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On 16 May 2007, the OECD Council decided to open discussions with Chile on accession to the Organisation and, on 30 November 2007, an Accession Roadmap, setting out the terms, conditions and process for accession was adopted [C(2007)100/FINAL].

In the Roadmap, the OECD Council requested a number of OECD Committees to provide it with a formal opinion. The Economic and Development Review Committee was requested to review Chile's overall economic policies in order to provide a formal opinion on the degree of coherence of Chile's policies with those of OECD member countries. In light of the formal opinions received from OECD Committees and other relevant information, the OECD Council decided on 15 December 2009 to invite Chile to become a member of the Organisation.

The present Economic Survey of Chile was prepared for the purposes of the accession review of Chile and was discussed by the Economic and Development Review Committee on 3 December 2009. The draft report was then revised in the light of the discussions and given final approval.

The Secretariat's draft report was prepared for the Committee by Nicola Brandt and Cyrille Schwellnus, under the supervision of Patrick Lenain. Research assistance was provided by Roselyne Jamin, Rodrigo Paillacar, Jehan Sauvage and Valéry Dugain.

The previous Survey of Chile was issued in November 2007. This Survey is published on the responsibility of the Secretary-General of the OECD.

BASIC STATISTICS OF CHILE (2008 UNLESS NOTED OTHERWISE)

THE LAND

Area (thousands sq. km)	756.6

POPULATION

Total (millions)	16.8
Inhabitants per sq. km	22.2
Net average annual increase over previous 10 years, per cent	1.1

EMPLOYMENT

Total employment (thousands)	6 641
In % : Agriculture	11.5
Mining	1.5
Manufacturing	12.9
Services	74.1
Unemployment rate (in per cent)	7.7

GROSS DOMESTIC PRODUCT (GDP)

GDP at current prices and current exchange rate (USD billion)	172.7
Per capita GDP at current prices and current exchange rate (USD)	10 302
In % of GDP : Agriculture	3.7
Mining	17.6
Manufacturing	12.8
Services	65.9
Gross fixed capital formation (GFCF) as % of GDP	29.7

PUBLIC FINANCES (as % of GDP)

Revenue	26.5
Expenditure	21.2
Nominal balance	5.3
Consolidated net debt (central government and central bank)	–23.9

INDICATORS OF LIVING STANDARDS

Internet users, per 100 inhabitants	3
Doctors, per 1 000 inhabitants (2003)	1.1
Infant mortality per 1 000 live births (2005)	9
Income inequality (GINI coefficient, mid-2000)	0.53
Poverty incidence (mid-2000)	16.4

FOREIGN TRADE

Exports of goods (USD billion)	66.5
In % of GDP	39.3
Copper exports in % of total exports	49.4
Imports of goods (USD billion)	57.6
In % of GDP	34.1

THE CURRENCY

Monetary unit: Peso

Currency units per USD, average of daily figures	
Year 2008	522.50
November 2009	507.78

Executive summary

Sound fundamentals and strong macroeconomic management have provided a buffer against the global economic recession, *which nevertheless hit Chile both through a sharp deterioration in its terms of trade and the collapse of world trade. There was room for decisive macroeconomic stimulus thanks to sound monetary policy and prudent fiscal policy during the boom years. This, together with the rebound in copper prices – Chile's main export – and the revival of global trade, has contributed to a turnaround in activity. The economy is now coming out of recession, yet unemployment is projected to remain initially high and inflation is likely to stay low. Macroeconomic policy should thus remain supportive in the near term. Assuming that the recovery becomes more robust, as projected, policy stimulus should be gradually withdrawn so as to set growth on a medium-term sustainable and non-inflationary path.*

The medium-term macroeconomic framework is strong and receives wide support. *The economy benefitted enormously from the macroeconomic policy framework implemented by successive governments. Still, there is room for further improvement in the medium term. The financial system is generally well regulated and has thus far held up well, but a better co-ordinated approach to financial conglomerates and stronger supervision of non-banks may be needed. Additional strengthening of the insurance element of the unemployment benefit system, in tandem with lowering severance pay, would provide more effective protection for the unemployed and would enhance labour market flexibility. Broadening the tax base by reducing inefficient tax expenditures could help obtain the tax receipts necessary to finance the likely increase of public spending in the medium term, notably on education, pensions and social programmes. It would also make the tax system more progressive.*

Additional reforms to foster competition, entrepreneurship and innovation are needed to stimulate productivity. *Chile's productivity appears to have stagnated in the past decade, thus weighing down on medium-term growth. Recent competition policy reforms that strengthen enforcement of cartel law must now be implemented effectively. In particular, the National Economic Prosecutor should receive sufficient resources and the relatively low ceilings on fines should be reviewed. Enhancing consumer protection would help improve the functioning of product markets by fostering price transparency. Facilitating entrepreneurship could also have beneficial effects on productivity and economic dynamism; for this purpose, regulatory "red tape" burdening start-ups should be reduced and bankruptcy procedures could be further simplified. Recent initiatives to promote innovation are also welcome, but the objectives for the sectoral clusters should be accompanied by appropriate monitoring procedures and sunset clauses for public support to be adequately implemented.*

The quality and equity of primary and secondary education have to be improved further. *Notwithstanding impressive progress in school enrolment, much remains to be done if Chilean children are to reach OECD standards in learning outcomes. Better qualified teachers and improved initial teacher education and training are key. More equal conditions for schools to compete are needed and the government has started to address this with the prohibition on selecting pupils up to sixth grade. The increased school voucher for poor pupils is an important opportunity to help these children improve their results, which would enhance both the average level and the equity of outcomes.*

Assessment and recommendations

The economy of Chile has performed strongly since the early 1990s, establishing a track record of robust growth, rising living standards, well contained inflation and recurring budget surpluses. This enviable outcome owes a lot to the sound macroeconomic framework implemented by successive governments. However, despite its strengths, the economy was not immune to the global financial and economic crises. As a small open economy relying on exports, particularly of copper, Chile was hit hard by the meltdown of international trade and the plunge in commodity prices, which exerted negative effects on domestic demand and activity. The government rapidly introduced counter-cyclical policies and, with the help of a rebound of copper prices, the economy is coming out of recession. Once the upturn is under way, the challenge will be to return to a path of rising living standards on a sustainable basis. Although income per capita on a purchasing power parity basis has increased sharply over the past two decades, it remains at only 44% of the OECD average. To foster convergence, key policy reforms require further enhancing product market competition, improving the conditions for entrepreneurship and innovation and improving the quality of education. Despite fast growth of per capita GDP and a reduction in poverty, income inequality, as measured by the Gini coefficient, has not declined markedly over the past 20 years and remains very high by OECD standards, notwithstanding some recent improvement. Sustained growth will need to be accompanied by the right social policies to further reduce poverty and improve income distribution. Against this background the key challenges discussed in this *Survey* are:

- overcoming the crisis (Chapter 1);
- strengthening the medium-term framework for fiscal policy (Chapter 2);
- fostering productivity growth and thus longer term potential output growth (Chapter 3);
- investing in human capital by improving the quality of schools (Chapter 4).

Chile is now emerging from the economic crisis

Chile was hit hard by the collapse in world trade and commodity prices, notably the decline in copper prices by more than half. Domestic demand was also severely affected by the worsening environment, with both gross capital formation and consumption falling sharply. GDP growth was negative during four consecutive quarters between mid-2008 and mid-2009 and unemployment increased rapidly during the same period. However, a good part of the drop in the terms of trade, especially copper prices, was reversed by mid-2009 and world trade started to grow again, helping activity to bottom out in the second half of the year. With support from a substantial macroeconomic stimulus, growth is set to increase in 2010 and gather further pace in 2011.

Macroeconomic policy should remain supportive in the near term, but assuming that the economy regains traction as projected, the stimulus should then be withdrawn gradually

Faced with rapidly deteriorating activity and declining inflation, *Banco Central de Chile* reacted vigorously in the first half of 2009 by reducing the monetary policy interest rate from 8.25% to 0.5% and finally taking non-conventional measures, such as reducing short-term debt issuance and establishing a term liquidity facility. While the economic environment improved in the second half of 2009, activity nonetheless remained below potential, the unemployment rate stayed close to 9% and consumer prices declined mildly. This is why the central bank decided to hold the policy interest rate close to its minimum level for a prolonged time period and to use its policies with flexibility so that projected annual inflation stands at 3% over the policy horizon. Assuming the economy regains strength in 2010-11, as projected, and that prices stop falling thanks to the supportive monetary policies, the stimulus should be withdrawn in time to keep inflation expectations well anchored. *Unless inflationary pressures build up appreciably faster than expected, interest rates should remain low well into 2010 and then be raised gradually.*

The government was also quick to enact a well-targeted fiscal stimulus in 2009. The package comprised temporary measures in favour of public investment, a cash allowance for low-income households, tax reductions and a temporary increase in subsidies for training programmes. In addition, some permanent measures were introduced, including an extension of unemployment benefits to workers with fixed-term contracts and a wage subsidy for young, low-wage workers. The slump in activity and copper prices, along with the fiscal measures, could see the 2008 fiscal surplus of more than 5% of GDP move to a deficit of around 3½ per cent of GDP in 2009. Notwithstanding the recent deterioration of the budget balance, Chile continues to enjoy the benefits of low debt and positive net financial assets. *It can thus afford to keep some of the fiscal stimulus measures in place in 2010 to provide further support to domestic demand. Assuming the recovery gains pace as projected, fiscal stimulus could be further withdrawn in 2011.*

The financial system has held up well in the crisis, but in some areas regulation needs to be strengthened

Thanks to prudent financial supervision and careful regulation, Chile's financial system seems comparatively sound with little or no exposure to currency mismatches or to the toxic assets that brought down OECD financial markets. To keep credit flowing during the crisis the government extended credit guarantees by state agencies, recapitalised state-owned *BancoEstado* and allowed insurance companies and other non-bank financial institutions to provide credit. It increased the ceiling for debt financing of subsidised housing, while lowering the capital requirement for bank credit with guarantees from government funds. *While it is important to facilitate access to credit in the current environment, some of these measures imply laxer prudential standards and should therefore be subject to close monitoring. They should be reassessed once the recovery is well entrenched.* Despite a dominance of financial groups and conglomerates operating in several segments of financial markets, co-ordination between the separate supervisors for banking, for insurance and securities

and for pensions remains limited. Since it is difficult for separate supervisors to detect intra-group risks of financial contagion, there is a need for close co-operation. Recently introduced information-sharing between regulators in committees is welcome, but should be formalised and deepened, *and consolidated information for financial conglomerates should be collected. In the longer term, the government should take action to establish group-wide financial supervision. One option would be to designate a "lead supervisor" based on the group's main activity.*

Department stores' issuance of credit cards, mainly targeted at lower-income households with higher credit risk, now accounts for more than 80% of cards in circulation though a minor share of total credit. Credit rating agencies have downgraded several of the department stores because of mounting losses this year. Banks and department stores do not share full information on credit histories, weakening their ability to evaluate their clients' credit risk. *The recent draft bill to create a consolidated credit register is welcome.The authorities need to carefully monitor non-bank credit issuers to detect potential threats to systemic stability. The Superintendency of Banks should supervise all credit card issuers.*

The fiscal framework is working well and receives wide support, but could be improved further

Chile's macroeconomic framework – a structural fiscal rule, inflation targeting and flexible exchange rate – has been largely successful in shielding the economy against overheating in the last copper price boom. Nevertheless, *the framework could be strengthened further*. For instance, Chile should consider the experiences of OECD countries that complement their fiscal rule with a ceiling on expenditure growth. During booms, such ceilings help to accumulate additional funds, which can then be used counter-cyclically in sharp downturns. Any improvement should seek to balance the cost of changing a rule that is working and receives wide support with the benefits that it might bring. *Fiscal policy could also be made more counter-cyclical by strengthening the automatic stabilisers,* including through an enhanced unemployment benefit system.

Unemployment protection could be made more effective

Unemployment benefits largely rest on individual savings accounts with small complements from an insurance fund, the *Fondo Solidario,* which had very restrictive access until recently. Severance pay rights are often several times higher than unemployment benefits, contributing to slower adjustment of the economy after adverse shocks. Furthermore, severance pay is only available to workers on indefinite contracts; it is likely that this discourages employers from offering indefinite contracts, thus contributing to the comparatively large share of workers on fixed-term contracts. The government has recently strengthened the unemployment benefit system by easing access to the *Fondo Solidario* and opening it to workers on short-term contracts, who account for the largest part of job turnover. *Increasing unemployment benefit replacement rates for all workers and extending duration, both of which are currently very low compared to OECD countries, while simultaneously restricting severance pay would provide more effective protection. It would also allow for more efficient job search, thus maximising workers' productivity through a good match. Strengthening the Fondo Solidario would be the best option as insurance would provide more*

effective income protection than individual savings. Unemployment benefits should be moved up with great care, however, as excessively high unemployment benefit replacement rates could reduce incentives for job search.

Public spending is likely to increase in the medium term. This will require higher levels of tax receipts

As in other emerging economies, public spending accounts for a small share of national income at present. As Chile converges towards higher levels of living standards, it is likely that the demand for public services will increase. The goals of economic convergence and of building an equitable society also call for developing further public policies, such as for poverty reduction or better educational outcomes. Existing social programmes to reduce poverty and inequality are well targeted and efficient, but they remain small by OECD standards, despite significant expansion in recent years. A further increase of public spending in these areas is therefore not only plausible, but also desirable, although it should continue to be well targeted, efficiently implemented, and sustainably financed.

In order to increase the provision of public goods and keep public finances sustainable in the medium term, government tax revenues may need to be expanded. Broadening the tax base by abolishing some of the less efficient and regressive tax exemptions and working to increase the yield of the income tax system would contribute to this goal. The government has already limited the VAT tax credit for housing construction. *It could also reassess the highly regressive exemption from VAT of health and education services, which benefit mainly higher income households.* Tax exemptions for contributions to private pension funds and accrued returns to savings, although common in OECD countries, are costly and they disproportionately benefit high-income earners with high marginal income tax rates, while the vast majority of tax-exempt workers do not benefit. Moreover, evidence that tax subsidies are effective in increasing pension savings of higher income earners is scant. The government recently introduced the opportunity for medium- and low-income earners to opt for a pension subsidy instead of a tax allowance. *The government should further strengthen subsidies for low- and medium-income earners while capping tax benefits for high-income earners. This could be done with refundable tax credits or flat subsidies to ensure that support for savings reaches those who need it most.*

The large difference between the corporate and the top marginal income tax rates creates incentives for high-income individuals to keep their savings in corporations often solely created for this purpose, such as *sociedades de inversión*. *The government should close the tax loophole associated with these vehicles.*

Chile needs to enhance productivity growth

Lagging labour productivity explains the major part of the per capita income gap with OECD countries, while weak labour utilisation due to low participation of females and youths explains a smaller part. The apparent stagnation of productivity over the past decade accounts for most of the slowdown in GDP growth. Although macroeconomic management has improved markedly over the past two decades, a number of weaknesses in structural policies have contributed to the uneven productivity performance: product market competition, as measured by price-cost margins, remains weak by OECD standards.

Further, regulations on entry and exit discourage entrepreneurial risk taking and the diversification into new and higher-productivity activities. Although recent reforms of the innovation policy framework aim at broadening the focus of innovation policy from basic public research to all forms of innovation, technological and non-technological innovation in firms remains low.

Anti-cartel reform is welcome, but there is room to go further

A recent reform of competition policy increases the investigative powers of the National Economic Prosecutor, introduces a leniency programme and increases the level of fines for cartel infringement. *The well-designed reform must now be implemented effectively. The National Economic Prosecutor should receive sufficient resources to cope with a likely increase in caseload, and deterrence for cartel participation would be strengthened by making price-fixing a criminal offence*, as planned by the government. Competition in product markets would be enhanced by more price transparency from more effective consumer protection, and by further strengthening the enforcement of competition law, in particular in the area of cartels. The current maximum fine remains too low to deter large corporations and risks undermining the effectiveness of the leniency programme, as immunity becomes more attractive the higher the fine. *The authorities should therefore consider linking the maximum fine to sales on the relevant market.* The effectiveness of the leniency programme will also depend on legal certainty for potential applicants. The publication of a preliminary guideline on the conditions under which the National Economic Prosecutor will grant immunity is therefore a welcome measure and the final guideline should spell out these conditions as precisely as possible.

Regulation on start-ups and the bankruptcy laws need to be improved to foster entrepreneurship

OECD indicators show that administrative burdens on start-ups are higher than in most OECD countries. Chilean entrepreneurs face more procedures, longer delays and higher costs when starting a business. Entry regulations in specific services sectors, such as registration and notification requirements in retail and exclusive rights in professional services, also appear to be more restrictive than in most OECD countries. *Chile has recently passed a law to reduce red tape for small and medium-size enterprises. To enhance entrepreneurship, Chile should further reduce administrative burdens on start-ups and facilitate entry into specific services sectors.*

The bankruptcy procedure is inefficient, which not only slows the exit of low-productivity firms but also holds back entrepreneurial risk taking and makes access to credit difficult. According to the World Bank *Doing Business* indicators, Chile's bankruptcy procedure is lengthier and more costly than in most OECD countries. Moreover, the protection of creditors during bankruptcy appears to be weak. As creditors anticipate low recovery rates, they can become reluctant to give credit to potentially very productive but risky businesses. Several initiatives to make the bankruptcy law more efficient are under way and, in particular, the government enacted a law that simplifies bankruptcy procedures for small and medium-size enterprises. The authorities have also launched an inter-ministerial working group to assess options for reform, among others the creation of

specialised bankruptcy courts. *Efforts to improve the bankruptcy procedure should be continued to facilitate the exit of inefficient firms and encourage entrepreneurial risk taking in innovative sectors.*

Efforts to broaden innovation policy beyond basic research should be continued

Until recently, the innovation policy framework focused on basic research in public institutes and universities. As a consequence, the private business sector's propensity to engage in technological (product or process) and non-technological (marketing or organisational) innovation is low by OECD standards. The authorities have taken several measures to improve industry-science relationships to make scientific research more market-relevant. Among other measures, they introduced an R&D tax credit that requires the participation of research institutes external to the firm, and they strengthened funding mechanisms that require matching public grants with funds from private businesses. The authorities have also started to move away from a narrow focus on R&D to support all forms of technological and non-technological innovation, among others by broadening the support programmes of the economic development agency. *Efforts to strengthen links between firms and universities and support all forms of technological and non-technological innovation in firms should be continued.*

Cluster strategies should remain based on market-like mechanisms and potential risks should not be overlooked

Most OECD countries encourage the formation of industrial clusters, which may be justified on economic grounds if there are positive externalities for the economy at large. In Chile, the formation of industrial clusters may foster the diversification into non-traditional high-productivity sectors, but potential risks to public resources should not be overlooked. *To avoid spending public resources without any inducement effect or on sectors that turn out to be failures, clear performance objectives should be specified.* For clusters that meet their performance objectives, the need for continued public support should be reviewed periodically (sunset clauses), as the objective should be that private financing eventually replaces public support. For clusters that continually fail to meet their performance objectives, support should be withdrawn early to avoid the lock-in of failures. The authorities have started to specify the clusters' outcome targets in terms of exports, which should now be complemented by transparent protocols on the conditions under which public support will be withdrawn.

The quality of education in public schools should improve further

Chile's PISA scores have improved recently, probably owing to considerable efforts since 1990 to improve results, especially in schools serving the poorest children. However, average scores still fall well short of OECD standards, even when accounting for Chile's lower income level. In addition, they are more strongly dependent on students' socio-economic background than in any OECD country, suggesting that until recently schools did

not do enough to help disadvantaged pupils attain better results. Municipal and private subsidised schools, which serve more than 90% of all children, are financed by a system of vouchers, providing until recently an essentially flat subsidy per student. Private subsidised schools are allowed to ask for top-up fees from parents, up to a limit. Private subsidised, but not municipal schools had been largely free to select and expel students until 2009. This had created incentives to compete by attracting students that are easier to teach, limiting the beneficial effects of school competition on the quality of education. The government has now prohibited selection by ability or socio-economic background until sixth grade in publicly funded (municipal and private subsidised) primary schools. *It should make sure that this is enforced, while considering extending the prohibition of selection to secondary school.* The creation of an independent agency for quality evaluation and assurance, the *Agencia de Calidad de la Educación*, and an agency ensuring schools' compliance with the law, the *Superintendencia de Educación* is welcome. It may provide information that fosters competition on quality and make sure that the government intervenes when results fall short of minimum standards.

Directing more resources at vulnerable pupils is appropriate

The education voucher was recently increased substantially for the poorest children (*Subvención Escolar Preferencial, SEP*) with some extra payments for schools where these children are concentrated. This is based on the well-founded assumption that it is more difficult to educate vulnerable children, especially when they are concentrated. *One good use for the extra resources would be to increase wage incentives for teachers of proven excellence to teach in schools with many poor children. Another good use for the extra funds could be to provide principals with sufficient staff to delegate administrative tasks and train principals continuously to develop their educational leadership skills.* Chile has already launched promising programmes to train principals and it should develop them further. *In general, the government should provide for independent evaluation of methods financed with the extra resources to promote learning outcomes of students with poor results. It should identify good practices and provide schools with the necessary assistance to help disseminate them through the system.*

In principle, the increased subsidy for vulnerable children could be an incentive for more advantaged schools to accept vulnerable children and meet their educational needs. However, schools are not required to enter the SEP system. *Accepting the SEP should become mandatory to promote socio-economic integration.* The government's plan to integrate the separate quality assurance system for SEP schools into the general national quality assurance system for all publicly funded schools, once it is fully developed, is welcome. This will reduce the risk that the special quality assurance system for SEP schools could be a disincentive to enter this system.

The quality of teachers and their preparation needs to be improved

Substantial increases of teachers' wages over the past 15-20 years have attracted increasingly better prepared students to the profession, but a recent pilot exam for primary school teaching graduates has revealed remaining deficiencies. *To attract more talented individuals the government could work towards defining teaching career paths for publicly funded*

schools, with promotions more closely linked to performance. Chile has already developed a well thought-out teacher evaluation programme, which would be a good basis to implement such career paths. *It currently applies only to municipal school teachers and should be extended to all publicly funded schools, as teacher quality is wanting across the entire system*. Currently, private subsidised schools have much more flexibility over teacher employment and pay, creating unequal conditions to compete. *All schools should have some flexibility to decide on teachers' wages and on hiring or dismissing them*.

Chile needs to build on its efforts to improve training for teachers at all levels of education. First, the quality control of initial teacher education programmes needs to become more effective. Parallel to university programmes, special programmes (*Programas Especiales de Titulación*) currently train a substantial percentage of candidates, although they have been found to suffer from serious deficiencies regarding entry requirements, the quality of their educators and their teaching programmes. *The government should ensure that the accreditation process leads to closure of deficient programmes*. Second, given the persistent weaknesses of basic and secondary education, many students arrive at university with insufficient literacy and numeracy skills. *As long as learning outcomes at school have not improved sufficiently, universities should systematically offer remedial classes to make up for this*. Third, primary school teachers are trained as generalists and their training does not include sufficient subject content knowledge even for lower grades. This problem becomes especially acute in the upper grades of primary school which currently lasts eight years. The government plans to reduce primary school to six years and this is welcome, because secondary school teachers have more specialised training. *However, this will require a rapid expansion of the available programme that offers a post-graduate degree in specific school subjects for practicing teachers (Postítulos de Mención) so that their subject content knowledge is upgraded quickly. Initial teacher programmes should upgrade the teaching of subject content knowledge as well*. Aspirant and practising teachers alike need more specialised training in how to identify students at risk of falling behind and provide them with the support they need to catch up. *One way to ensure that initial teacher education helps candidates attain appropriate standards of knowledge and abilities would be to develop centralised external exit exams to certify teachers*. OECD experience suggests that this is useful in a system like Chile's where teacher education programmes are of very variable quality.

Chapter 1

Overcoming the crisis

Chile's robust pace of expansion hit a roadblock when the global financial crisis erupted in mid-2008, and trade flows tumbled. Despite strong fundamentals, Chile was hit severely by the crisis, notably because of its high exposure to commodity prices. Output contracted severely, at a pace similar to that following the Asian crisis, and there was mild deflation. However, the recession was relatively short-lived. The economy bottomed out in mid-2009, helped by the rebound in export prices and a bold macroeconomic policy stimulus. Reflecting past prudent macroeconomic management, Chile was in a good position to easily finance a strong fiscal stimulus, and an aggressive reduction in interest rates was possible thanks to relatively stable inflation expectations. Activity and employment growth are projected to pick up pace in 2010 and reach rates above potential in 2011, but the unemployment rate is likely to stay at a high level and a large negative output gap will persist. Unless the recovery proves significantly stronger than expected, monetary and fiscal policy should remain supportive well into 2010. Ensuing policy tightening should be adapted to the pace of the recovery. Chile should be careful not to withdraw the stimulus too fast, not least to avoid a repeat of unemployment persistence observed after the Asian crisis.

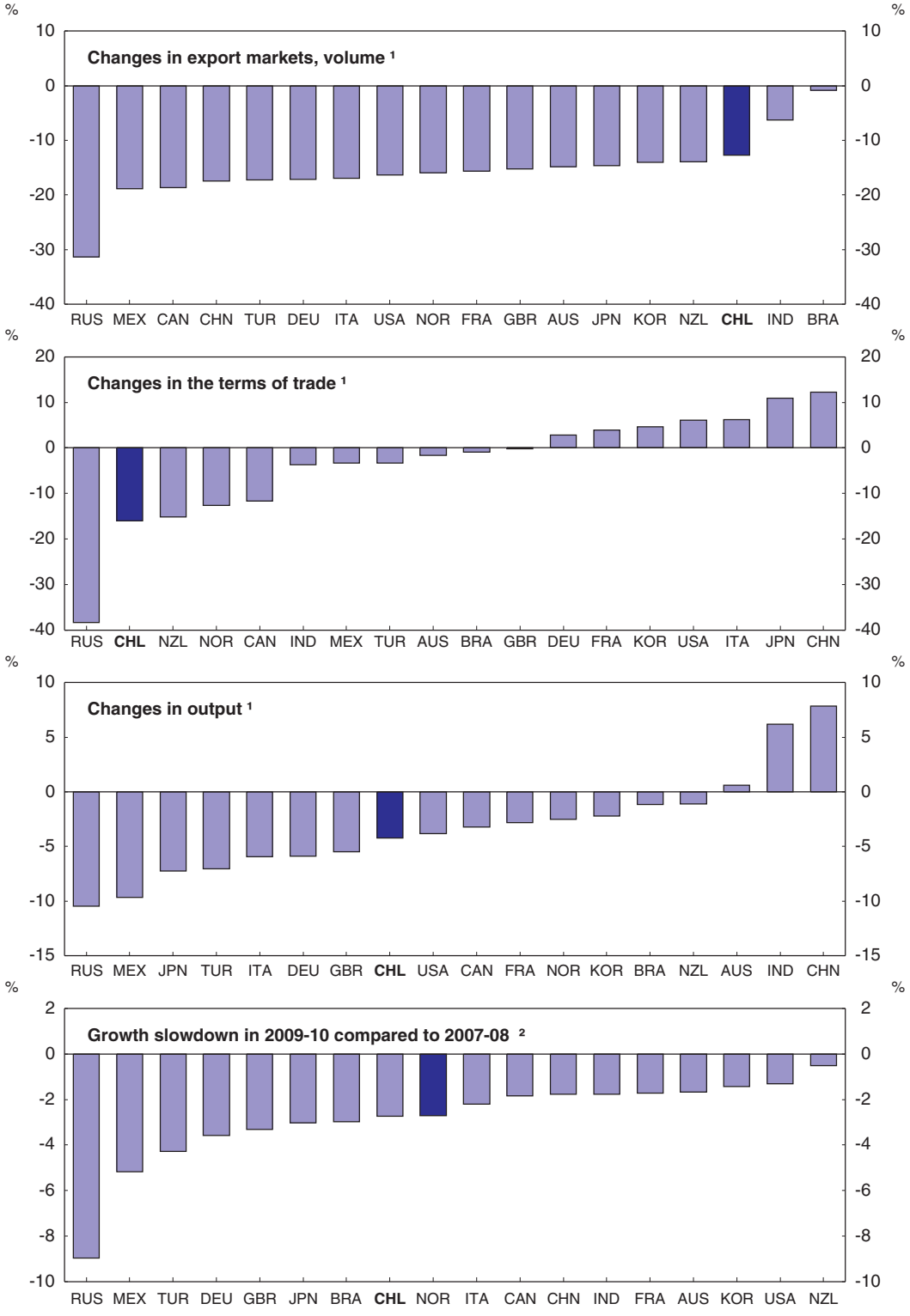
The crisis hit Chile mainly through a strong terms of trade shock

After a strong economic performance in recent years, Chile was hit by the intensification of the global financial crisis in September 2008. As a small open economy with a strong dependence on mining and agricultural exports, Chile was severely affected by the collapse of world trade and the decline in commodity prices. While the loss in exports market volume, as measured by a weighted average of trading partners' import demand, was not as severe as in many other countries, the deterioration of Chile's terms of trade was more marked than in any OECD country (Figure 1.1). As a result, export earnings tumbled, confidence deteriorated and both private consumption and investment, which had been the backbone of the upturn before the crisis, fell sharply. Output contracted for four consecutive quarters, prices started to fall and unemployment increased fast. Considering the severity of the shock, the output loss Chile experienced appears relatively mild. Once exports and the price of copper – which accounted for more than 50% of Chile's export revenues in 2008 – partly recovered, economic activity started to pick up again relatively quickly (Figure 1.2).

While it was hit by the world trade collapse, Chile benefited from resilient domestic financial markets and decisive policy action. External financing was temporarily disrupted when US interbank markets seized up in September and October 2008 and US dollar liquidity became scarce for Chilean corporations, particularly for foreign trade financing. To support US dollar liquidity the central bank reacted by: *i)* suspending its programme of US dollar reserve accumulation; *ii)* implementing US dollar repo operations with weekly auctions of USD 500 million; and *iii)* allowing the fulfilment of reserve requirements regarding US dollar deposits in local currency or non-US dollar foreign currencies (instead of in US dollars only), among others. The Ministry of Finance shifted US dollar deposits held abroad to the domestic banking system, including through deposit auctions. The central bank also took measures to support peso liquidity by implementing repo operations and accepting a wider range of collateral. Bank lending rates have since reverted to below pre-crisis levels and the corporate sector recovered its access to foreign credit, as the repatriation of foreign investments by institutional investors further contributed to the easing of external financing conditions. The resilience of domestic financial markets reflects the absence of significant exposure to the toxic assets that brought down banks in OECD countries, prompt policy reaction and prudent bank supervision.

The recovery is now under way and should gradually gain speed with growth reaching rates above potential in 2011, when unemployment should begin to decline from its high level. Against the backdrop of a large widening of the output gap, prices are projected to continue falling throughout this year, but inflation should increase gradually toward the lower end of the monetary policy tolerance band of 2-4% by the end of 2010. The current account balance has turned positive again this year, as import values have declined even more than export values, but the increase in the surplus should moderate as stronger domestic demand boosts imports.

Figure 1.1. **The transmission of the world economic crisis to Chile**

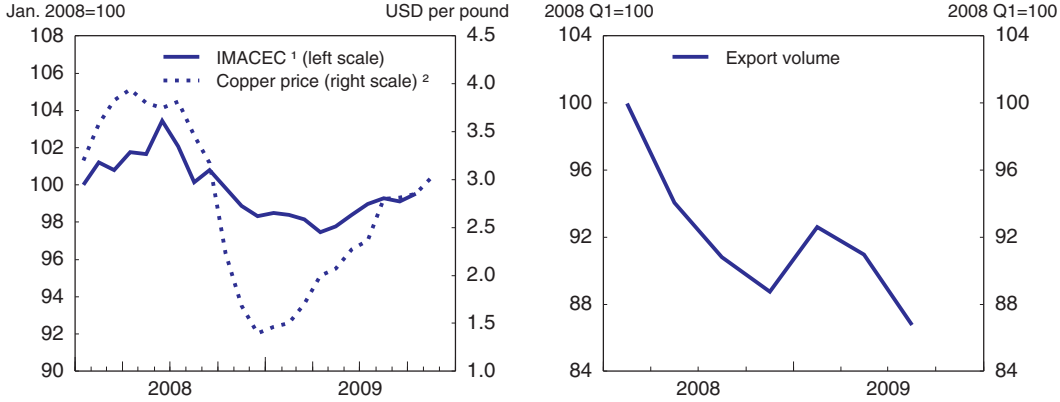


1. Percentage changes between 2008 Q2 and 2009 Q2 (Q1 if Q2 not available).
2. OECD projections.

Source: OECD, *Economic Outlook 86 Database.*

StatLink http://dx.doi.org/10.1787/775711763520

Figure 1.2. **Activity indicator, copper price and export volumes**



1. Indicator Mensual de Actividad Económica (IMACEC), monthly indicator of economic activity.
2. London Metal Exchange price.

