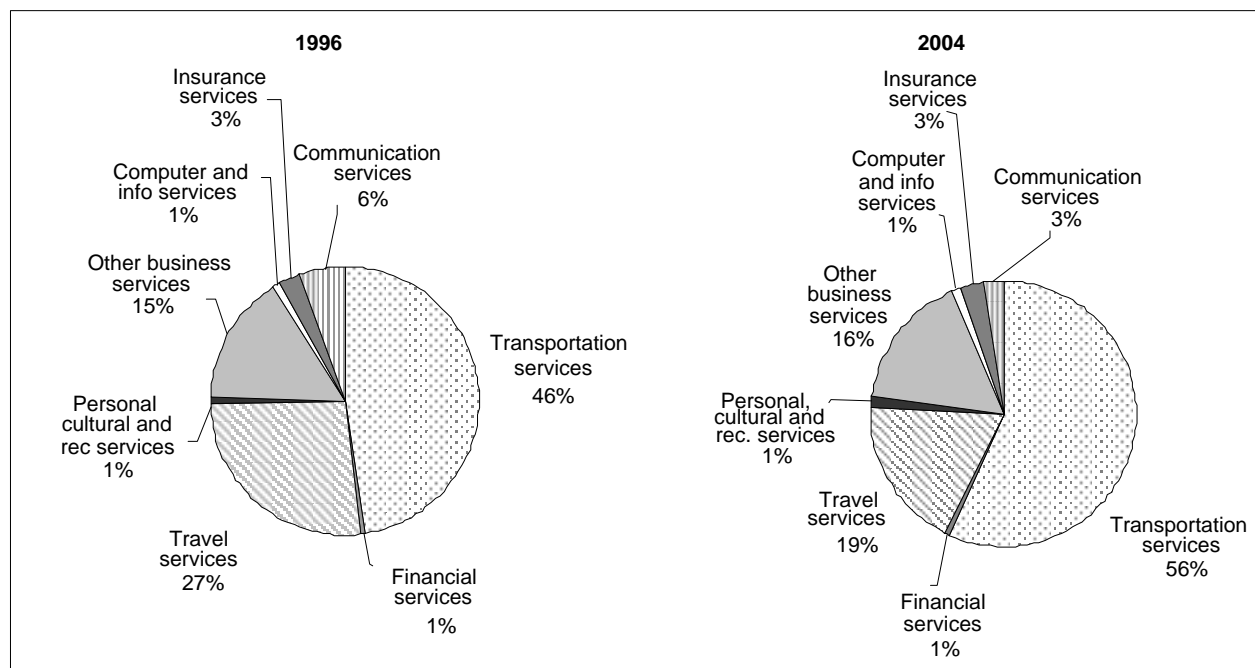
Source: Balance of Payments, IMF and Central Bank of Chile.

It jumped from \$1.7 billions in 1996 to \$3.3 billions in 2004, accounting for 56% of the total exports in services during that year (see Figure 12). Within this category, exports of freight transportation accounts for the largest share suggesting that the dynamism in the exports of transportation services has been largely related to the dynamism in the trade of goods. The same argument applies to the category 'other business services', which includes operational leasing services and business, professional, and technical services, but that also covers merchandising and other trade-related services. This last sub-category has shown the strongest growth rates and accounts for more than 70% of the exports of "other business services".

⁵ Trade in services normally encompasses four modes of delivery: Mode 1 (*Cross-border supply*) is analogous to trade in goods and involves the supply of a service from one country to the consumers in another country; Mode 2 (*Consumption abroad*) occurs when consumers move to another country to obtain the service; Mode 3 (*Commercial presence*) involves foreign direct investment and includes services supplied through any type of foreign business or professional establishment, and Mode 4 (*Presence of natural persons*) involves the movement of service-supplying nationals of one country to the territory of another.

Figure 12 shows that travel represents the second most important component of the exports of services. Although the exports of travel services have not shown a strong performance in the last years (2.9% annual growth rate between 1996 and 2004), the size of its contribution to the exports of services is substantial (19% in 2004). Finally, the exports of computer and information services represent only 1% of the total service exports, however, the exports of this sub-category have almost tripled since 1996 indicating that there has been a fairly vigorous performance in this sector.

FIGURE 12
COMPOSITION OF SERVICE EXPORTS



Source: Balance of Payments, IMF and Central Bank of Chile.

Revealed Comparative Advantage

Does Chile have a comparative advantage in services? To answer this question we compute the so-called indices of revealed comparative advantage (RCA) for 1990-2002.⁶ Table 1 indicates that Chile has a comparative advantage in goods and, by the same token, a comparative disadvantage in services. Even though there is a comparative disadvantage in services overall, Chile exhibits a comparative advantage in transportation services that, as we saw before, is largely related to the performance of trade in goods. The table also shows that the economy exhibits a comparative disadvantage in travel services that has been deteriorating over time. The amount of tourists that

⁶ An RCA index is calculated by taking the share of a particular sector's export in total Chilean exports of goods and services, and dividing this share by the share of all countries' exports in this sector in aggregate global exports of goods and services. An RCA value greater than unity indicates a comparative advantage in the sector; a value less than unity indicates a comparative disadvantage. The estimates must be interpreted with caution because the RCA index is in many ways a crude measure of comparative advantage. For example, the index does not take into consideration the presence of trade barriers. Therefore, a low value of the index in a particular sector does not necessarily indicate lack of comparative advantage but it could be the reflection of high barriers faced by these exports.

visited the country in 2001, for example, was equal to 11% of its population, which does not seem particularly large when compared to other countries in Latin America (Costa Rica, 29%; Dominican Republic, 34%; Mexico, 20%; Uruguay, 64%).⁵ In fact, the Organisation for Economic Co-operation and Development - OCED [2003] argues that Chile's tourism sector is underdeveloped given the country's natural endowments, climate variety, stability and relatively safe environment.

TABLE 1
REVEALED COMPARATIVE ADVANTAGE OF CHILEAN EXPORTS, 1990-2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Goods	1,028	1,021	1,031	1,004	1,016	1,035	1,032	1,030	1,017	1,031	1,031	1,027	1,021
Services	0,889	0,921	0,886	0,986	0,939	0,860	0,875	0,882	0,936	0,883	0,876	0,896	0,920
Transportation	1,343	1,353	1,475	1,521	1,593	1,294	1,772	1,837	2,066	2,115	2,113	2,273	2,186
Travel	0,809	0,949	0,822	0,964	0,846	0,725	0,702	0,796	0,843	0,657	0,563	0,570	0,648
Other services	0,677	0,654	0,615	0,717	0,655	0,725	0,546	0,476	0,472	0,452	0,496	0,473	0,531

Source: Own calculations based on IMF Balance of Payments Statistics.

Does Chile's comparative disadvantage in services imply that there is a limitation to the possibility of diversifying exports via services? In principle, no. The RCA index is affected by the presence of trade barriers faced by Chile in other markets and does not necessarily measure the potential of the country to successfully export services in the future. Second, having a comparative disadvantage in services as a whole does not necessarily mean having disadvantages in all sub-categories (as shown for the case of transportation services). For instance, although the 'other services' category exhibits a comparative disadvantage, this might not be necessarily true for all the sub-categories within.⁶ Finally, countries might be able to develop comparative advantages in services with time.⁷

What Can be Done to Foster Trade in Services?

There are certain policies that Chile could follow to foster its trade in services, some of them related to the capacity to develop comparative advantages in this area, but what exactly determines comparative advantages in services?

According to Berlinski and Soifer [2002], countries that for some reason, geographical or historical, developed a large fishing industry in the past, probably export maritime transport services today. Countries with beautiful landscapes probably export tourism services. In other words, factor endowments might be an important determinant of a country's exports in services. Sapir and Lutz [1981] empirically show that differences in factor endowments go a long way in explaining patterns

⁵ The data is taken from the World Tourism Organization.

⁶ Unfortunately, RCA indexes for specific services within the 'other service' category could not be constructed because the underlying data are not consistently reported by all countries, which may bias the world controls used in the calculation.

⁷ For example, according to the World Bank [2002b], Brazil had a comparative disadvantage in the exports of "business services" during the early nineties but by the late nineties, the country exhibited a strong comparative advantage in this type of services

of trade in services across countries. According to the authors, relative abundance in physical capital is important for exporting such services like transportation or communications services while relative abundance in human capital is important for exporting services like insurance, professional or technical services. In the theoretical front, Deardorff [1985] has shown that the concept of comparative advantage applies not only to trade in goods but also to trade in services.

Following this literature, one can argue that Chile's ability to successfully export services is partly determined by the relative size of its endowments. This implies that the likelihood of developing new comparative advantages will depend on the possibility of accumulating adequate stocks of certain factors. For example, India's software industry has been able to boom not only because new technologies have reduced communication costs, but also as a consequence of a pre-existing large stock of highly qualified scientists and engineers that was accumulated over many years.

India's software industry began practically inadvertently with the creation of a university. In 1909, the Indian Institute of Science was established in Bangalore. After national independence in 1947, government defense, aeronautics, and electronics agencies moved there: Hindustan Aeronautics, Bharat Electronics, the Indian Space Research Organization, and the National Aeronautical Laboratory. This made possible that a software industry gravitated around this spot. A process of cumulative causation took place in which software engineers arrived there because other software engineers were already there and this eventually produced a very large stock of specialized human capital (Easterly [2001]). The key to this process is that inventors' activity is often spurred by having other inventors around them (Helpman [2004]). The example of India underscores the importance of having an adequate pool of specialized labor to successfully develop a high-tech industry.

The prospects of Chile to become a global player in providing information services or other high-tech services will depend, to a certain extent, on its pool of specialized human capital. *A priori*, it is difficult to assess how adequate this pool is, but in general terms, the literature suggests that the stock of human capital dedicated to S&T is not very large relative to international standards (World Bank [2005]; Eyzaguirre, Marcel, Rodriguez and Tokman [2005]). This implies that Chile's current likelihood to exhibit strong comparative advantages in high-tech services appears to be limited unless effort is put on education skills. Needless to say that the prospects of successfully exporting high-tech services are not limited to the pool of human capital available in the country. The entire national innovation system, which sets the incentives for adoption and innovation activities, will also influence these prospects. As stated above, however, the adequacy of Chile's S&T framework will be discussed elsewhere (S&T paper).

A second factor that is likely to influence the exports of services of a country is the institutional platform supporting this type of activities. In many countries, there is a common anti-export bias that is mostly institutional and is associated with the ambiguity and the lack of definition by which exporters of services are normally treated (Prieto [2003]). Generally, institutions in charge of implementing procedures and guidelines connected to international trade (i.e. Central Banks, National Custom Systems, etc.) have long traditions regulating trade in goods. Regulation of trade in services, however, is much more recent. Given the intangibility of service trade, the formalization of many of these transactions is not always easy. In order to address this challenge, sometimes these institutions have imposed definitions to trade in services that are overly restrictive leaving a large bulk of service transactions in the informality and making many service exporters lose potential benefits.

A similar problem arises in terms of the financial needs. The operations of foreign trade in services normally face a set of financial products conceived for merchandise trade and thus are inadequate to satisfy the specific demands of services. Normally bank's requirements in terms of guarantees in physical assets or output of economic activity do not correspond to the structure or the organizational scheme of several service industries. This hampers access to adequate financing and inhibits service trade.

There is not a lot of information to identify precisely how severe these problems are in Chile. However, there seems to be some evidence indicating that the business community has been facing some of these obstacles. For example, the "Catastro de Barreras Internas a las Exportaciones 2000" is a document elaborated jointly by the Minister of Economy and the private sector that captures these concerns. The document states: "(...) *uno de los principales problemas es el desconocimiento general de los negocios de servicios por parte de instituciones vinculadas al proceso exportador, tales como instituciones financieras y públicas, lo que afecta la evaluación de las operaciones del negocio en cuestión, entabando los procesos formales definidos para dicho proceso (...) los procedimientos son definidos fundamentalmente para productos y algunos servicios definidos explícitamente, lo que deja a varias actividades con dificultades para acceder a los mecanismos de apoyo para las exportaciones*". It seems, then, that addressing the problems of anti-export bias against services is an area by which the export of services could be fostered.

Finally, it is important to address the degree of Chile's trade barriers in services. Admittedly, trade barriers may affect mostly imports of services rather than exports. Therefore, at first, this may look less of an issue for our discussion on whether services can become a relevant factor on an export diversification strategy. Many services, however, are used as inputs to other sectors (including the service sector itself) and their inefficient provision may act like a tax on production limiting output or reducing competitiveness. In fact, the use of services as an intermediate input is more important for the service sector itself than for any other sector.⁸ Therefore, by lowering competitiveness, a barrier to services may impact indirectly the capacity to diversify exports particularly in the service industry. This is why it is important to assess the level of protection of trade in services in Chile.