Source: Central Bank of Chile.

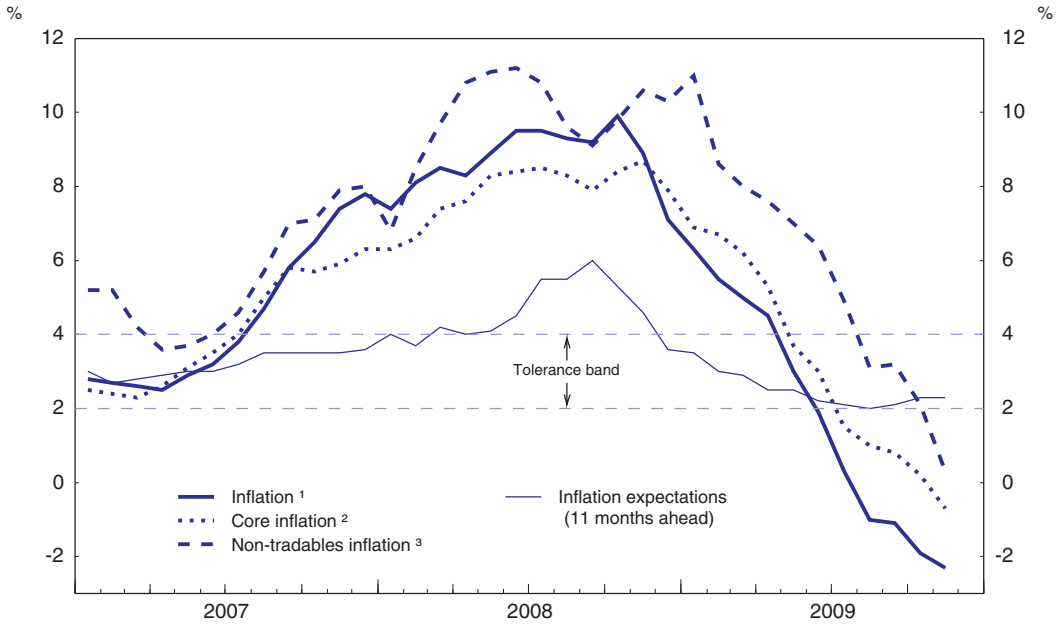
StatLink http://dx.doi.org/10.1787/775723237278

Monetary policy authorities faced complicated decisions

The monetary inflation-targeting framework, implemented by the independent central bank, had generally accommodated swings in the exchange rate without negative effects on financial stability or inflation. When the crisis began to hit Chile, headline inflation was running at close to 10% – well above the central bank's tolerance band of 2-4% – despite several increases in the monetary policy rate from 6.25% in June to 8.25% in September (Figure 1.3).

Figure 1.3. **Inflation and inflation expectations**

At annual rates



1. Consumer price index (IPC).
2. IPCX1.
3. IPCN.

Source: Central Bank of Chile.

StatLink http://dx.doi.org/10.1787/775733174476

This was due to rising prices of imported commodities and pressures from domestic demand, mainly booming investment. Although the monetary policy framework has enhanced the credibility of the central bank over the past decade (Box 1.1), inflation expectations nevertheless drifted up.

Box 1.1. **The monetary policy framework**

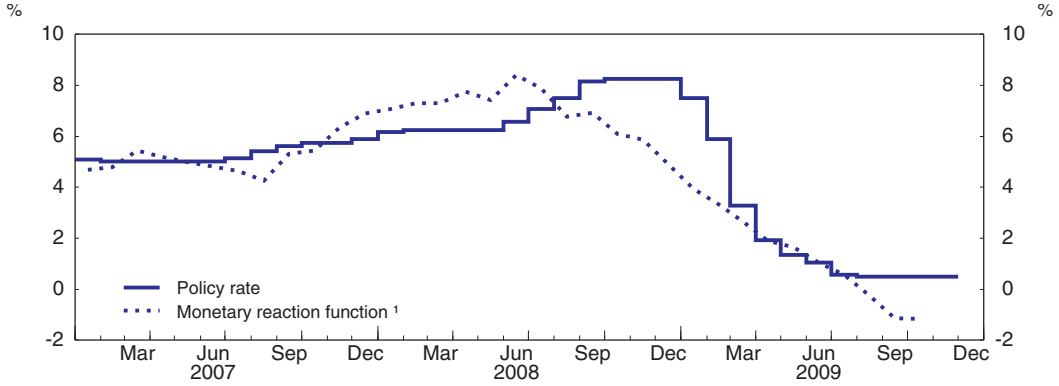
Since 2000 the stated objective of monetary policy is to keep annual headline inflation close to 3% and within a tolerance band of 2 to 4% over a horizon of 12 to 24 months (since 2006 the policy horizon is around 24 months). The central bank enjoys legal independence and implements its monetary policy by defining a target level for the nominal overnight interbank rate. Transparency is a fundamental component of the inflation-targeting framework. The central bank releases a brief communiqué immediately after each monetary policy meeting and detailed minutes three weeks after the meeting, and it publishes a monetary policy report with detailed forecasts for inflation and output every four months. After the Asian Crisis, the central bank abandoned its exchange rate band in 1999 and adopted a floating exchange rate, although it has occasionally intervened in the foreign exchange market when it considered the real exchange rate to be misaligned with its long-term fundamentals or when it judged the level of currency reserves to be too low. This monetary policy framework has served the Chilean economy reasonably well, with relatively stable inflation expectations despite high inflation volatility over the past two years (inflation was within the tolerance band around 60% of the time between January 2000 and September 2009). Exchange rate volatility has increased with respect to the 1990s but corporations have access to an increasingly deep and liquid hedging market (De Gregorio *et al.*, 2005).

It is in this context of high headline inflation, and elevated inflation expectations, that Chile was hit by the liquidity squeeze in US dollars in the fourth quarter of 2008 and the fall in the value of copper exports, making for difficult choices for monetary policy. The adoption of a floating exchange rate regime in 1999 has contributed to a reduction of currency mismatches, as households have reduced their foreign currency debt and firms indebted in foreign currency have increasingly started to hedge their exposure. But the sharp depreciation of the peso, which occurred in a context of flight to safety, added to monetary policy complications, as significant exchange rate weakness risked feeding into inflation, thus requiring a tighter policy stance. Moreover, the central bank expected upward pressures on domestic demand to recede only gradually. Although in November it took the unprecedented step of publishing interim growth projections (forecasts are normally published only in January, May and September), it maintained a projected growth rate of 2-3% for 2009 until January.

Vigorous monetary policy easing throughout 2009 was well justified

As the central bank expected inflation risks to be on the upside, it maintained its policy stance until end-2008. A simple monetary policy reaction function based on current inflation and output gap considerations alone suggests that according to the central bank's own rule over the period 2001-07, the monetary policy reaction was broadly appropriate (Figure 1.4).

Figure 1.4. **Policy rate and monetary reaction function**



1. Monetary reaction function computed using weights of 0.5 on both current inflation and the output gap and an intercept of 4. Weights and intercept obtained from OLS regression of the monetary policy rate on current inflation and the output gap over the period January 2001 to December 2007.

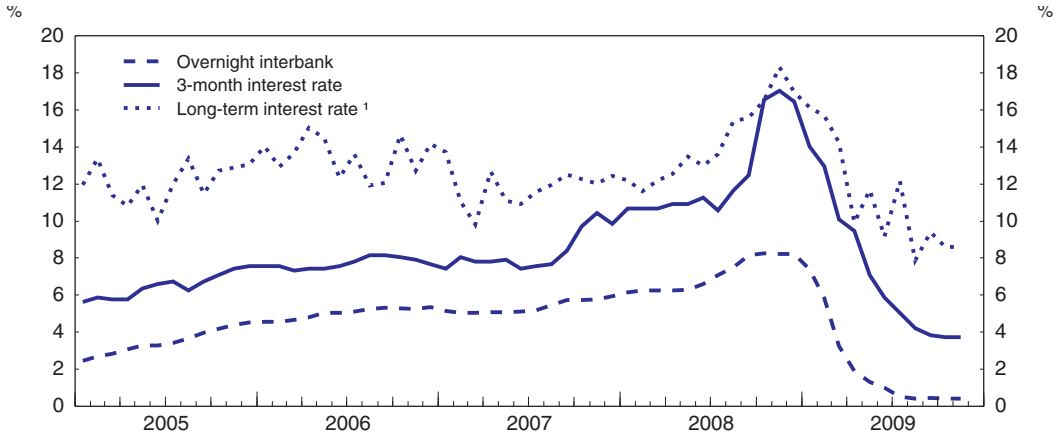
Source: Banco Central de Chile and OECD.

StatLink http://dx.doi.org/10.1787/776028507286

In January 2009 the central bank reacted to falling inflation and contracting domestic demand and reduced the policy rate from 8.25% at the beginning of January to 0.5% in July. In July it also took several non-conventional monetary policy measures, among others the establishment of a term liquidity facility, the suspension of programmed debt issuance and the announcement that the policy rate would be kept at 0.5% for a protracted period of time. At its November meeting, the central bank confirmed its view that it expected the policy rate to remain at its low level for a prolonged period of time (at least into the second quarter of 2010) but announced the gradual withdrawal of the term-liquidity facility.

The pass-through to market interest rates was relatively quick (Figure 1.5). In July 2009 nominal interest rates at all maturities were below September 2008 levels, implying that the extensive interest rate cuts were effective in bringing market interest rates down. The somewhat slower pass-through to long-term rates is consistent with the gradual rebound in inflation expectations since August 2009, according to the central bank survey. Despite

Figure 1.5. **Interest rates**



1. More than 1-year commercial rate (loans).

Source: Banco Central de Chile.

StatLink http://dx.doi.org/10.1787/775838216806

the sharp reduction in the policy rate, the exchange rate started to appreciate against the US dollar in January 2009, as institutional investors repatriated part of their assets held abroad and the price of copper increased.

The fiscal stimulus was bold, timely and well targeted

After the crisis hit, the government was quick to enact a package of fiscal stimulus measures. This included increased spending on several temporary programmes (public works, a one-time cash allowance for low-income households, a temporary increase in subsidies for training measures) and various tax reductions. Most notably, the government allowed access to unemployment benefits for workers sent on training (rather than being laid off). While this measure seems rather innovative, uptake has been slow so far, with only around 900 workers participating in September 2009. The package also includes a temporary reduction of income tax prepayments for companies and an acceleration of personal income tax reimbursements. This brought forward tax revenue losses that otherwise would have occurred later on, when annual tax adjustments are due, because of reduced activity related to the crisis. This strengthened the liquidity of households and businesses when it was most needed. Excluding the recapitalisation measures mentioned below, the package provided an overall stimulus of some 1.8% of GDP (Table 1.1).

Table 1.1. **Fiscal stimulus in Chile**

	2009	
	Bn pesos	In % of GDP
Public works	441.0	0.51
Contribution to municipal finances	20.0	0.02
Temporary elimination of stamp duty	396.0	0.45
Bonus for low-income households	138.9	0.16
Increased subsidies for training measures	113.5	0.13
Temporary increase in forestation subsidy	12.6	0.00
Reduction of income tax prepayment for enterprises	290.0	0.33
Advancement of income tax reimbursement for individuals for 2009	139.0	0.16
Total	1 551.1	1.78

Source: Ministry of Finance.

The government also enacted more permanent reforms to support employment and attenuate the impact of layoffs on the economy. It brought forward the reform to extend unemployment benefits to workers with fixed-term contracts from 2010 to 2009 and introduced a wage subsidy for young low-wage workers.

The government recapitalised a number of state-owned companies to support credit flows and investment. The recapitalisation of the state-owned copper-mining company CODELCO was deemed to support investment projects in times of difficult access to financing. A recapitalisation of the state-owned bank *BancoEstado* and the development agency (CORFO), for its credit line for factoring (accepting a company's accounts-receivable, such as invoices, as collateral) and its guarantee programme for credit restructuring, were

intended to enhance financing flows. The recapitalisation measures were worth about 1.2% of GDP.

Overall the government's fiscal measures were implemented rapidly and thus acted as a timely support for aggregate demand when the crisis was at its most severe. They were reasonably well targeted to the most vulnerable groups of society hardest hit by the crisis, notably low-income households and those at risk of or affected by unemployment. These households are also most likely to have a high propensity to consume and to be liquidity constrained, so that the government had reason to hope for a relatively large effect on aggregate demand. Public construction projects are also likely to have a relatively high multiplier effect with few losses through imports.

These fiscal measures combined with sharp tax revenue losses related to the decline in the copper price and the cyclical downturn are expected to lead to a strong deterioration of the fiscal balance. The surplus of more than 5% of GDP in 2008 is set to move to a deficit of around 3.5% of GDP according to current government projections. The government now expects to miss its structural surplus target, which it had lowered from 0.5% of GDP to a structural balance at the beginning of the year to be able to conduct its stimulus programme. Currently, the government expects a structural deficit of 0.4% of GDP. While this might be unfortunate in better times, the stimulus measures were well justified in view of the severity of the crisis.

With large financial assets accumulated in its stabilisation funds and low debt, the government is in a comfortable position to finance revenue shortfalls related to the crisis, its fiscal stimulus plan and recapitalisation measures. The government has covered the largest part of its financing needs by drawing assets from the sovereign wealth fund (*Fondo de Estabilización Económica y Social*, FEES), with a smaller part coming from government bond issues at 5-10 year maturities. To reduce crowding out of private sector borrowing, the central bank reduced its debt issuance and repurchased its debt instruments at these maturities.

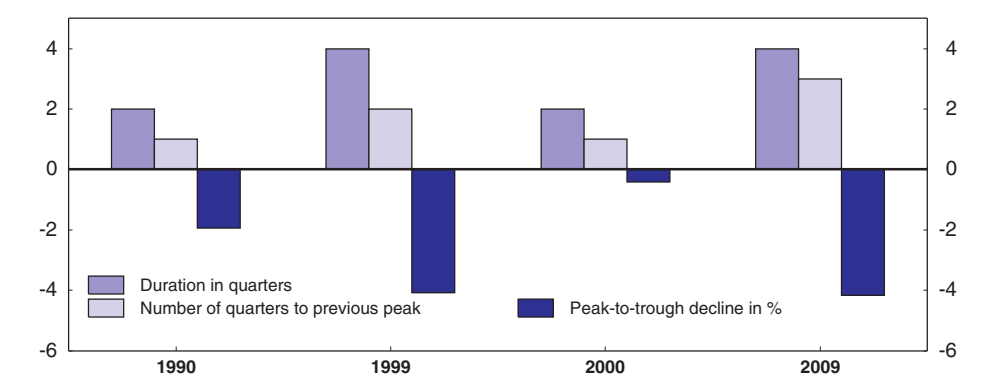
The government plans to make progress towards its structural balance target by reducing real expenditure growth to 3% in 2010, from close to 15% in 2009. A return to a structural surplus of 0.5% in GDP in 2011 and beyond would require keeping real spending flat in 2011. In 2012 and 2013 real expenditures could rise no more than 3%. This compares with 6.5% real expenditure growth during the period 1990-2008 and 7.5% during the copper bonanza 2004-2008.

The government's bold measures have attenuated the depth and in particular the length of the crisis. The sharp contraction of output up to mid-2009 is testimony to the difficulty of shielding a small, open economy that is dependent on natural resource exports from a world economic crisis. The projected GDP contraction in 2009 was slightly larger than in the 1999 contagion episode from the Asian crisis (Box 1.2), mainly because of a much stronger trade and terms of trade shock. Although the hit to its terms of trade was exceptional, the severity of Chile's economic recession appears average by international standards (see Figure 1.1). This suggests that Chile's sound fundamentals and the substantive macroeconomic stimulus have had significant stabilising effects.

Box 1.2. **The current recession and the 1999 recession compared**

The downturn that started in the third quarter of 2008 was similar in size and length to the 1999 contagion episode in the wake of the recession in emerging Asia, but more severe than other recessions that Chile suffered in 1990 and 2000 (Figure 1.6).

Figure 1.6. **The current recession in comparison**[1]



1. Cyclical turning points are identified with an algorithm developed by Harding and Pagan (2002). A recession is defined as the period from peak to trough of seasonally adjusted GDP. Dates on the bottom axis correspond to the year of the cyclical trough.

Source: OECD, *Economic Outlook 86 Database.*

StatLink http://dx.doi.org/10.1787/776035484741

In 1998 the recession in emerging Asia was transmitted to Chile mainly through an external financing shock. In the early to mid-1990s the average annual growth rate of GDP growth exceeded 7%, fuelled by a boom in domestic demand and large capital inflows. The real effective exchange rate was appreciating at an average annual rate of around 4% despite foreign exchange interventions by the central bank and controls on short-term capital inflows. As a result the current account deficit widened from 1.5% of GDP in 1990 to almost 5% in 1998. When a severe recession started to hit emerging Asia, a series of speculative attacks destabilised the peso. An improvement of the current account through stronger exports would have required a depreciation of the peso. Yet, as the central bank initially defended the currency, the burden of adjustment fell mainly on domestic demand, in particular investment, which declined sharply. As imports fell sharply as a result, the current account moved to balance in 1999.

This time around net capital outflows actually decreased, as some domestic investors (mainly the pension funds) repatriated part of their funds. The economic crisis instead hit the economy through the collapse in world trade and copper prices. As consumer and business confidence plummeted, the fall in export revenues had almost immediate effects on domestic demand. In contrast to 1998, however, the macroeconomic policy stance was more expansionary and better co-ordinated. Whereas in 1998 only fiscal policy was expansionary and the central bank tightened monetary policy to maintain the exchange rate within its target range, in the current recession both monetary and fiscal policies have been highly supportive. Given that world economic conditions were appreciably more favourable in 1999, as there was no world economic recession and terms of trade losses were small, Chile appears to have fared much better in the current recession.

The recovery is expected to be relatively fast but there are risks to the short-term outlook

After the downturn, the economy bounced back in mid 2009 and growth is estimated to have been positive during the second half of 2009. Going forward, activity is projected to gradually gain speed in 2010 and actual growth should exceed potential growth in 2011 (Table 1.2). With the recovery in global trade taking hold over the second half of 2009 and accelerating over 2010, Chilean exports are projected to pick up relatively quickly. Helped by monetary and fiscal stimulus and by improved consumer and business confidence, private consumption and business investment have gradually been recovering over the second half of 2009 and are projected to pick up pace over 2010. The unemployment rate has been falling more rapidly than in previous crises after economic activity picked up in mid-2009 but is projected to remain high throughout 2010 as unemployment generally reacts to a pick-up in activity with a lag. Moreover, the fiscal stimulus will gradually be withdrawn over 2010 and private sector job creation is unlikely to take up the full slack. With a large amount of unused production capacity and a strongly negative output gap, prices are projected to continue falling throughout this year. Inflation should return gradually towards the central bank tolerance band of 2-4% towards the end of 2010, as inflation expectations have remained well anchored throughout the recession and have gradually been increasing over the second half of 2009, and import prices are projected to increase over 2010. The current account is estimated to have turned positive again in 2009,

Table 1.2. **Demand, output and inflation**

Annual percentage change, unless indicated

	2007	2008	2009	2010	2011
Demand and output (constant prices)					
Private consumption	6.9	4.3	–1.7	2.2	4.8
Government consumption	8.0	4.0	8.7	3.8	2.9
Gross fixed capital formation	12.0	19.5	–16.0	5.2	9.6
Final domestic demand	8.2	7.9	–4.3	3.1	5.7
Stockbuilding[1]	–0.3	–0.7	–3.0	1.6	0.0
Total domestic demand	7.8	7.2	–7.1	4.7	5.8
Exports of goods and services	7.6	3.1	–5.2	4.0	7.2
Imports of goods and services	14.9	12.9	–15.9	5.6	8.7
Net exports[1]	–1.1	–2.8	4.2	–0.3	–0.1
GDP at market prices	4.8	2.9	–1.8	4.1	5.0
Inflation					
GDP deflator	5.0	0.5	0.4	2.0	3.3
Private consumption deflator	3.2	7.9	3.8	1.3	2.8
Consumer price index	4.4	8.7	1.4	1.0	2.8
Other items					
Potential growth	4.3	5.0	3.6	4.2	4.2
Unemployment rate (% of labour force)	7.1	7.8	9.7	10.2	9.3
Output gap[2]	0.9	–0.9	–6.0	–6.3	–6.1
Central government financial balance[3]	8.8	5.3	–3.5	–1.3	–1.0
Current account balance[3]	4.5	–2.4	0.8	0.3	0.1

1. Contributions to GDP growth.
2. In per cent of potential output.
3. As a percentage of GDP.

Source: OECD, *OECD Economic Outlook 86*.

reflecting the sharp decline of import values, with the external surplus narrowing slightly in 2010 and 2011 following the revival of domestic demand.

While the recovery so far appears to unfold as expected, there are nonetheless risks to these projections, on both sides. There could be a firmer pick-up of activity, particularly if business investment resumes its past fast pace of growth, thus giving traction to overall domestic demand. On the other hand, the Chilean economy could face headwinds anew if the expected recovery in world trade is not as firm as expected and if exports and the price of copper do not sustain their recent climb. Flexibility in actual policy implementation will be vital and the authorities should promptly react to signs that the recovery is not unfolding as expected. Should the recovery turn out to be more vigorous than expected, the fiscal stimulus could be withdrawn more quickly. This would also be desirable on political-economy grounds by confirming the temporary nature of the fiscal stimulus measures. The monetary stimulus could nonetheless remain in place well into 2010 as the risks of renewed inflationary pressures remain low, and low interest rates may help avoid a further strengthening of the peso, thereby boosting net exports. Should the recovery turn out to be significantly weaker than expected, fiscal and monetary stimulus could remain in place for a prolonged period of time. So as to anchor expectations, transparent communication will be essential: medium-term plans should be announced regarding the exit from extraordinary stimulus, notably consolidation of fiscal policy and the normalisation of monetary policy.

The effect of the crisis on potential output has consequences for the timing of the stimulus withdrawal

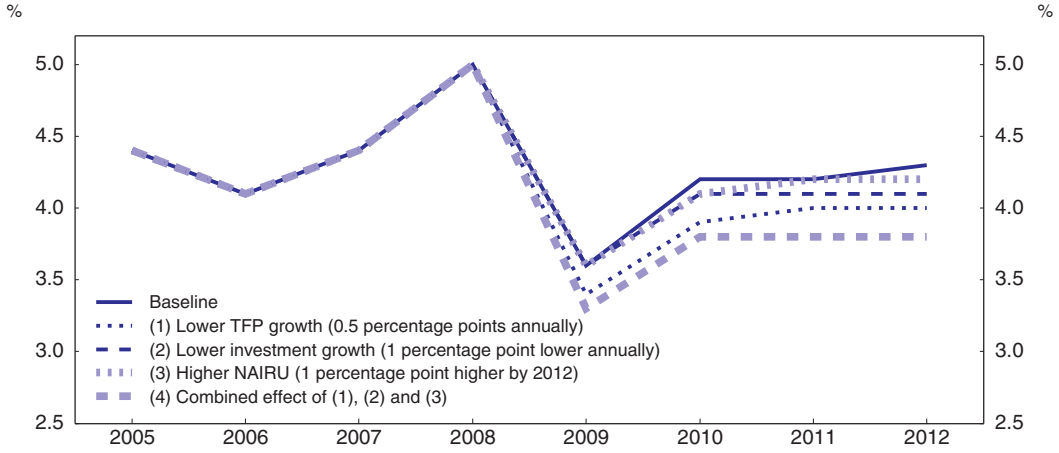
As in most OECD countries, the financial crisis is likely to have permanent effects on Chile's economy, notably on the availability of production factors, thus resulting in output losses compared to what would have occurred under past trends. In the *Economic Outlook 86* (OECD, 2009), the OECD has revised downwards potential output for OECD members by 2% on average at the end of 2010. In Chile, most of the adjustment in potential growth in 2009 and 2010 is likely to come from an adjustment of the capital stock, reflecting the sharp decline of gross capital formation in the midst of the crisis. In addition, another part of the adjustment in potential growth could come from a reduction in the availability of labour resources, for example if unemployment stayed persistently high, as happened after the Asian crisis, driving up structural unemployment. At that time, the unemployment rate increased to around 10% from a pre-crisis low of around 6% and it took 9 years for it to revert to 7%. The increase in the unemployment rate during the crisis may also discourage some people from entering the labour force and reduce participation rates in the medium term. The effect of the crisis on total factor productivity (TFP) is *a priori* ambiguous; while firms may reduce their investment in innovation, hence adversely affecting TFP, the least productive firms may be forced out of business. Provided that new firms entering the market are more productive than those that are forced to leave it as a result of the crisis, this type of creative destruction may increase TFP.

Based on likely capital stock and labour input adjustments in the central scenario, by the end of 2010 the level of potential output is expected to be lower by 2% than in the absence of the crisis. This is similar to the simple average of the downward revision to the level of potential output by the end of 2010 across OECD countries, as noted earlier. This scenario is based on similar assumptions on investment as in the projections reported in Table 1.2 and a constant rate of structural unemployment, which the authorities currently

estimate at 8.1%. The labour force is assumed to grow at its medium-term trend. TFP growth is assumed to grow at an average annual rate of around 0.5% between 2009 and 2012. Potential output should resume growing at around 4.3% in 2011 and gradually pick up to around 4.5% after, helped by the gradual pick-up in investment and a stronger than pre-crisis TFP growth. Whereas TFP had apparently been growing at negative rates in the years preceding the current recession it is assumed to resume positive growth, as large-scale investments in mining and energy become operational. Moreover, the crisis could shift resources to more productive firms and activities. These estimates are broadly in line with the revised projections by the panel of experts in charge of estimating trend output for Chile's budget process.

There are important risks to this scenario. Most importantly, the hit to investment may turn out to be stronger than assumed here. After contagion from the Asian crisis in 1999, investment remained depressed for a prolonged period of time, with the investment-to-GDP ratio below or around 20% between 2000 and 2004 and returning to pre-crisis levels only in 2004. The fall in the growth rate of the labour input may also be underestimated if the increase in the unemployment rate discourages some people to enter the labour force and leads some others to drop out of it, or if the increase in unemployment turns out to be more persistent than projected, as in the wake of the 1999 recession. In the central scenario it is assumed that there are no effects of the crisis on long-term participation rates and that there is no increase in the structural rate of unemployment. The assumption of positive TFP growth that underlies the return to potential growth of 4.5% may also err on the optimistic side, given the apparently negative productivity performance in the recent past. Figure 1.7 shows the evolution of potential output if some of the most optimistic assumptions are adjusted downwards.

Figure 1.7. **Potential output growth scenarios**



Source: OECD calculations based on Ministry of Finance data.

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The withdrawal of the macroeconomic stimulus should be gradual

Fiscal policy should remain supportive in the near term but, assuming the recovery takes hold as expected, the stimulus should then gradually be withdrawn. Withdrawing most of the measures that were designed as temporary at the outset, in particular

temporary tax measures and the cash allowance for low-income households, seems appropriate as the recovery is expected to gain speed. This would also be desirable from a political-economy perspective, as it would underline the temporary nature of the fiscal stimulus. The government plans to maintain the permanent measures, such as the wage subsidy for young low-wage workers and easier access to unemployment benefits for temporary workers, which is welcome. However, there will still be considerable slack in the economy in 2010, as suggested by the expected large negative output gap and the high unemployment rate. To avoid the risks of hysteresis effects (a short-term rise in unemployment leading to a persistently higher unemployment rate and a higher rate of structural unemployment), some of the temporary measures should be withdrawn only gradually. In particular, cancelling at an early stage public investment programmes for housing, urban development, health and education risks increasing the unemployment rate, as the government estimates these programmes to have generated around 120 000 jobs since the beginning of the year. Unless the recovery turns out to be stronger than expected and unemployment starts falling earlier on, returning to the structural balance in 2010, as planned by the government, seems premature. The required slowdown in expenditure growth and the resulting negative fiscal impulse risk endangering the recovery. With low public debt and still considerable reserves accumulated in the sovereign wealth funds, Chile can afford to maintain a small structural deficit for some time. Should the recovery turn out to be weaker than expected, the fiscal measures designed as temporary could be withdrawn later than initially planned.

The policy rate should remain low for a prolonged period of time. A supportive monetary policy stance, with the real interest rate remaining below its neutral level, which is estimated at around 3% (Fuentes and Gredig, 2008), is needed to support the recovery. Unless inflationary pressures build up appreciably faster than expected, interest rates should therefore be raised only gradually and after the withdrawal of fiscal stimulus. Maintaining an expansionary stance of monetary policy after the withdrawal of fiscal stimulus would help the recovery by reducing upward pressure on the peso, thereby boosting net exports.

Structural measures to boost TFP, human capital and labour market participation will help Chile return faster to higher potential output growth. As shown in Chapter 3, increasing the degree of competition in product markets through a stricter enforcement of competition law and fostering entrepreneurship and business innovation would help boost TFP growth in the medium term. Likewise, more effective education policies, as explained in Chapter 4, would increase the quality of labour with positive effects on growth and on productivity, as more educated individuals are more likely to contribute to the diffusion of innovation. This could compensate part of the negative hit on potential output stemming from the reduction in investment. Increasing the labour market participation of females and youths from currently very low levels would also help minimise the effects of the crisis on potential output. Current policies are likely to help in this respect, as the government has increased affordable childcare places substantially and has introduced a wage subsidy for young low-wage earners.

Measures to avoid a credit crunch are welcome but supervision should remain prudent

Sound financial regulation has avoided contagion of Chilean capital markets from the global crisis. Thanks to prudent regulation and conservative supervision based on a

positive-list approach (Box 1.3) the complex financial products, which have contributed to over-indebtedness and the de-stabilisation of financial markets in many OECD economies, have never played an important role in Chile. The government plans to foster liquidity, financial innovation and integration with global capital markets through a capital market reform (MK III) that was kept on hold during the crisis. The main measures in the MK III reform plan include: *i)* enhanced consumer protection, among others through the obligation for financial institutions to offer one standard product for which costs are easily comparable across institutions; *ii)* enhanced competition, among others through better market access for foreign financial institutions; *iii)* the authorisation of innovative financial products such as *Exchange Traded Funds* (ETFs) and the facilitation of securitised credit; and *iv)* the exemption from the capital gains tax for a wider range of financial products. While measures to broaden and deepen capital markets are welcome, the government should exercise the necessary caution to avoiding endangering Chile's exemplary track record of prudential regulation.

Box 1.3. **Financial regulation in Chile**

The Chilean financial system is generally viewed to be sound and well-supervised. The introduction of mandatory private pensions in the early 1980s led to rapid and diversified financial sector growth. The financial system weathered the economic downturn well after the external shock from the Asian crisis in the late 1990s. Despite moderate increases in non-performing loans, the financial services sector has remained profitable and well capitalised in this downturn too.

The main players in Chile's financial system are commercial banks, pension funds, securities markets intermediaries and insurance companies, which are supervised by specialised public sector agencies. Regulation is shared between the central bank and the Superintendencies but supervision is entrusted only to the latter. The Superindency of Banks (SBIF) supervises commercial banks and bank subsidiaries, the Superintendency of Securities and Insurance (SVS) securities market intermediaries and insurance companies and the Superintendency of Pensions (SAFP) the pension funds and unemployment insurance.

Financial entities are regulated based on a positive-list approach. The law or regulations issued by supervisory agencies specify which financial products can be offered. The central bank plays a central role in the authorisation of financial products, in particular in the areas of derivatives and foreign exchange transactions. Credit securitisation is restricted and the central bank regulates covered bonds for mortgages.

The measures taken by the government to keep credit flowing under the *pro crédito* initiative have contributed to a normalisation of financial conditions. The measures include additional credit guarantees (by the *FOGAPE* credit guarantee fund of the state-owned *BancoEstado*) as well as measures to increase credit for micro-enterprises (additional resources for existing seed capital and credit programmes for micro-enterprises, extension of the time limit for the renegotiation of tax debt from 12 to 36 months). The government has also widened the possibilities for non-banks, such as insurance companies and *Cajas de Compensación*, to extend credit. In addition, the *pro crédito* initiative increases the maximum debt financing of subsidised housing purchases from 80% to 90% of the housing value. As a result interest rates at all maturities came down to pre-crisis levels by mid-2009,

the share of banks reporting tighter credit standards decreased and bank lending stabilised after having fallen over the first half of the year.

Measures to avoid a credit crunch are welcome in the current situation, but the government should exercise the necessary caution. Some of the measures include laxer prudential standards, as for instance a higher ceiling for debt financing for house purchases and less stringent conditions for non-banks to extend credit. This comes against the background of an increase in non-performing loans related to the recession. Chile has a strong track record of prudent financial regulation and it should not risk compromising the health of its financial system. The *Pro Crédito* measures should be temporary, unless they demonstrate long-term benefits. In particular, the extension of credit by non-banks, such as insurance companies and *Cajas de Compensación*, needs to be reassessed. The facilitation of lending by insurance companies is likely to reduce their capital ratios, which are already close to the minimum required by the regulator for some of them. The supervisors should also assess the group-wide effects of increased lending by insurance companies, as these often form part of diversified financial conglomerates.

The government has recapitalised state-owned *BancoEstado* with an injection of USD 500 million, which should help it withstand potentially higher credit losses. The recapitalisation increased *BancoEstado*'s capital ratio from 12% to around 15%, allowing it to step up its lending. Portfolio growth in the near term can be expected in the riskier lower income residential mortgage and commercial segments. The capital infusion should help the bank to withstand potentially higher credit losses over 2009. However, the bank's leaner profitability and capitalisation relative to Chilean peers expose its balance sheet to higher levels of stress should the crisis prove to be deeper and more protracted than expected. This may ultimately pose risks to the stability of *BancoEstado* with potentially large fiscal costs and, in the worst case, risks for the banking sector stability at large. The supervisors should therefore make sure that *BancoEstado*'s expansion into riskier market segments is in strict compliance with prudential regulations.

Weaknesses in financial market regulation need to be addressed

Credit extension by department stores needs to become more transparent and better supervised

One challenge for supervisors at the current juncture is the diversification of department stores into credit card issuance (see also the formal opinion of the OECD's Committee on Financial Markets on Chile's accession to the OECD[1]). Initially, the department stores allowed their customers to use the cards only within their own stores, but these "closed-circuit" cards have gradually developed into standard private-label credit cards. Currently, the Superintendency of Banks estimates the share of credit cards issued by the department stores to account for more than 80% of cards in circulation (20 million credit cards issued by the department stores against 4.3 million credit cards issued by banks), although they account only for small share of total outstanding credit (around 2%). This development has opened access to credit for low-income households who have difficulty obtaining credit at a bank, as department stores tend to target their credit cards at this group. However, this is likely to make for a particularly risky credit portfolio. This risk was reinforced by strong competition for the market between department stores during the economic expansion in 2007 and 2008, which had put downward pressure on risk standards. Judging from default rates published by the Superintendency of Banks, it is

likely that the credit portfolio of the department stores is significantly riskier than those of banks.

Banks and department stores do not share full information on credit histories, which can increase the riskiness of their balance sheets. Full credit history information is provided by the Superintendency of Banks, but only to the banks. Department stores share information on delinquencies, but not on their clients' overall indebtedness, with the regulator. It is only this information on delinquencies which is then made available to banks and other department stores. This limited exchange of information weakens both the banks' and the department stores' ability to evaluate their clients' credit risk. For instance, a customer applying for a bank credit can have several loans from department stores without the bank being able to access this information. A customer applying for a credit card with a department store can be highly indebted with one or several banks and own several credit cards from other department stores, without the department store being able to evaluate the associated risk.

The government's plan to create a consolidated credit register will make it easier for banks and department stores to evaluate their clients' credit risk but the authorities should continue to carefully monitor the department stores, and macro-prudential surveillance could be stepped up. A current draft bill submitted to Congress in May 2009 foresees the creation of a register that would consolidate the credit of each individual in the bank and non-bank sector and make it available to banks and department stores. This would make it easier for the banks and the department stores to assess the creditworthiness of their clients and for regulators to identify the emergence of larger scale solvency problems, thus reducing the potential systemic risk from limited information. However, the register will not become operational immediately. Against the current background of rising unemployment and falling demand, some department stores may face financial difficulties from rising defaults in the near term. Credit rating agencies have already downgraded several of the department stores because of mounting losses during the first half of 2009. The authorities should therefore carefully monitor the department stores to detect potential threats to systemic stability arising from their balance sheets. In the short term, systemic risks could be contained by bringing all credit card issuers under the oversight of the Superintendency of Banks.[2] To limit systemic risks in the medium term the existing macro-prudential surveillance tools, namely the regular stress tests conducted by the central bank and the superintendencies, may need to be complemented by macro-prudential regulations.

More formal rules on co-operation between financial market supervisors may be necessary

A further challenge for supervisors is the dominance of financial conglomerates in the Chilean financial system, which can create vulnerabilities. Almost all banks, securities market intermediaries and pension funds and around 40% of insurance companies form part of a corporate group that has activities in at least one other financial sector (Stephanou, 2005). This can create several financial vulnerabilities. Firstly, it can make it difficult for the sectoral supervisors to detect intra-group risks of financial contagion. For instance, a large amount of intra-group lending or dependence on funding from other parts of the group could lead to a heavy exposure of the group bank to other financial or non-financial entities in the group. Differences in regulatory regimes across financial sectors could also lead to regulatory arbitrage by the group (*e.g.* in minimum capital requirements)

and raise the costs of effective supervision. Finally, the current regulatory setup leaves some types of financial activities of financial conglomerates uncovered. This is currently the case with the issuance of credit cards by department stores, which do not fall under the oversight of the Superintendency of Banks.

Despite a dominance of financial groups and conglomerates operating in several segments of financial markets, co-ordination between the separate supervisors for banking, for insurance and securities and for pensions remains limited. The authorities have mainly relied on "firewalls" that limit permissible activities, cross-ownership and intra-group lending to limit intra-group risks of financial contagion. Since it is difficult for separate supervisors to detect intra-group risks of financial contagion, there is a need for close co-operation. Recently introduced information-sharing between regulators in the Capital Markets Committee at the Ministry of Finance and the Superintendents' Committee is welcome, but should be formalised and deepened, and consolidated information on financial conglomerates should be collected. In the longer term, the government should take legislative action to establish group-wide financial supervision. One option would be to designate a "lead supervisor" based on the group's main activity.

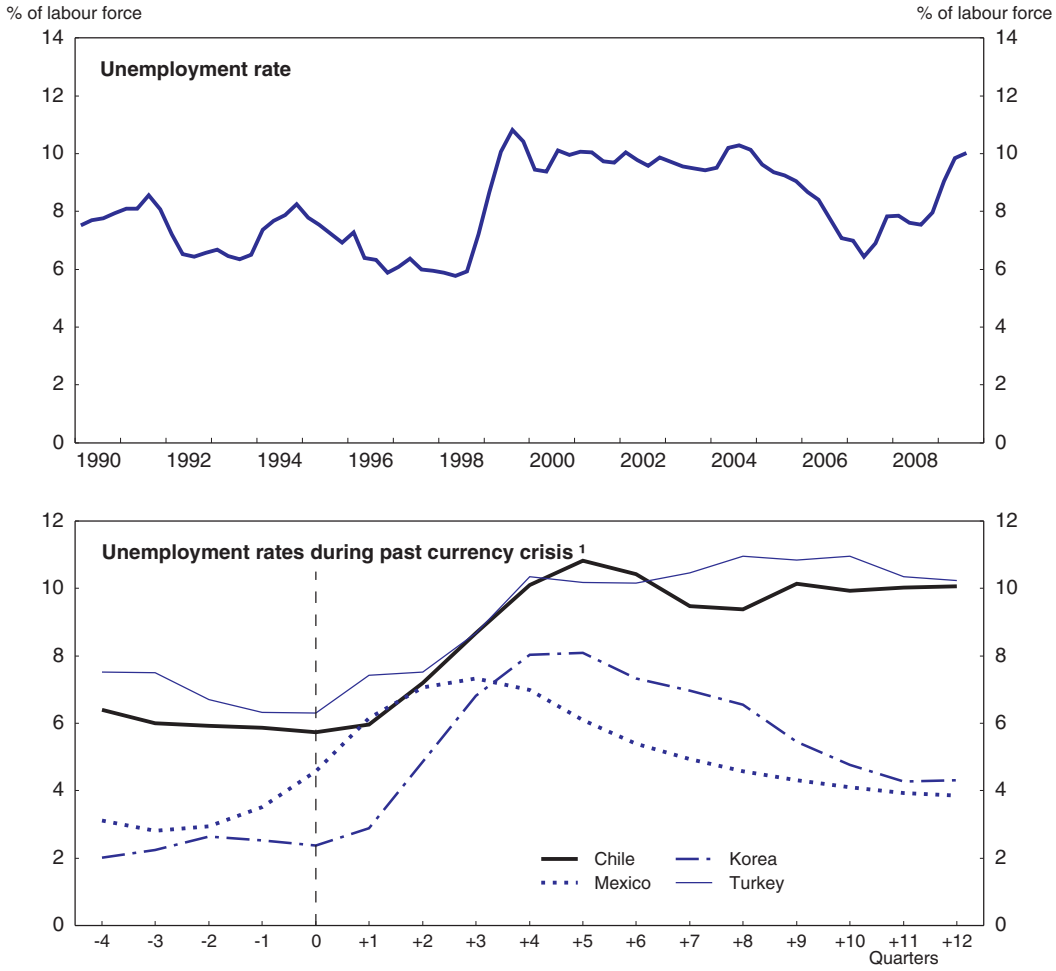
Persistent unemployment remains a risk, as after the Asian crisis

Unemployment has increased rapidly in the current crisis and it is important to avoid it becoming as persistent as in the past. Unemployment has shot up from an average 7.4% in September 2008 to more than 10% in August 2009. After the Asian crisis, unemployment proved stubbornly persistent; this was in stark contrast to the experience in Mexico and Korea which had experienced similar crises, although unemployment in Turkey showed similar persistence to Chile's after its 2001 crisis (Figure 1.8). The risk of unemployment persistence comes against the background of a segmented labour market and limited employment opportunities for women and youths (OECD, 2009a).

One determinant of unemployment persistence was a relatively weak economic recovery after the Asian crisis. While Mexico, Korea and Turkey allowed their exchange rate to depreciate shortly after their currencies came under attack, Chile attempted to defend its currency through a mix of exchange rate interventions and interest rate increases. This probably contributed to a weaker recovery in Chile compared to the other crisis countries – with growth averaging 3% in Chile during the three years following the crisis compared to around 7% in Korea and Turkey and 5½ per cent in Mexico. As a consequence, the output gap in Chile remained open for much longer than in Korea and Mexico (Figure 1.9), although not Turkey, where the output loss was particularly high. The unemployment experience from the aftermath of the Asian crisis reinforces the argument that the fiscal stimulus, and in particular measures to support the labour market, should not be withdrawn too early. Therefore, the permanent character of the wage subsidy for young workers and the enhanced access to unemployment benefits for workers on short-term contracts is welcome. The temporary subsidy for workers sent on a training measure (instead of being laid off) should be phased out only gradually.

Another determinant of unemployment persistence after the Asian crisis was an increase in the minimum wage. In 1998 the Chilean Congress fixed a calendar for minimum wage increases for three years, averaging more than 10%, which affected a small but non-negligible part of workers (6% according to Cowan *et al.*, 2004). This was based on economic expectations that *ex post* turned out to be much too optimistic, given the effects

Figure 1.8. **Unemployment developments**



1. 0 corresponds to the quarter when output peaked before the crisis, Chile: Q2 1998, Mexico: Q4 1994, Korea: Q3 1997 and Turkey: Q4 2000.

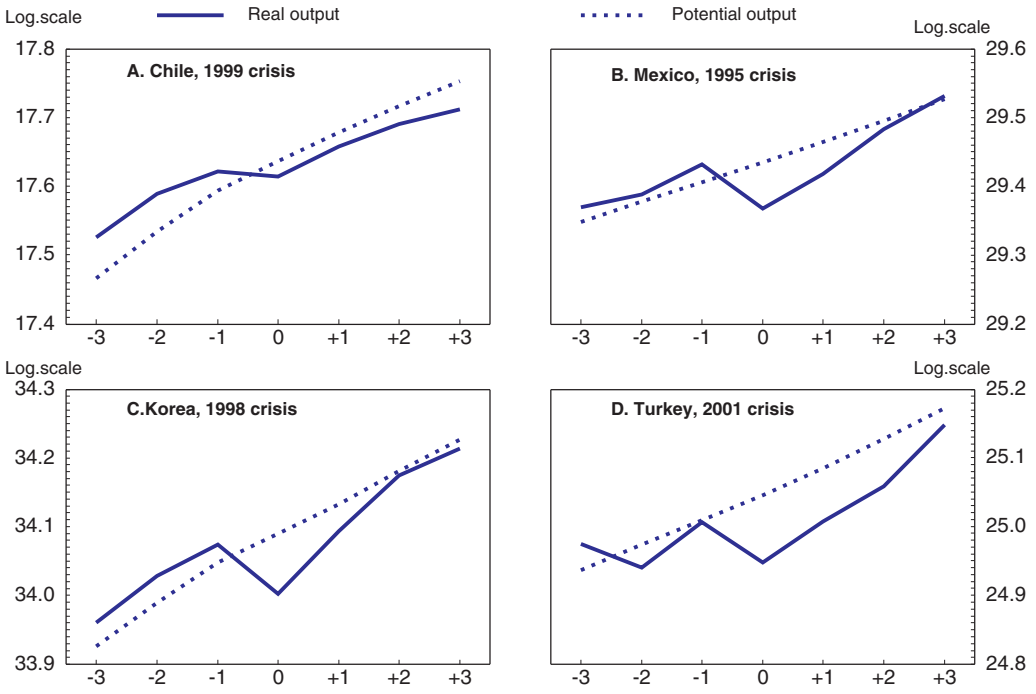
Source: OECD, *Analytical Database*.

StatLink http://dx.doi.org/10.1787/776040220524

of the Asian crisis. The minimum wage increase of 3.6% decided for 2009 is much more in line with current economic developments. While the minimum wage is comparatively high (Figure 1.10), it is important to note that, as in other OECD countries (Card and Krueger, 1995; Bassanini and Duval, 2006), the empirical evidence points to weak effects of minimum wages on aggregate employment in Chile (Martinez *et al.*, 2001).

Real wages react little to developments in the real economy, which was a further source of unemployment persistence after the Asian crisis. The evolution of aggregate wages is well described by inflation-adjusted two-year-contracts, suggesting that the practice of subscribing longer-term indexed contracts goes beyond the relatively low fraction of workers that are involved in collective wage bargaining (Cowan *et al.*, 2004), recently about 5% of employees (OECD, 2009a). This is puzzling given that there is no formal extension of negotiated contracts to other workers. Moreover, the combined share of workers with short-term or without contracts is above 40%; in this segment wages should in principle be flexible, unless there are horizontal equity considerations within

Figure 1.9. **Cyclical developments in past crises**[1]



1. 0 corresponds to the first year of the recession.

Source: OECD, *Analytical Database*.

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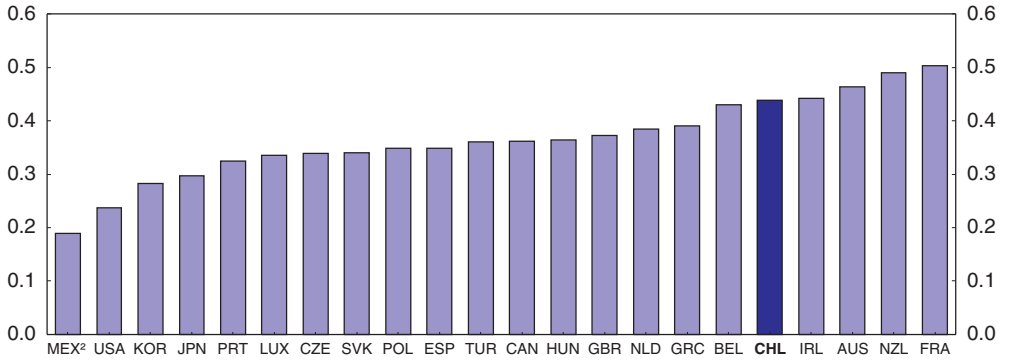
Figure 1.10. **Minimum wage across countries**[1]

2006



1. Minimum relative to average wage of full-time workers.
2. 2005.

Source: OECD and INE.

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firms whereby employers do not want to pay some workers less than others. Most bargained wage contracts last two years and schedule wage adjustments in line with inflation, usually twice a year (Table 1.3). Correlation analysis shows that initial wage increases are highly and significantly correlated with current growth but that they are

Table 1.3. **Wage adjustments resulting from collective agreements**
Percentage of wage increase by type of instrument and type of worker representation

	Average initial increase (%)		Scheduled readjustments as a % of CPI		Readjustment periods (months)	
	Trade union	Other worker grouping	Trade union	Other worker grouping	Trade union	Other worker grouping
2000	0.83	0.87	98.90	97.40	6.40	6.50
2001	0.80	0.32	99.60	99.50	5.50	6.70
2002	0.71	0.28	100.00	100.10	7.00	6.50
2003	0.96	0.79	100.10	99.90	7.20	7.20
2004	0.74	0.90	100.00	101.40	6.80	7.10
2005	0.63	0.87	100.10	99.80	6.80	6.50
2006	0.79	0.56	99.80	100.10	6.80	6.50

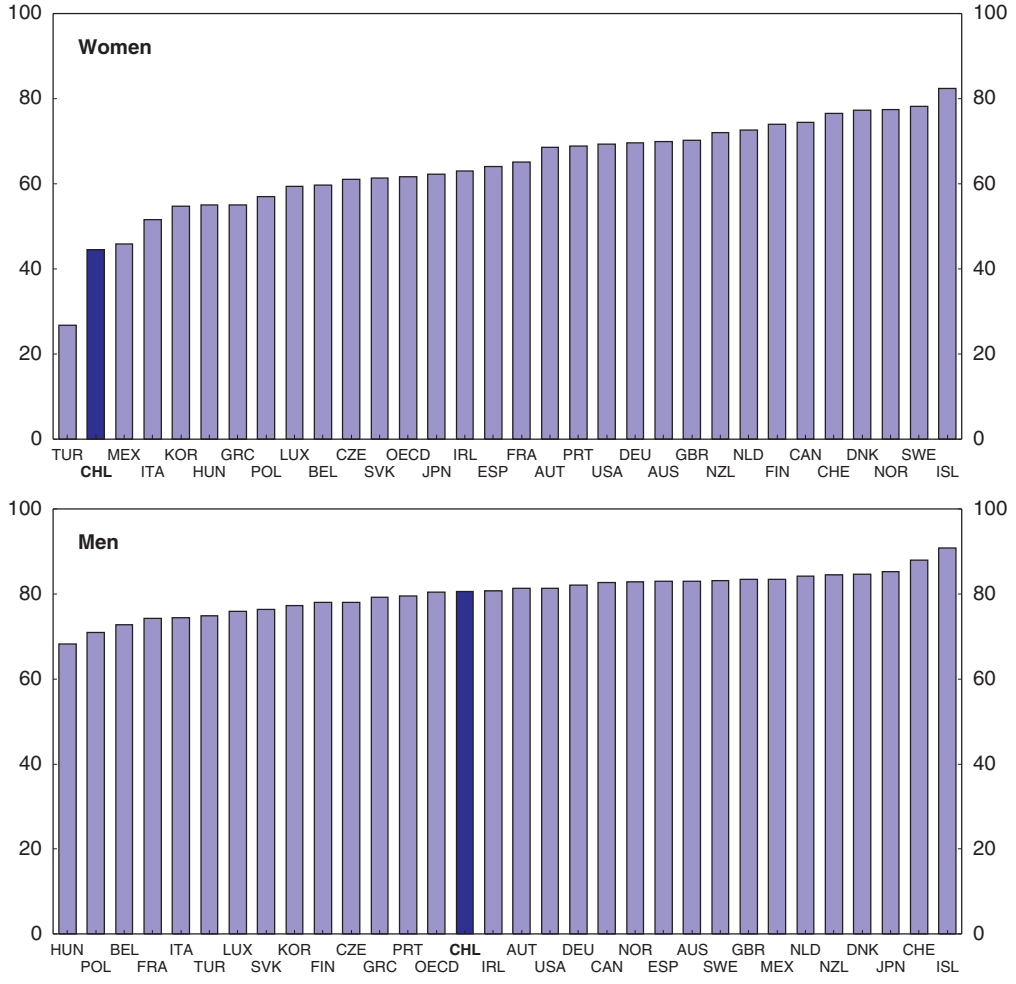
1. Data for 2006 are preliminary.
Source: OECD (2009), *Review of Labour Market and Social Policies: Chile* and Dirección del Trabajo (DT) – Chile.

uncorrelated with growth forecasts of the Ministry of Finance or the central bank. This implies that wage growth can be excessively high during episodes of falling growth.

In the medium term, strengthening employers' and employees' willingness to make more flexible working time arrangements could help to reduce the negative impact on employment in times of falling activity. The government had plans to make it easier to negotiate working hours and agree on more flexible arrangements, although for now the proposed law has not been sent to parliament to avoid introducing labour reforms in the midst of the crisis. Currently unions lack the trust to negotiate over their privileges' acquired by law, including working time. From a political-economy perspective, achieving more flexible working time arrangements may therefore require strengthening unions' bargaining power. Wage negotiations currently take place at the enterprise level, worker representatives receive some outside assistance in little more than half of the cases and often there is more than one union or bargaining group in an enterprise, each of which negotiates for its own workers (OECD, 2009a). In a number of cases, enterprises obtain a different tax identification number for each plant or branch, in which case each is considered a different enterprise for purposes of labour negotiations. The resulting fragmentation weakens unions' bargaining power. Putting an end to this practice would help to rebuild unions' confidence in the collective bargaining process. Other possible measures to strengthen unions' bargaining power include increasing the union fee that non-union members have to pay if they want to participate in the benefits negotiated by a union. In the medium term, there would be merit in picking up these proposals.

Efforts to increase labour market participation of women and youths, which are low by OECD standards, should be continued to reduce the risk that the crisis has long-term effects on labour supply. Labour market participation of men is similar to the OECD average (around 80%). Although labour market participation of women increased from around 31% in 1990 to 44.5% in 2007, it remains lower than in most OECD countries (Figure 1.11). According to the CASEN household survey 2006, the labour market participation rate of women in the top income quintile (around 60%) is similar to the average rate in other OECD countries but appreciably lower for women in the bottom quintile (around 28%). Survey evidence quoted in the *OECD Review of Labour Market and Social Policies* (OECD, 2009a) suggests that the main reason for female inactivity is the care of children or elderly relatives and household activities. According to Micco and Saez (2009), rigid part-time work regulations and overly generous maternity protection may also contribute to low female

Figure 1.11. **Labour force participation rates**
15-64 years, 2008



Source: OECD, *Labour Force Database.*

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labour market participation in Chile. The government is working on increasing the number of public childcare places, which mainly target low-income groups, substantially over the period 2006-2010. Nursery places are being increased more than fourfold which would allow for coverage of 15% of children under one year old by 2010. Kindergarten places for 2-3 year olds are being increased by more than 50% to allow for coverage of 25% of the children in that age bracket by 2010. Easing rules on part-time work, which currently make it difficult to reduce working time by any number of hours instead of necessarily by one third, as under the current rule, would also help increasing female labour market participation (OECD, 2007).

The employment subsidy for young low-skilled workers introduced as part of the fiscal stimulus plan may foster the employment of this group of workers. Low labour market participation rates of youths in international perspective (around 18% of 15- to 19-year-old males and 9% of young females participate in the labour market against OECD averages of 34% and 28%, respectively) may not be a problem to the extent that young men and women

may choose to delay entry into the labour market in order to study. However, high youth unemployment in Chile (in 2007 around 21% of 15 to 19-year old males were unemployed and around 31% of females) suggests that youngsters also face high barriers to entry into the labour market. As suggested by Micco and Saez (2009), low education levels and work experience of vulnerable youths together with a relatively high minimum wage may have contributed to high youth unemployment rates by keeping productivity of a significant share of youths below the minimum wage. The employment subsidy for young low-skilled workers may therefore help this group enter the labour market, but risks of displacing other groups of workers should be closely monitored. Other options to foster youth unemployment and ease the transition from school to work include expanding existing vocational training programmes (see Chapter 3) and the recently launched *Jóvenes Bicentenario* programme, which will provide vocational education and workplace training to 30 000 unemployed youths between 2008 and 2010.

Box 1.4. **Recommendations to overcome the crisis and improve financial market regulation**

- Withdraw unconventional monetary policy measures, but phase in interest rate increases only gradually to avoid endangering the recovery.
- Continue to provide fiscal support to demand in the near term, so as to secure the recovery; return gradually to the structural budget balance target once growth has regained pace.
- Once the danger of a credit crunch abates, reassess measures to keep credit flowing in the light of prudential regulation standards.
- Continue pursuing efforts to establish a consolidated credit register for all credit card issuers, including non-banks. Bring all credit card issuers under the oversight of the Superintendency of Banks.
- Take legislative action to establish group-wide financial supervision, among others by designating a "lead supervisor" based on the group's main activity.
- Improve possibilities to negotiate more flexible labour arrangements, among others on working time, while putting an end to the practice of employers splitting their enterprise for the purpose of wage negotiations.
- Continue efforts to increase labour market participation of women and youths by reviewing part-time work regulations and strengthening vocational training.

Notes

1. DAF/CMF/ACS(2009)21/FINAL.
2. In 2006 the Superintendency of Banks, together with the central bank, issued a norm regulating the issuance and operation of credit cards, including by non-bank issuers.

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ANNEX 1.A1

Progress in structural reform

2007 Survey recommendations	Actions taken
Measures to strengthen the management of the copper-price cycles	
A. Strengthening fiscal responsibility legislation further	
Consider increasing the annual limit on transfers to recapitalise the BCCh from the current level of 0.5% of GDP per year to allow for a speedier completion of the recapitalisation of the central bank.	No action taken
B. Making the most of pension reform	
Set the value of the solidarity pension sufficiently low in relation to the minimum wage to strengthen incentives for saving through a contributory scheme.	As planned in the law, the amount of disability and old age Solidarity pensions (PBS) is set at CLP 75 000 in 2009 (USD 141 at the current exchange rate) which corresponds to less than one half of the minimum wage (currently CLP 165 000, or USD 310.2).
Gauge the willingness of own-account workers to pay for social protection through regular surveys, while strengthening enforcement capabilities when contribution becomes mandatory.	A panel household survey specifically focused on social security issues (Encuesta de Protección Social, EPS) was applied in 2009 (previously applied in 2006, 2004 and 2002). It includes detailed questions concerning employment status, history of retirement saving, and individual motives to contribute to the public social security system.
Make health insurance mandatory for own-account workers at the same time and following the same timeframe as in the case of pension contributions, rather than delaying implementation until 10 years after approval of reform.	No action taken
Ensure that options for correcting gender imbalances do not give women a higher retirement income than those accruing to men with the same contribution history, accounting for life-expectancy differentials.	No action taken
Eliminate in a phased manner the gap that currently exists between the retirement age for males (65 years) and females (60 years) for contributory pensions.	No action taken
Maintain the independence of the AFP regulator in the new proposed institutional setup.	The new *Superintendencia de Pensiones* kept the independent status.
C. Making the tax system more efficient	
Reduce the stamp duties gradually.	Since 2008, SMEs can deduct the duty from taxes. A temporary elimination of the stamp duty was applied in 2009 as part of a stimulus package.
Assess the net benefits of reducing the discrepancy between the top marginal rate for the personal income tax (currently at 40%) and the uniform corporate tax rate (currently at 17%).	No action taken
D. Fostering further financial sector development	
Gradually replace mandated quantitative restrictions by prudential regulations for pension fund portfolio composition to be issued by the industry regulator.	No action taken

2007 Survey recommendations	Actions taken
Boost co-ordination between the BCCh and the Treasury on debt issuance management.	Debt issuance by the central bank and the Treasury was co-ordinated in 2009
Measures to improve government spending in selected social programmes	
E. Closing the student performance gap	
Improve the quality of teaching through training programmes for teaching and managerial personnel and by setting up an accreditation system for training institutions	Mandatory accreditation for teacher training programmes introduced in 2009
Appropriately assess the demands on the central government arising from the recovery plans to be introduced for underperforming schools.	The Ministry developed a website to support the formulation for schools' recovery plans. A bill is discussed in the Congress to create the *Servicio Nacional de Educación*, with the aim to support schools in their implementation of the reforms.
Consider the introduction of a matching mechanism in the differentiated voucher programme to prevent higher voucher receipts from substituting for municipality financed spending.	No action taken.
Consider the introduction of rewards for "graduating" schools, possibly on the basis of the currently available SNED-related per-school performance index.	The recently approved General Education Law establishes the introduction of performance standards for schools in the system. In addition, a bill currently in discussion in Congress creates an Agency of Quality of Education to assess these and other standards. This bill also gives the possibility for schools in the top performance category to be registered as Entities for Technical and Pedagogical Support, and thus help other schools overcome their difficulties.
F. Boosting the efficiency of health care programmes	
Extend the Solidarity Compensation Fund to FONASA as a means of further improving risk pooling.	No action taken.
Consider a relaxation of mobility restrictions for FONASA beneficiaries under the Institutional Modality of care (while carefully evaluating the impact that this measure might have on insurance costs), and make the level of co-payments for homogeneous services equal for FONASA and ISAPRE policy holders.	No action taken.
Broaden the range of treatments that can be financed through diagnosis-related and prospective payments (PAD-PPP).	Since 2007 treatments for colon cancer, child and adult osteosarcoma, morbid obesity and traumatological surgery can be financed though PAD.
Conduct service satisfaction surveys more frequently and disseminate the results broadly, including through health care insurers.	A Committee on Citizenship Participation in health issues is currently being established. A satisfaction survey will be conducted yearly by FONASA.
G. Facilitating access to better housing and neighbourhood conditions for vulnerable social groups	
Use public land for new subsidised housing developments, available zoning and environmental regulations permitting.	No action taken
Consider the option of buying land in advance for new subsidised housing developments.	No action taken
Boost co-ordination among the different policymakers in charge of urban planning, transport, public works and environment at the central- and local-government levels.	No action taken, with the exception of the metropolitan co-ordination for Santiago's transport system ("co-ordinación General del Transporte de Santiago", Transantiago), which has only a consultative role.
Measures to reduce informality in the labour market and the business sector	
H. Making the tax code and tax administration more friendly to formality	
Assess compliance costs for micro- and small enterprises and continue to work to make the tax system more SME-friendly	No action taken
Expand the ICT training programme for SMEs (MIPYME 10 000-2006).	No action taken
Further simplifying procedures to reduce the time it takes to pay taxes, especially by SMEs.	No action taken

2007 Survey recommendations	Actions taken
I. Making the regulatory framework less burdensome	
Strengthen co-ordination among the municipalities, health, safety and other agencies to expedite business registration.	Sanitary procedures for requesting permits, licenses and inspections are being standardized across all 15 regions. 12 permits already can be requested through a governmental website. Permits and procedures to start up business are being redesigned at a municipal level, at a pilot project covering 9 areas representing the area where more than 13% of businesses are located in Chile .
Extend credit support under FOSIS to unregistered businesses, conditional on the recipient enterprise taking the necessary steps to formalise.	FOSIS provides support to unregistered businesses through the Integrated Income Generation System (SIGI in Spanish), which allows micro-entrepreneurs to obtain credits and subsidies. After this the only condition is to formalise in order to achieve better conditions at the business development network.
J. Improving human capital accumulation	
Extend the grants available for small enterprises for labour training to those that currently operate informally, conditional on the recipient enterprise taking the necessary steps to formalise.	Fiscal incentives were introduced for formal labour force participation among youths through a wage subsidy conditional on their paying social security contributions.
Expand the skill-certification system to cover the most common occupations in industry and construction.	A national Labour Skill Certification System was established in 2008 as part of the *Chilecalifica* programme, which aims to develop a lifelong learning and training system. It targets especially low-skilled workers. There are standards established in several sectors, including industry, tourism, construction and technical and mechanical installations.
Measures to encourage labour force participation for women and youths	
K. Strengthening the framework conditions for labour utilisation	
Clarify regulations so that working time can be reduced by any number of hours, and not necessarily by as much as one-third, a limit that currently triggers some special provisions.	In the regulation as well as application by inspection authorities there is clarity that the working time can be less than 45 hours per week.
L. Making social protection conducive to participation	
Monitor trends in labour supply during the period in which social security contributions by own-account workers will be voluntary (during 7-10 years after approval of the pension reform proposal) and identify the groups whose labour supply may be discouraged once social security contributions and health insurance become compulsory (10 years after approval of the pension reform proposal).	A panel household survey specifically focused on social security issues (Encuesta de Protección Social, EPS) was applied in 2009 (previously applied in 2006, 2004 and 2002). It includes detailed questions concerning employment status, history of retirement saving, and individual motives to contribute to the public social security system.
M. Facilitating access to child care	
Public finances permitting, increase the supply of publicly-funded child care services, especially for low-income households.	Public day-care centres from JUNJI and INTEGRA to increase by 70 000 places between 2006 and 2010. Nursery places to increase by 45 000 places in the same period.