It is worth mentioning that the barriers to trade in services are more complex and less visible than tariffs for the case of goods. Trade in services involves four modes of supply: Mode 1 (cross-border supply); Mode 2 (consumption abroad); Mode 3 (commercial presence), and Mode 4 (presence of natural persons). Except in the case of Mode 1, trade in services does not usually involve consumers and service suppliers interacting across borders; rather, transactions typically occur within one country or the other. Given this, impediments to services trade normally take the form of regulations or other measures that effectively limit access of foreign services suppliers to the domestic market, rather than border measure such as tariffs. As a result, measurement of barriers to services trade faces the same types of challenges as those involved in measuring nontariff barriers (NTBs) to merchandise trade.

⁸ Own calculations using the Chilean input-output matrix (1996) from the Central Bank show that one peso-worth of output in the service sector requires 0.26 peso-worth of services as inputs. These requirements are much lower in the other sectors of the economy: agriculture (0.10), mining (0.18) and industry (0.15).

A first approach to examine Chile's trade policy on services consists on identifying the commitments made by Chile at the General Agreement on Trade in Services (GATS) in the Uruguay Round of trade negotiations. It is worth noting that the procedure for negotiating this agreement was the following: each member defined the services to negotiate (that is, which services will be under the rules of market access and national treatment), and then defined restrictions to those services in each of the four modes of supply.

The information about the commitments made by a country can be used to calculate some frequency measures like the ratio of signed commitments relative to the 620 maximum possible⁹ and the share of "no restrictions" commitments in a member's total commitments. According to Hoekman [1996], these frequency measures (or coverage indicators) provide information on the relative restrictiveness of policy regimes because the coverage in each country's schedule is an indicator of its policy stance –the higher the coverage, the more open the regime.

Table 2 shows that Chile signed 140 commitments resulting in a ratio of signed commitments to total commitments equal to 22.6%. This coverage was indeed higher than in the typical Latin American country, but much lower than in the average OECD country indicating that Chile had a more liberal stance in the negotiations when compared to its regional counterparts, but much less liberal than the developed world. Chile, however, signed many of its commitments with restrictions resulting in a ratio of commitments with "no restrictions" to the number of total signed commitments (our second frequency measure) equal to 25.7%. This ratio was in fact lower than in the typical Latin American country indicating that although Chile's coverage was more generous than the coverage made by the average country in the region, relative to what it was committed, Chile was somewhat more "restrictive".

TABLE 2
COMMITMENTS TO MARKET ACCESS IN GATS

Indicator	Chile	Average LAC	Average OECD
1) Number of commitments signed	140.0	119.0	330.4
2) Number of commitments signed with "no restrictions"	36.0	49.1	188.9
3) Number of commitments signed / Total list GATS (620) (%)	22.6	19.2	53.3
4) Number of commitments signed with "no restrictions" / Number of commitments signed ((4) = (2) / (1) * 100)	25.7	41.3	57.2

Source: Berlinski and Romero [2001].

As mentioned before, the frequency measures are only rough proxies of policy regimes that provide only a partial view of the level of barriers. For instance, the frequency measures do not capture the severity of the restrictions included in the commitments and the policy applied by a country might have actually been more liberal than the commitments signed at the Uruguay Round. This seems to have been the case for Chile, as reported by the WTO [2003].

⁹ GATS classification list included 155 non-overlapping service sectors. Since there are four possible modes of supply, a maximum of 620 commitments could have been signed.

Given the limitations of the frequency measures, we complement the above information with a more elaborated set of restrictions that have been constructed for different services industries by various researchers: telecommunications (Warren [2000]), maritime transport (McGuire, Schuele and Smith [2000]), distribution (Kalirajan [2000]), and professional services (Nguyen-Hong [2000]). A unified methodology was employed to construct a trade restrictiveness index in each of these cases. To develop these indexes, restrictions on trade and investment in a service industry were compiled from a number of sources. These restrictions were then assigned scores and grouped into categories, each of which was assigned a numeric weight. These scores and weights were based on subjective assessments of the costs of restrictions to economic efficiency. Finally, the indexes were computed using these scores and weights.¹⁰ The more stringent the restriction, the higher the score. Scores range from 0 to 1.

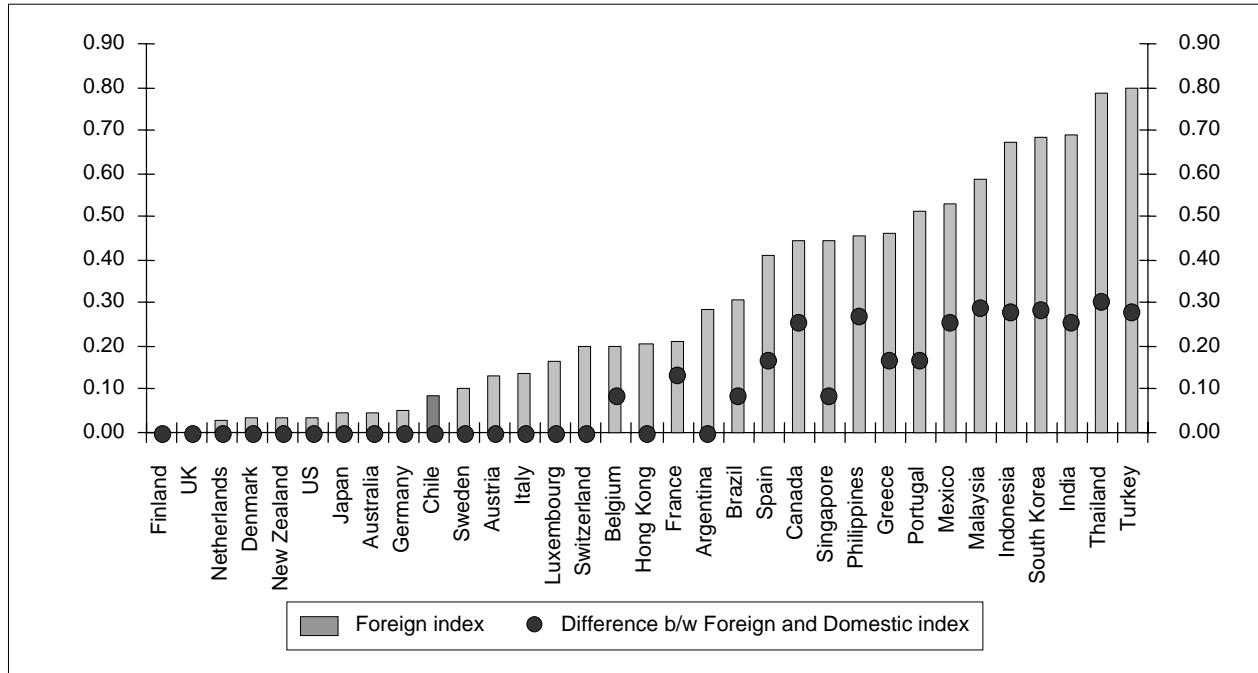
An index is calculated separately for domestic and foreign service suppliers. A foreign index is calculated to measure all the restrictions that hinder foreign firms from entering and operating in an economy. A domestic index represents restrictions that are applied to domestic firms. The difference between the foreign and domestic index scores is a measure of discrimination against foreigners. The next graphs show the level of restrictions in four service industries in Chile as well as in other countries.

Figures 13 and 14 show examples of services in which Chile's restrictions are fairly low for foreign investors. These are telecommunication services and distribution services that encompass wholesale trade and retail trade services. In the case of telecommunication services, the difference between the foreign restrictiveness index (represented by the bars) and the domestic restrictiveness index (not shown) is equal to zero (represented by the dots) (see figure 13). This implies no discrimination against foreigners. In the case of distribution services, the restrictions are also very low relative to international standards. However, in these services there is a positive gap between foreign and domestic restrictions indicating that some forms of discrimination exist against foreigners.

Figures 15 and 16, on the other hand, show examples of services in which Chile's restrictions are high relative to other countries. These are maritime services and professional services like architectural, engineering and other technical services. In both cases, foreign suppliers encounter particular stringent barriers but also they face a large degree of discrimination relative to their domestic counterparts. This is particularly the case on professional services. As we mentioned earlier, there is a large literature indicating that Chile exhibits a shortfall in specialized human capital and that this could limit the prospects of exporting services that use skills intensively. Related to this, it should be noted that the stock of human capital does not have to be all national. Foreigners can provide an initial pool of skills in certain areas and establish the seeds for training and transferring know how.

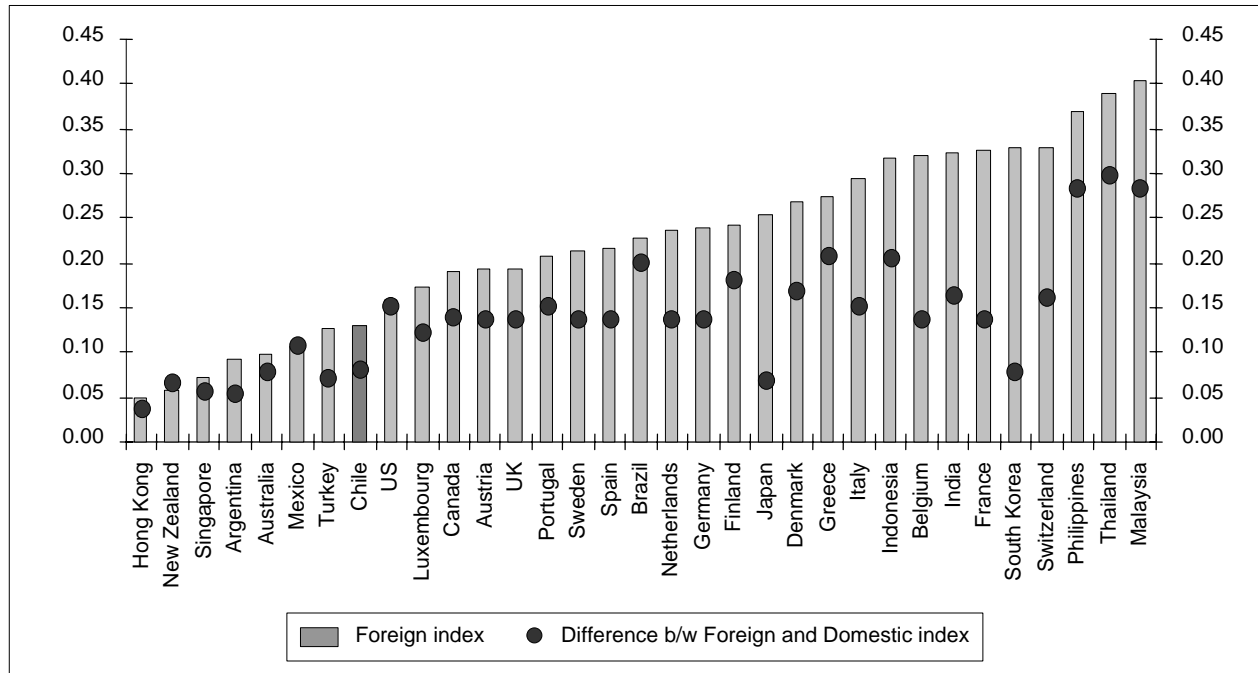
¹⁰ Restrictions on the trade restrictiveness indexes include: licensing requirements for new firms, restrictions on direct investment, restrictions on the temporary and permanent movement of people, restrictions on firms conducting their core business, the pricing of services, etc.

FIGURE 13
RESTRICTIVENESS INDEXES FOR TELECOMMUNICATIONS SERVICES



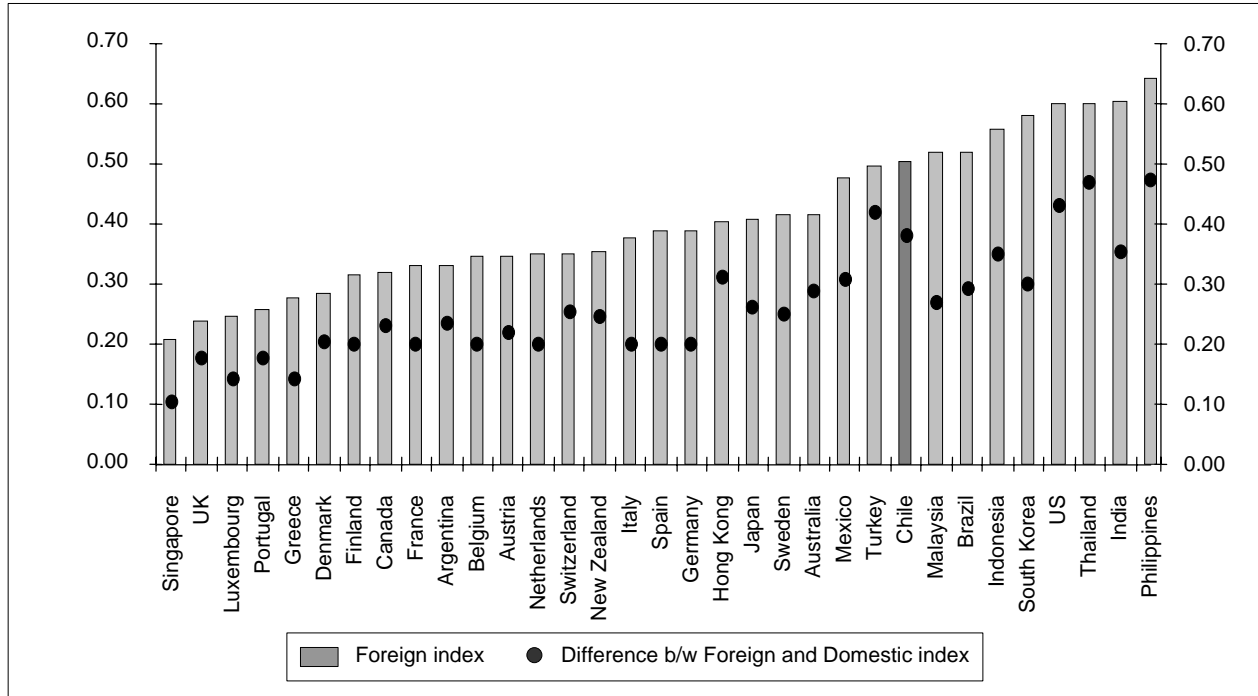
Source: Warren [2000].