Chapter 2

Fiscal policies for enhanced resilience and equity

Chile's fiscal rule has provided a powerful protection against global headwinds, making a sizable counter-cyclical stimulus possible without disrupting financial markets and helping to jumpstart activity. This chapter suggests ways to further bolster the economy's resilience against shocks by sharpening the fiscal rule in copper price booms, while making room to relax it more in severe downturns. Further strengthening the insurance element of the unemployment benefit system would enhance the automatic stabilisers, while allowing for better matches between employment seekers and job vacancies as well as more effective protection for the unemployed. Lowering severance pay in turn would reduce employers' incentives to favour short term employment to avoid paying it. This could also help attenuate the strong duality of the labour market, with a considerable share of short-term and informal employment. As it embarks on the recovery and on a path of rising living standards, Chile will need to meet a growing demand for public services and work toward achieving a more equitable society. Compared to OECD countries Chile employs relatively small, but well-targeted social spending programmes to reduce poverty and inequality and it has recently expanded many of these along with higher education spending targeted at poor children. Limiting some of the more regressive and less efficient tax expenditures could help finance these spending increases or target the commensurate subsidies more at lower-income households.

Further increasing Chile's resilience against shocks

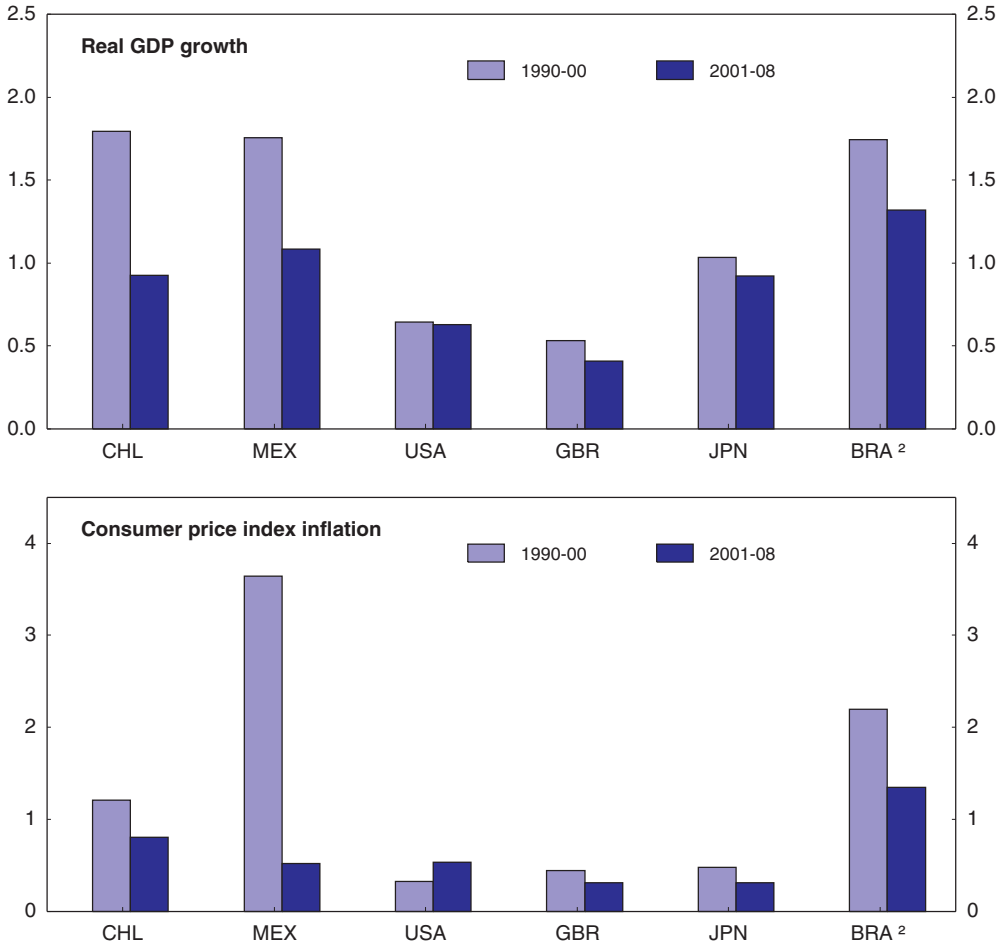
Chile's macroeconomic framework and in particular its fiscal rule (Box 2.1) have provided a shield against external shocks. Considering the openness of the economy and its dependence on copper exports, it has weathered the breakdown of world trade rather well. The fiscal rule has facilitated the conduct of counter-cyclical fiscal policies and has protected the economy against swings in commodity prices. The fiscal rule enjoys a broad political consensus and has proved to be a useful device for budgetary planning. The accumulation of funds during the copper bonanza has allowed Chile to easily finance a decisive fiscal stimulus in the crisis.

For commodity exporters, like Chile, it is important to avoid that commodity price booms lead to an overheating of the economy. This can happen as capital flows into the country to exploit profitable investment in the natural resource sector and as higher domestic spending based on increased export revenues leads to inflation in the non-tradables sector. Chile's macroeconomic framework, the fiscal rule along with inflation targeting and flexible exchange rates, has been largely successful in this respect. In the most recent copper price boom private as well as government consumption, investment and credit developments remained much more stable than in previous episodes (OECD, 2007). While the 2008-09 recession led to large swings in inflation and output, the period preceding the crisis was characterised by a decrease in volatility (Figure 2.1). This moderation in volatility was observed around the world, but it is plausible that the introduction of the macroeconomic framework also contributed to reduced cyclical swings.

Nevertheless, commodities remain important for the Chilean economy. The mining sector accounted for 18% of GDP on average over 2003-2008, although the employment contribution of the sector is close to only 1% owing to the high capital intensity of mining production. The importance of the mining sector for exports is even more pronounced and given the openness of the economy, this plays an important role. The contribution of mining, in particular copper, to exports was high even before the boom in world trade and commodity prices started, accounting for 46% and 39% of total export values respectively on average over 1996-2003. It then increased substantially, as the mining sector accounted for the largest part of Chile's increase in export revenues. Especially in the later years of the boom this was largely due to a price effect, as export volumes peaked before that (Figure 2.2).

The effect of copper on the Chilean economy is attenuated thanks to the macroeconomic framework and profit remittances of foreign companies, but it can still be felt. Changes in government revenues related to higher copper prices were smoothed thanks to the fiscal rule. Moreover, most private mining companies are foreign. As these companies repatriated some of their increase in profits, not all of it impacted on the Chilean economy. Nevertheless, the upswing in world trade and commodity prices provided a strong impulse for the Chilean economy after several years of sluggish growth following the Asian crisis. It spilled over to the domestic economy mainly through an

Figure 2.1. **Standard deviations of GDP growth and inflation**[1]



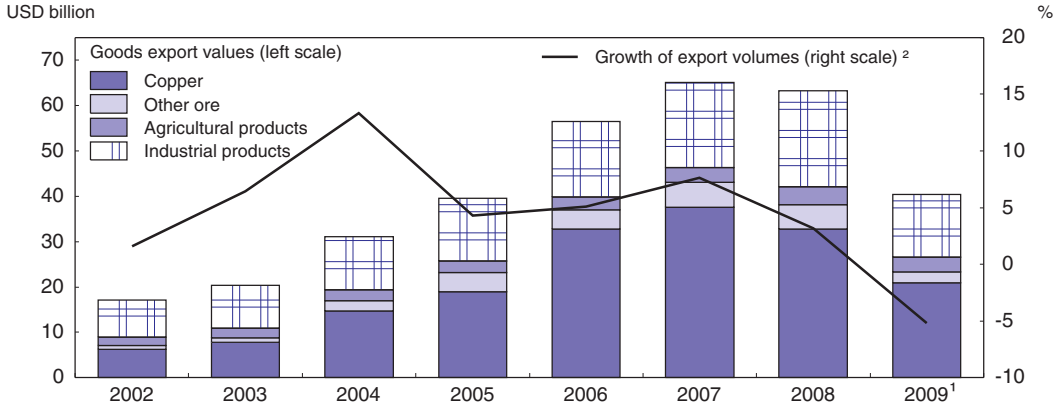
1. Average standard deviations were calculated as the average of four-quarter trailing standard deviation.
2. 1996-2000.

Source: Banco Central de Chile; OECD, *National Accounts* and *Main Economic Indicators*.

StatLink http://dx.doi.org/10.1787/776223010721

investment boom, including a strong surge of investment in the mining sector with an average growth rate of 12% between 2003 and 2007, but in particular in construction (more than 55%). As a result, costs, in particular wages, of construction, as measured by the implicit deflator of the sector, increased faster than elsewhere in the economy (Figure 2.3). Prices of other non-tradables increased fast, as well, and thus the real exchange rate appreciated substantially (Figure 2.4). The real appreciation was also related to capital inflows, a large part of which was directed at investments in the mining sector. In the final stages of the boom, Chile showed signs of overheating, as core inflation increased much faster than it did in other commodity exporting economies that are also very open to international trade (Figure 2.5). When world trade and commodity prices eventually collapsed, dragging down Chile's export revenues, the investment boom came to a halt and inflation started to decrease fast. These developments seem to suggest that Chile is not entirely immune to large terms of trade shocks, likely because of wealth effects and the impact on overall household and business confidence.

Figure 2.2. **Export development**



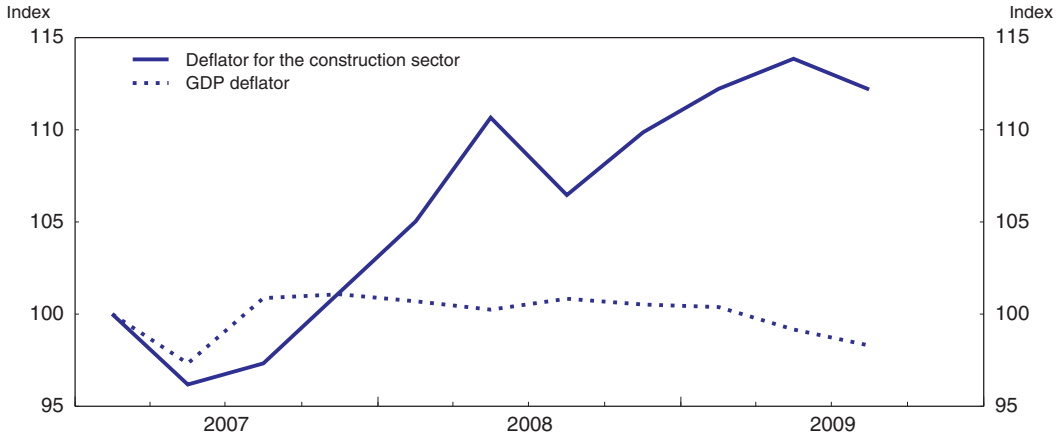
1. OECD estimates.
2. Goods and services, volume.

Source: Banco Central de Chile and OECD, *OECD Economic Outlook 86*.

StatLink http://dx.doi.org/10.1787/776232572067

Figure 2.3. **Development of construction prices**

2007 Q1 = 100



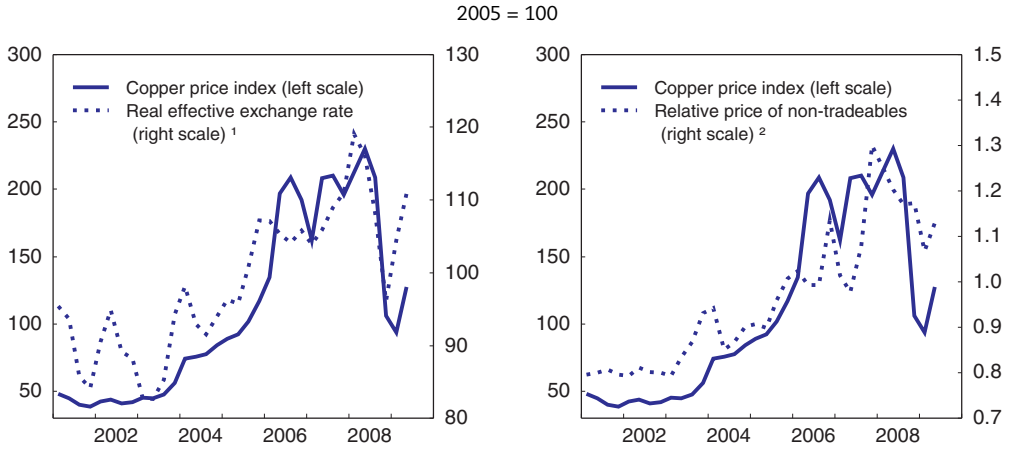
Source: Banco Central de Chile.

StatLink http://dx.doi.org/10.1787/776242014220

Shielding the economy entirely from the influence of commodity exports will not be possible for Chile. However, in the medium term Chile could think about refinements to its fiscal rule to provide an even stronger shield than today. Options are discussed in what follows. There are trade-offs to consider, however. Changes should not undermine the rule's simplicity, clarity and transparency, nor the broad political consensus on which it rests today. The government could evaluate different options and, if it finds one of them to be useful, envisage amending the current rule later on.

The fiscal rule aims at steering the public finances toward structural balance or a small surplus target each year. This target is defined as the headline budget balance excluding the effects on government receipts of fluctuations in output, the copper price and, since more recently, the price of molybdenum. Estimating structural revenues in this context requires an estimate of trend GDP growth and the long-run copper price and overestimating these during copper price booms can potentially lead to pro-cyclical

Figure 2.4. **Copper price and real exchange rate**

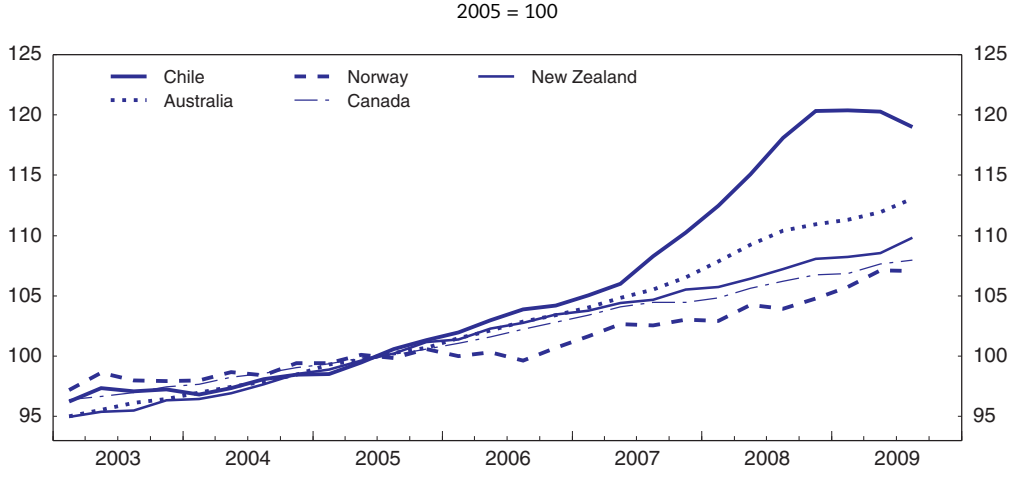


1. The real effective exchange rate is based on relative unit labour costs in manufacturing.
2. Deflator for the construction sector over deflator for the manufacturing sector.

Source: OECD, *Economic Outlook 86 Database*; Banco Central de Chile.

StatLink http://dx.doi.org/10.1787/776266224567

Figure 2.5. **Core inflation**



Source: Banco Central de Chile and OECD, *OECD Economic Outlook 86*.

StatLink http://dx.doi.org/10.1787/776308362345

spending increases. Chile has delegated the estimation of trend growth and the copper price to an external panel of experts with the aim of shielding these projections from political opportunism (Box 2.1). While this institutional framework favours the conduct of prudent fiscal policies, it does not fully rule out errors. The panel of experts revised its estimate of the long term copper price several times upwards during the latest copper price boom (Figure 2.6), allowing for spending increases. Projecting commodity prices is a daunting challenge and the panel of experts may be right in its assessment that copper prices are going to stay higher for longer. Nevertheless, an additional impulse from public spending is not warranted when the economy is already booming thanks to higher copper prices. During the boom, public spending growth had accelerated from 3.5% in real terms during 2000-03, a period of rather sluggish growth and low copper prices, to 7.5% during the copper price boom 2004-08.

Box 2.1. **The Chilean fiscal rule in practice**

Chile aims for structural balance or a small surplus target each year, netting out cyclical variations in output, the copper price and, since more recently, the price of molybdenum. Non-copper revenues are adjusted with standard elasticities that translate deviations of output from trend into deviations of actual tax revenues from their long-term level. Revenues from the state-owned copper company CODELCO and tax revenues from private mining companies are adjusted with the gap between the actual copper price and the long-run copper price, instead. The adjustment for cyclical variations in the price of molybdenum is equivalent. These adjustments require an estimate of trend growth and the long-run copper and molybdenum prices.

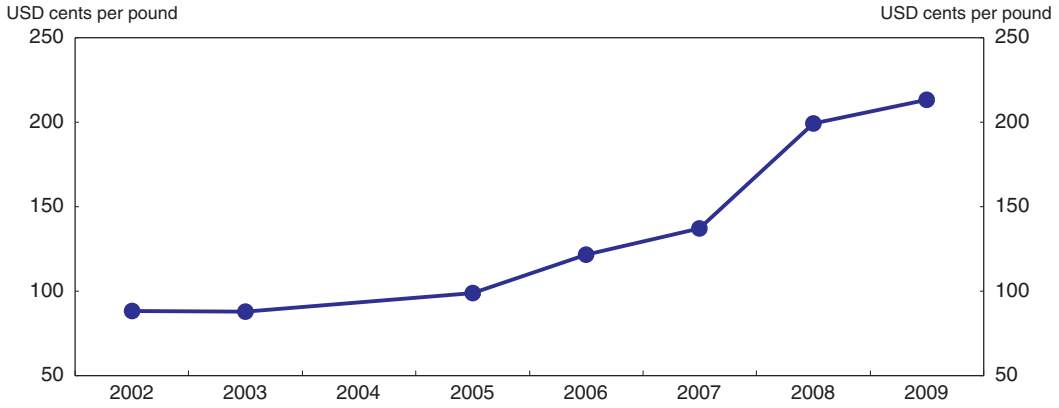
Surpluses that go beyond the structural balance target are accumulated in several sovereign wealth funds. These assets had grown to more than 13% of GDP during the copper price boom. In downturns, like the present one, Chile uses some of these assets to finance deficits.

Independent panels of experts estimate trend growth and the long-run price of copper for the government every year. The Ministry of Finance estimates the molybdenum price in consultation with experts. Tax elasticities with respect to the output gap are estimated at the Ministry of Finance, as well.

The structural balance target was initially set at 1% of GDP with three main goals in mind: 1) recapitalising the central bank given its negative net worth and structural operating deficit, 2) pre-financing contingent liabilities related principally to guaranteed minimum pensions and old-age benefits and 3) creating a buffer to limit external vulnerability arising from currency mismatches and potential limits on foreign borrowing in local currency. After evaluating the performance of these three variables the government reduced the structural surplus target to 0.5% in 2008. In 2009 it announced a temporary reduction of the structural balance to 0 to be able to conduct a fiscal stimulus during the crisis.

Figure 2.6. **Panel of Experts' estimate of the long-term copper price**[1]

2002-09



1. Prices are estimated on a 10-year projection from the initial year

Source: Gobierno de Chile, Ministerio de Hacienda, Dirección de Presupuestos.

StatLink http://dx.doi.org/10.1787/776312215436

One policy option to shield fiscal policies even more from copper price swings would be to move closer to the Norwegian model**.** Norway separates accumulated oil and gas-related surpluses in an off-shore fund, and aims over time to transfer 4% of the value of the fund (the estimated long-run real return on fund assets) to finance the non-oil budget deficit. The idea is to preserve the real value of natural resource assets, while allowing some spending of the proceeds today. The automatic stabilisers are allowed to work and the fiscal rule allows for deviations from the 4% path (including, as now, during cyclical downturns). The model is similar to Chile's as both accumulate a part of commodity-related revenues in a sovereign wealth fund. However, the Norwegian model avoids the need to estimate long-term commodity prices.

This model is not directly applicable to Chile, but the country could consider a version of it. Chile's copper is not expected to be depleted soon like Norway's oil and Chile has many opportunities to invest profitably in public goods, such as education and infrastructure, to generate higher income in the future. Thus, the case for preserving the copper wealth for future generations in the form of financial assets is not as strong in Chile as in Norway. Nevertheless, Chile could separate mining revenues from the budget and then define a constant annual structural deficit target for the non-mining budget to be financed with assets from the copper fund. This would ensure that mining revenues were spent counter-cyclically, like under the current rule, but without the risk of spending too much in a boom related to frequent updates of long-term copper price projections which could turn out to be pro-cyclical. It would make the rule simpler in the sense that estimates of the long-term copper price would not be needed to calculate the structural balance every year. Conceptually, the non-mining structural deficit target could be set such that it is sustainably funded with mining revenues without accumulating these over the copper cycle. However, this would most likely require periodic adjustments to the structural deficit target to avoid a sustained accumulation or depletion of resources in the copper fund when copper prices change on a sustained basis. Adjustments could be made if an accumulation or depletion of funds continued for more than five years and the size of the fund was judged to be too big or too small, which would be similar in spirit to the UK debt ceiling. This is similar to Chile's current rule, except that the structural non-copper deficit can currently increase whenever the panel of experts revises the long-term copper price, and thus structural copper revenues, upwards. With the suggested rule, this would happen only once a ceiling or a floor for assets in the sovereign wealth fund were to be hit.

If Chile does not want to change the fiscal rule to such an extent, it could simply convene the expert committee for the determination of long-term copper prices less frequently. Convening the expert panel less frequently could help limit the risk of pro-cyclical errors in copper price projections. Estimating the copper price less frequently does not automatically make the estimates more accurate. However, there is some evidence that it is easy to overestimate trend growth and thus underestimate the cyclical budget component during long-lasting asset price booms (Jäger and Schuhknecht, 2004), and the same may well apply to copper price booms. A longer interval for re-estimates could potentially limit this danger provided that the interval was long enough so that re-estimations occurred at different phases of the cycle. Lengthening the interval would increase chances that this would be the case. The ideal in this respect would probably be to re-estimate the copper price only once a full copper price cycle has been completed. To achieve this, the committee of experts could be asked to date the cycle and re-estimate the long-term price once it judges a full cycle to be completed.

In addition, Chile could consider complementing the structural fiscal rule with a multi-annual expenditure ceiling. This has worked well in a number of OECD countries, including Sweden and the Netherlands. The cap on spending should not be set so low as to rule out that the share of spending in GDP can increase over time, as this is to be expected as the country grows richer. However, the expenditure ceiling should be low enough to be a constraint in times of strong increases in output and copper price growth, so as to avoid an additional impulse from fiscal policy in booms. Complementing the current structural fiscal rule with an expenditure ceiling would potentially lead to structural surpluses beyond the current target and thus to a faster accumulation of funds during copper price booms. To maintain the symmetry of the fiscal rule, Chile could consider using these in severe downturns, like the current one, to relax the structural balance rule and allow for a discretionary fiscal stimulus. For this it would be important that the expenditure ceiling does not constrain spending increases in severe downturns when a discretionary fiscal stimulus would be warranted. Using a multi-annual expenditure ceiling should be sufficient to prevent this from happening, as sizeable discretionary fiscal stimuli with strong spending increases should only be necessary in exceptional crisis situations. Moreover, strong spending increases would rarely continue for several years. While Chile has increased spending by 15% in real terms in 2009, average spending growth would be less than half of this over the 2009-11 according to the budget 2010 and spending scenarios beyond that (Ministry of Finance, 2009). For extreme cases, when even a multi-annual ceiling could become a constraint for fiscal stimuli in times of crisis, Chile could introduce an escape clause into the fiscal rule. However, this would have to be weighed against making the rule more complicated.

Chile could consider building flexibility into its fiscal rules *a priori* for times of exceptional crises. As the current crisis has shown, the economy is not immune to very large terms of trade shocks. Moving into structural deficit in the current situation was the right decision, but returning to a structural balance or a small surplus too fast may endanger the recovery. Chile has built a lot of credibility in the past and there is probably no problem with relaxing the fiscal rule spontaneously in a severe crisis like this. But the government might be more comfortable to relax the structural deficit target and return only gradually to it, if this did not imply a breach of the fiscal rule. Chile could consider allowing for structural deficits *a priori* in well-defined exceptional crisis situations, for example in recession when output contracts for more than two consecutive quarters. These exceptions could come with principles on how to return to the rule gradually without jeopardising the recovery.

There are further refinements to the fiscal rule that Chile could consider. This includes adjusting the structural balance for cyclical changes in expenditures, as only revenues are adjusted now. Spending is likely to react more strongly to the cycle than until recently, as Chile has expanded its unemployment insurance system. Chile could also consider adjusting the structural balance for short-term changes in the exchange rate, which is important in particular for copper revenues. Finally, as birth rates have started to decline in Chile it could start to complement its fiscal reporting system with longer-term projections to get a feeling for sustainability issues.

Making protection against unemployment more efficient and effective

Chile could also strengthen its automatic stabilisers to cushion its economy against shocks. Currently, job creation programmes are launched only in periods of high

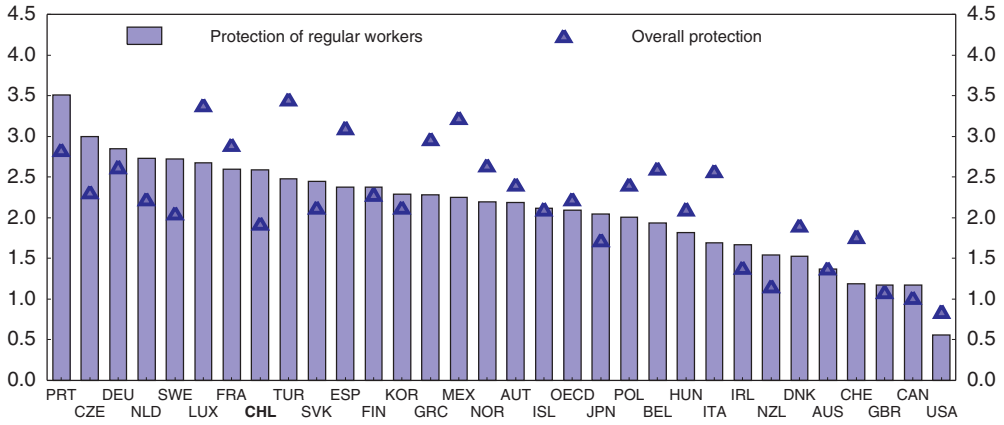
unemployment to provide some protection against employment losses. There is also a limited unemployment insurance system, which the government has strengthened recently, however. This should reinforce automatic stabilisers as well as providing more effective protection for the unemployed, thereby allowing for better matches between laid-off workers and job vacancies. The government should evaluate the recent reform of the unemployment benefit system to assess whether the extension of benefit duration has been sufficient.

Unemployment benefits are based on a system of forced savings accumulated in individual accounts with small complements from a fund called *Fondo Solidario* if the account balance is below a certain level. Until recently, only workers on indefinite contracts who were laid off for economic reasons could apply for payments from this fund. Before the reform, the average benefit payment was 30% of the average wage and the duration was limited to a maximum of 5 months, but for many workers it was shorter due to insufficient savings in their accounts (OECD, 2009a). Workers on fixed-term contracts, who are most likely to be unemployed, contribute less regularly and with low average contributions resulting in a low balance in their accounts. In fact, a large minority has accumulated less than one monthly minimum wage in their accounts (*ibid*). Unemployment benefits with excessively high replacement rates and long duration can lower work incentives. However, they should not be too low either, as they have an important role to play in ensuring households against excessive income losses in the event of a layoff with a stabilising effect on the macroeconomy in downturns. Benefits need to be available for long enough to put unemployed workers in a position to search until they find a job which matches their abilities, as mismatches are likely to lower productivity (Acemoglu and Shimer, 1999 and 2000). In Chile, the replacement rate of unemployment benefits is relatively low and so is their duration compared to OECD countries, not least owing to the fact that many workers are not able to save enough. In addition, access to the *Fondo Solidario* has been rather restrictive until recently. Up until 2008 it has been involved in less than 6% of the benefit cases (OECD, 2009a).

The government has strengthened unemployment benefits to some extent, which is welcome. After evaluating the effects of the changes, it could consider moving further in this direction. The reform has eased access to the Solidarity Fund and workers on fixed-term contracts are now sure to receive benefits for 5 months, with the benefit replacement rate tapering off from 50% at the first payment to 25% at the last. Payments can be prolonged for a further month in times of high unemployment. The government has also made the Solidarity Fund available for workers on short-term contracts and has eased the conditions for access, now allowing the minimum number of 12 monthly contributions to be discontinuous. Workers on fixed-term contracts can receive two monthly benefits from the Solidarity Fund replacing previous earnings at rates of 35% and 30%. In situations of high unemployment, the government can extend the benefits for two further months. This is an improvement that provides welcome income support in the current crisis and future downturns. The government should evaluate the recent reform and consider whether there would be merit in increasing benefit replacement rates which remain low compared to OECD countries. To achieve this, it would be efficient to strengthen the Solidarity Fund further, as insurance provides more effective income protection for contingent events, such as unemployment, than individual savings. Moral hazard can be contained by keeping duration short enough and continuing to let benefits taper off.

In return for better protection through unemployment benefits, the government could reconsider severance pay provisions. Overall, Chile's employment protection legislation (EPL) is not particularly rigid by OECD standards (Figure 2.7) but this is mainly due to relatively lax protection of temporary forms of employment and an absence of specific requirements for collective dismissals. In contrast, job security provisions for permanent workers are at the stricter end with an EPL-score close to that in France and higher than in Mexico, Turkey and Korea. This is mainly due to relatively high severance pay for this group of workers in Chile. There is some evidence that severance pay that increases with job tenure has negative effects on employment and participation rates of young workers in Chile, while favouring prime-aged and older workers, although with no significant effects on aggregate employment and labour participation (Pages and Montenegro, 2009). This study finds that the adverse effect on youth employment is essentially driven by the link between severance pay and job tenure. Caballero *et al.* (2006) show that in countries with stricter job security regulation the adjustment of employment to its optimum level after shocks is slower, also reducing output and productivity growth. Taken at face value, this study would suggest that high severance pay in Chile could explain to some extent why unemployment is more persistent than in countries with lower severance pay. Micco and Pages (2006) obtain the result that job security legislation reduces employment and output in very volatile sectors, mainly through a reduction in net entry.

Figure 2.7. **Employment protection, 2008**
Scale from 0 (least stringent) to 6 (most restrictive)



Source: OECD, *Indicators of Employment Protection.*

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However, severance pay is in fact paid only to a relatively small section of the labour force. Only workers with job tenures above 12 months are entitled to severance pay and this group is as small as 6% of all formal and informal employees who become unemployed. This is because 60% of annual labour turnover is accounted for by workers on contracts with limited duration (Dirección del Trabajo, 2007), although approximately 70% of all formal jobs are of indefinite duration. This is an indication that employers react strongly to severance pay by dismissing mainly those workers without entitlements. Moreover, a significant part of laid-off workers who do have a right to severance pay seem to receive none or less than they are entitled to. Many firms going bankrupt have not provisioned for severance pay, as there is no obligation to do so, and cannot pay (Cowan

and Micco, 2005). Other employers negotiate or refuse to pay the full amount or to pay at all, disregarding the law. Some estimates suggest that only 1.25% of all dismissed workers actually receive severance pay (Escobar, 2009).