FIGURE 14
RESTRICTIVENESS INDEXES FOR DISTRIBUTION SERVICES



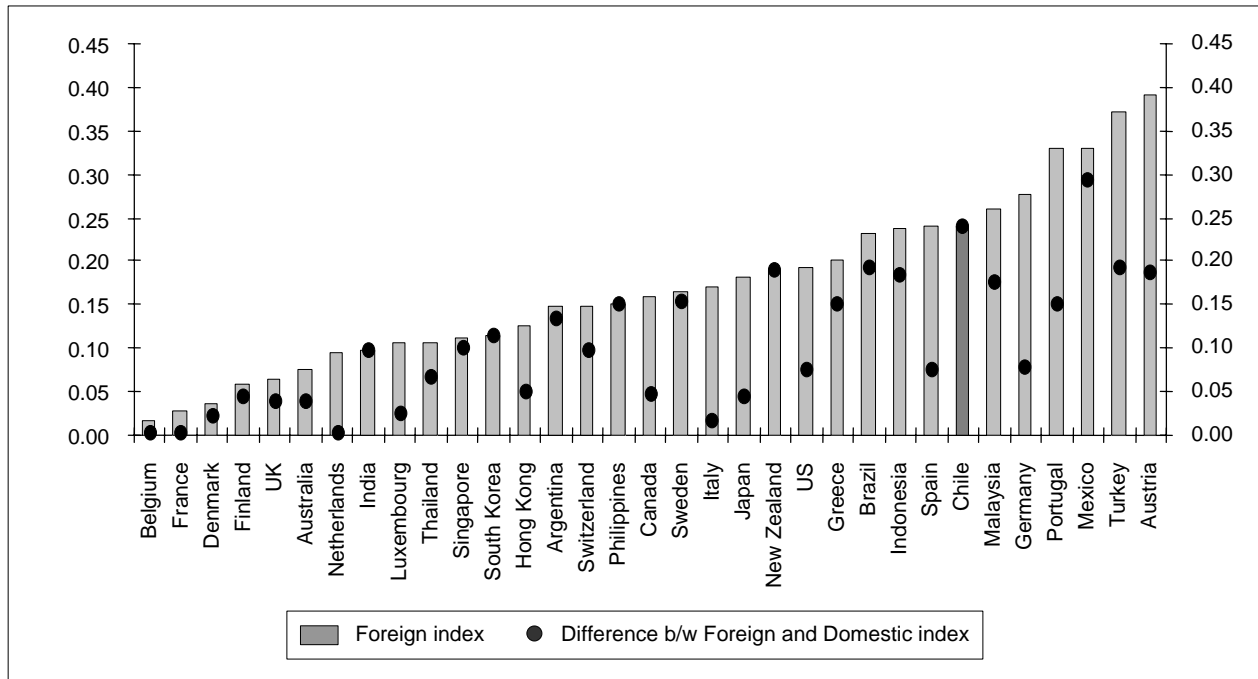
Source: Kalirajan [2000].

FIGURE 15
RESTRICTIVENESS INDEXES FOR MARITIME SERVICES



Source: McGuire, Schuele and Smith [2000].

FIGURE 16
RESTRICTIVENESS INDEXES FOR PROFESSIONAL SERVICES



Source: Nguyen-Hong [2000].

As Figure 16 indicates, however, high levels of restrictions still persist in several professional services like engineering, and other technical services in the country. Therefore, addressing these restrictions seems to be one way to facilitate the accumulation of specialized human capital endowment in Chile. In the case of maritime transport, Chile has made progress in the overall liberalization process, but in the areas of cabotage and pilotage, liberalization still faces some challenges (for details, see Mattos and Acosta [2003]).

One limitation of the benchmarking analysis presented above is that the data is not available for more recent periods. Chile may have done already some progress in liberalizing some of these markets. Indeed, some of the most recent PTAs -in particular those signed with the US and the EU- have extensive chapters on services that may imply lower restrictions to the foreigners from these markets than those exhibited in the pictures. Still some services were left out of these agreements, like maritime cabotage in the EU's PTA. The overall picture here, however, is that although Chile may have moved forward in liberalizing its service industry, the country should continue analyzing what progress remains possible in this area.

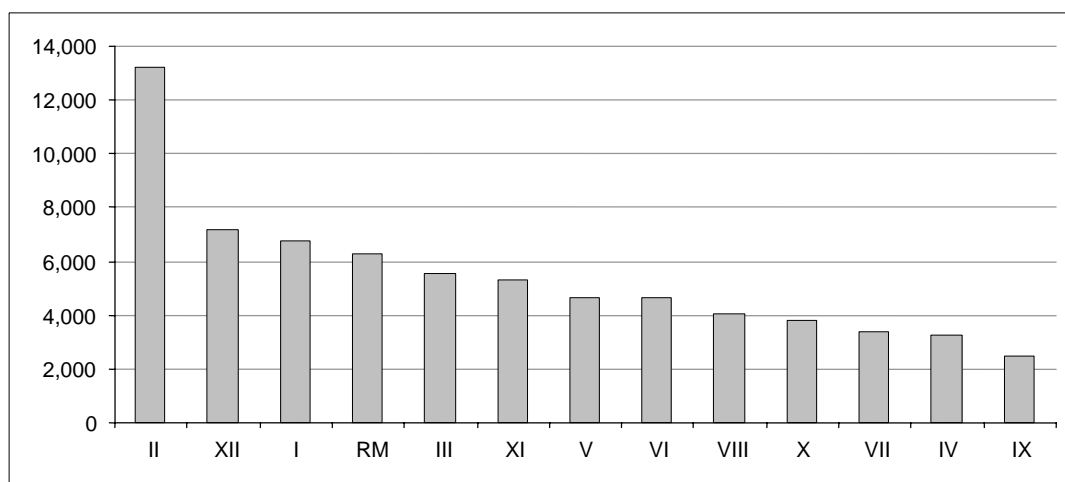
Chilean exports of services also face barriers in other markets. For example, the "Catastro sobre Barreras Externas al Comercio 2004" reported that within the region, Chilean exports encounter obstacles in various types of services: professional services in Argentina, Brazil and Colombia; transportation services in Argentina and Colombia; communication services in Colombia, and commercial presence (in general) in Bolivia and Brazil. With respect to the US, Chilean exports face barriers particularly on maritime services. Chile has signed preferential trade agreements with all these countries (see Section III), therefore, it is on its interest to analyze whether greater market access can be granted within the provisions, or by deepening the scope, of these agreements.

Summarizing, services can be part of an integrated strategy to diversify exports in the country. We have mentioned some actions that could facilitate the road to do so: first, evaluating and –if necessary- addressing the potential anti-export bias that could exist in services, including the lack of definition by which the exporters of services might be treated by public institutions and the potential inadequacies of the financial services available to finance export activities. Second, several indicators show that although the liberalization of trade in services has advanced well in many areas, more work remains possible in other services. This is relevant because as services are used as inputs to other sectors, their inefficient provision may lower competitiveness and decrease the likelihood to export successfully. Chile should also evaluate whether greater market access for its exports of services can be granted within the provisions, or by deepening the scope, of the preferential agreements that has already signed. Finally, we have stressed that the prospects of exporting services cannot be decoupled from the country's factor endowments. Particularly, the exports of high-tech services involve the accumulation of certain factors that have not been traditionally demanded by the natural-resource-based sectors. Therefore, developing strong comparative advantages in this area implies a move from the low-risk cone to the high-risk cone of diversification that might not be possible without some forms of government intervention. It is for the Chilean authorities to decide, however, the extent of these interventions and the degree by which the economy should move to the high-risk cone.

III. TRADE AND REGIONAL DISPARITIES

A large body of evidence shows that Chile's strategy of market liberalization, trade opening, and other structural transformations during the past twenty years led to a period of high and sustained growth (Gallego and Loayza [2002]; Morandé and Vergara [1997]). Although there is consensus on the strong dynamism experienced by the country, there is also a perception that this dynamism has not been equal across regions.¹¹ After a substantial period of economic growth, Chile's disparities across regions remain large. The richest region (II) has a GDP *per capita* that is more than five times the GDP *per capita* of the poorest region in the country (region IX) (see Figure 17).¹² The government has, for some time, fostered plans for the decentralization and advancement of the regions, which is a reflection of the necessity to reach a more equal development.

FIGURE 17
GDP PER CAPITA, 2002
(1996 - US\$)



Source: Own calculations with data from Central Bank of Chile.

The analysis of regional disparities is related to trade because the internationalization of the economy could create territories of winners and losers. This renders interesting studying Chile's insertion into the global economy from the perspective of its regions. Figure 18 shows the share of the Chilean exports by regions.¹³ The figure indicates that the exports of the country have been concentrated mainly in three regions: region II, the Metropolitan region and region VIII.

¹¹ Chile is divided in 13 regions: Tarapacá (I), Antofagasta (II), Atacama (III), Coquimbo (IV), Valparaíso (V), O'Higgins (VI), El Maule (VII), El Bío Bío (VIII), La Araucanía (IX), Los Lagos (X), Aisén (XI), Magallanes and Chilean Antarctic Territory (XII), and Metropolitan Region of Santiago (RM).

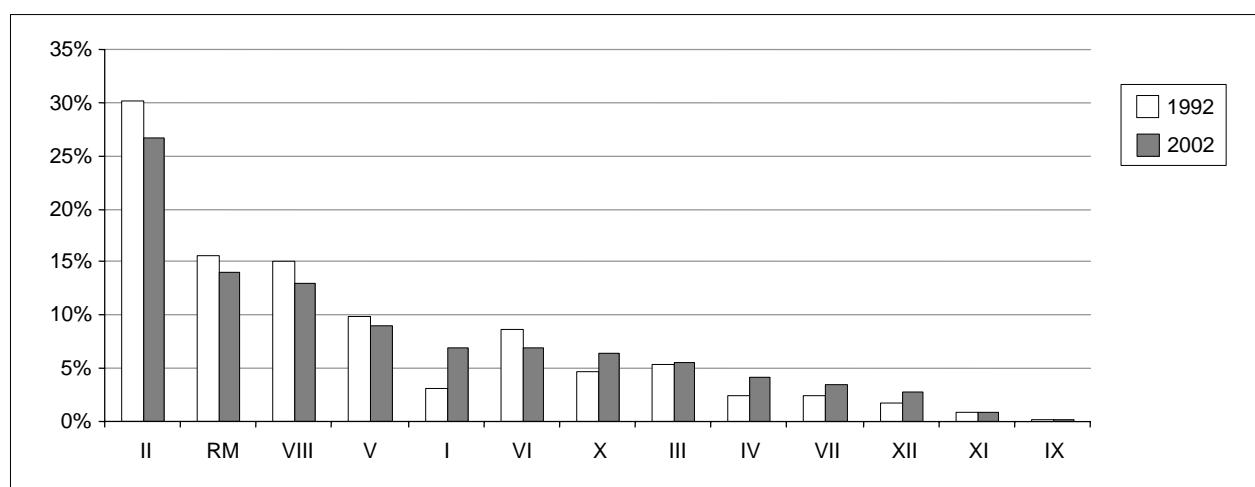
¹² Although regional income disparities in Chile compare favorably relative to some developing countries like Brazil, Indonesia or the Philippines they are large relative to European countries, the US or Canada (Shankar and Shah [2001]). For example, Chile's regional income disparities are 3 times larger than in the US. There is evidence that the regions have been converging but at a speed that is too slow to become a significant force in equalizing regional income (Soto and Torche [2004]; Duncan and Fuentes [2005]).

¹³ The exports have been expressed in real terms using export indices by sub-categories provided by the Central Bank of Chile. Therefore, changes in the shares between 1992 and 2002 denote only changes in the relative volumes of exports and not in relative prices.

Together, they account for around 60% of the country's exports. On the other hand, regions IV, VII, IX XI and XII have shown the lowest export participation.

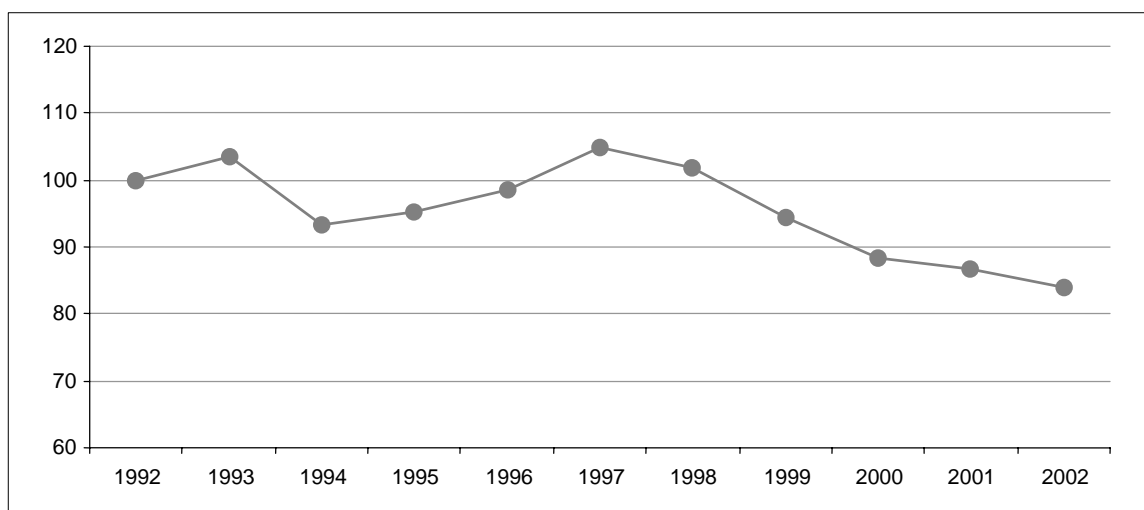
Although the concentration of the exports is high, there are signs that it has been falling. While in 1992, regions II, VIII, and RM, accounted for 61% of total exports, this percentage decreased to 54% in 2002. At the same time, many regions that in 1992 had a very small participation experienced by 2002 an increase in their shares (I, X, IV, VII, XII). A concentration index is shown in figure 19. The measure is a Herfindahl index constructed as the sum of the squares of the shares of exports of each region. The index indeed shows that after a peak in 1997, the regional concentration of exports has been falling over time.

FIGURE 18
REGIONAL SHARE IN TOTAL EXPORTS



Source: MIDEPLAN.

FIGURE 19
REGIONAL CONCENTRATION OF EXPORTS
(Herfindahl index)



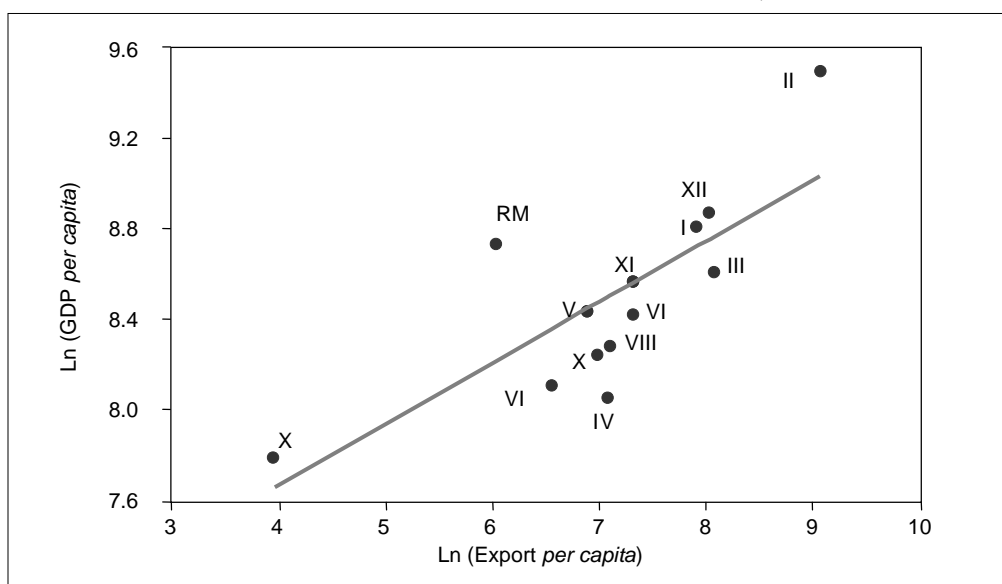
Source: Own calculations with data from MIDEPLAN.

A. Infrastructure and Regional Exports

In order to explore whether there is a relationship between exports and development, Figure 20 plots the GDP *per capita* of the 13 Chilean regions together with their exports *per capita*. The figure shows that a positive relationship exists between these two variables. At the extreme cases, region IX is not only the region with the lowest GDP *per capita* but also the region that exported the least. On the other hand, region II is by far the richest region of the country and also the one with the largest exports *per capita*.

Although informative, the positive relationship shown in figure 20 has to be interpreted with caution. For instance, the relationship does not provide any information about the causality between these two variables. Moreover, the correlation could be positive just because, by construction, the exports are part of the GDP. Pardo and Meller [2002], however, estimate an econometric model in which these and other econometric problems are controlled for. According to the authors, an increase of 10% in the level of regional exports generates, on average, an increase in the level of regional GDP of 2%. The results also show that the more export-oriented regions tend to exhibit the largest elasticities.

FIGURE 20
GDP PER CAPITA vs EXPORTS PER CAPITA, 2002

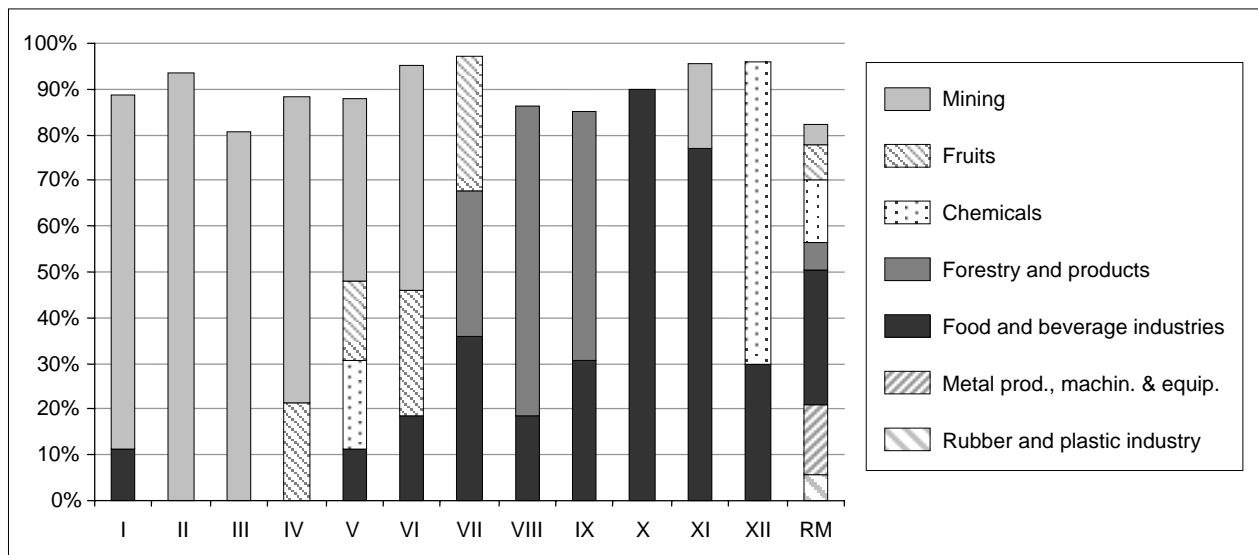


Source: Own calculations based on Central Bank of Chile and MIDEPLAN.

Faced with this evidence, it is natural to ask what regions could do, if anything, to improve their insertion into the global markets? After all, Chile's trade barriers are already very low and the potential of the regions to export are largely determined by their endowments. Here, it is useful to analyze the patterns of exports specialization by regions. Figure 21 shows the main exports categories of each region. First, it is clear that the degree of specializations varies across territories. For example, region II exhibits a very high level of specialization with more than 90% of the exports concentrated only in mining while the Metropolitan region (RM) presents the lowest specialization

levels with exports diversified across several categories. Second, if the Metropolitan region is excluded, the strongest exporters, regions II and VIII (see Figure 21), concentrate their export potential mainly on natural -resources- based products. It is not difficult to understand why. On the one hand, 25% of the world's copper reserves are in Chile and the largest shares of these reserves are found in region II. On the other hand, region VIII concentrates more than 44% of the forests of the country and its ideal soil conditions allow trees to grow almost 5 times faster than in other countries giving this region a strong advantage in forestry and its products. Unfortunately, not all the regions exhibit such a global competitive edge. Therefore, what these other regions could do to improve their insertion into the international markets?

Figure 21
EXPORT SPECIALIZATION BY REGIONS, 2002



Source: Own calculations with data from MIDEPLAN.

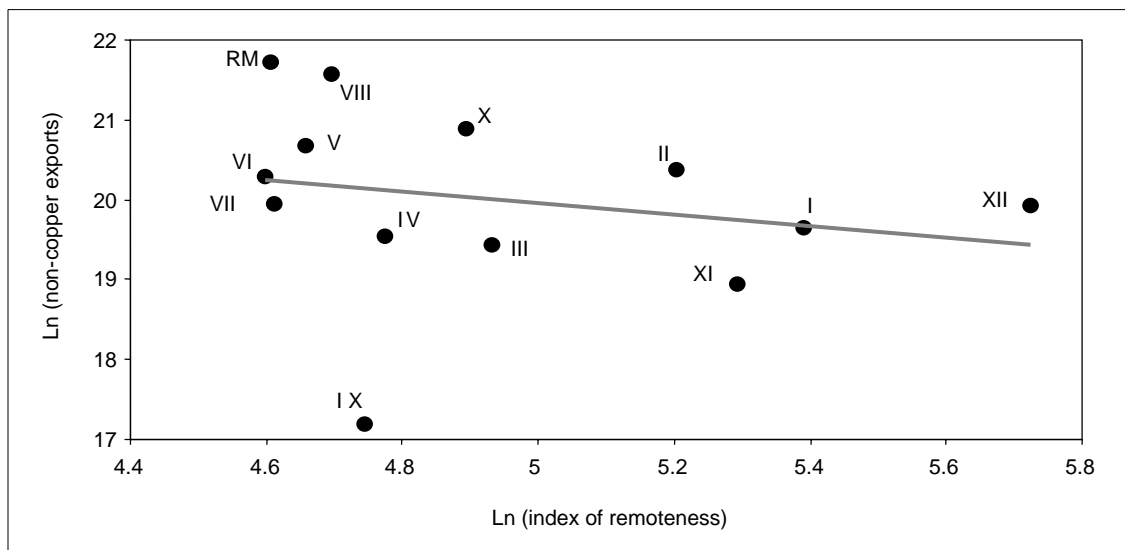
The new economic geography literature, pioneered by Krugman [1991], may provide some hints to this question. The main idea behind this literature is that the location of economic activity depends on the interplay between centripetal forces (that tend to concentrate economic activity) and centrifugal forces (that tend to disperse it). Industrial linkages are normally behind the centripetal forces as firms benefit from proximity to their industrial suppliers and customers. Strong market competition and congestion costs are normally the factors behind the centrifugal forces.

Using this class of models, Martin and Rogers [1995] and Martin [1999] analyze the role of public infrastructure on industrial location. They find that public infrastructure that tends to facilitate transactions within a region could spark economic activity. By reducing transaction costs between suppliers, producers and consumers, improved regional infrastructure may lead to larger trade inside a region increasing its overall level of expenditure. As the size of the market increases, more firms will then relocate to benefit from scale economies. Additional agglomeration may also arise as firms will seek to benefit from knowledge spillovers that tend to be localized (see Jaffe and Trajtenberg [1993] and Henderson *et al.* [1995]). Lower transaction costs within the region, the argument goes, strengthen its centripetal forces and thus its attractiveness.

Improved infrastructure can also lower the transaction costs between regions. This might be particularly important for regions that are isolated from the rest of the country. Chile has a curious shape. The country's territory is very long and thin. From North to South it stretches from deserts to ice with the main economic center (Santiago) in the middle. It might be reasonable to expect that the geographic location of a region influences its economic development and perhaps its capacity to export. For instance, regions that are far away from the rest of the country may face prohibitively high cost to transport intermediate inputs from other zones. Similarly, isolation could put a toll on exports due to the possible high transportation costs to access ports and/or storages. One can also imagine that factors of production might be less likely to cluster in one particular territory if it is too isolated from the rest of the country. Thus, without having a strong comparative advantage -like copper- the isolation of a region may constitute an important obstacle to successfully export to other markets.

Figure 22 plots the exports (non-copper) of the 13 Chilean regions together with a measure of their degree of remoteness (proxied by the sum of the distances between the particular region and all the others, expressed as an index).¹⁴ Given Chile's long and thin shape, the farther away the region is from the center of the country the more isolated the region is. The figure shows that a negative relationship exist between these two variables: regions that are far away from the rest of the country tend to export less. Although only a correlation, the figure illustrates the potential adverse effects of being away from the country's inputs and markets when it comes to export.

FIGURE 22
REGIONAL EXPORTS AND REMOTENESS



Source: <http://turistel.cl>.