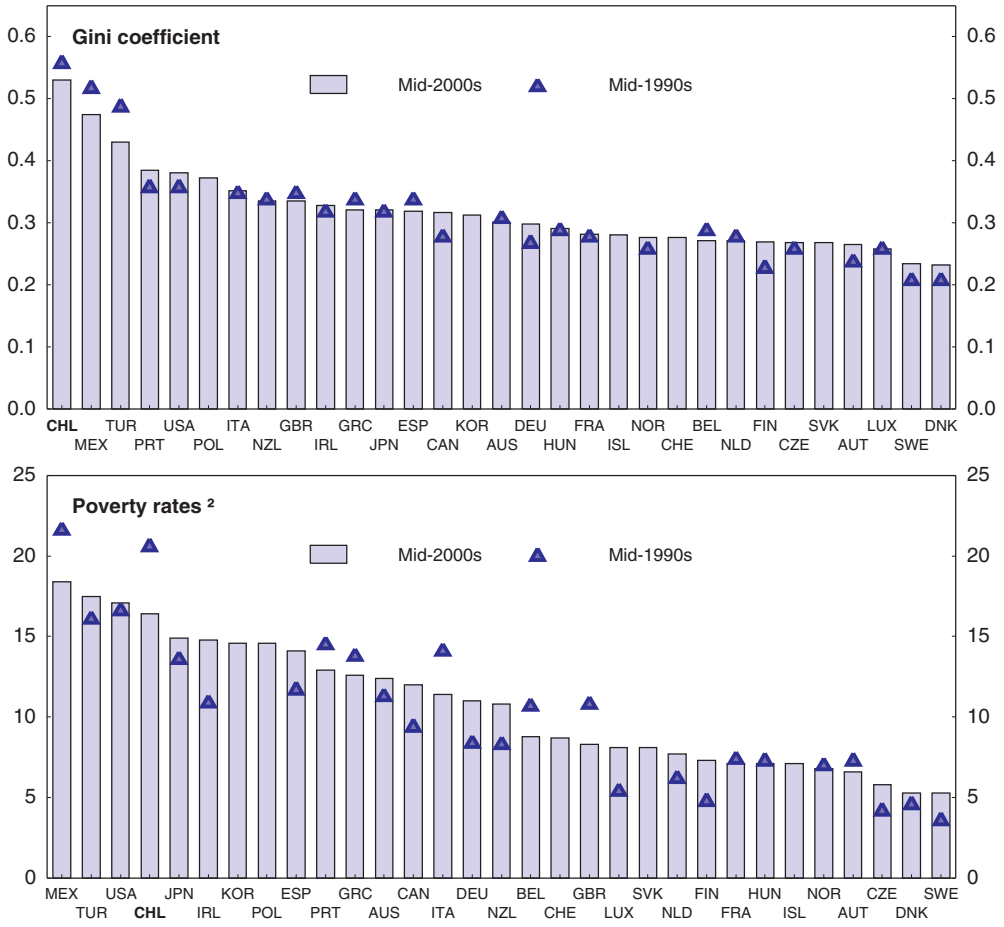
Evidence for OECD countries suggests that maintaining high dismissal costs for indefinite contracts along with relatively liberal regulations for fixed-term contracts, as in Chile, can lead to a dual labour market (Blanchard and Landier, 2002; Dolado *et al.*, 2002; OECD, 2004). This is mainly because employers have an incentive to recruit through temporary contracts and refrain from converting these into permanent ones to avoid severance pay. Both for employers and for the temporary workers themselves incentives to invest in training are reduced, especially if it is job-specific, given that the employment is likely to be terminated before the return on such investments is fully reaped. The result can be an increased concentration of labour turnover on people in temporary jobs, potentially trapping some of them permanently in employment with a high level of insecurity and under-investment in their education and training, which wastes part of their productivity potential. The high incidence of job turnover on temporary employment in Chile is testimony to this. Therefore, limiting severance pay, in particular its relation with job tenure, might improve the functioning of the Chilean labour market and in the end the quality of jobs. However, reducing severance pay is highly unpopular and for political-economy reasons Chile should best consider such a reform in a package, for example with higher unemployment benefits or possibly a strengthening of unions' bargaining power along the lines suggested in Chapter 1. Employers could be obliged to make a payment into the unemployment insurance savings accounts of workers with accrued rights, possibly with matching grants from the government, to compensate for at least some of the loss. Such a rebalancing of protection against unemployment should be acceptable to workers, as unemployment benefits would be available for a larger group, and they would be more reliable even for those workers who are now entitled to severance pay given that it is often not paid today.

Strengthening tax revenues for targeted social spending

Expenditure on education and social programmes is increasing

Despite good growth performance in recent times, inequality remains very high in Chile by international comparison (Figure 2.8). Poverty, in turn, has decreased substantially no matter what particular level for the poverty line is chosen and whether it is defined in absolute or in relative terms. Nevertheless, many people continue to hover around the poverty line (Larrañaga, 2009). In addition to its policies to enhance growth performance Chile uses well-targeted social policies to make progress to reduce poverty, which however remain limited in size in comparison with most OECD countries (Figure 2.9), although like in some OECD countries publicly mandated social spending is higher than it appears in Figure 2.9. Pension benefits accruing from the private compulsory system accounted for about 1.5% of GDP in 2007 and spending on healthcare by private insurers accounted for another 1% of GDP, although not all of this corresponds to compulsory health insurance. In addition, private spending on education below the tertiary level, which is mostly public in most OECD countries, accounted for close to 1% of GDP in 2006. Chile has recently substantially increased spending targeted at poorer households. This includes: school subsidies for poor children; in-work benefits for young low-wage workers; easier access to the Solidarity Fund of the unemployment benefit system, which is partly funded from the general budget; a substantial expansion of subsidised places in nurseries and

Figure 2.8. **Inequality and poverty across OECD countries**[1]



1. After taxes and transfers.
2. Poverty line defined at 50 per cent of the current median income.

Source: OECD, *Growing Unequal? Income Distribution and Poverty in OECD Countries; OECD Social, Employment and Migration Working Papers No. 85*, "Inequality, Poverty and Social Policy: Recent Trends in Chile".

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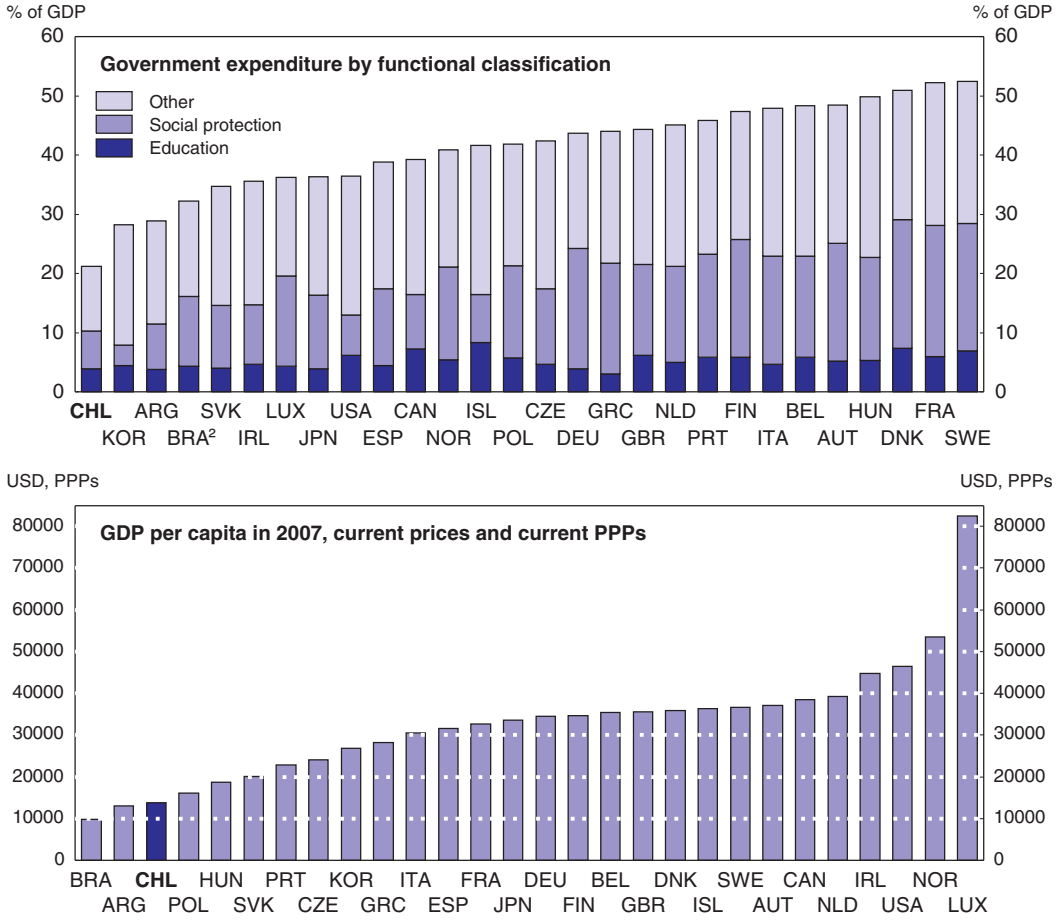
kindergartens and higher tax-paid minimum pensions along with top-up payments for those individuals who are not or insufficiently covered by the private pension system (around 70% of the labour force). These initiatives should help reduce poverty further, improve employment chances for young low-wage workers and provide better opportunities for poor children to develop their abilities to their full potential.

Tax revenues in Chile are relatively low in relation to GDP and overall the tax system is slightly regressive (Engel *et al.*, 1998; Cantallopts *et al.*, 2007). This is due to a relatively low yielding progressive income tax and a high share of indirect taxes in overall revenues (Figure 2.10), a combination which is not atypical for middle-income countries. It should be noted, though, that tax revenues, like public spending, are somewhat underestimated to the extent that the main pensions system and parts of the health care system are private and contributions are not recorded as public revenues. In 2007 they accounted for more than 6% of GDP. This section makes suggestions to limit or abolish some of the less efficient and more regressive tax expenditures. Proceeds can be used to target the commensurate

Figure 2.9. **Government expenditure and GDP per capita**
2007 [1]



1. Or latest year available, 2008 for Chile.
2. Excludes outlays on debt service.

Source: Ministerio de Hacienda; OECD, *National Accounts Database*; IMF, *GFS Database*; STN.

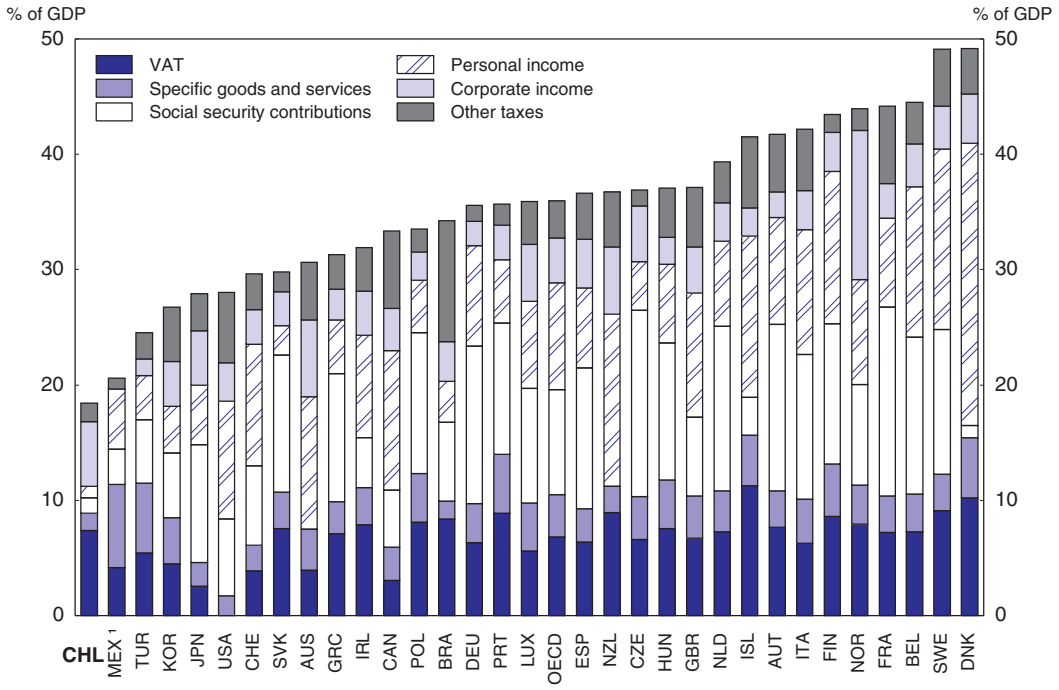
StatLink http://dx.doi.org/10.1787/776387775851

subsidies better at lower income households, to finance higher social spending or to lower tax rates, thus making the tax system more efficient.

Given that the tax system plays no role in Chile's redistributive efforts, spending on education and social programmes will remain important to reduce poverty and attenuate inequality Approved social reforms, including the pensions reform, are expected to be financed by future revenues and to a lesser extent by assets accumulated in sovereign wealth funds, including the *Fondo de Reserva de Pensiones*, which was set up to pre-finance a part of future pension benefits. Decreasing outlays for the public pension system, which is being phased out, are also going to contribute. On the other hand, the long-term development in revenues could be weaker than projected if recent copper price increases were not sustained or if the longer term impact of the crisis on potential output was stronger than currently expected. First, Chile should ensure that spending is effective and efficient. But government tax revenues may need to be expanded in the medium term in order to finance higher spending on social programmes and important public goods, such as education, while keeping public finances sustainable. Broadening the tax base by

Figure 2.10. **Tax revenue from different sources across selected countries**

2006



1. Personal income tax collections include revenue from taxes on corporate income/profits in Mexico.

Source: OECD, *Revenue Statistics Database*; SII for Chile and SRFB for Brazil.

StatLink http://dx.doi.org/10.1787/776401813781

abolishing some of the less efficient and regressive tax exemptions and working to increase the yield of the income tax system would contribute to this goal. As Chile is making important progress in reducing informality, including by improving the efficiency of its tax administration, it will become possible to strengthen tax revenues over time without risking an increase in the informal sector.

Chile has a commendable reporting system for tax expenditures. The nature and size of tax expenditures is reported every year in the budget report. Their costs in terms of foregone tax revenues are estimated to amount to around 5% of GDP (Ministry of Finance, 2009). The cost of tax expenditures is not comparable across countries given that estimates depend on the definition of what would be the benchmark. Judging from self-reported foregone tax revenues of the biggest tax expenditures in selected OECD countries, however, Chile's tax expenditures should be comparable in size to those of other countries (OECD, *forthcoming*). Limiting or abolishing tax expenditures that are thought to be unnecessary is often difficult, because in many cases they favour well-organised interest groups. Chile could therefore consider complementing its reporting system with an independent evaluation of the effectiveness and efficiency of tax expenditures in reaching their stated goals compared with alternative instruments. This could give the government reassurance when the tax expenditures are well designed. When they are not, the evaluation would provide the government with arguments to limit or abolish them. It would also be desirable to publish the distributive features of tax expenditures more regularly. An analysis in the budget report of 2006 shows that tax expenditures benefit mainly the wealthiest parts of the population, owing largely to the fact that few Chileans actually pay income taxes. As an

example, 85% of the tax deferrals in the personal income tax system, including the one for retained corporate earnings, benefit the wealthiest 5% of the population and 66.6% benefit the wealthiest 1% (Ministry of Finance, 2006).

Limiting less efficient tax exemptions could help finance higher spending…

The government might want to review remaining exemptions and preferential tax treatments. With a uniform rate at 19% and few exemptions, VAT in Chile has a rather broad base compared with OECD countries, which explains its relatively high contribution to overall revenues (see Figure 2.10). However, a few exemptions and tax credits remain, amounting to around 0.8% of GDP of foregone tax revenues. The government has recently capped the VAT credit for housing construction for more expensive buildings so as to reduce the foregone tax revenue and make the tax credit less regressive. The tax exemptions for health and education services could be reviewed, as well. They have a regressive impact as both are mainly consumed by higher-income households, while poorer households consume free public education and health services. Limiting these exemptions or abolishing them altogether could help finance recent increases in education and social spending or alternatively help to reduce the VAT rate to make the tax system more efficient and somewhat less regressive.

Chile could reconsider the tax treatment of private pension savings to further strengthen subsidies for medium- and low-income earners to save, while capping tax benefits for higher-income earners. The private pension system in Chile has contributed to the deepening of the financial market. At the same time it is characterised by low coverage, as around 55% of the working age population were not covered in 2005, and low density of contributions, as many more contribute for less than half of their working lives. Chile has made commendable progress by increasing tax-financed minimum and top-up pensions for this group and introducing subsidies for young low-wage workers and mothers. However, income tax allowances to promote pension contributions mainly benefit higher-income groups given that a majority of Chilean workers have earnings below the exemption threshold and do not pay income taxes. Mandatory contributions also benefit from tax subsidies, although the need to provide savings incentives for higher-income individuals is likely to be limited when coverage is compulsory. Some of the public revenues now foregone due to tax incentives for higher-income individuals might be better spent on subsidies for low-income individuals to save. The main challenge that Chile's private pension system needs to confront is low coverage and density of contributions of low-income workers who struggle to save sufficiently for old age. Subsidies should be well targeted at this group.

Contributions to the private pension system and the accrued return on accumulated funds are tax-free in Chile, while the benefits are treated as taxable income upon withdrawal. This regime is often referred to as exempt-exempt-tax (EET, see OECD 2006, Antolin *et al.,* 2004; OECD, 2004b). It is a common treatment of voluntary private pension savings in OECD countries. In Chile, it is applied both to mandatory contributions and to voluntary top-up contributions up to a ceiling, including employer-sponsored programmes. It is considered a favourable tax treatment compared with the so-called comprehensive income tax regime that treats all sources of income equally (Antolin *et al.*, 2004, de Serres and Yoo, 2004). In such a regime, saving contributions and accrued returns would be subject to income tax, while benefits would remain tax-free (tax-tax-exempt, TTE). Compared to this the treatment of pensions in Chile is a tax deferral. The main

rationale for the EET-regime is that it does not distort the decision between current and future consumption. In practice, however, tax regimes rarely achieve neutrality, not least because other savings instruments are rarely subject to an EET-regime. Estimates of the net cost of different tax treatments for pension savings in OECD countries suggest that the EET regime is a particularly expensive model to favour pension savings (Antolin *et al.,* 2004; de Serres and Yoo, 2004). Countries who tax contributions or accrued returns to some extent incur lower foregone revenues compared to the benchmark TTE. In Chile the treatment of pension savings is one of the costliest tax expenditures according to government calculations.

In principle, Chile could treat compulsory private pension savings like any other savings instrument, as compulsory savings need not be supported with tax incentives at least for those individuals who are able to save sufficiently without subsidies. However, the government may still wish to apply a favourable tax regime to pensions, especially for the part that goes beyond the compulsory level to encourage higher pension savings. Evidence suggests, however, that a favourable tax treatment of pension savings is more likely to distort the composition of savings, while doing little to increase overall savings, especially when tax incentives benefit mainly higher-income earners (OECD 2006, Antolin *et al.,* 2004: OECD, 2004b). In Chile the low coverage of self-employed workers of 3.3% in 2007 is testimony to this, as these workers are eligible for the favourable tax regime, but their contributions were voluntary until recently.

Making private pension savings compulsory for additional programmes and groups is probably more effective to increase the coverage of the pension regime and the density of contributions. For example, in the longer term Chile could consider whether it is feasible to make occupational pension programmes mandatory, as they are in a number of OECD countries (Antolin *et al*., 2004). The government has made pension savings mandatory for the self-employed who declare income taxes, which will be gradually phased in over 2012-18. This is a welcome initiative. Making pension contributions mandatory for the self-employed will require enhanced control efforts, because even those who pay income taxes now could start under-declaring their income. Extending the reach of mandatory pensions would allow the government to lower fiscal incentives to contribute to the system, freeing resources to support pensions of low-income households.

Subsidies for pension savings could be better targeted, by concentrating them more on workers with middle and low incomes. The government has already taken measures to improve access to subsidies for some contributors who pay little or no income tax, as workers who contribute voluntarily can now opt for a direct subsidy instead of tax breaks. It could consider strengthening subsidies for medium- and low-income earners further and capping the tax relief for pension contributions by providing a flat non-wastable tax credit or a subsidy instead of a tax allowance. This way the subsidy would be available for middle- and low-income earners with earnings below the tax exemption threshold, who are most likely to need support to be able to save sufficiently for old age. At the same time, the tax incentive would no longer increase with marginal tax rates and thus income. Limiting the subsidy for higher-income workers is justified, because they are likely to be able to save even without support. Higher pension savings subsidies for low- and middle-income earners who declare taxes can also be a powerful incentive to move into the formal sector.

To limit the cost of fiscal savings incentives further, the government could even consider applying a low flat tax rate to accrued earnings. This can reduce the net fiscal

costs of savings incentives substantially, even when applied at a relatively low rate (Antolin *et al.*, 2004). It would be important to calibrate such a tax carefully, however, so as not to endanger the adequacy of future pension income. Providing tax credits for pension contributions and taxing accrued returns at a low rate can still be calibrated so that the net present value of tax payments is lower than for other saving instruments. This could remain true even if the income tax were continued to be applied to benefits at the full rate, given that pension income is likely to be lower than previous earnings. However, if the government is concerned about double taxation it could apply some tax relief to benefits. What is important in the end is to reduce the fiscal cost of savings incentives, while targeting them at those who need them most.

The rental income derived from much of the country's real estate is tax exempt and there would be merit in reviewing this measure. Rents derived from properties that are smaller than 140 square meters and have been built in line with the provisions of Law Decree No. 2 of 1959 (*Decreto con Fuerza de Ley* No. 2, DFL 2) are tax exempt. This was originally designed to encourage the building of affordable housing. According to estimations of the internal revenue service, only 20% of residential housing do not benefit from this measure. The rationale and the effectiveness of this tax expenditure could be reviewed not least because the VAT tax credit for housing construction serves the same goal. In addition there are well-targeted demand-oriented housing subsidy programmes (OECD, 2007). The government should evaluate the effectiveness and efficiency of the instruments it uses to promote affordable housing, including their interaction. It might well be preferable to retain only the most effective instrument.

... and Chile could work towards increasing its income tax revenues

The contribution of the personal income tax to overall tax revenues in Chile is low in international comparison. This is due to a relatively high exemption threshold, low rates for most tax payers (Box 2.2) and the difficulty to tax high-income earners at the rates foreseen in the personal income tax schedule. Retained earnings are taxed at the corporate tax rate of 17%. Corporate tax earnings have recently increased substantially, because private mining companies have started to pay taxes, after benefitting from accelerated depreciation allowances on their original investments. The personal income tax rate, which is significantly higher than 17% for higher incomes, is applied only once earnings are distributed. This creates an incentive for high-income individuals to keep most of their income as retained earnings of corporations. The existence of more than 30 000 investment societies (*sociedades de inversión*) that are exclusively created to manage retained profits is testimony to this (Cantallopts *et al.*, 2007). The fiscal revenues losses associated with deferring personal income taxation for retained corporate earnings is estimated to be around 2% of GDP (Ministry of Finance, 2009).

The government could consider closing the tax loopholes associated with corporations that are created for the sole purpose of deferring taxes or avoiding them altogether, such as *sociedades de inversión*. It has recently suppressed the possibility for such vehicles to defer payment of corporate income taxes to the moment when profits are withdrawn, a treatment to which some small companies in Chile are eligible. It could consider moving further into this direction by banning *sociedades de inversión* altogether or by applying the personal income tax rate to savings retained in such vehicles. As a complementary measure, the government could also consider bringing the corporate income tax rate and the top personal income tax rates closer together to reduce incentives

Box 2.2. **The Chilean tax system**

Personal and corporate income taxes are fully integrated and together account for about one third of tax revenues. The corporate tax rate (impuesto de primera categoría, IPC) is flat at 17%. The earnings tax for dependent workers (impuesto de segunda categoría, ISC) and the general income tax (impuesto global complementario, IGC) are subject to the same progressive tax schedule. They are filed on an individual basis.

Table 2.1. **Number of taxpayers in Chile per income brackets (Consolidated Personal Taxes)**

Annual Tax Unit (UTA)	2009		
	Marginal rate (%)	Number of taxpayers	% of taxpayers
0 to 13.5	0	6 346 693	82.68
13.5 to 30	5	872 082	11.36
30 to 50	10	242 104	3.15
50 to 70	15	102 080	1.33
70 to 90	25	49 589	0.65
90 to 120	32	33 284	0.43
120 to 150	37	13 260	0.17
150 and above	40	16 898	0.22
Total		7 675 990	**100**

1. One UTA is equivalent to 442,356 pesos (810 USD in November 2009).
Source: Servicio de Impuestos Internos – Chile.

Retained profits are taxed at the corporate profit rate. Once they are distributed, the corporate tax is creditable against the IGC which then becomes due at the individual level. Individuals or legal entities that are not residents in Chile pay a 35% additional tax on dividends, withdrawals and/or remittances of profits (against which paid corporate taxes can be claimed as a tax credit).

There is a presumptive tax system for unincorporated businesses in selected sectors (agriculture, small mining and transport) subject to turnover thresholds. Special tax regimes are also in place for small enterprises based on simplified accounting and for small taxpayers (street vendors, miners and craftsmen, etc.) based on turnover.

The Value Added Tax (VAT) with a uniform rate of 19% is the main indirect tax accounting for more than 40% of total tax revenues. Education and health care services, public transport services, real estate rents and life insurance are tax exempt. There are no registration thresholds. Other indirect taxes include excise taxes on tobacco, alcohol and fuel.

Chile introduced a small royalty on operating profits (after normal depreciation) of mining companies in 2005. The tax rate increases with sales above 12 000 equivalent tonnes of copper (metallic and non-metallic minerals) and can reach up to 5% for sales above 50 000 equivalent tonnes of copper.

Municipal taxes account for 1.5% of GDP and comprise a property tax, municipal licenses and a vehicle registration tax.

for aggressive tax planning. Lowering top personal income rates could be justified politically if the tax base could be broadened at the same time by eliminating regressive tax exemptions. However, to strengthen tax revenues through such a measure this would also need to involve increasing the corporate income tax rate at least a bit.

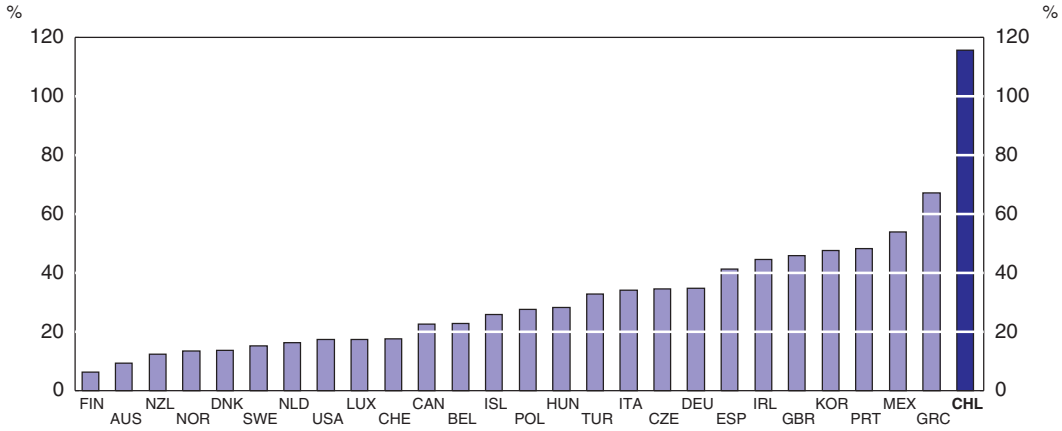
Increasing the corporate tax rate involves more difficult decisions, but as long as the increase is not too high, ensuing problems should be limited. The corporate tax rate in Chile is among the lowest in the OECD and depreciation allowances are very generous. Depreciation allowances are worth more the higher the capital income tax rate. The government could evaluate whether low corporate tax rates and high depreciation allowances are needed at the same time. In fact, there is evidence that at least for large firms that are not credit-constrained the corporate tax rate does not influence investment decision in Chile (Bustos *et al.,* 2003), mainly because of the high depreciation allowance and interest rate deductibility. On the other hand, there is some – although not entirely conclusive evidence – that the reduction of the corporate tax rate on retained profits in 1984 has helped spur the ensuing investment boom, possibly by helping credit-constrained firms to finance this investment (Hsieh and Parker, 2006) in a context of weakly developed financial markets. However, it should be noted that the tax rate was lowered from 40% to 10% at the time and financial markets have developed since then. A moderate increase in the corporate tax rate should do little harm to firms' ability to finance profitable investments, especially if the government continues its efforts to improve the access of small and medium enterprises to capital markets. It is also important to consider that depreciation allowances that go beyond economic depreciation are likely to distort the allocation of resources in favour of particularly capital-intensive sectors, such as mining in Chile, with potential damage to employment.

Increasing income tax revenues need not imply lower work incentives for many. Recent OECD work suggests that while income taxes are preferable over consumption taxes in terms of their effects on distribution, a revenue-neutral shift from income to consumption taxes may have slightly positive effects on growth (Johansson *et al.,* 2009). This is because consumption taxes often have a broader base than income taxes, because they apply to all forms of income, and because they are proportional, while income taxes are progressive which is found to be less beneficial for growth. However, this empirical result is obtained for OECD countries with comparatively high and progressive marginal income tax rates that cover large parts of the population. In Chile increasing income tax revenues by bringing the personal and the corporate income tax rate closer together might have some negative effect on the incentives of high income individuals to work and save as they might effectively pay a higher income tax than before. However, this effect could be kept relatively low as long as higher personal income tax rates were lowered sufficiently. Moreover, some of the higher income tax revenues along with proceeds from abolishing the remaining VAT exemptions could be used to lower the VAT rate, which would produce countervailing effects. This is because VAT lowers the purchasing power of real after-tax wages, weakening work incentives in much the same way as the income tax. Since marginal consumption tax rates are high in Chile compared to marginal income tax rates for most individuals, this could raise the efficiency of the tax system.

Chile could also consider applying a very low income tax rate to an income bracket that is below the exemption threshold so that more people with lower income pay income taxes. Today, the exemption threshold is very high in international comparison (Figure 2.11). Simulations suggest that if Chile were to apply a 3% tax rate to individuals who are currently not taxed it could raise its income tax revenues by almost 2% of GDP, although this is an

Figure 2.11. **Income tax exemption threshold for a single person**

As a percentage of GDP per capita, 2008



Source: OECD, *Taxing Wages 2007-2008* and OECD calculations; Servicio de Impuestos Internos – Chile.

StatLink http://dx.doi.org/10.1787/776406814823

accounting exercise that does not take into account people's reactions (OECD, 2009b). It is also important to note that while it may be possible to lower the tax exemption threshold, it would not be advisable to abolish it altogether as assumed in this simulation exercise. Lowering the tax exemption threshold, however, would not be politically feasible unless it came in a package with important improvements for low-income earners, such as stronger unemployment benefits or lower indirect taxes after a broadening of its base. If indirect taxes could be lowered sufficiently, however, this could well result in a lower tax wedge for these low-income earners, as the impact of a low income tax rate on their tax wedge could well be lower than the impact of a VAT rate of 19%.

To strengthen tax revenues property tax would also be a good candidate. Taxes on immovable property are relatively growth-friendly, because they do not affect decisions to supply labour, produce, invest and innovate to the same extent as other taxes. Also, these taxes are more difficult to evade because real estate and land are highly visible and immovable. Property taxes with regular updating of valuation can also contribute to the progressivity of the tax system (Johansson *et al.*, 2009). This should be the case in Chile where the exemption threshold for housing real estate corresponds approximately to the median value of homes owned by the lowest income quintile. The median value of residential property rises sharply for higher income deciles (Torche and Spilerman, 2004). While the revenues of the real estate tax go to municipalities, higher property tax revenues could still free resources for the central government, as municipalities are dependent on central government transfers. Alternatively, the central government could increase its surcharge on the municipal tax.

Box 2.3. **Recommendations to strengthen the fiscal framework**

- Consider possibilities to further strengthen the fiscal rule.
- Consider strengthening the insurance element of the unemployment benefit system, by easing access to the *Fondo Solidario* further and allowing to some extent for higher benefits. Severance pay could be lowered in return, for example by keeping it flat rather than letting rights increase with job tenure.