In order to explore more carefully the relationship between regional infrastructure and exports, we estimate export demand functions at the regional level and include a measure of the region's

¹⁴ The distances are between regional capitals. The data comes from <http://turistel.cl>.

stock of physical capital in infrastructure. We construct the stock of physical capital for each region with data from the effective public investment on infrastructure, by region, taken from MIDEPLAN. We employ the perpetual inventory method to construct the capital stocks. It would have been preferable to use direct measure of capital stocks -such as roads, railway length or telephone lines- since the perpetual inventory method has its own limitations.¹⁵ However, this data is not readily available on a consistent basis. Nevertheless, the perpetual inventory method has been widely used to estimate capital stocks including capital stocks in infrastructure (see for example, Agénor *et al.* [2005]).

The traditional methodology to estimate export demand functions for a country uses a specification that includes the income of the main importing partners and a relative price (see Senhadji and Montenegro [1999]). Adapting this literature to the case of regions in Chile, we use the following specification:

$$\log(EXP_i) = \beta_0 + \beta_1 \log(GDP_i) + \beta_2 \log(RER_i) + \beta_3 \log(INFR_i) + \varepsilon_i$$

where EXP_i are the exports of region i , GDP_i represents the weighted sum of the GDP's of the main importing partners of region i , RER_i is the multilateral real exchange rate of region i that is calculated with respect to its main importing partners, and $INFR_i$ is the capital stock of public infrastructure.¹⁶

We run a panel regression and include regional dummies to control for regional aspects (other than infrastructure) that could influence the exports of the region. The estimation covers the period 1990-2000. The results are as follows:

$$\log(EXP_i) = 1.33 \log(GDP_i) + 0.20 \log(RER_i) + 0.37 \log(INFR_i)$$

(2.94) (1.15) (4.19)

where the numbers in parentheses are the t -statistics.¹⁷

The coefficients for the GDP and Real Exchange Rate (RER) variables show the expected signs. An increase in the income of the region's importing partners and a depreciation of the real exchange rate have positive impacts on the region's exports. The coefficient for the real exchange rate, however, is not significantly different from zero. The elasticities also seem to fall close to

¹⁵ For instance, estimating the initial capital stock.

¹⁶ The main importing partners included in this analysis are: Argentina, Belgium, Bolivia, Brazil, Canada, China, Colombia, Ecuador, France, Germany, India, Indonesia, Italy, Japan, Mexico, Netherlands, Peru, Korea, Spain, Switzerland, Turkey, United Kingdom, United States and Venezuela. Together, they import almost 80% of Chile's total exports. The weights consists on the shares of the exports of region i to each of these countries. These weights are used in the construction of the GDP and RER variables. The GDPs of the importing partners are taken from the WDI of the World Bank. The GDPs are PPP-comparable. The RERs are CPI-based. The CPI indexes are taken from the IFS of the IMF. A depreciation rate of 4% was used to construct the capital stocks in infrastructure. ADF and Phillips-Perron tests indicate that all the EXP, GDP and INFR series have a unit root. Johansen tests indicate the existence of at least one cointegrating vector for each region.

¹⁷ The R^2 of the regression is equal to 0.98 which is not uncommon for export demand estimations with variables integrated of order 1. The ADF test for this panel regression is equal to -8.93 which shows the presence of cointegration among the variables. The regression is also run with the dependent variables lagged 1, 2 and 3 periods to control for endogeneity problems. The size and the significance of the estimated coefficient does not change when the variables are lagged.

normal values.¹⁸ Finally, the coefficient for the stock of physical capital is positive and significant. This result support the argument that physical capital in infrastructure is important for the regions to export as it may lower transaction costs within the region -triggering development- and between regions - improving connectivity. In the last section of this note, we come back to this point and review some of the literature regarding the role of transportation costs on trade and the effects of a better infrastructure on geographical development.

B. Chile's Price Bands

Geography, though, is not the only factor mediating the impact of trade on regional development in Chile. In one of the few distortions left in trade policy, a price band system is used for wheat, wheat flour, and sugar, which ultimately affects resource allocation across regions.¹⁹ When prices, including insurance and freight, fall below the floor, a special tax is added to the uniform tariff rate to raise the price to the floor, setting a minimum import price that is normally higher than both international and Chilean domestic prices.

The stabilization system was not designed as a regional policy and, by nature, protects all producers without any particular targeting. However, most of the beneficiaries in Chile are concentrated in three regions (VIII, IX and X), some of which, as seen before, are among the poorest and least trade integrated regions in Chile. Although other regions (V, VI, VII and RM) have soil and weather conditions that could support these crops, farmers in these other regions have preferred to specialize in other products -like fruits- which are not protected. One could argue, then, that the system works as a mechanism to protect or compensate some of the less privileged regions for the inequities generated by trade. On the face of it, removing it would make some of the poor regions even poorer relative to the rest of the country.

If one looks, though, beyond the most immediate impacts, this sort of intervention is not only costly, but is likely to perpetuate or even widen the trade and income gap across the regions. For one thing, the system has a clear negative impact on the welfare of consumers nationwide. The price band raises production costs for bread and other flour-based products, and for all products that use sugar as an input. For another, the net employment effect for the country as a whole is ambiguous, since employment gains in the wheat and sugar industry are likely to be offset by losses in the industries that use these products as inputs (Schiff [2002]).

As for the beneficiary regions, it seems clear, first, that the occasional gain in terms of income and employment has not been enough to close the income gap *vis-à-vis* the other wealthier regions, and, second, that the incentives the system provides work against the search for new products and comparative advantages that ultimately could provide a sustainable source of

¹⁸ Senhadji and Montenegro [1999], for example, estimated export demand functions for a group of developed and developing countries with income elasticities typically in the order of 1.5. For the case of Colombia, Misas, Ramírez and Silva [2001] find elasticities between 0.3 and 1.5 for the real exchange rate and between 2 and 4.2 for the world's GDP. Similarly, for the case of Chile (as a whole), Cabezas, Selaive and Becerra [2004] obtained elasticities in the range of 0.2 and 0.8 for the real exchange rate and between 1.2 and 4 for the GDP of different partners.

¹⁹ The system has been modified after the WTO ruled in 2002 that it was inconsistent with the WTO Agreement on Agriculture. Further modifications have been contemplated (including its eventual elimination). See (USTR [2004]).

economic growth. For instance, as Schiff (*op. cit*) pointed out, the price-band raises the price of land in those regions, which, in turn, works against the viability of non-traditional agriculture, a sector that has been a reliable source of growth elsewhere in the country.

Other regional policies -like improving infrastructure and physical connectivity- would generate fewer distortions, and, therefore, would not create a perverse trade-off between regional development and the country's overall welfare, and would almost certainly be more effective in furthering the cause of reducing regional disparities. True, given the usual political economy restrictions, this is easier said than done. Yet, compensation for the short-term losses in the affected regions, including subsidies to facilitate the transition to alternative crops, could make the policy of removing the price band more politically feasible. In fact, given the regional component of the price band, future modifications of the system including potential compensation for their impacts might be better framed within the government's plans of regional development.

This section has addressed some of the regional dimensions of Chilean trade. Following the argument that a region's capacity to export is not only determined by its endowments but also by the adequacy of its infrastructure as well as its geographical location, the section has argued that improvements in infrastructure that allow a reduction in the transaction costs at the intra-regional and inter-regional levels should have a positive impact in the capacity of a region to export. We have also mentioned that the agricultural price bands have a clear regional component. Potential modifications of the system might be better dealt within the more general government's plans of regional development.

IV. PREFERENTIAL AGREEMENTS: COMPLETING THE CIRCLE

Chile's most conspicuous departure from a classic, textbook, strategy of integration has been its aggressive approach towards signing preferential trade agreements across the globe. Government officials describe this approach as a "multidimensional trade strategy" (e.g. Rosales [2004]), which would combine the best of unilateral, multilateral and preferential trade liberalizations. Others called it "additive regionalism", defined as a process of "sequentially negotiating free trade agreements with all significant trade partners" (Harrison, Rutherford and Tar [2003] p. 1).

The rationale is well known and has also been adopted by other countries in Latin America, notably by Mexico. A wide network of preferential trade agreements would allow Chile to: (a) expedite integration by bypassing the complexities and, therefore, slow pace of multilateral negotiations; (b) avoid the costs of asymmetrical market access, typical of unilateral liberalizations and (c) make sure that trade diversion, a cost implicit to all preferential trade agreements, would remain low while ensuring improved market access. The critics of this strategy draw attention to the distortions, namely the risks of trade diversion, the incentive given to exporters to work against multilateral liberalization (which would undermine their preferences), the administrative costs of a myriad of rules of origin and related trade diversion on inputs, the allocative distortions caused by a multitude of effective rates of protection driven by preferences and the limited net gains (net of the distortions), if any at all (e.g. Hachette [2000], Schiff [2002] and Fischer [2004]).

A comprehensive evaluation of the impacts of Chile's preferential agreements has yet to be done, in part because this is an ongoing strategy and some of the more important agreements, such as the ones with the European Union (effective in 2003) and the US (effective in 2004), are still in their initial stages of implementation (see Table 3). Yet, the evidence available suggests that gains, though modest in general, have been outweighing the costs. Harrison, Rutherford and Tar (*op cit*) results, for instance, using a computable general equilibrium model, support the argument that Chile's low uniform tariff coupled with important South-South and North-South Agreements (North America, European Union-UE, *Mercado Común del Sur*-MERCOSUR and the rest of South America) generate welfare gains (ranging from 0.4 to 8.4% of the GDP) that far outstrip those from an unilateral liberalization (0.1 of the GDP).

Chumacero, Fuentes and Schmidt-Hebbel [2004], in turn, calibrate a dynamic general equilibrium model to quantify the impact of the US and EU trade agreements on the Chilean economy. Taking into account both traditional (tariff and market access) and non-traditional (intellectual property rights, risk premium and productivity) effects, their results point to a permanent GDP increase of 1%. As the authors put it (p.20), this is a significant gain "when put on the balance with costs incurred by Chile during a decade of trade negotiations with the United States and the European Union."

As important as economic evaluations are, Chile's motives to adopt "additive regionalism" go well beyond economics and there is little sign that future governments are prepared to question its fundamentals. In fact, the evidence suggests that all four candidates of the upcoming presidential election support this policy (AFP, October 20, 2005), which already accounts for most of Chile's trade. In the first semester of 2005, effective preferential trade agreements (PTAs) accounted for 65% of total Chile's exports and 78% of total imports. Out of the 35% of exports carried out outside effective PTAs, Japan, China and India account for 24%. In this context, not

only "additive regionalism" seems to be a *fait a compli*, but it is also clear that Asia is the missing link of the "multidimensional" strategy.

TABLE 3
CHILE'S PREFERENTIAL TRADE AGREEMENTS. 1992-2005

Country	Signing date	Effective
Venezuela	April 2, 1993	July 1, 1993
Bolivia	April 6, 1993	July 7, 1993
Colombia	December 6, 1993	January 1, 1994
Ecuador	December 20, 1994	January 1, 1994
MERCOSUR	June 25, 1996	October 1, 1996
Canada	December 5, 1996	July 5, 1997
Mexico	April 17, 1998	August 1, 1999
Peru	June 22, 1998	July 1, 1999
Costa Rica	October 18, 1999	February 14, 2002
El Salvador	October 18, 1999	June 3, 2002
European Union	November 18, 2002	February, 1, 2003
South Korea	February 15, 2003	April 1, 2004
United States	June 6, 2003	January 1, 2004
EFTA	June 26, 2003	December 1, 2004
N. Zealand, Singapore, Brunei	July 18, 2005	Pending
China	October 31, 2005	Pending

Source: DIRECON, Chile.

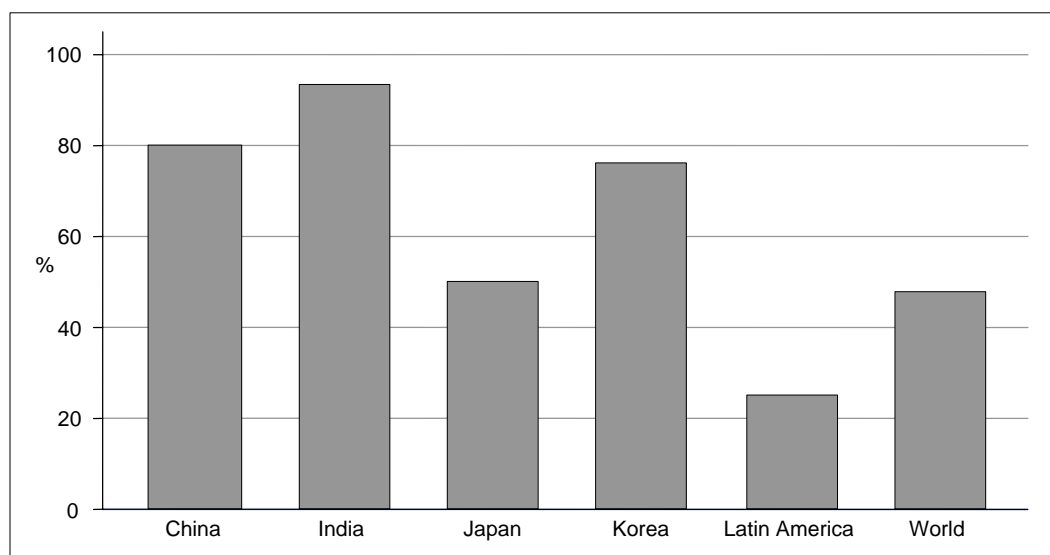
Even the most PTA-skeptic analyst would agree that PTAs with countries in Asia would offer important benefits, particularly given that Chile has already invested substantial resources in building a wide network of preferential agreements. There are at least four solid reasons for that:

- a) Asia, led by China, is the fastest growing market in the world, and, even without a formal agreement, is already the most dynamic market for Chilean exports (exports to Japan, India and China jumped by 68% in 2004, whereas total exports grew by 52%);
- b) The level of protection (notably of non-tariff barriers-NTB) in these markets is generally higher than that of the US and European markets. For instance, Chile's Economy Ministry calculates in 12% the tariff faced by exporters in China in 2002, but considers NTBs in agriculture, including tariff-quotas and sanitary and phytosanitary measures, the most important obstacles to trade (Ministerio de Economía de Chile [2004] and Gobierno de Chile [2004]);
- c) Countries such as Japan and China, in contrast to Chile, are scarce in natural resources offering substantial opportunities to trade;
- d) As a consequence of (b) and (c), Chile's exports to Asia are considerably more concentrated than its exports to the rest of world. As Figure 23 shows, the share of copper in exports to

Asia's main markets are considerably higher than those to markets elsewhere. As Gobierno de Chile [2004] put it, the challenge is not only to expand the value of exports to Asia, but also the number of products exported. More diversified exports to these markets would alleviate Chile's problems and risks associated with the still relatively high concentration level of its exports.

- e) The Asian PTAs offer not only market access, but also efficiency gains since they would lower preferences to all other preferential trade partners and therefore reduce risks of trade diversion.

FIGURE 23
SHARE OF COPPER IN CHILE'S EXPORTS TO ASIA, LATIN AMERICA AND THE WORLD
2004



Source: Comtrade.

The Chilean government seems to be well aware of these potential benefits and has already signed agreements with South Korea, New Zealand, Singapore and Brunei (P4). Moreover, it has just concluded negotiations with China, and is negotiating at different levels with Japan, India, Russia and Australia.

Even though Asia deserves to be at the top of Chile's preferential agenda, there are also other issues that are worth considering such as the Free Trade Area of the Americas (FTAA). It is clear that market-access gains in this case may be small given the country's extensive network of the PTAs in the region. Moreover, exporters are bound to suffer a cut in their preferences. The FTAA, though, is a good opportunity for Chile to reduce the variance of its effective rates of protection and, therefore, improve resource allocation. The FTAA is also a good opportunity to tackle the so-called spaghetti-bowl costs, allowing countries in the hemisphere to harmonize and simplify issues such as customs procedures and rules of origins and to bring in new issues in the agenda such as services and investment.

Finally, it is also important for the Chilean government not to lose sight of the limits of the "additive regionalism" and to reinforce, *via* its membership of the Cairns and G-20 groups, the multilateral

dimension of the "multidimensional" strategy. The Doha Round offers Chile the benefits of a broader and first-best solution to the distortions and "spaghetti-bowl" costs associated with regionalism and, above all, a valuable opportunity to reduce subsidies and ensure market access in agriculture, particularly, in the non-traditional sector, which has been one of the main drivers of Chile's export growth.

Given the systemic character of the negotiations involving agricultural subsidies and taking into account Chile's already low levels of protection and limited domestic market, advances in agriculture on the basis of PTA's alone are bound to be limited. This limitation is evident in the agreements Chile has already negotiated where, more often than not, agricultural products are classified as "sensitive products" and have tariff phase-outs which go for ten or more years. The agreement just negotiated with China seems to be a case in point, with important, non-traditional goods such as fresh salmon, grapes and apples facing a phase-out schedule of ten years.²⁰

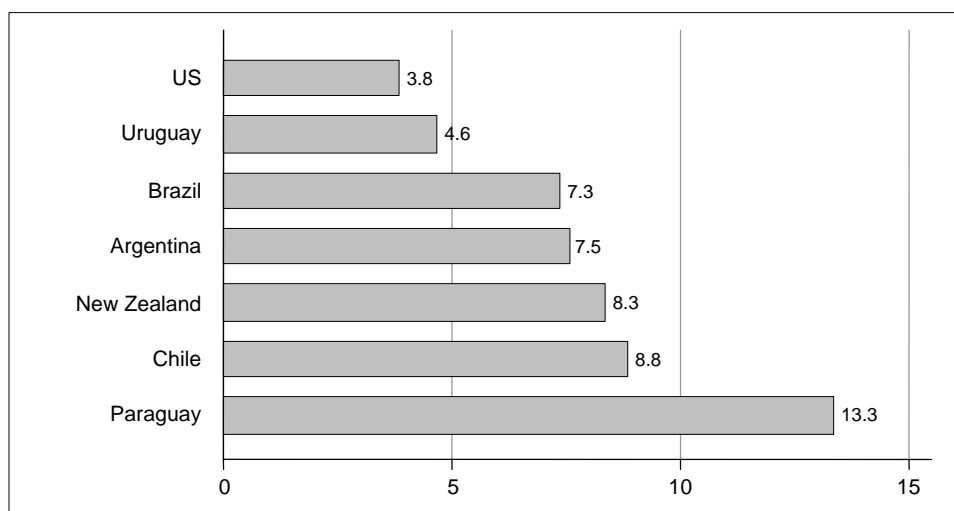
²⁰ Ministerio de Relaciones Exteriores, press release, November 1, 2005.

V. TRADE AND TRANSPORT COSTS

As discussed in the previous sections, Chile has gone a long way towards reducing trade costs by bringing down its tariffs unilaterally and by signing preferential trade agreements all over the globe. Even though there are still markets to be open at home and abroad, transport costs are likely to be today one of the main barriers to expansion of Chile's trade. In a world where policy induced trade barriers are being dismantled rapidly, transport costs are assuming a prominent role everywhere, but Chile's peculiar geography-significant barriers to neighboring countries and the long distance to the major markets in the Northern Hemisphere-coupled with a decreasing but still significant infrastructure "deficit", give transport costs an even greater strategic importance.

But what exactly is the magnitude of transport costs in Chile? How they measure up against tariff and non-tariff costs? To what extent they reflect deficiencies in the infrastructure as opposed to distance? These are all very important empirical questions and to answer them rigorously would involve time and data requirements that are well beyond the scope of this document. It is possible, though, with the help of the literature and readily available data, to have a rough estimate of the orders of magnitude involved. Hummels [1999], for instance, estimates freight costs for all trade partners of Chile and MERCOSUR countries, using 1994 import data from *Asociación Latinoamericana de Integración (ALADI)*. As the author warns, it is somewhat tricky to compare freight rates across countries because of difference in valuation, and it is certainly even more complicated to use them to draw conclusions about the quality of the infrastructure because of differences in geography and direction, scale and patterns of trade. Yet, the results are useful to pinpoint an order of magnitude for transport costs and, as it can be seen (Figure 24), Chile emerges with one of the highest costs in the region, behind only landlocked Paraguay. Its costs are also higher than "remote" New Zealand and more than twice that of United States.

FIGURE 24
FREIGHT RATES*
Trade weighted over all partners. 1994



Note: * Freight costs as a percentage of imports.

Source: Hummels [1999].

Amjadi and Winters [1997], using the same ALADI database, but including insurance in their calculations, look at transport costs among MERCOSUR countries plus Chile and between these countries and the rest of the world (Table 4). The advantages of proximity are evident with Chile showing the lowest transports costs with MERCOSUR and the highest with Asia. Unlike Hummel's results, though, Chile's transport costs do not seem to be that much different from those of Argentina and Brazil in their trade with the rest of the world.

Thomson, Sanchez and Bull [2003] using import data from an Economic Commission for Latin America and the Caribbean (ECLAC) database have also tried to measure transport costs in South America, but covering a more recent year-2001. Their results (see Figure 25) generally suggest somewhat lower freight expenses, particularly because, unlike Hummels', they include insurance costs. That is the case of Chile whose freight and insurance costs are estimated to be 6.4% of total imports, higher than its MERCOSUR partners, except for Paraguay, but lower than those of the Andean community countries.

TABLE 4
AVERAGE TRANSPORTATION COSTS ON IMPORTS TO MERCOSUR COUNTRIES AND CHILE, 1993*
(%)

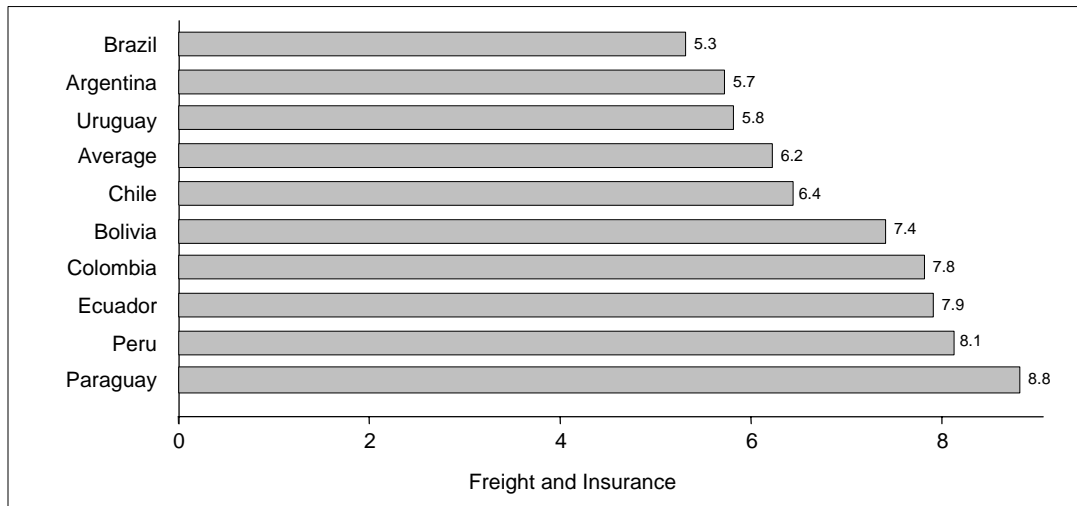
Exporter	Argentina	Brazil	Paraguay	Uruguay	Chile
MERCOSUR	6.2	5.6	10.8	2.6	8.9
Rest of the World (except Chile)	12.3	12.2	22.7	14.0	12.7
Argentina	-	6	12.2	2.4	8.3
Brazil	6.7	-		3.3	9.2
Paraguay	6.3	2.6	-	4.9	10.9
Uruguay	4.6	6.2	16.2	-	16.1
Chile	8.1	10.7	14.5	8.0	-
Europe	11.3	12.4	18.8	12.5	13.2
US-Canada	14.5	15.4	23.8	12.1	12.5
Asia	16.8	19.3	25.5	16.2	14.9

Note: * Freight Rates as a percentage of Imports. Weighted averages using imports from MERCOSUR as weights. Includes Insurance.

Source: Amjadi and Winters [1997].