Box 2.3. **Recommendations to strengthen the fiscal framework** *(cont.)*

- Complement reports about the size of tax expenditures with evaluations of their effectiveness and efficiency.
- Consider abolishing or limiting remaining VAT exemptions.
- Consider strengthening subsidies for pension savings supporting low- and medium-income earners further, while capping tax benefits for high income earners.
- Close tax loopholes associated with corporations created for the sole purpose of deferring the payment of personal income taxes.
- Consider increasing the property tax rate, if needed.

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Chapter 3

Need for speed: Boosting productivity growth by strengthening competition, entrepreneurship and innovation

Productivity growth has declined since the late 1990s, slowing the catching-up process. Structural reforms to strengthen competition, entrepreneurship and innovation would go a long way toward enhancing it. Recent competition policy reforms that strengthen enforcement of cartel law must now be implemented effectively. The National Economic Prosecutor should receive sufficient resources and the ceiling on fines against cartels, which has recently been raised, may need to be reviewed again. Entrepreneurship should be strengthened by reducing regulatory "red tape" for start-ups and simplifying bankruptcy procedures. Recent reforms to the innovation policy framework are welcome but the focus on sectoral priority clusters will need to be accompanied by appropriate monitoring procedures and sunset clauses for public support.

Over the past two decades Chile has grown faster than most OECD countries. Between 1986 and 2007 GDP per capita grew on average 4.3% per year as compared to 2.2% per year in the OECD area. Income per capita (in PPP) relative to the United States has increased from 18% in 1986 to 31% in 2007 and Chile has overtaken all other Latin American countries except Mexico. While part of the exceptionally high growth in the second half of the 1980s was due to the cyclical recovery from the banking crisis in the early 1980s, it also followed the implementation of ambitious reforms to liberalise foreign trade, improve the functioning of labour, product and financial markets, and restructure the pension system. Sounder macroeconomic policies also played an important part (Ffrench-Davis, 2006).

Nevertheless, the income gap with many advanced OECD economies remains substantial and growth has slowed since the end of the 1990s. Chile's GDP per capita is around one third of the level in advanced OECD countries. Following the Asian crisis, growth of per capita GDP slowed to less than half the pace of growth during the "golden age" 1986-1997 and the severe recession of 2008-2009 may once again have negative long-term effects.

To the extent that the speed of convergence to the leading countries decreases as the income gap with the leading countries narrows, a slowdown in growth is to be expected. Although comparisons with other countries that have made the transition from middle-income to high-income status in the past have to be taken with a grain of salt because of changing world economic conditions, it appears that growth over the decade preceding the crossing of the income per capita threshold in 2007 (USD 13 000) has not been outstanding (Table 3.1). Moreover, in the past few countries have managed to sustain the pace of growth prevailing in the decade that preceded the crossing of this threshold.

Productivity explains the major part of the recent slowdown in growth. The contribution of capital formation to GDP growth has been similar over the past decade as over the 1986-1997 period but both labour input and total factor productivity (TFP) growth have slowed down. The slowdown in the labour input growth accounts for around one third of the slowdown in GDP growth over the past decade and the apparent stagnation of TFP accounts for the remaining two thirds. According to a growth decomposition, productivity grew at more than 2% per annum over the 1986-1997 period but was around its 1998 level in 2008.

In Chile the macroeconomic policy framework, in particular the structural fiscal rule with an independent inflation-targeting central bank and a flexible exchange-rate regime has gone a long way towards achieving macroeconomic stability. However, macroeconomic stability alone is not sufficient for achieving strong productivity growth. One important precondition for strong productivity growth is vigorous competition in product markets, which gives firms incentives to reduce inefficiencies in organisation and management and to innovate. The regulatory framework for entrepreneurship, including entry and exit regulations, can facilitate the reallocation of production from inefficient to more efficient

Table 3.1. **GDP per capita (constant PPPs, constant prices)**

	Threshold year	GDP per capita (PPP)	Growth rate in decade preceding threshold year	Growth rate in decade following threshold year
Chile	**2007**	**13 108**	**2.6**	**n.a.**
Australia	1961	13 291	3.0	3.3
Finland	1970	13 070	7.1	3.3
Greece	1971	12 784	9.4	2.8
Ireland	1983	13 020	2.5	3.7
Italy	1970	13 600	7.8	3.3
Japan	1970	13 541	12.5	3.3
Korea	1993	13 572	7.4	4.6
New Zealand	1965	13 371	5.0	3.0
Norway	1966	12 795	4.8	5.8
Portugal	1987	13 078	2.2	3.4
Singapore	1979	12 326	14.5	6.4
Spain	1972	13 156	8.2	1.5
Sweden	1967	13 519	5.4	3.6

Note: The reference year for PPPs and prices is 2005. Threshold year indicates the year for which per capita GDP was closest to the USD 13 000 threshold.
Source: OECD, World Bank (WDI), Penn World Table Version 6.2.

firms. An appropriate innovation policy framework can also help to lift productivity growth, as it influences firms' propensity to upgrade their products or production technologies.

A number of weaknesses in structural policy settings have contributed to Chile's disappointing productivity performance. Product market competition remains weak by OECD standards, as suggested by high price-cost margins. Furthermore, existing framework conditions do not encourage entrepreneurial risk-taking and the reallocation of production to new and higher-productivity activities. For instance, entry and exit regulations for businesses are overly restrictive and relatively high severance pay may limit labour market mobility. Until recently, the innovation policy framework favoured basic public research over business innovation. As a consequence, both rates of technological (product and process) and non-technological (marketing and organisation) innovation in firms remain low and production remains concentrated in low-productivity activities.

Education policy and human capital formation, which are further major bottlenecks for productivity growth in Chile, are mainly discussed in Chapter 4. The availability of a skilled workforce influences firms' capacities to adopt new technologies and organisational or marketing innovations. Improving the qualification level of the Chilean workforce, including through improving and expanding vocational education and training (VET) and lifelong learning, may also foster mobility from low-productivity jobs to higher-productivity jobs. Chile has made great progress in increasing the educational attainment of the workforce in the past decades but the quality of education as measured by standardised tests of student performance remains low by OECD standards. Moreover, education outcomes are highly unequal across socio-economic groups, suggesting the potential of some segments of society is not fully utilised. Policies to improve the quality and equity of basic education are discussed in Chapter 4 but the current chapter discusses VET and lifelong learning policies, as these are particularly closely linked to productivity.

Recent reforms in competition and innovation policies will reduce firms' scope for anticompetitive behaviour and may boost the pace of innovation in the business sector. A

major competition policy reform was adopted in April 2009, which will strengthen enforcement through an expansion of the investigative powers of the National Economic Prosecutor and through higher fines for cartel participation. The R&D tax incentive introduced in 2008 aims at improving incentives for innovation in the private business sector, and the newly created National Innovation Council has started to develop a long-term innovation strategy.

Despite recent reforms, much remains to be done if faster productivity catch-up with more advanced OECD countries is to be resumed. Even though the April-2009 reform has strengthened competition law enforcement, deterring anti-competitive behaviour, in particular by large corporations, will require diligent application of these rules. Public support for the formation of a number of sectoral industrial clusters, which is part of the long-term innovation policy strategy proposed by the National Innovation Council, risks spending public resources on sectors that eventually turn out to be unviable or that would have developed even in the absence of public support. Setting clear objectives for the sectoral clusters and regularly assessing progress towards achieving these will help reduce the risk of misspending public resources. Product market regulations on entry and exit remain restrictive. Resuming the pace of reform in product markets of the 1990s to foster productivity growth should be one of the main priorities on the economic policy agenda.

Background on recent productivity developments

A growth accounting exercise shows that on average the contribution of total factor productivity growth (TFP) to GDP growth has been close to 0 since 1998. Even excluding the mining sector, in which TFP has actually decreased, the contribution of TFP would only be marginally higher (around 0.2% per year). Total factor productivity growth, which accounted for a substantial part of GDP growth from the late 1980s to the mid-1990s, slowed down markedly at the end of the 1990s (Table 3.2). The contribution of hours worked has also slowed over the past decade but remains positive at around 1.5% per year. Over the past few years, the contribution of growth in the capital stock has accelerated and represents the major growth component over the period 2004-2008. As TFP is calculated as the residual of a Cobb-Douglas production function, it may to some extent reflect errors in the measurement of the capital stock. Firstly, the Chilean capital stock is computed using a perpetual inventory method, making it dependent on assumptions on depreciation rates. Secondly, the capital stock is not corrected for capacity utilisation, which may vary over the business cycle. Although there are therefore some uncertainties as to the exact level of TFP and its yearly growth rate, it appears safe to say that TFP growth has been close to 0 over the past decade: the use of the same measurement method for the capital stock over time

Table 3.2. **Contributions to annual GDP growth 1986-2008**

Percentage

Period	TFP	Capital	Labour	Total
1986-1991	2.1	1.8	2.8	6.7
1992-1997	2.2	3.6	2.1	7.9
1998-2003	–0.7	2.2	1.2	2.7
2004-2008	0.0	3.1	1.6	4.7

1. TFP is calculated as the residual of a Cobb-Douglas production. Following Ministry of Finance calculations for the expert panel on potential GDP, the weight on the capital stock is set to 0.48 and the weight on the labour input to 0.52. The labour input is measured as actual hours worked corrected for educational attainment of the workforce.

Source: OECD calculations based on Ministry of Finance data.

should keep errors in the growth rate of the capital stock to a minimum and cyclical capacity utilisation effects should even out over 10-year periods.

Weak TFP growth appears to be a structural issue. The investment boom of 2007-2008 (20% growth of gross fixed investment in 2008) led to a substantial increase in the capital stock but not necessarily to an immediate increase in production, thereby reducing measured TFP as no adjustment is made for the utilisation rate of the capital stock. However, this cannot explain why average TFP growth over the period 1998-2008 decreased by more than 2 percentage points after having grown by more than 2% over the period 1986-1997. Instead, part of the slowdown may also be due to the tailing off of the structural reforms of the 1980s and 1990s, which had helped sustain high rates of TFP growth (Box 3.1).

Box 3.1. **Main structural reforms in Chile over the past three decades**

Starting in the mid-1970s a series of structural reforms in the following areas were enacted:

- Tax reform: Introduction of value added tax and improvements in tax collection.
- Trade and FDI reforms: Elimination of all non-tariff barriers, introduction of a flat multi-lateral tariff, non-discriminatory treatment for foreign direct investors.
- Large-scale privatisations in all sectors of the economy.
- Pension reform: Shift from a pay-as-you-go to a fully-funded system.
- Labour market reform: Collective agreements at the firm level (as opposed to the sectoral level); easing of dismissal regulations.

After the banking crisis in the early 1980s, the main reforms in the late 1980s and over the 1990s were in the following areas:

- Banking law: Strengthening of government supervision and regulation.
- Deregulation of network industries: Multi-carrier system in telecommunications, infrastructure concessions, privatisation of water provision and sanitation.
- Macroeconomic framework: Independence of the central bank, gradual adoption of inflation targeting and a flexible exchange rate, adoption of a structural fiscal rule.

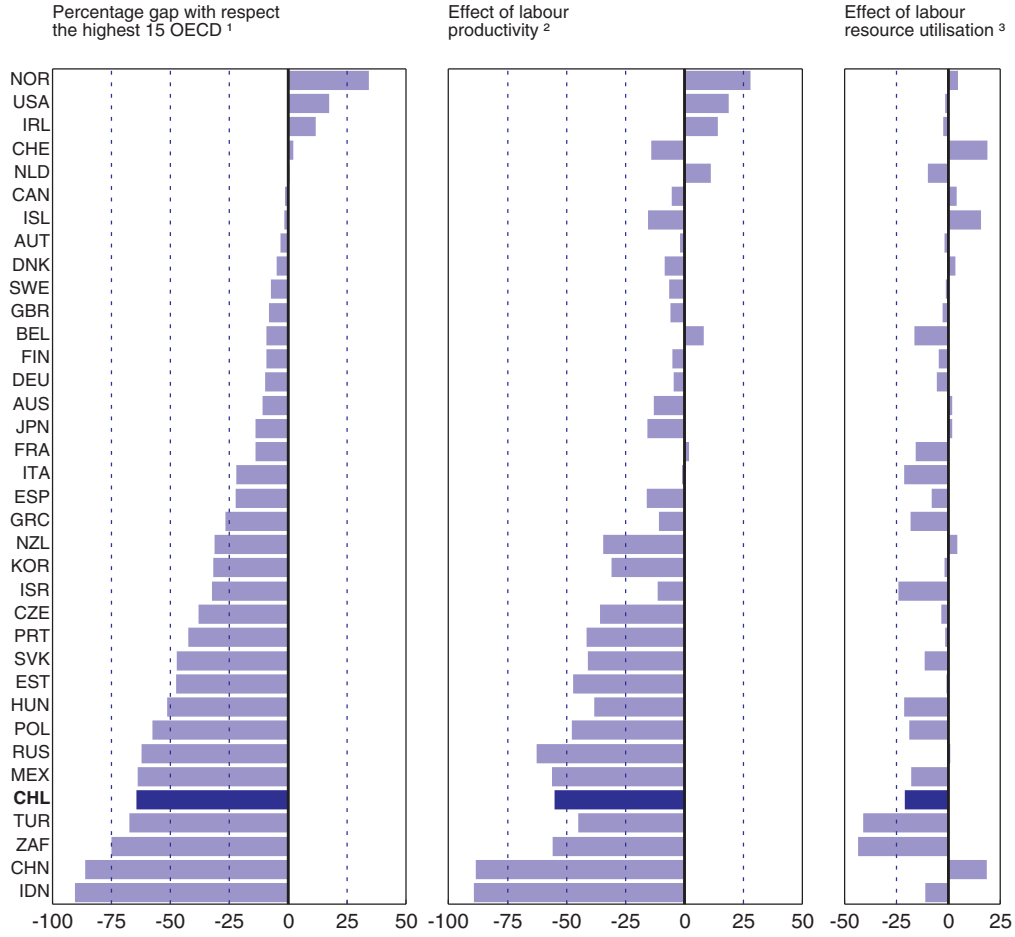
The main structural reforms over the past decade were:

- Capital market reforms: Increase in investment options for pension funds, elimination of capital gains on a number of transactions, corporate governance (rules on disclosure of information, voting rights, among others), regulation of pension funds (easing of restrictions on investment choices, among others).
- Several competition policy reforms: Creation of the Competition Policy Tribunal, more powers for the National Economic Prosecutor, introduction of a leniency programme.

The income per capita gap with more advanced OECD countries is to a large extent attributable to lower labour productivity. Although labour utilisation is lower than in most OECD countries, mainly because of lower labour market participation of women and youths, lower labour productivity explains around 80% of the remaining income gap (Figure 3.1).

A sectoral decomposition of the sources of labour productivity growth (Box 3.2) shows that transitory gains from the movement of labour from low-productivity sectors (such as

Figure 3.1. **The sources of real GDP per capita differences, 2007**



1. Simple average of the highest 15 GDPs per capita (based on 2005 purchasing power parities).
2. Labour productivity is measured as GDP per person employed.
3. Labour resource utilisation is measured as the ratio of those employed to the persons of working age.

Source: World Bank.

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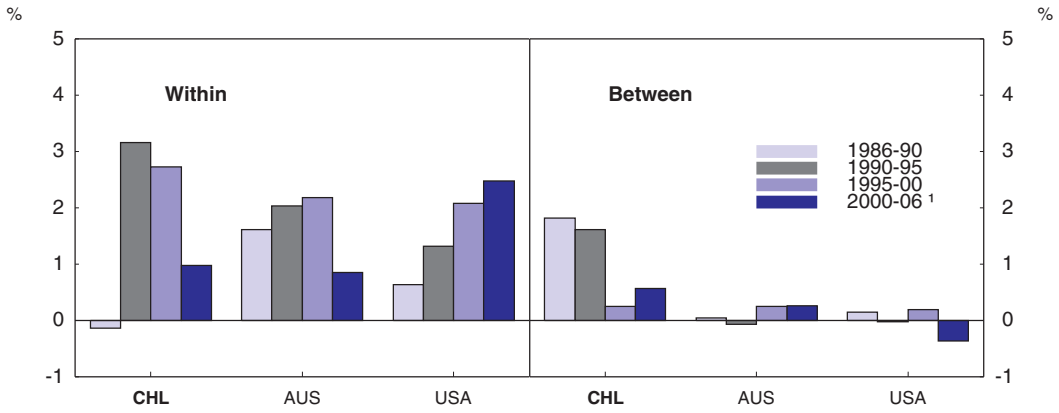
agriculture or personal services) into higher-productivity sectors (such as financial services or manufacturing) have been declining. Indeed, the potential for reaping such gains might already be largely realised. Consequently, future labour productivity growth will mainly have to come from within the sectors themselves. A low contribution of the "between sectors" component is a general feature of high-income economies, as for instance Australia and the United States (Figure 3.2), as transitory gains from the movement of resources from agriculture and other low-productivity sectors into higher-productivity sectors become largely exhausted. In Chile the decline in the "between sectors" components results from the tailing off of transitory effects from the recovery of the banking crisis in the early 1980s. A large part of the positive "between-sectors" effect in the late 1980s and early 1990s was in effect attributable to the movement of resources into the finance sector, in which measured labour productivity is high, from other sectors of the economy. In this sense, the large contribution of changes in industrial structure to labour productivity in Chile in the early and mid-1990s was most likely a one-off effect and

Figure 3.2. **Shift-share analysis**
Average annual contributions



1. 2000-08 for Chile.

Source: Banco Central of Chile; and *EUKLEMS Database*.

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sustaining high rates of labour productivity growth in the future will therefore mainly require technological and non-technological innovation within sectors. Nevertheless, remaining unexploited "between-sectors" productivity gains may be reaped from improving the skills of the workforce, which would increase labour mobility from low-productivity sectors, as the "other services" sector that remains large, to higher productivity sectors.

Box 3.2. **Sectoral decomposition of labour productivity growth**

Labour productivity growth can be decomposed into three components. The "within-sectors" component is calculated as the sum of sectoral labour productivity growth rates weighted by their shares in total value added. This component measures the hypothetical labour productivity growth rate of the economy in the absence of structural change. The "between-sectors" component is calculated as the sum of changes in sectoral employment shares weighted by the relative productivity of each sector. It measures the hypothetical labour productivity growth rate of the economy in the absence of within-sector labour productivity growth, or the pure effect from structural change. Even in the absence of productivity growth within sectors the economy-wide productivity level can increase if resources move into the sectors with the highest levels of productivity. The third or "cross-sectors" component is calculated as the product of the "within-sectors" and the "between-sectors" components and measures labour productivity growth attributable to the movement of resources into the sectors with the highest productivity growth rates. As the "cross-sectors" component is, in practice, negligible over the whole 1986-2008 period, it is not shown in Figure 3.2.

Policies to enhance product market competition

Product market competition is weaker than in some OECD countries

One important microeconomic precondition for strong productivity growth is vigorous competition in product markets. Strong competitive pressures can give firms incentives to reduce inefficiencies in organisation and to upgrade their technology. Nickell (1996), for

instance, argues that lack of competitive pressures may increase managerial slack or reduce workers' effort. A number of empirical studies (for instance, Nickell, 1996, Blundell *et al.,* 1996 or Aghion *et al.,* 2008) find that firms with more competitors and lower rents display higher productivity growth. Similarly, several empirical studies find that regulations that reduce competition in product markets reduce productivity growth at the level of the firm and the industry (for instance, Conway *et al.,* 2006, Arnold *et al.,* 2008). Competition can also foster productivity growth by driving the most inefficient firms out of the market and ensuring that only the most efficient survive. This hypothesis has received strong empirical support in recent studies on trade liberalisation, which have shown that the major part of productivity gains from stronger import competition can be attributed to reallocation effects (for instance, Pavcnik, 2002, Eslava *et al.,* 2009).

Increasing the level of competition may have especially large payoffs in terms of productivity growth in a catching-up economy such as Chile. Recent empirical evidence indicates that the effect of competition on innovation depends on the technological gap between competitors (Aghion *et al.,* 2005). When the technological gap between the firm at the technological frontier and its competitors is large, lower competitive pressures may improve the laggards' incentives to innovate, as post-innovation rents are high. By contrast, when the technological gap between the firm at the frontier and its competitors is small, greater competitive pressures reduce pre-innovation rents and therefore increase incentives to innovate in order to escape competition. As Chilean firms' catch up with the technological capabilities of their foreign competitors in the market, the "escape competition effect" will become increasingly important. Strengthening competition will increase firms' incentives to innovate, which may have large payoffs in terms of productivity growth.

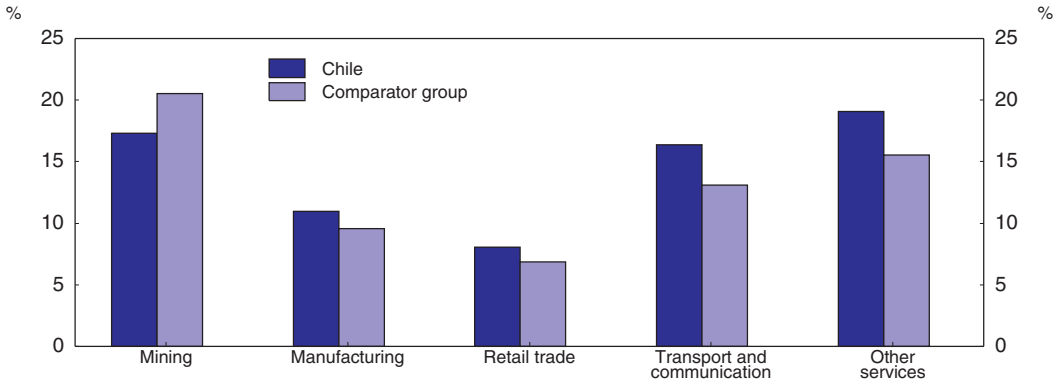
Despite high rankings on overall competitiveness indicators, and openness to trade and FDI, competition as measured by price-cost margins of listed firms appears to be less intense than in a comparator group of resource-intensive OECD countries. Chile ranks high on overall competitiveness indicators compiled by think tanks and international organisations, which measure the quality of regulation and the overall macroeconomic framework.[1] Chile is also very open to international trade and FDI, with a 6% multi-lateral tariff, an extensive network of free trade agreements (FTAs), which has brought the average actual tariff rate paid on imports down to close to 2%, and no restrictions to inward FDI. The structure of price-cost margins, defined as the ratio of operating income over total revenue, across industries in Chile is similar to a comparator group of resource-rich OECD countries (Box 3.3. on the calculation of price-cost margins). This is in line with expectations because price-cost margins are partly determined by the production technology in an industry, as for instance the level of fixed costs. However, the level of price-cost margins is higher in Chile than in the comparator group in all industries, except mining. Price-cost margins are higher even in the manufacturing sector, which is open to international trade, and in the retail sector, which has a reputation of being competitive (see for instance EIU, 2008). But the largest differences can be found in transport and telecommunications and in other services, which mainly includes business services. This indicates that competition, in particular in the services sectors, is weak in Chile.

Regulation of start-ups and some services sectors is restrictive

One reason for high profit margins is that by OECD standards Chile has relatively restrictive product market regulation in some areas, according to the 2008 OECD product

Figure 3.3. **Price-cost margins in Chile and comparator group**[1]

2000-08



1. Average ratio of operating income to total revenue. The comparator groups includes Australia, Canada and New Zealand.

Source: Thomson Financial, *Wordscope Database*.

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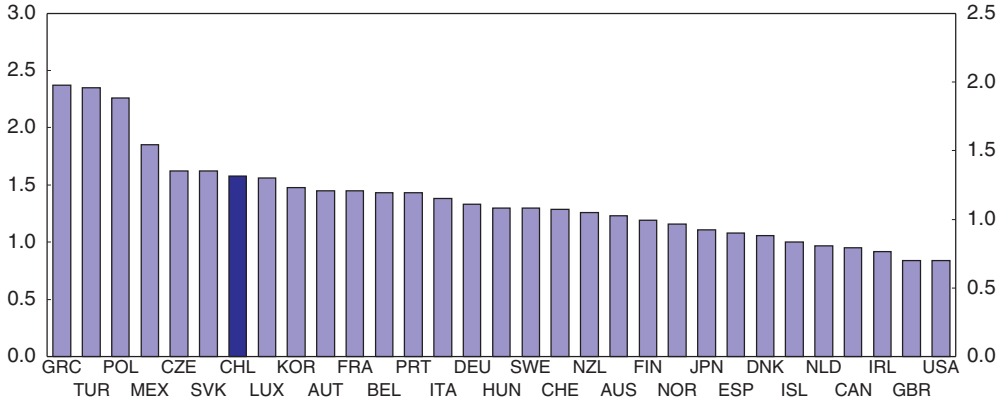
Box 3.3. **Calculation of price-cost margins using Worldscope data**

- The calculation of price-cost margins uses financial statement data of publicly listed companies obtained from the Worldscope dataset (Thomson Financial). The dataset contains yearly balance sheet items and information on basic firm characteristics.
- Following Aghion *et al.* (2008) the price-cost margin (or Lerner index) is chosen as a measure of product market competition. In theory, it is defined as the ratio of price (p) minus marginal cost (mc) over price, or $(p\text{-}c)/p$. The larger $(p\text{-}c)/p$, the larger is the distance between the price and the competitive price. In the empirical implementation the price-cost margin is approximated by the ratio of operating income (total revenue – cost of goods sold – depreciation – selling, general and administrative expenses) to total revenue.
- The sample contains only firms from the mining, manufacturing, retail services, transport and communications services, business services, and other services (mainly personal services) in Chile, Australia, Canada and New Zealand for the years 1990-2008. In the reported results business services and other services are aggregated to a single "other services" category. Firms reporting negative average price-cost margins over the sample period are considered as outliers and are dropped from the sample. Australia, Canada and New Zealand are chosen as the benchmark for Chile, as they are resource-rich economies with fairly similar industrial structures but more pro-competivive product market regulation, according to the 2008 OECD product market regulation indicator. The final sample contains 8 257 firm-year observations.
- The results are robust to using net income (gross income + net interest income + extraordinary income) instead of gross income in the empirical approximation of price-cost margins.

market regulation (PMR) indicators (Woelfl *et al.*, 2010) (Figure 3.4). While Chile ranks high on broad indicators of overall competitiveness, the OECD PMR or the World Bank Doing Business Indicators, which measure more specifically regulation affecting competition in product markets, suggest some regulation could be eased to catch up with the OECD average (Chile ranks 49th on the World Bank Doing Business Indicators, World Bank, 2009).

Figure 3.4. **Product market regulation**[1]

2008



1. Overall indicator.

Source: OECD, *Product Market Regulation Database.*

StatLink http://dx.doi.org/10.1787/776537473858

While Chile has less barriers to trade and investment than most OECD countries, according to the OECD PMR indicator, administrative burdens on start-ups are higher than in almost any OECD country, which reduces the disciplining effect of potential entry on incumbent firms. Only in Mexico are administrative burdens imposed on sole-proprietor firms higher than in Chile and no OECD country imposes a higher burden on corporations, mainly through lengthy and costly registration and notification requirements. According to the World Bank Doing Business Indicators, it takes 9 procedures (against 5.8 in the OECD), 27 days (against 13.4 in the OECD) and costs 7.5% of GNI per capita (against 4.9% in the OECD) to start a business. The government does not ask sectoral regulators to use alternatives to traditional forms of regulation and does not provide guidance on alternative forms of regulation.

Regulation of retail and professional services is stricter than in most OECD countries. In particular, Chile appears to have higher entry barriers in retail, mainly because of stricter registration and notification requirements, than any OECD country. A similar pattern emerges in professional services (accountants, architects, engineers and lawyers), in which entry barriers are comparatively high. Whereas education requirements to enter the professions are around the OECD average, exclusive rights of provision for accountants, architects, engineers and lawyers keep potential entrants out of the market. Advertising bans in these professions further restrict competition. Against the background of high price-cost margins in services (see Figure 3.3), the authorities should consider easing these regulations.

The regulatory framework for network industries is sound

The regulatory framework for network industries is sound (see OECD, 2005), but regulation in the electricity sector could be further improved. Tariffs for electricity distribution are set according to the efficient-firm standard. In essence, this standard calculates assets and costs of an efficient model firm and sets tariffs such that this firm could earn a given rate of return in the market (see OECD, 2005 for more details). Tariffs are reviewed every four years, making the firm the residual claimant of any cost savings during this time interval. In this sense, the efficient-firm standard can be viewed as a reasonable

incentive-based regulation mechanism. A particularity of the Chilean system is that the firms and the regulator both prepare tariff studies, with the regulator's study receiving a weight of two thirds and the firms' study a weight of one third. This gives the regulated firms strong incentives to overestimate the costs of an efficient firm to obtain higher regulated tariffs. The authorities plan to leave dispute resolution to an independent expert panel. This would reduce the incentive problem but in the medium-term the authorities could consider leaving the determination of prices entirely to the regulator, as in some OECD countries.

Electricity generation, transmission and distribution are unbundled but distribution and retail are vertically integrated. This means that separate firms provide generation, transmission (high-voltage) and distribution (from the high-voltage transmission network to final consumers) but electricity distribution companies both deliver electricity and buy electricity from generators for resale to final customers (retail). Except for large final consumers, retail prices are regulated. This is similar to the regulatory arrangements in most OECD countries, although some of them have introduced distribution and retail unbundling, including for small customers (among others, the UK and the Nordic countries). Most final consumers pay a tariff that combines a fixed charge, a distribution charge, an electricity charge, and a peak power charge into a single tariff. The main disadvantage of this tariff is that it does not give final consumers an incentive to reduce their consumption of electricity when demand is high or supply is low.

The sector regulator (*Comisión Nacional de Energía*) is currently examining whether distribution and retailing could be unbundled to achieve more efficient electricity use. With unbundled distribution and retailing, distribution companies would operate the distribution wires and separate retail companies would contract electricity from the generators and sell it on to final consumers. Distribution prices would remain regulated whereas retail prices would be liberalised. The economic rationale is that electricity distribution remains a natural monopoly but retailing is a potentially competitive market. If retailers were allowed to set price schedules freely, they would have incentives to find the consumers that are willing to reduce their consumption at peak hours or times of energy shortages at the lowest cost. Retail prices would have to be accompanied by prudential regulations to ensure retailers either contract enough electricity to meet peak demand or set their price schedules such that consumers have incentives to reduce demand when there is a supply shortage. Otherwise, some retailers may choose to undercut their competitors' prices by offering cheap peak electricity and default if a deficit occurs. As all users are connected to the same grid this may lead to electricity outages.

In telecommunications, competition in fixed-line telephony has mainly depended on an entrant to the local telephony market competing with the incumbent by building its own network, so-called facilities-based competition. By contrast, in services-based competition, competitors have non-discriminatory access to the network and compete on the quality and the price of the service. In Chile, facilities-based competition in local telephony has increased over the past decade. In 2000 the incumbent company (*Telefónica*) had a market share of around 80% and its largest competitor (*VTR*) a market share of around 4%. In 2008 market shares were 60% and 17%, respectively. Despite this improvement, the authorities should consider regulating the access price to the incumbent's network, which would avoid costly duplication of the network and bring prices down more quickly in localities where the incumbent has the only network. The

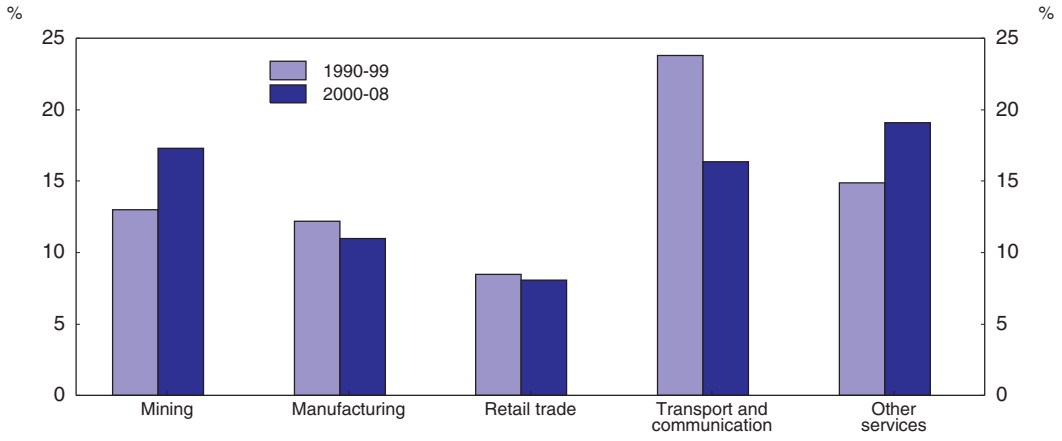
sector regulator has already taken first steps in this direction by commissioning a study on the relative benefits of services-based *versus* facilities-based competition.

Recent competition policy reforms strengthen enforcement

Apart from overly restrictive product market regulation in some areas, a major reason for high price-cost margins is weak enforcement of competition law, in particular in the area of cartels. The institutional structure for competition law and enforcement is now sound. The National Economic Prosecutor (Fiscalía Nacional Económica, FNE) investigates cases of potential anticompetitive behaviour while the Competition Tribunal makes decisions and can impose fines. Any deed, act or agreement, including a contract, that "prevents, restricts or hinders free competition", or that tends to do so, is subject to sanctions under the law. As in the competition laws in OECD countries, the anti-competitive practices covered by the Competition Act include collusive agreements such as cartels to fix prices explicitly includes as anticompetitive practices collusive agreements such as cartels (*e.g.* to fix prices, allocate market shares); (unilateral) abuse of dominant position; and predatory behaviour to obtain, mantain or increase a dominant position (*e.g.* through predatory pricing). Until the recent amendments, the investigative powers of the National Economic Prosecutor were limited. It could initiate investigations, but it could not make surprise inspections ("dawn raids"), intercept communications or seize documents. Because it was hard to obtain direct factual evidence, the cases brought before the Competition Tribunal often relied instead on indirect evidence, such as parallel behaviour, to imply that participants had reached an anti-competitive agreement.

Strengthening the enforcement of competition law is particularly important to increase competitive pressures in the services sectors, which face no import competition. As shown in Figure 3.3, price-cost margins tend to be higher in the services sectors, that are mostly non-tradable, than in manufacturing. Of course, this is not only the result of weaker competition but also reflects differences in production technologies, as for instance high sunk costs in network industries such as transport and telecommunications. However, Figure 3.5 shows that price-cost margins are not only generally higher in services but they have also increased in some sectors since 2000. Even in the retail sector in which price-cost

Figure 3.5. **Price-cost margins in Chile**[1]



1. Average ratio of operating income to total revenue.

Source: Thomson Financial, *Wordscope Database*.

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margins are relatively low and which is reputed to be competitive, there have recently been several high-profile cases of collusion and anti-competitive behaviour (Box 3.4. on the ongoing lawsuit against pharmacy retailers).

Box 3.4. **The lawsuit against pharmacies**

- May 2008: The Health Ministry announces that it has detected co-ordinated fixing of prices through the main pharmacy chains (FASA, *Cruz Verde, Salcobrand*) that control more than 90% of the market; the FNE starts an investigation.
- December 2008: The National Economic Prosecutor concludes that there has been co-ordinated fixing of prices in 222 pharmaceutical drugs between December 2007 and April 2008 and files a lawsuit at the Competition Tribunal.
- March 2008: *FASA* admits having engaged in price fixing and reaches an agreement with the National Economic Prosecutor. It agrees to pay a fine amounting to around 1 million US dollars in exchange for the National Economic Prosecutor dropping the charges against *FASA*. As the National Economic Prosecutor had already filed a lawsuit at the Competition Tribunal this can be assimilated to a cartel settlement but it is unrelated to the new leniency programme introduced in 2009.
- Currently: *Cruz Verde* and *Salcobrand* have not admitted and the lawsuit is pending at the Competition Tribunal.

Strengthening the enforcement of competition law and improving market transparency is especially important in small markets, such as Chile. A small market might sustain only a small number of firms producing at the minimum efficient scale. Markets in small economies therefore tend to have a more concentrated production structure, with only few firms serving a large share of the market (Table 3.3 for concentration in a selected number of industries in Chile). This could be productively more efficient than a less concentrated structure, of course. But a highly concentrated structure could also lead to allocative inefficiency. In an oligopolistic market structure, where each producer's action

Table 3.3. **Concentration in selected industries**

Sector	Market share three largest companies (%)	Herfindahl-Hirschman Index
Internet access services	81.9	0.269
Granulated nitrogen fertilizer	83	0.268
Granulated phosphorus fertilizers	78	0.252
Granulated potassium fertilizer	71	0.221
Basic local telephony service (fixed line)	86.4	0.451
Cable and satellite TV delivery	94.2	0.525
Diesel[1]	62[2]	0.384
Petrol[1]	81.9[2]	0.671
Pharmaceuticals	92.1	0.304
Matches[1]	92.9[2]	0.868
Beer[1]	98.3[3]	0.714

Notes: HHI is defined as the sum of the squares of the market shares. It ranges between 0 and 1, where 1 represents a single monopolistic firm.
1. Information for 2006.
2. Market share of largest company.
3. Market share of two largest companies.
Source: National Economic Prosecutor.

has a direct effect on its competitors, prices may rise above competitive levels even if the parties do not explicitly reach collusive agreements (Tirole, 1988). A liberal trade regime helps to deter anti-competitive conduct, but it cannot substitute for a well-designed and enforced competition law and market transparency, in particular in services which are often non-tradable. The government is planning to take several measures to improve market transparency and consumer protection: *i)* facilitation of dispute resolution in consumer-related disputes, in particular collective action procedures; *ii)* strengthening of consumer protection in financial markets (information, abusive clauses, renegotiation of loans, switching financial institutions); *iii)* obligation for credit institutions to offer at least one standardised product which is easily comparable across institutions (MK III financial markets reform, see Chapter 1); and *iv)* consolidated credit register for banks and non-banks to improve transparency in credit markets (see Chapter 1).

In Chile, the difficulty of proving cartels based on indirect evidence has led to a focus of competition policy on unilateral abuse of dominant position. In 2007, for instance, the National Economic Prosecutor opened 66 matters of unilateral abuse of dominant position as compared to only 13 matters of horizontal or vertical collusion. Most recent cartel cases based on indirect evidence have resulted in acquittals, either in the first instance at the Competition Tribunal or in the second instance at the Supreme Court. There are some signs of change, as a recent Supreme Court ruling confirmed the finding of the Competition Tribunal in the so-called "flat-panel TV war" case that was based on the indirect evidence of the number of phone calls between two retailers engaging in an anti-competitive agreement.[2] But it is too early to judge whether this represents a trend.

The absence of a leniency programme and relatively low fines have also contributed to weak enforcement. Many OECD countries, among others the United States and the European Union, use leniency programmes to detect cartels. In Chile, firms participating in cartels could until recently not apply for immunity in exchange for co-operating with the National Economic Prosecutor. This has further contributed to making the collection of direct evidence on collusive agreements difficult. Moreover the level of fines is relatively low. The highest fine ever imposed was around USD 11.2 million against the two retailers in the "flat-panel TV war" case. According to the income statement of one of the retailers involved (*Falabella*), the fine for the company amounted to less than 0.1% of its revenues in 2008.[3]

A 2009 reform addresses some of the enforcement issues, but may require additional resources for the National Economic Prosecutor (Box 3.5). The reform includes an increase in the maximum fine for cartel infringements from around USD 15 million to around USD 23 million, enhanced investigative powers for the National Economic Prosecutor (it will be allowed to request "dawn raids", intercept communications and search premises to seize documents), and a leniency programme for cartel infringements (the National Economic Prosecutor can grant full immunity to the first firm to confess to a cartel and fine reductions of up to 50% for others). It is expected that these reforms will lead to an increase in the number of cartel cases brought before the Competition Tribunal, which may require additional resources for the National Economic Prosecutor.

Competition policy enforcement could be enhanced further. A firm weighs the expected profits of engaging in anti-competitive practices against expected losses, namely the probability of being caught times the fine it expects to pay in such a case. In this sense, the enhanced investigative powers of the National Economic Prosecutor will increase the

Box 3.5. **Evolution of Chile's competition policy framework**

The Chilean competition policy framework has evolved from an emphasis on "economic freedom" (autonomy of firms) to an emphasis on efficiency and consumer welfare.

- 1973-1993: *Fiscalía Nacional Económica* (National Economic Prosecutor), Competition Commission and Consultative Commissions (sanctions and recommendations) played less important role than macroeconomic reforms (trade liberalisation, privatisation, deregulation).
- 1993-2003: Microeconomic reform in network industries and capital markets. Because of limited investigative and enforcement powers existing institutions could not deal effectively with significant cases.
- 2003: New Competition Tribunal (*Tribunal de Defensa de la Libre Competencia*) replaced Competition Commission and Consultative Commissions. Average level of fines increased from USD 13 500 in the period 1973-2002 to USD 840 000 since 2004. Some new powers for the National Economic Prosecutor.
- 2009: Apart from an increase in the maximum fine for cartel infringements, enhanced investigative powers for the National Economic Prosecutor, and the introduction of a leniency programme, the reform passed in April 2009 includes:
  - Measures to ensure the independence of the head of the National Economic Prosecutor: introduction of a public contest for selection and strict rules on dismissal, among others a majority ruling of the Supreme Court.
  - Measures to increase the professionalism of the Competition Tribunal: increase in remuneration and time judges dedicate to Competition Tribunal; strict rules on professional incompatibilities.
  - Streamlining of procedural rules of the Competition Tribunal: notification of resolutions, statute of limitations, and regulation of discovery, testimony of witnesses and other evidence.

expected costs of anti-competitive behaviour by increasing the expected losses of anti-competitive behaviour. Nevertheless, it seems that, at least for large corporations, even the increased maximum fine remains too low, as it probably only represents a very small fraction of the additional revenues they can earn by forming a cartel.

Removing the ceiling on fines imposed against cartels and treating price fixing as a criminal offence would increase deterrence. On theoretical grounds, it is desirable to link fines to firms' profits from cartel participation, because even high fine ceilings may have weak deterrent effects if the expected profits from cartel participation are very large. In practice, it is difficult to precisely evaluate these profits. In some OECD countries the fine is therefore calculated as a percentage of the cartel participants' revenue. In the United States, for instance, the base fine is calculated as 20% of the firms' revenues in the market involved in the conspiracy (Viscusi *et al.*, 2005). The simplest policy option would be to remove the fine ceiling altogether and leave the determination of the fine to the Competition Tribunal and appeal courts. If this is legally not possible, the maximum fine could be set as a percentage of the firms' revenues in the market involved in the conspiracy. The authorities plan to make price fixing a criminal offence, which would also help to increase deterrence.

The leniency programme is well designed and in many respects in line with best OECD practice. However, its effectiveness will depend in part on legal certainty for applicants to the programme. Best practice suggests that discretion of the competition authorities in granting immunity should be limited and firms be eligible even after an investigation has started. This has the advantage of giving the firm legal certainty and giving it the possibility to apply even after the start of an investigation has changed the trade-off between expected payoffs and costs of forming a cartel.[4] For instance, the United States reformed its leniency programme along these lines in 1993 and the number of applications rose from approximately one per year to two per month (Motta, 2004). The European Union, since 2002, has applied a leniency programme with automatic immunity and eligibility after an investigation has started. The Chilean leniency programme is in line with best practice in that firms can apply after an investigation has started. The National Economic Prosecutor has also published the first draft of a guide on the conditions it will require for granting immunity. The final guide should make the granting of immunity automatic if a number of clearly stated conditions are satisfied to give potential applicants legal certainty.

The use of diverging concepts and definitions by the judiciary may create legal uncertainty and weaken the deterrent effects of the 2009 reforms. In several instances in the past the Supreme Court overturned decisions of the Competition Tribunal using diverging concepts to define anti-competitive behaviour. For instance, in 2006 the Supreme Court used a concept of predatory pricing that was different from the one of the Competition Tribunal to overturn a Competition Tribunal ruling that had acquitted a firm producing fibrocement sheets.[5] This divergence in concepts and definitions has introduced an element of legal uncertainty which may reduce the expected losses from competition law infringement. While judicial review through a higher court is clearly desirable on accountability grounds, the Competition Tribunal and the Supreme Court should work more closely together to harmonise concepts and definitions. The quality of the economic analysis of the Supreme Court may also be enhanced by the hiring of specialised economic consultants.

The procedural rules for merger control could be further clarified. There is no pre-merger notification or review requirement, except for television and radio. Firms can voluntarily submit a planned merger for review, which has increasingly been the case since 2003. The system appears to function satisfactorily without imposing excessive administrative burdens on competition authorities and firms. Merger remedies in the form of behavioural or divestiture requirements are applied regularly. But the National Economic Prosecutor and the Competition Tribunal do not speak with one voice about merger analysis methods. The National Economic Prosecutor issued an internal guide for merger analysis in 2006 but the Competition Tribunal deviated from it in the recent case of a merger between two major retailers (*D&S* and *Falabella*).

Policies to foster entrepreneurship and business innovation

Entrepreneurship and innovation are important determinants of productivity growth. Entrepreneurship may enhance productivity through the reallocation of resources from low-productivity firms to higher-productivity firms if entrepreneurs with potentially successful ideas face low barriers to entry and failing firms can exit the market with relative ease. Innovation increases productivity not through the reallocation of factors of production across sectors but through the development of new products, the improvement of production processes, and the adoption of new marketing or organisational techniques.

As it is often entrepreneurs who enter the market with new ideas who are at the forefront of innovation, entrepreneurship and innovation are closely linked.

Innovation on the global technology frontier ("on-the-frontier" innovation) as measured by patent registrations is low, which is to be expected for a country at Chile's income per capita level (Box 3.6). Although the number of patent registrations is an imperfect measure of on-the-frontier innovation, because companies may prefer to keep commercially sensitive information secret, it is nonetheless frequently used (Griliches, 1990, OECD, 2007a). Chile's triadic patenting – patents that are registered simultaneously in the United States, the European Union and Japan – is almost negligible (23 patent registrations over the period 1996-2004). Despite a relatively large stock of FDI, foreign affiliates of multi-national companies located in Chile only account for a very small share of R&D. The share of foreign affiliates in total business R&D was 3.6% in 2002 as compared to 47.9% in Brazil, 32.5% in Mexico and 23.2% in Argentina (UNCTAD, 2005), countries with a similar GDP per capita level. On-the-frontier innovation will become increasingly important as Chile grows richer and an appropriate innovation framework will help avoid the risk that low on-the-frontier innovation becomes a drag on productivity growth going forward.

The number of new products entering the Chilean export basket has recently slowed down (Figure 3.7). This partly reflects the pattern that the number of new products entering countries'export baskets decreases as countries grow richer (Box 3.6). But it may partly also reflect a slowdown in "within-the-frontier" innovation. Given Chile's remaining degree of export concentration, the sharp decrease in the number of products entering the export basket appears to be difficult to explain by Chile's growing income per capita alone. While of a total of 1 836 product categories (at the 5-digit level of disaggregation), resource-rich New Zealand exports more than USD 1 million (2005 prices) in 527 product categories,

Box 3.6. **"Inside-the-frontier" and "on-the-frontier" innovation**

Conceptually, it is useful to distinguish between "inside-the-frontier" innovation and "on-the-frontier" innovation (Klinger and Lederman, 2009). "Inside-the-frontier" innovation involves the discovery of products for exports that have been invented abroad but that are new to the country or firm. The number of products that enter a country's export basket in any given year is a frequently used measure of "inside-the-frontier" innovation. "On-the-frontier" innovation is defined as the invention of products that are new not only to the country but also internationally and is usually measured by the number of patents a country files in a given year. As countries grow richer and approach the global technology frontier, "inside-the-frontier" innovation tends to decline while "on-the-frontier" innovation tends to increase.

To evaluate the relevance of "within-the-frontier" and "on-the-frontier innovation" at different levels of income per capita, new export flows and patent registrations are regressed on per capita GDP, squared per capita GDP and population (to control for country size effects).* The results from these regressions are reported in Table 3.4. Figure 3.6, which plots the predicted values from these regressions, shows that for a country at Chile's income per capita level the relevance of "on-the-frontier" innovation is low relative to "within-the-frontier innovation". As Chile grows richer, however, "on-the-frontier" innovation will become gradually more important.

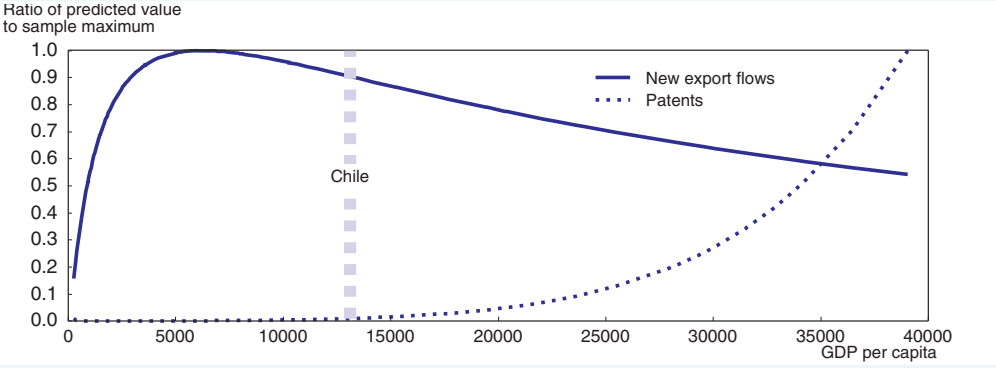
Box 3.6. **"Inside-the-frontier" and "on-the-frontier" innovation** *(cont.)*

Table 3.4. **Negative binomial regressions for patents and new exports**

Dependent variable	Patents (1)	New export flows (2)
Ln (GDP per capita)	–12.723***	3.157***
	[3.471]	[0.817]
Ln (GDP per capita)	0.846***	–0.181***
	[0.189]	[0.048]
Ln (population)	0.961***	0.174***
	[0.084]	[0.052]
N	79	172
Log likelihood	–315.49	–481.64

Note: Standard errors in brackets. *** significant at 1%. Negative binomial regressions are used to account for the count data nature of the dependent variables. Regressions include a constant.
Source: OECD calculations using OECD Triadic Patents Dataset, COMTRAD (BACII-CEPII).

Figure 3.6. **New export flows and patents**[1]



* New export flows calculated as the number of products entering a country's export basket in any given year (using a threshold of 1 USD million in 2005 constant prices). Variables are averaged for the period 1998-04.

Source: Own calculations using trade data from COMTRADE (BACI-CEPII), number of patents from OECD Triadic Patent Families, GDP per capita (PPP) from OECD and World Bank (WDI).

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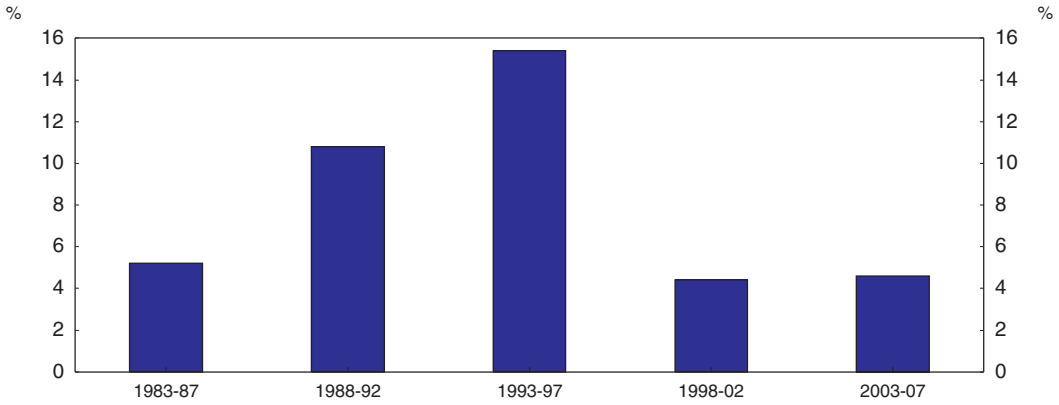
Norway in 637, Australia in 848 and Canada in 1268, Chile is exports in 374, *i.e.* in only one fifth of the categories.

Even by the standards of natural resource-abundant OECD countries, Chile's exports of goods remain heavily concentrated in mining and natural-resource intensive products, partly reflecting low levels of within-the-frontier innovation. Chile's specialisation pattern partly reflects its pattern of comparative advantage and a strategy of trade liberalisation and export-led growth over the past three decades. Trade liberalisation in the 1970s and 1980s led to a specialisation on natural-resource intensive activities in the primary sector and on the resource-processing manufacturing subsectors, as traditional trade theory would suggest for a natural-resource abundant country such as Chile. However, the specialisation pattern also reflects the slowdown in within-the-frontier innovation, as the number of products added to the Chilean export basket over the past decade was below the value expected for a country of Chile's income per capita. Although export concentration

Figure 3.7. **New export flows**[1]

Yearly averages



1. SITC Rev2 product classification. Threshold for new export flows is 1 million USD.

Source: COMTRADE (BACI-CEPII).

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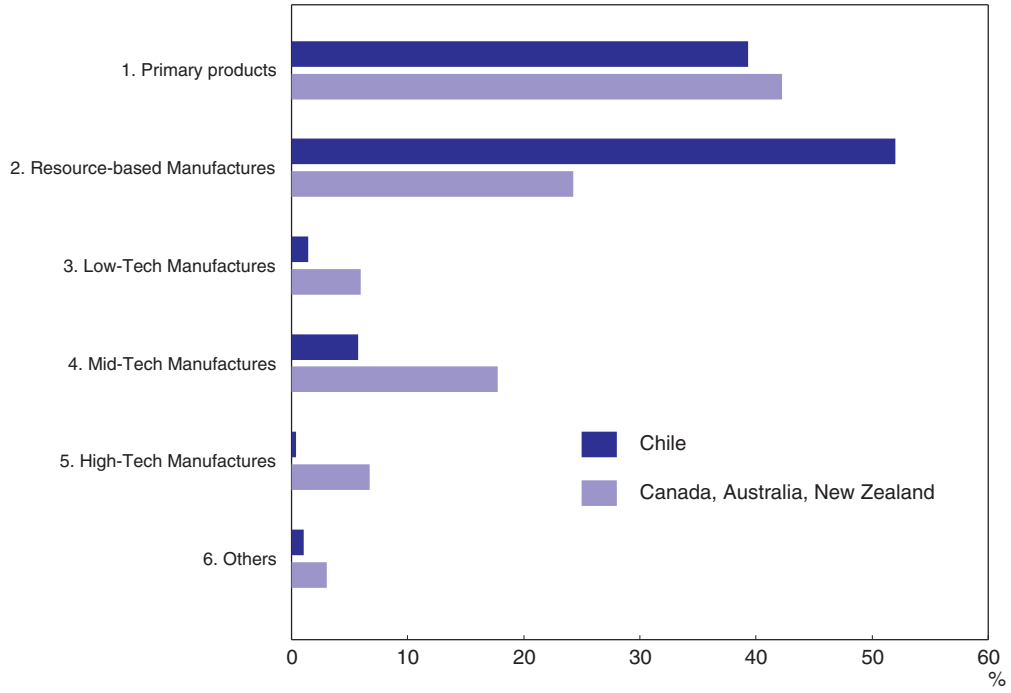
has decreased over the past decades, in 2006 the share of the 10 largest exports in Chile's total exports was above 65% (see Table 1.A1). This is lower than for Norway and Russia but higher than for other resource-rich OECD countries, such as Australia, Canada or New Zealand. Although export concentration has decreased over the past decades, around 90% of Chile's exports remain concentrated in primary products (mainly copper) and resource-based manufacturing (Figure 3.8). The share of non-resource based

Figure 3.8. **Export composition in 2006**[1]



1. Export shares for the benchmark calculated using simple average across countries. Lall (2000) product classification.

Source: COMTRADE (BACI-CEPII).

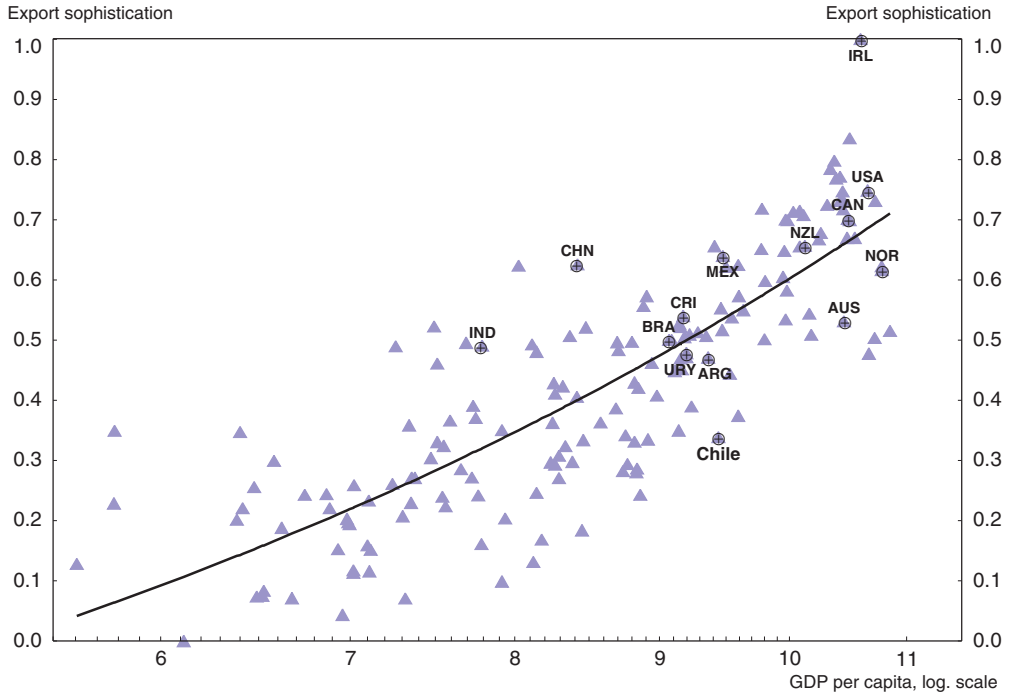
StatLink http://dx.doi.org/10.1787/776558680516

manufacturing is low – at any level of technological sophistication – relative to a control group of resource-abundant OECD countries.

Due to the pattern of export specialisation the sophistication of the Chilean export basket is lower than in other emerging and OECD countries, including natural-resource exporters. Hausmann *et al.* (2007) propose an indicator of the sophistication of a country's export basket, which is computed as the sum of a country's exported products weighted by the average income per capita of the countries exporting these products. Figure 3.9 shows that the sophistication of the Chilean export basket is lower than predicted by its income per capita. This reflects to some extent the weight of copper in the Chilean export basket but the OECD natural-resource exporters Australia, Canada, New Zealand and Norway have more sophisticated export baskets.

Figure 3.9. **Export sophistication**[1]

2006



1. Export sophistication indicator corresponds to EXPY in Hausmann *et al.* (2007), normalised between 0 and 1.

Source: World Bank WDI Database; COMTRADE (BACI-CEPII); OECD, *National Accounts Database*.

StatLink http://dx.doi.org/10.1787/776562514288

While empirical evidence suggests that there is a good case for increased diversification and sophistication leading to higher productivity growth, there are risks associcated with actively targeting specific sectors through public policy. Recent cross-country panel studies find that diversification has a positive effect on per capita income growth (Hesse, 2009, Ledermann and Maloney, 2009). Feenstra and Lee (2004) find that export product variety explains 13% of productivity gains in a sample of industrial and developing countries. Meanwhile, Herzer and Nowak-Lehnmann (2006) show that past export diversification has boosted GDP growth in Chile. Hausmann *et al.* (2007) show that increased export sophistication has positive effects on subsequent GDP growth. Increasing

the diversification and sophistication of Chilean exports may therefore indeed lead to higher productivity growth but the risks of targeting specific sectors through public policy should not be overlooked, as public resources may be wasted on sectors that turn out to be unviable or on sectors that would have developed even in the absence of public support. In any case, cluster policies should be complemented by easing overly-restrictive regulations on firm entry and exit that limit the reallocation of resources, which would be a relatively low-risk and low-cost policy to foster export diversification and sophistication. Improving the qualification level of the Chilean workforce, including through improving and expanding vocational education and training (VET) and lifelong learning, may also facilitate the transition from low-productivity to higher-productivity activities (Box 3.7).

Box 3.7. **VET and lifelong learning in Chile**

Upper secondary education in Chile comprises grades 9 to 12, of which the first two years follow a general curriculum. In the last two years, students have the choice between the general track and the vocational track, which offers 46 specialisation options in 14 occupational areas (see OECD, 2009b). To obtain a VET certificate in addition to the secondary school leaving certificate, students have to complete a period of workplace training, which typically takes place after graduation from secondary school. A small minority of students (4.5%) follows a dual track, which alternates periods of classroom education and workplace training. Tertiary VET includes two-year programmes in technical training centres (CFTs) and four-year programmes in professional institutes (IPs). The government is committed to improving VET and a VET commission has recently evaluated the system. According to OECD (2009b), the main issues are:

- **Insufficient literacy and numerical skills of VET students:** In Chile 36% of 15 year olds (those at or below level 1 in PISA) lack basic literacy skills to benefit from educational opportunities throughout their life and 55% have serious difficulties with mathematics. This seems to be a problem particularly among students who choose the vocational track of upper secondary education. As modern workplaces require good literacy and numeracy skills, employers increasingly value general skills. Of course, improving basic literacy and numeracy skill is primarily the task of the basic education system (see Chapter 4), but insuring these receive sufficient emphasis in VET curricula, and correcting initial deficiencies through special literacy and numeracy support would increase employability and job mobility.
- **Weak employer engagement:** Currently there are few systematic attempts in engaging employers in the VET system, as, for instance, through the definition of required competences for particular jobs or in the development of VET policies. The recently created National Council for Vocational Education and Training (CNFP) may help to improve consultation between the VET system and employers. Encouraging workplace training is one way of creating partnerships with employers. Its quality could be improved, for instance, by creating special apprenticeship contracts clearly setting out rights and obligations of both employers and students. Some OECD countries, as Germany, Switzerland and Norway, have made good experiences with extensive workplace training, which closely involves employers and business associations and has contributed to relatively low youth unemployment.

Box 3.7. **VET and lifelong learning in Chile** *(cont.)*

- **Weak connection between the various elements of the system:** Both the Ministry of Labour and the Ministry of Education have key responsibilities in VET policy and supervise different VET programmes. To improve the articulation between the elements of the system, the government plans to introduce a qualifications framework. This would increase mobility of students from one part of the system to another, for instance from the CFTs to the IPs and improve transparency for employers.

While VET can improve the professional skills and job mobility of youths, the International Adult Literacy Survey (OECD, 2000) showed that the skills of a large share of adults were insufficient to master basic tasks (see Chapter 4, Figure 4.1). The government is developing a National Labour Skills Certification System (*Sistema Nacional de Certificación de Competencias Laborales*) as part of the *ChileCalifica* programme, which aims at providing a framework for the recognition of professional competences, regardless of whether these were acquired on the job or through formal training. This may help adults without formal degree enter VET or other education programmes and improve their employability across sectors through lifelong learning.

Restrictive start-up regulations and an inefficient bankruptcy procedure slow entrepreneurship

Regulatory barriers in Chile have impeded entrepreneurial activity and the reallocation of resources from low-productivity activities into innovative and productivity-enhancing activities. Overly restrictive regulation of start-ups has prevented the development of new entrepreneurial ideas and an inefficient bankruptcy procedure has slowed the exit of inefficient firms from the market. A first best policy to enhance innovation would therefore be to ease these regulations, a conclusion supported by a number of recent studies that have shown that a liberalised trade and FDI regime needs to be complemented by free entry and exit in order to generate productivity gains (see Harrison and Rodriguez-Clare, 2009 for a survey).

Restrictive start-up regulations not only act as a brake on competition but can also hold back innovation by restricting the entry of firms with new and innovative ideas. The government is currently considering several reforms to ease regulatory red-tape for start-ups. These include easing administrative procedures for obtaining permits and an initiative to integrate the different administrative procedures in a single electronic platform (Platform of Interoperability of Public Services, PISEE). In the medium term this platform could act as a one-stop shop for business start-ups.

The bankruptcy procedure is inefficient, which holds back entrepreneurial risk taking and makes access to credit difficult. According to the World Bank Doing Business indicators, Chile's bankruptcy procedure is lengthier and more costly than in most OECD countries. It takes 4.5 years and costs 15% of the estate to close down a business, as compared to 1.7 years and 8.4% in the average OECD country. Lengthy bankruptcy procedures and high costs can deter entrepreneurial risk taking by making it costly to fail (White, 2005). Moreover, the protection of creditors during bankruptcy appears to be weak. While creditors in the average OECD country recover 68.6 cents on the dollar, in Chile they recover only 21.3 cents. As creditors anticipate low recovery rates, they can become reluctant to give credit to potentially very productive but risky businesses. Several initiatives to make the bankruptcy law more efficient are under way. The government has

facilitated the reorganisation or orderly close down of SMEs through an extra-judicial procedure (*Estatuto Pyme*). The authorities have also launched an inter-ministerial working group to assess options for reform, which considers, among other options, the creation of specialised bankruptcy courts.