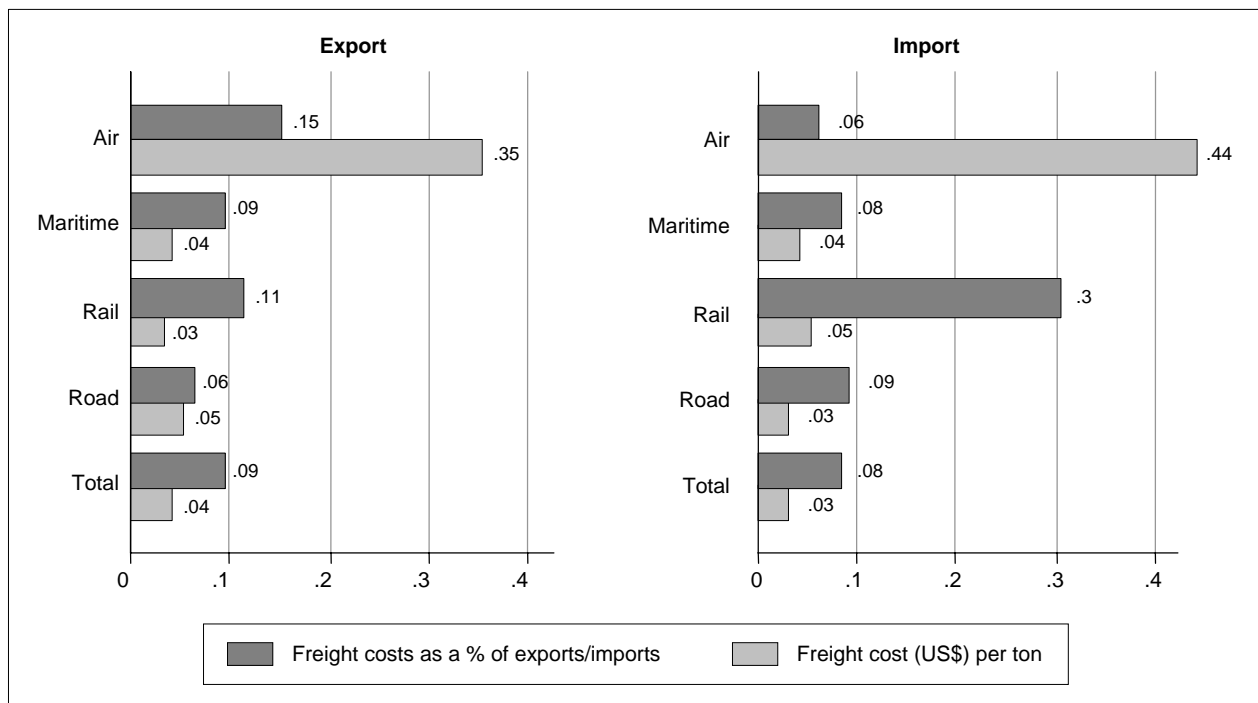
Directmar [2003] offers the most recent data on Chile's transport costs, for both imports and exports by mode. As it can be seen in Figure 26, total freight costs range from 8 (exports) to 9 (imports) percent, estimates that are in the same ballpark as Hummels' for 1994. As expected, transport costs vary widely across modes, reflecting not only actual cost differences, but also differences in the composition and direction of trade flows. Once differences in weight are controlled for (by calculating the costs per ton exported/imported), the usual ranking emerges with airfreight being the most expensive mode. One would also expect maritime freight to be the least costly, but differences in distance cloud the data, particular because almost all trade flows by rail and road are originated from or destined to neighboring countries. For instance, in 2000, roughly 55% of imports and 25% of exports to LAC were carried out by rail or road. Yet, the share of this mode for trade flows outside the region was negligible (ECLAC-BTI).

FIGURE 25
FREIGHT AND INSURANCE COSTS AS A % OF IMPORTS
 All partners for selected South American countries. 2001.



Source: Thomson *et al.* [2003].

FIGURE 26
CHILE'S FREIGHT COSTS
 All partners. 2002



Note: Graphs by flows.

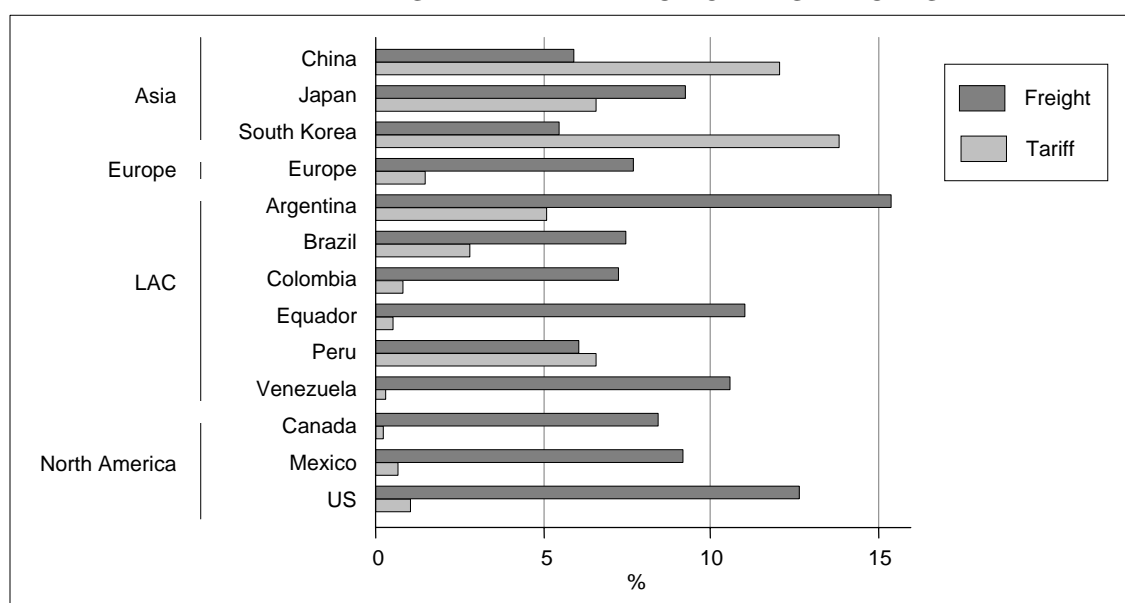
Source: Directmar.

These figures for transport costs in Chile and other countries may seem low, yet there are a number of issues that suggest that their magnitude and impact are being underestimated. First, as Hummels

(*op. cit.*, p.5) put it "aggregate freight expenditures are low because import choices are made to minimize transport costs". This is supported by the fact that trade weighted freight rates are usually at the low end of a wide range of observed rates. Second, even if trade weighted rates are taken at their face value, they, as shown below, tend to be higher than average tariffs, particularly in the case of Chile given the weight of preferential tariffs. And third, econometric estimates suggest that trade flows are in fact quite sensitive to changes in transport costs. For instance, Limao and Venables [2001] found that a 10-percentage point increase in transport costs typically reduces trade volumes by approximately 20%. Likewise Clark, Dollar and Micco [2004] estimated that a reduction in country inefficiencies associated to transport costs from the 25th to 75th percentiles (the higher the percentile the greater is the efficiency) imply an increase in bilateral trade of around 25%.

A closer look at freight and tariff data for Chile's exports illustrates and reinforces the first two points. Figure 27 compares maritime freight and (applied) tariff costs incurred by Chileans exporters in Asia, Europe, LAC and North America. It is evident that freight is considerably higher than tariff costs with the exception of China and South Korea in Asia and Peru in LAC. This gap is bound to be even larger since the tariff data shown (mostly for 2000) does not reflect the impact of more recent trade agreements such as those with the US (2003) and South Korea (2003). True, in the case of LAC just to look at maritime freight alone might distort the picture, especially with regard to neighboring countries, since, as mentioned earlier, 25% of Chile's exports are land-based. Detailed export freight data for the other modes is not available, but ECLAC-BIT data on import freight suggests (assuming that the different composition between exports and imports does not play a major role) that land freights costs, with a few exceptions, are lower than maritime freight costs (Figure 28), but the difference is not big enough to reverse the conclusions suggested by Figure 27.

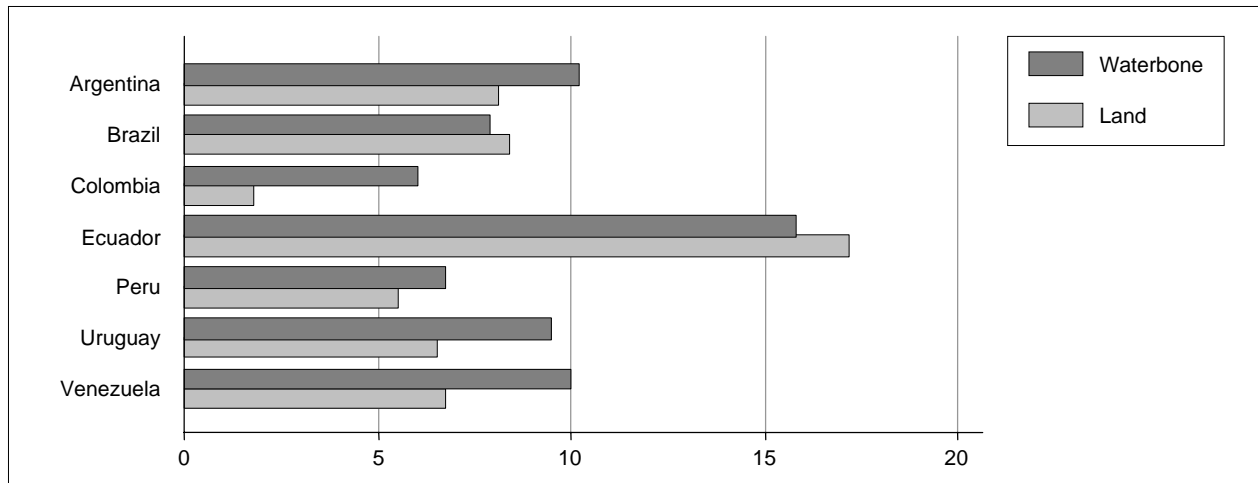
FIGURE 27
MARITIME FREIGHT AND TARIFF FOR CHILE'S EXPORTS



Note: Data on freight is for 2002. Tariff data is for 2000 except for Brazil (2002), Ecuador (2001) and Peru (2002).

Source: Directmar [2003] and Ministerio de Economía de Chile [2004].

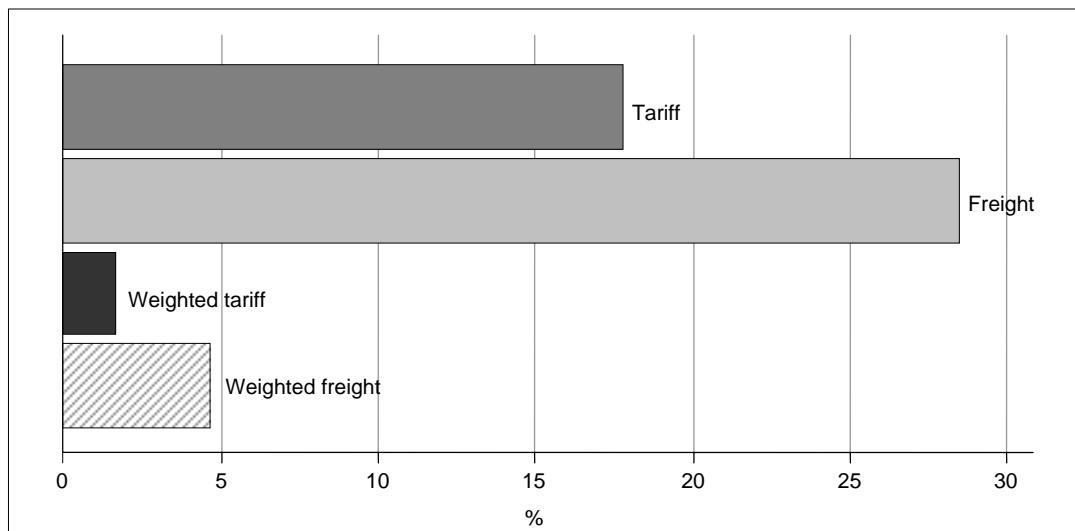
FIGURE 28
CHILE'S FREIGHT AND INSURANCE COSTS BY TRANSPORT MODE
 Selected South American countries. 2000. % of CIF imports



Source: CEPAL-DTI.

Detailed data covering Chile's exports to Brazil in 2004 (4.5% of total exports), allow for more insights into the relative importance of transport and tariff costs. The data, shown in Figure 29, confirms the dominance of freight over tariff and underscores the point made earlier about the extent to which the market minimizes transport costs: trade weighted are much lower than simple average freight costs. The weighted average suggests a transport cost of just under 5%, whereas the simple average points 29%, perhaps a more realistic estimate of the importance of transport cost for trade between the two countries.

FIGURE 29
FREIGHT AND ACTUAL TARIFF AS A % OF CHILE'S EXPORTS TO BRAZIL
 Simple and weighted average. 2004



Note: Tariffs are calculated dividing tariff revenue by imports.

Source: Receita Federal Brazil.

Though somewhat patchy, this body of evidence seems to be robust enough to support the message that transport costs are these days a more important obstacle to Chile's trade than the traditional tariff barriers, with the exception of a few (though important) Asian markets. True, this evidence does not include non-tariff barriers, which in some markets, particularly in agricultural goods, can be prohibitive. Yet, at the very least, it can be argued that the growing importance of transport costs call into question the almost exclusive attention being given to formal trade agreements, at the expense of the infrastructure components of trade costs.

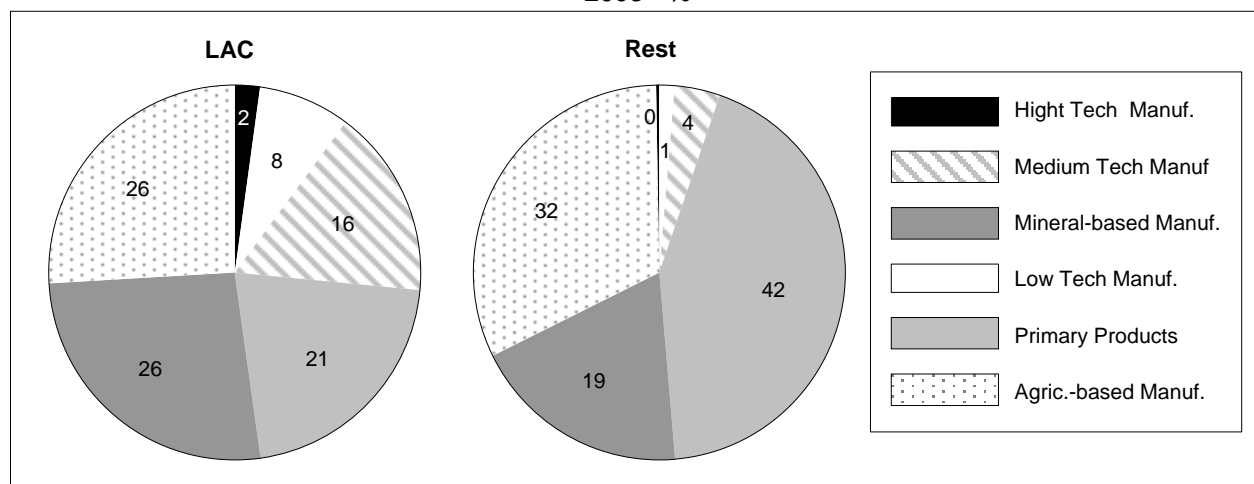
If this argument is accepted, the more immediate and logical policy implication would be to have investment in transport as a key part of Chile's policies to expand and diversify its trade. Not that Chile has not been investing in this area. In fact, Chile's has been at the top of the ranking of investments in infrastructure in LAC, having invested 5.6% of the GDP in 1996-2001, a level well above the region's average of 2.2% (Calderon and Servén [2004]). Boosted by private sector involvement and efficient regulation (see e.g. Micco and Perez [2001] and Foxley and Mardones [2000]), investment in transportation has been particularly strong. Land transportation alone has been receiving a growing share of the investments, peaking at 2.4% of the GDP in 2001, whereas LAC's average was just under 1.5% (Calderon and Servén *op. cit.*). The results of this effort are particularly visible in the area of ports and air transport, with Chile being granted the best quality score in LAC by the World Economic Forum, a score not too far from those of the US and East Asia countries such as Korea (World Economic Forum [2003-2004]).

In spite of these advances, a number of indicators suggest that Chile still has a substantial infrastructure "deficit", particularly visible when East Asia is used as a benchmark. An important part of this "deficit" appears to stem from land transportation, as pointed out by indicators such as percentage of roads paved and road length per area. In both cases, Chile lags well behind East Asian and developed countries (Calderon and Servén *op. cit.*). A more rigorous diagnosis of Chile's transport infrastructure would require more quantitative and qualitative information about the capacity and efficiency of all modes of transportation, which, unfortunately, is not available. But assuming that land transportation is really the soft spot of Chile's transport costs, this has important policy implications for both trade with LAC and the country's perspective to diversify its exports.

For instance, despite the proximity, transport costs are more likely to be hurting Chile's trade with the region than with the rest of the world. There are at least three good reasons for that: first, as mentioned earlier and unlike other regions, a substantial part of Chile's trade with LAC uses land transportation; second, Chile's main transport weaknesses appear to lie exactly in this mode; and third, Chile's problems are compounded by the poor infrastructure conditions of its Latin American partners, whose traditionally inefficient services and whose historical bias against intraregional trade became even worse after decades of underinvestment. In the last two decades, LAC's investment in infrastructure as percentage of GDP has fallen drastically, reaching 2% in 2001, after having reached a peak of 4% in 1987. Investment in land transportation was the hardest hit, failing by a factor of four to roughly 0.2% of GDP in 2001 (Calderon and Servén *op. cit.*).

Given that LAC has been playing an important role in the process of diversification of Chile's exports, and given that, as discussed before, export concentration in Chile is still very high, the gains of lower transport costs are bound to be substantial. As can be seen in Figure 30, Chile's exports to the region, whose share of total exports jumped from 13% in the early 1980s to 20% in the early 2000s, is much more diversified than it is the case of exports to the rest of the world. Figure 31, in turn, reveals that not only exports are more diversified, but diversification has increased faster in the region than elsewhere.

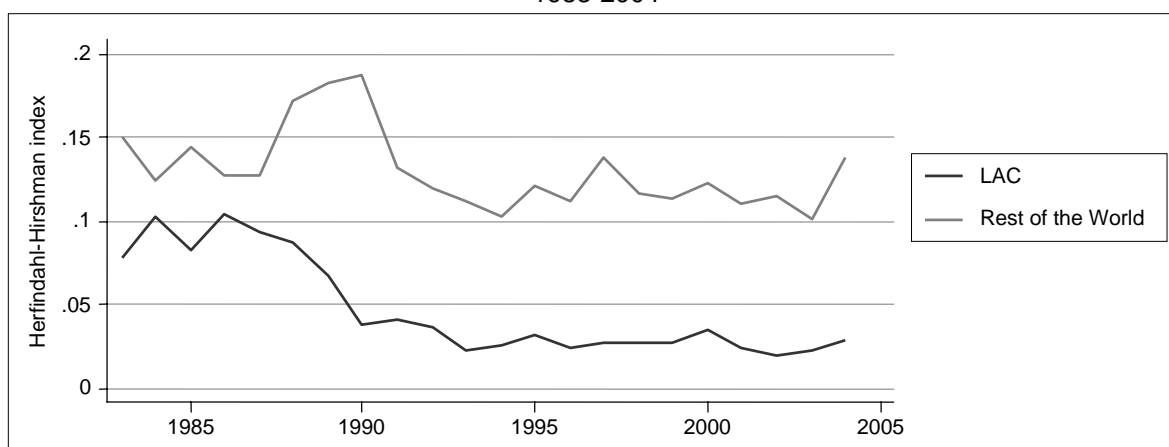
FIGURE 30
COMPOSITION OF CHILE'S EXPORTS TO LATIN AMERICA AND THE REST OF THE WORLD
 2003 - %



Note: See Lall [2000] for classification.

Source: Comtrade.

FIGURE 31
CHILE'S EXPORT CONCENTRATION TO LATIN AMERICA AND REST OF THE WORLD
 1983-2004



Note: HHI at the 5 digit STIC level.

Source: Comtrade.

It is worth noting, though, that lower transport costs between Chile and LAC depend not only on the country's willingness to invest, but also on a concerted effort by all countries in the region to improve the infrastructure that serves intra-regional trade. Issues of coordination and externalities, which affect the development of infrastructure across borders, are not going to be solved by a country alone. Cross country initiatives such as the Integration of Regional

Infrastructure in South America (IIRSA), which takes a regional approach to the problem, are more likely to be successful.²¹

A final comment on the role of transport costs is related to its impact on regional disparities. As discussed in Section II, there is clearly a trade component in the relatively high level of regional disparities in Chile. Exports are concentrated in small number of regions and preliminary evidence suggests that remoteness is part of the explanation. It can be argued, then, that the benefits of policies to reduce transport costs are likely to go well beyond Chile's trade with the rest of the world, and help the country to spread the gains from integration more evenly across its regions.

There seems to be a growing consensus among analysts that investment in infrastructure may be a powerful tool to, at the very minimum, level the regions and countries' access to the gains of trade. Venables [2005], for one, argues that disparities are more likely to develop at intermediate levels of integration. That is, situations where trade costs are not high enough to prevent trade altogether, but are high enough to stop countries from reaping the full benefits of integration. The *rationale* is that low trade costs increase the number of tradable goods, giving regions and countries more options to allocate their resources efficiently and export.

If that is really the case, increasing and leveling the stock and the quality of Chile's infrastructure can make a significant contribution to mitigate regional disparities. This point is also underscored by Behrens [2004], whose theoretical simulations suggest that transportation infrastructure "plays a crucial role in determining whether economic integration leads to more or less inequality within a country" (p. 4).

Both Venables and Behrens raise, however, an important caveat. Lower transport costs, as in the case of tariffs, may also widen disparities, since it makes easier to supply several markets from just one location and may encourage skilled labor to leave. Yet, judging by experiences such as that of Mexico with the North American Free Trade Agreement (NAFTA) and Brazil with MERCOSUR, where proximity (i.e. low transport costs) made the difference in terms of regional impacts, one could argue that a well developed infrastructure may not be sufficient to ensure a smooth distribution of integration gains, but it clear seems to be a necessary condition. More to the point, its positive impact may be assured by other policy initiatives involving fiscal and financial incentives designed to trigger development in less privileged regions.

²¹ In September 2000, the 12 countries of South America launched an unprecedented initiative, whose main objective is to develop the region's infrastructure within a context of environmental sustainability. Supported by the IDB, the Andean Development Corporation, and the Financial Fund for the Development of the River Plate Basin, IIRSA is based on a hub strategy and its action plan calls for (a) strengthening national investment planning and coordination among countries, (b) standardizing and harmonizing regulatory and institutional aspects and (c) developing a portfolio of projects that encourage private sector participation and innovative financing schemes. The 12 countries involved agreed on focusing on 335 consensual projects, which amount to US\$ 37 billion. Among those projects, 31 will be implemented in the next five years. See Mesquita Moreira [forthcoming, 2007] for details.

VI. SUMMARY AND CONCLUSIONS

What are the main issues in Chile's trade and integration agenda? This note sought to argue that Chile's agenda does not lend itself to that traditional kind of policy advice usually given throughout Latin America. Protection is low and uniform, institutions that govern trade policy are strong and well protected from capture by special interest groups and the country has put a lot of effort in opening markets in the region and abroad.

The important issues that come out of the analysis are to a great extent, "second generational". That is, challenges and opportunities that emerge when a country clears the table of the most distortive policies and institutions that mediate its exchanges with the rest of world. And what are those issues? Export diversification, the country's regions access to trade, completion of the "multidimensional" trade strategy and transport costs.

Whereas there is no doubt that Chile has made progress in diversifying its exports away from copper, concentration is still high even when compared to other resource intensive countries. Why this should be cause for concern? There are two sets of arguments related to the gains of diversification *per se* and the risks of specialization on natural resources. The first set speaks of the gains from higher and less volatile exports earnings, knowledge spillovers and better terms of trade. The second set speaks of the risks of Dutch Disease, truncated technological development, high volatility and weak institutions.

Whereas the jury is still very much out on the empirical validity of the arguments -particularly on the natural resource curse- the bulk of the evidence available suggests that Chile would be well advised to consider carefully the risks of its current pattern of specialization and to reassess the cost and benefits of policy intervention.

To acknowledge the need to deepen diversification beyond the levels achieved by markets forces is, however, just the first, and in many ways, easiest step. Thornier questions arise when one tries to confront the issues of how to do it and in which direction. The comparison with countries such as Australia suggests that Chile still has room to diversify within its low-risk, natural resource-intensive "cone of diversification", which would require more of the limited type of government intervention that country has successfully experienced so far.

Yet, if Chile wants to minimize the risks of a export portfolio highly concentrated on natural resources, this would involve moving resources towards products in the "high risk" cone, which, in turn, asks for more government action in dealing with market failures stemming from externalities or missing markets. Whatever strategy the country may pursue, it seems clear that Chile has at least two main constraints for whatever type of diversification policy it may pursue: education and science and technology.

These constraints would be particularly relevant if the government, as it has already indicated, decides to invest in high-tech services. Chile's current comparative advantages in services are not obvious and are not revealed by the data. Yet the country's prospect in this area could be greatly improved if it removes the anti-export bias embedded in the regulatory framework, liberalizes imports of services and, above all, addresses the limitations of the human capital stock.

On the regional issue, it seems clear that Chile's export-led growth in the last two decades was not evenly distributed across the regions. True, regional disparities have fallen, but their level remains unduly high, particularly in terms of access to trade. Factor endowments are, no doubt, part of the explanation, yet there are other relevant variables such as the adequacy of the infrastructure, the regions' remoteness and the price bands--one of the rare distortions left in Chile's trade policy. Better infrastructure that reduce transaction costs within and between regions should have a positive impact in the capacity of the regions to export. Likewise, the removal of the price bands are likely to favor the search for new tradable products, which, in turn, might give a boost to growth in the less privileged regions.

On Chile's "multidimensional" trade strategy, Asia is clearly the missing link in the country's wide net of preferential agreements. PTA's with Asia offer: the most dynamic markets in the world, above-average market access gains, factor-endowment complementarity, opportunities to diversify exports and lower risks of trade diversion across preferential partners. Even though the focus on Asia seems to be justified, the limits of the "additive regionalism" are evident. The Doha Round offers the benefits of a broader and first-best solution to the distortions and "spaghetti-bowl" costs associated with regionalism and, above all, a valuable opportunity to reduce subsidies and ensure market access in agriculture, particularly, in the non-traditional sector, which has been one of the main drivers of Chile's export growth.

Obstacles to trade, though, go beyond policy barriers created by tariffs, NTBs and subsidies. They include a number of other issues, such as transportation, information, legal and regulatory costs. Since Chile has made substantial progress in bringing policy barriers down, these other trade costs are bound to gain prominence, particularly those related to transport given the country's peculiar geography. The evidence available confirms this presumption, suggesting that transport costs are these days a more important obstacle to Chile's trade than tariffs, with the exception of a few Asian markets.

It follows, then, that the country has a lot to gain in terms of trade from sustaining, and even increasing, the relatively high levels of infrastructure investment of the last decades. This seems particularly important for trade with LAC, which has been offering Chile more opportunities to diversify its exports and which depends to a considerable extent on land transportation, one of the weakest points of Chile's infrastructure. In the light, though, of externalities and coordination requirements, lower transportation costs to and from LAC hinges not only on the country's willingness to invest, but also on a concerted effort by all partners in the region.

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