Inside-the-frontier innovation and the shift of resources into higher-productivity activities is also held back by high severance pay, which can lock workers into low-productivity jobs in traditional activities. Chile's employment protection legislation (EPL) is less rigid than in the median OECD country. However, employers who dismiss an indefinite-duration worker with more than one year of tenure for economic reasons have to pay one monthly wage of severance pay for every year of service (see Chapter 2). As workers lose their entitlements when they terminate a contract, high severance pay can lock them into low-productivity jobs. Even when higher-productivity and higher-wage opportunities emerge, they may prefer to stay in a low-productivity occupation if they expect to receive severance pay in case of dismissal for economic reasons.[6] Moreover, recent empirical evidence shows that restrictive employment protection legislation, including high severance pay, can reduce firms' speed of adjustment to shocks, thereby lowering aggregate productivity growth (Caballero *et al.*, 2006).

The innovation policy framework has improved

Despite several recent innovation policy reforms, a further reason for low innovation are a number of remaining weaknesses in innovation policy. R&D is mainly financed by the government and carried out in universities and public research institutes. With the caveat that data on the composition of R&D spending in Chile after 2004 are not available, only around 46% of R&D is financed by industry as compared to an OECD average of more than 60%. Links between universities, public research institutes and the private business sector are weak.[7] As a consequence, the private business sector's propensity to engage in innovation is low by OECD standards (Figure 3.10). The share of firms reporting technological innovations (product or process) in the 2007 innovation survey is 23.7% and the share reporting a non-technological innovation (marketing or organisational) is 27.8% (SCL, 2008).

For firms that do introduce technological and non-technological innovations, public innovation policy instruments and co-operation with public research institutes or universities play a minor role. Only 5.2% of firms that had introduced an innovation reported having used a public innovation policy instrument. Only around 10% of firms having introduced an innovation co-operate with public research institutes or universities on innovation. Moreover, co-operation with universities and public research institutes is the least-valued form of co-operation next to co-operation with competitors.

The authorities have recently taken several measures to promote links between public research institutes or universities and private enterprises. They introduced an R&D tax credit in 2008, under which firms can claim a tax credit of 35% of the payments made to a public research institute they have contracted to conduct R&D and can deduct 65% of the remaining amount from taxable income. Research centres and R&D contracts have to be certified by the Economic Development Agency (CORFO) and in-house R&D is excluded from the tax credit. It remains to be seen whether the R&D tax credit will induce more R&D. Because the entire amount of R&D expenditure contracted with a certified research institute can be claimed, the credit may have little incremental effect on R&D spending. To make sure that firms benefit from tax credits only for additional R&D, some OECD countries use incremental schemes (Ireland, United States) in which only additional R&D with respect to a reference base is

Figure 3.10. **Innovations in firms**
As per cent of all firms[1]

1. Two-year reference period 2004-05 and 2005-2006 for Chile.

Source: OECD (2009a); Ministry of Economy, Fifth Innovation Survey Indicators.

StatLink http://dx.doi.org/10.1787/776582036837

eligible, while others use mixed volume-incremental schemes (France, Korea, Portugal and Spain). A volume-based mechanism is of course a precondition for setting up an incremental scheme, as it collects information on R&D per firm, which can then be used as the reference for the incremental mechanism. Once the current volume-based scheme is up and working, the Chilean authorities should consider a switch to an incremental mechanism.

Since the introduction of the R&D tax credit in 2008, 56 research centres have registered with the economic development agency and 8 R&D contracts have been certified. Although it is too early to judge the success of the of the R&D tax credit the number of certified contracts seems relatively low. This may be due to the double certification process (both research institutes and contracts have to be certified) or to the business sector's insufficient knowledge about the scheme. Although CORFO has already held seminars and meetings with the business sector, greater advertising efforts may be needed to reach potentially interested businesses. Another reason may be that in the sectors in which R&D is currently concentrated firms conduct R&D mostly internally

within firms' own R&D departments. These firms may not be willing to contract out R&D to avoid the leakage of sensitive knowledge. Indeed, the certified R&D contracts are not in the mining and manufacturing sectors, in which R&D is currently concentrated, but instead in the fishing and aquaculture sectors.

The authorities have launched other promising initiatives to promote links between private enterprises and public research institutes that require the matching of public grants by private funds. One of these programmes is the joint Technological Consortia Programme of the National Commission for Scientific and Technological Research (CONICYT), the Economic Development Agency (CORFO) and the Foundation for Agricultural Innovation (FIA), which requires private enterprises and research institutes to set up technological consortia to be eligible for public grants; 24 consortia are currently in operation. CORFO's *InnovaChile* runs a similar technological consortia programme (although it does not require the participation of a university or technological institute). An older programme created in 1991 is CONICYT's Fund for the Promotion of Scientific and Technological Development (FONDEF) which requires public research institutes to match public grants with private funds for applied research projects, research at the pre-competitive stage and technology transfer.

Traditionally, most of the public funding instruments have focused on R&D, rather than technology diffusion, although *InnovaChile* has recently devoted more effort to business innovation. According to the Innovation Survey, only 30.9% of firms having introduced an innovation (technological or non-technological) report R&D spending, as the bulk of innovating firms mainly rely on the acquisition of machinery and equipment. Indeed, only around 20% of firms' spending on innovative activities is on R&D. Benavente (2006b), using the standard Crepon *et al*. (1996) methodology, finds no link between R&D spending and innovation in Chile. The move of *InnovaChile* to support any type of innovation (product, service, marketing, organisational) and not exclusively spending recorded as R&D may help foster more market-oriented innovation, as does the support for the formation of technology consortia including private enterprises and public research institutes that develop market-oriented technologies.

Creating networks of technological institutes and private enterprises for technology diffusion is a promising idea. To enhance the diffusion of existing technologies the National Innovation Council for Competitiveness (2008) proposes to create an association of the 15 technological institutes (Sistema Nacional de Institutos Tecnológicos, SNITec), which would provide R&D and technological consulting services especially tailored to the needs of SMEs. This association would also certify private enterprises or public research institutions to act as "trusted brokers" for technology transfer. The Ministerial Committee for Innovation has approved the creation of a co-ordinating secretariat in early 2009. Against the background of the currently weak co-operation between enterprises and research institutes the authorities should pursue this project further and emphasise its technology diffusion component.

Until the creation of the National Innovation Council for Competitiveness, the setting of innovation policy priorities had not been separated from funding and the innovation policy framework was fragmented. Several agencies in the ministries of economy, education, agriculture, and planning had been setting the innovation policy priorities in a decentralised manner, which had made the formulation of a coherent long-term innovation strategy difficult (see Box 3.8 on the government agencies responsible for innovation policy). The creation of the National Innovation Council in 2006 follows international best practice by separating the policy-setting function from the funding

Box 3.8. **The innovation policy framework after the 2006 reforms**

- The National Innovation Council for Competitiveness (created by decree in 2006 pending approval by Congress) sets guidelines for long-term national innovation strategy.
- The Ministerial Committee for Innovation chaired by the Ministry of Economy designs the innovation policies and sets up action plans based on the National Innovation Council's recommendations. It also administers the newly created Fund for Competitiveness, which mainly provides funding to the funding agencies mentioned below.*
- The main funding agencies are:
  - *i)* the National Commission for Scientific and Technological Research (CONICYT) which is attached to the Ministry of Education and which focuses on public support for scientific and technological research and the development of human capital; among others, CONICYT runs the Fund for the Promotion of Scientific and Technological Development (FONDEF) that requires matching public grants with private funds for applied research projects.
  - *ii)* the innovation arm (*InnovaChile*) of the Econonomic Development Agency (CORFO) which operates under the oversight of the Ministry of Economy and focuses on supporting business innovation and entrepreneurship; among others, *InnovaChile* runs a business innovation programme aimed at supporting all types of innovation (product, service, process, marketing, organisational) in individual firms and the setup of technological consortia between private enterprises and public research institutes; it also administers (through the certification of R&D contracts and research institutes) the tax credit for private R&D that came into force in 2008 and under which firms can claim a credit of 35% of the payments made to a certified public research institute contracted to conduct R&D.
- Other relevant funding agencies are:
  - *iii)* the Millenium Scientific Initiative which is attached to the Ministry of Planning and which finances research centres of excellence in areas that are relevant to Chile's economic development;
  - *iv)* the Foundation for Agricultural Innovation which is attached to the Ministry of Agriculture and supports innovation in the agricultural sector.
- According to Ministry of Economy (2009) and information provided by the Ministry of Finance, spending on science, technology and innovation in 2009 amounts to 325 billion pesos (0.38% of GDP). This represents a 41% growth of the science, technology and innovation budget in real terms with respect to 2008. Of these, around 31% are allocated through the Fund for Competitiveness, around 5% through the scholarship programme *Becas Bicentenario* and around 60% through other budgetary items (CONICYT, CORFO and other funding agencies). The authorities plan to allocate at least 50% of the Fund for Competitiveness and part of the Becas Bicentenario and other budgetary items to priority clusters.

* Although earmarking of public funds is prohibited by constitution in Chile there is a clear political commitment to use the proceeds of the new minining tax introduced in 2006 for innovation policy purposes through the Fund for Competitiveness.

function. However, the multiplicity of funding mechanisms remains and funds partly overlap. For instance, the FONDEF fund, operated by CONICYT and CORFO's business innovation programme, targets similar market failures and similar firms.

A number of sectorally neutral or "horizontal" policies address presumed failures in the market for innovation, in particular financial restrictions for small and innovative entrepreneurs. The state-owned bank *BancoEstado* guarantees credit for SMEs through its FOGAPE programme, which helps small and potentially innovative entrepreneurs to obtain access to credit. CORFO's venture and seed capital instruments also help innovative but risky ventures to obtain access to capital. Further support for this type of enterprises may come from a planned capital market reform (MK III, see Chapter 1) that foresees the easing of regulatory restrictions on domestic and foreign risk capital funds.

Potential risks from prioritising sectoral clusters should be borne in mind

The authorities have started to move away from a purely horizontal approach to innovation policy towards a more vertical approach, under which some sectors are singled out for priority support (National Innovation Council for Competitiveness, 2007, 2008). In other areas, the authorities have already moved away from a purely horizontal approach. The economic development agency, for instance, has a programme to attract FDI to high-technology sectors (Box 3.9). The withholding tax for repatriated earnings has also been reformed in 2007 to make investment in knowledge-intensive services more attractive (15% withholding tax rate on knowledge-intensive services as compared to a 35% rate on other repatriated earnings).

Box 3.9. **FDI and technology diffusion**

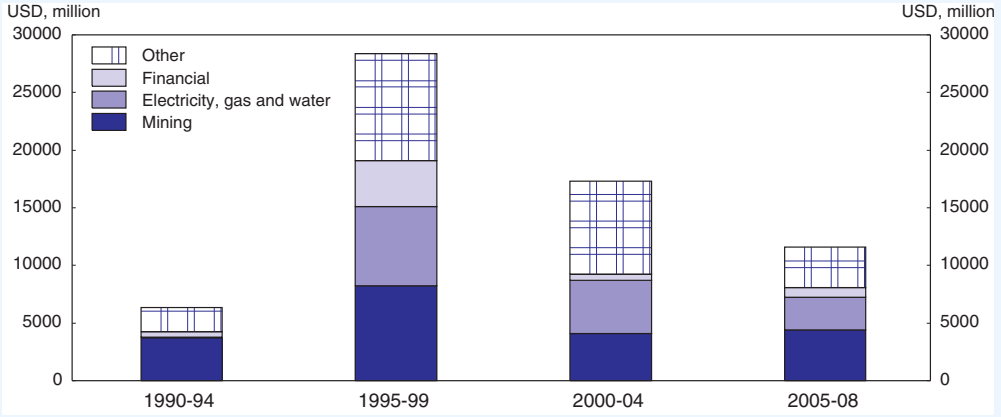
As a share of GDP, inward FDI to Chile is the highest among South American countries, attracted by a stable macroeconomic environment and an open and non-discriminatory FDI regime. Although the share of FDI in services – mainly related to privatisation and deregulation in network industries – has increased over the past two decades, the mining sector remains the most important recipient of inward FDI (Figure 3.11).

FDI in the mining sector is generally seen as bringing limited gains in terms of technology diffusion because of its relative disconnection from the rest of the economy. When in 1996 the multi-national Intel chose to set up shop in Costa Rica instead of Chile – mainly because of the lack of qualified workers but partly also because Chile rejected the request for a tax break (Rodríguez-Clare, 2001, Agosín *et al.*, 2009) – this sparked a debate on targeting specific sectors for FDI. Since 2000 CORFO targets high-technology sectors through its High Technology Investment Promotion Programme (renamed *InvestChile*), through subsidies for feasibility studies, investment in fixed assets, and training. At the beginning the programme targeted only high-technology producing sectors, which proved to be ineffective as no investment could be attracted. Nowadays, the programme targets high-technology using sectors, such as software development and call centres. According to Agosin *et al.* (2009), around 40 of the around 70 firms that have benefited from subsidies have decided to set up shop in Chile. However, the authorities have not conducted a formal impact study of the programme to date. It therefore remains difficult to judge whether the high-technology companies that decided to set up shop in Chile have indeed been attracted by CORFO's programme or whether they would have chosen Chile as the FDI location even in the absence of the programme.

Box 3.9. **FDI and technology diffusion** *(cont.)*

Ultimately, FDI policy should not be assessed in terms of the number of high-technology investments it attracts but in terms of the technology diffusion and knowledge spillovers it helps to generate. A number of studies find that technology diffusion and knowledge spillovers are not automatic (see Hoekman and Javorcik, 2006 for a survey). In this sense, the training subsidies of *InvestChile* appear justified, as they may help diffuse the knowledge of the multi-national firm to the local workforce but the subsidies for feasibility studies and investment in fixed assets appear more questionable in this respect. In any future upscaling of the programme, which is currently relatively small (11 million US dollars in 2008), the focus should therefore be on training subsidies.

Figure 3.11. **Foreign direct investment by sector**[1]



1. Investment through the Foreign Investment Statute (DL 600).

Source: Foreign Investment Committee.

StatLink http://dx.doi.org/10.1787/776600431420

In the first white book the National Innovation Council (National Innovation Council for Competitiveness, 2007, pp. 21-29) states that the cluster strategy aims at enhancing competitiveness and the diversification of production. While it explicitly rejects the view that resource-abundant countries should move away from resource-intensive production irrespective of their comparative advantage ("hard" industrial policies by creation of comparative advantages from scratch), it nevertheless emphasises the need to diversify into more knowledge-based activities.[8] The National Innovation Council therefore ranks potential clusters for priority support according to both distance from Chile's revealed comparative advantage and potential growth on world markets.

The National Innovation Council outsourced the identification of priority clusters for public support to a global consulting firm, which was chosen through a competitive bidding process. In its study, the consulting firm evaluated growth potential on world markets and the comparative advantage of Chile for a large number of industries through interviews with the main actors in the industry, consultation with leading sector specialists, benchmarking of industries, and scientific and press publications. Even though large uncertainties surround the consultant firm's potential global growth and comparative advantage estimates, and it remains unclear how the two factors are weighted in the final ranking, outsourcing the identification procedure to a private consultant has the benefit of being transparent.

The number of clusters identified for priority support has been narrowed down to eight by the National Innovation Council. These priority clusters are mostly linked to natural resources, in which Chile's comparative advantage has been revealed in the past. The selected sectors are fish farming, special interest tourism, copper mining, global services, processed food, primary fruit industry, pork and chicken farming, financial services. The National Innovation Council also identified five "transversal" platforms: human capital; research and development; infrastructure and natural resources; regulatory, legal and political framework; and financial services.

Based on the strategic guidelines elaborated by the National Innovation Council, the Ministerial Committee for Innovation has developed a biannual action plan for 2009-2010. This action plan has reduced the number of priority clusters to five (food industry, fish farming, mining, special interest tourism, global services) and redefined the priority transversal areas as environment and water resources, biotechnology, renewable energies and ICT (Ministry of Economy, 2009). The reduction of the number of priority clusters appears to be the result of regrouping the processed food industry, pork and chicken farming and the primary food industry under the processed food industry, but the prioritisation of biotechnology, renewable energies and ICT as transversal areas appears only loosely related to the National Innovation Council's principle to rank sectors according to Chile's comparative advantage and potential growth on world markets. Instead, it appears to aim at supporting knowledge-based industries irrespective of Chile's comparative advantage. To make sure the selection of sectoral priority clusters and transversal areas are based on similar principles, the selection process for the transversal areas could be made more transparent.

One risk of deviating from sector neutrality in innovation policy is to pick sectors that would have formed successful clusters even in the absence of public support. Cluster policies can help overcome co-ordination failures between private businesses that prevent the emergence of successful clusters. However, cluster policies may also erroneously target sectors in which private businesses are able to overcome co-ordination failures on their own. This could occur even if the National Innovation Council's projections of global growth of the sector and its comparative advantage were accurate. Sectors with strong global growth potential and a strong comparative advantage may turn out to form successful clusters without public sector intervention. For instance, the Chilean wine industry has moved towards promoting the image of Chilean wine abroad and increasingly co-operated on upgrading Chilean grapes through R&D as export prospects soared over the past decade (Box 3.10). In this case, targeted public funds may have little additional effect.

Box 3.10. **Export discovery and cluster formation without public intervention: The Chilean wine industry**

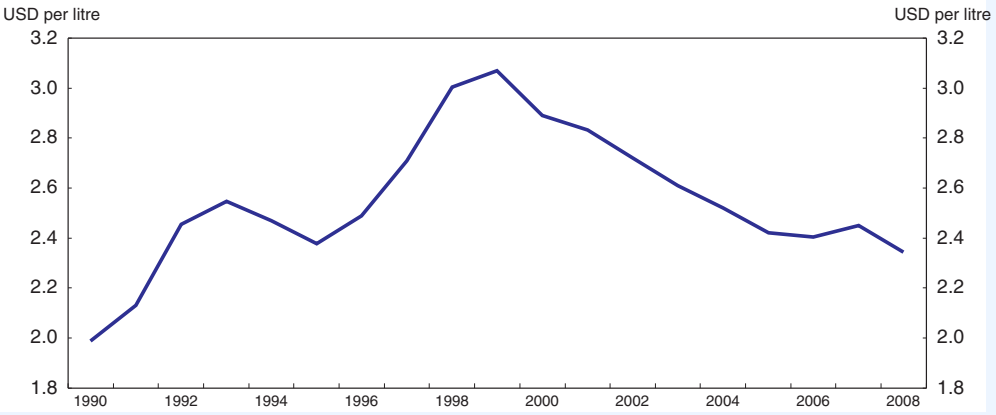
Chile has a century-old tradition of wine production but "export discovery" took place in the late 1970s, as a result of foreign direct investment. In 1978, the Spanish firm *Miguel Torres* started to import technologies that were standard in higher-income markets (small oak barrels, stainless steel vats) but new to Chile and started to produce export-quality wines. Several vineyards followed suit and exports started to take off in the late 1980s. While in the 1980s most technology was imported, over the 1990s national suppliers of technology started to emerge and wine producers started to access more advanced foreign technologies and marketing techniques through joint ventures with foreign firms.

Box 3.10. **Export discovery and cluster formation without public intervention: The Chilean wine industry** *(cont.)*

The role of the public sector in export discovery and technological upgrading was limited to providing appropriate framework conditions, such as an open trade and FDI regime and a reasonable level of market regulation. An open FDI regime helped *Miguel Torres* and other foreign firms with advanced technological and marketing know-how to set up shop in Chile. Low tariffs kept the price of imported technologies in the 1980s low and an expanding network of free trade agreements provided preferential access to key foreign markets. On the regulatory side, the elimination of restrictive regulations for wine production (limits on land surface allocated to wine production) and agriculture in general in the 1970s established a more business-friendly environment; appropriate phyto-sanitary regulations helped to keep diseases outside the Chilean borders; and the introduction of denominations of origin in 1994 effectively established minimum quality standards.

Currently, the main challenge for the industry is to move into higher quality segments on world markets, as the price per exported litre has fallen since the late 1990s (Figure 3.12). According to industry observers (Benavente, 2006a), to achieve quality upgrading Chile's country brand has to be strengthened, research capacities in the industry have to be stepped up and the denominations of origin have to be enforced. The industry association (*Vinos de Chile*) has taken significant steps in promoting the Chilean brand as a high-quality wine producer and has started to co-operate on R&D. The major challenge for the public sector is currently to fully enforce the denominations of origin.

Figure 3.12. **Export unit value for bottled wine**[1]



1. In 2000 USD deflated with the US price deflator (PPI) for wines with denomination of origin (product code: 22042110).

Source: ODEPA.

StatLink http://dx.doi.org/10.1787/776600586843

Another risk is the opposite problem: supporting sectors that are not viable. If the National Innovation Council's projections of global growth and Chile's comparative advantage turned out to be inaccurate, public resources would be wasted on failing sectors. Moreover, labour and capital would be allocated to relatively unproductive uses, thereby reducing overall output and productivity.

Capture may be another problem with selecting sectors for priority support, although the planned institutional setup for the National Innovation Council and the use of temporary grants limits this risk. According to a draft bill currently discussed in Congress the members of the National Innovation Council would be independent (nominated by the president and ratified by the Senate) and the terms of office would not coincide with those of the president. In this sense, the members of the National Innovation Council would be independent of the electoral cycle and less likely to make concessions to special interest groups to enhance their electoral prospects. The predominant use of the existing funding mechanisms of the Economic Development Agency (CORFO) and the National Commission for Scientific and Technological Research (CONICYT), which mainly use temporary grants to redirect resources to the priority clusters, also limits the risk of capture by special interest groups, as compared to "hard" industrial policy instruments, such as import tariffs or tax breaks.

The authorities have identified the outcome targets of the industrial clusters. These should be monitored closely. Although setting quantitative performance objectives for clusters is a complicated task, three measures can be implemented in practice (Rodrik, 2004). Firstly, objectives can be set in terms of productivity growth. Although productivity is difficult to measure, project audits by technical and business consultants can provide useful information. Secondly, clusters can be benchmarked against similar industries in other emerging counties. Finally, outcome objectives can be set in terms of export performance, as this provides useful information on how the cluster performs compared to world-class competitors. The authorities have chosen to specify the outcome targets for the industrial clusters mainly in terms of export performance.[9]

Cluster designations should be reviewed periodically and clear protocols should be established on when to withdraw public support. Support should be withdrawn from clusters which continually fail to meet their performance objectives to avoid lock-in of failures (Rodrik, 2004). Even for clusters that meet their performance objectives, support should be reviewed after a pre-specified period of time has elapsed (sunset clauses), as for successful clusters the objective should be that private financing eventually substitutes for public support.

More generally, the role of the public sector in selecting export sectors should not be overemphasised and public sector action should focus on providing adequate framework conditions, such as an open trade and FDI regime and an appropriate level of regulation. This is the main lesson that can be learned from the case studies on the salmon and wine industries (see Boxes 3.10 and 3.11). In the case of salmon farming the public sector did play a role in the identification of the sector for exports through a partly publicly-owned institution (*Fundación Chile*), but the wine sector emerged as a successful exporter on world markets without public support. While in the presence of severe co-ordination failures the public sector may play a useful role in identifying export sectors, in general a strong comparative advantage and adequate framework conditions will be sufficient for export success. The wine sector, for instance, was helped by an open trade and FDI regime and appropriate regulation. By contrast, the salmon sector suffered from over-reliance on self-regulation and a lack of government oversight which led to the outbreak of a preventable disease and the near-breakdown of production over the past year (Box 3.11).

Box 3.11. **Salmon farming: Public sector induced export discovery and regulatory failure**

Salmon farming is generally viewed as a successful example of a public sector induced export discovery. In 1980 *Fundación Chile*, a private non-profit institution partially owned by the State, established an aquaculture programme, whose success had strong demonstration effects on private entrepreneurs. Although some observers have argued that the salmon farming would have been discovered for exports even in the absence of intervention from *Fundación Chile* (Quiroz, 2006), its role in the take off and development of the industry is unquestionable. After selling off the pilot project to the private sector, *Fundación Chile* continued to support the growing industry through knowledge-generation initiatives and the establishment in 1986 of a first business association (*SalmonChile*).

Over the 1990s the salmon industry emerged as a major exporter on world markets, helped by low tariffs and an open FDI regime. Low tariffs facilitated the import of inputs, such as capital goods and salmon eggs. Favourable conditions for FDI attracted foreign firms, which introduced new business strategies (such as vertical integration) in Chile. Moreover, an expanding network of free trade agreements gave Chilean exporters an important edge over its major competitors in some markets.

The increase in exports went hand in hand with falling prices on world markets and deteriorating sanitary conditions on the salmon farms. Exports soared from 50 million US dollars in 1989 to 2.4 billion in 2008 and Chile became the world's second-largest exporter of farmed salmon (after Norway), which contributed to a fall in world market prices. Chilean firms reacted by increasing production, which, in turn, lead to a deterioration in sanitary conditions on salmon farms and an extensive use of antibiotics.

The recent outbreak of Infectious Salmon Anemia (ISA) that brought the industry to its knees in 2008 and 2009 can partly be attributed to regulatory deficiencies. One of the main determinants of sanitary conditions on salmon farms is the geographical proximity of production units, as a high density favours the spread of diseases. In Chile the density of production is higher than in other salmon farming countries (Economist, 2008), mainly due to inadequate regulations on the minimum distance between farms and to an over-reliance on self-regulation. A second main determinant of sanitary conditions is controls for imported salmon eggs, which failed to detect ISA early on. The authorities have taken emergency measures to address these deficiencies but going forward a change in the regulatory framework will be necessary to maintain Chile's position as a main player on world markets.

Concluding remarks

Lifting productivity growth from its current slow pace is one of the main policy challenges in Chile and enhancing competition should be a major element of any economic strategy setting out to address this challenge. The recent reform of the competition policy framework is a big step forward in this respect but effectiveness will depend on diligent implementation. Product market regulation, which is overly restrictive and stifles competition in some areas, should be another priority for reform.

Policies to foster entrepreneurship and innovation may also help enhance productivity growth. Restrictive regulations on entry and exit of firms limit the discovery of new entrepreneurial ideas and restrict the exit of inefficient firms from the market. The innovation policy framework has improved considerably over the past years and many promising projects have been launched. The authorities are right to emphasise potential positive effects from greater export diversification on productivity and growth but risks of targeting specific sectors should be borne in mind.

Box 3.12. **Recommendations on enhancing competition, entrepreneurship and innovation**

The main objectives of economic policies to enhance productivity growth should be to strengthen competition through legal and regulatory action, to remove regulatory barriers to entrepreneurship and to strengthen innovation in firms.

- Ensure the National Economic Prosecutor receives sufficient resources. Strengthen deterrence for cartel participation by linking the maximum fine to revenues on the market involved in the conspiracy; make price fixing a criminal offence.
- To encourage participation in the new leniency programme, clarify the conditions under which firms will be granted immunity through the publication of transparent guidelines.
- Enhance consumer protection to improve the functioning of product markets through increased price transparency.
- Reduce entry barriers in retail and business services to discipline incumbent firms.
- Reduce "red tape" for start-ups to both strengthen competition and the discovery of new entrepreneurial ideas.
- Reform the bankruptcy law to encourage entrepreneurial risk taking in non-traditional sectors.
- In innovation policy, continue efforts to strengthen links between universities and firms and continue to move away from the narrow focus on R&D and support all forms of innovation in firms.
- Publish the quantitative objectives for the industrial clusters and review public support if targets are not met; establish sunset clauses for public support.

Notes

1. On the Fraser Institute indicator that combines measures of governance, macroeconomic management and regulatory quality into a summary indicator of "economic freedom", Chile ranks sixth in the world (Fraser Institute, 2008). On the subindicator for regulatory quality of the World Bank governance indicators Chile ranks 19th (Kaufmann *et al.*, 2009). The World Economic Forum ranks Chile among the top emerging-market performers on its Global Competitiveness index, which apart from macroeconomic and regulatory framework conditions also measures the level of education and infrastructure, and on which Chile ranks 30th in the world (World Economic Forum, 2009).
2. In the "flat-panel TV war case", the Competition Tribunal ruled that two large retailers (*Almacenes Paris* and *Falabella*) had colluded and used their dominant position *vis-a-vis* their distributors to make them boycott a promotional event organised by a potential competitor (*Banco de Chile*). It based its decision on indirect evidence from an unusually high telephone traffic between the two retailers. The Supreme Court in most part confirmed this ruling.
3. According to Falabella's income statement, its revenues in 2008 were 3 727 186 million pesos or around USD 7.1 billion (available at *www.google.com/finance*) and the fine imposed on it was 8 000 tax units, which in 2008 was equivalent to USD 6.9 million. The other retailer involved, Almacenes Paris, is owned by Cencosud and a separate income statement is not available.
4. Before an investigation has started the availability of a leniency programme does not change the firm's trade-off between expected profits and expected losses. After an investigation has been started, the probability of being caught increases and a firm may be willing to turn itself in and co-operate with the authorities to unveil the cartel if it is eligible for immunity (see Motta and Polo, 2003, for a formal model).
5. The Competition Tribunal's ruling was based on the consideration that the firm was not a dominant player, its prices were above its average variable costs, and its investments were not

aimed at creating an entry barrier. The Supreme court, in contrast, argued that predatory pricing does not require a dominant position, that prices were below "costs" without specifying its cost definition, and that the level of investments created an entry barrier.

6. According to the OECD's *Labour Market and Social Policy Review of Chile* (OECD, 2009), around 6% of workers who become unemployed are entitled to severance pay and even less actually receive it. Nonetheless, workers may ex-ante attach a high value to severance pay if they are very averse to the risk of being dismissed for economic reasons or if they are imperfectly informed on the actual probability of receiving severance pay.
7. According to a 2008 government communication to the Committee for Scientific and Technological Policy of the OECD and OECD (2007).
8. "This strategy recognizes that, at least initially, the greater part of our future gamble must be placed with the development of natural resource-intensive economic activities. However, we must emphasise that this does not imply ignoring the benefits of a greater production diversification (towards knowledge-intensive services and industries) or the argument that manufacturing has more possibilities for innovation in the final product" (National Innovation Council for Competitiveness, 2007, p. 28).
9. According to information provided by the Ministry of Economy for the offshoring cluster an export target of 1 billion US dollars by 2010 has been specified; for the tourism cluster the outcome objective is to increase average expenditure per tourist from USD 2 700 to USD 4 000; for the mining cluster the objective is to increase exports of provider firms from USD 300 million to USD 1 billion in 2012; for the agrifood cluster the objective is to reach USD 1.5 billion of processed foods exports by 2010 and USD 1.5 billion of fresh fruits by 2012; the objective of the aquaculture cluster is to reach USD 4.5 billion of exports by 2015.

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ANNEX 3.A1

Ten main export products

The ranking is based on trade data at the 6-digit level of the Harmonized System (HS6) using the BACI-CEPII version of COMTRADE. The BACI dataset improves the reliability of COMTRADE data by harmonising import and export declarations of trading partners.

Table 3.A1.1. **Shares of Chile's main exported products in total exports**

Rank		Product[1]	Million USD	Export share	Markets
1	740 311	Copper cathodes and sections of cathodes unwrought	16 142	28.6	34
2	260 300	Copper ores and concentrates	11 450	20.3	22
3	740 200	Unrefined copper, copper anodes, electrolytic refining	2 797	5	18
4	261 310	Molybdenum concentrates, roasted	1 367	2.4	22
5	290 511	Methyl alcohol	1 032	1.8	20
6	261 390	Molybdenum ores and concentrates except roasted	944	1.7	13
7	740 319	Refined copper products, unwrought, nes	912	1.6	19
8	080 610	Grapes, fresh	879	1.6	82
9	220 421	Grape wines nes, fortified wine or must, pack < 2 l	844	1.5	111
10	470 321	Chem wood pulp, soda or sulphate, conifer, bleached	814	1.4	39
		Total	37 185	65.9	126[2]

1. The ranking is based on trade data at the 6-digit level of the Harmonized system (version 1989-92). This classification is composed of 5 041 products.
2. All destinations to which any of the 10 products is exported.

Source: COMTRADE (BACI-CEPII).

Chapter 4

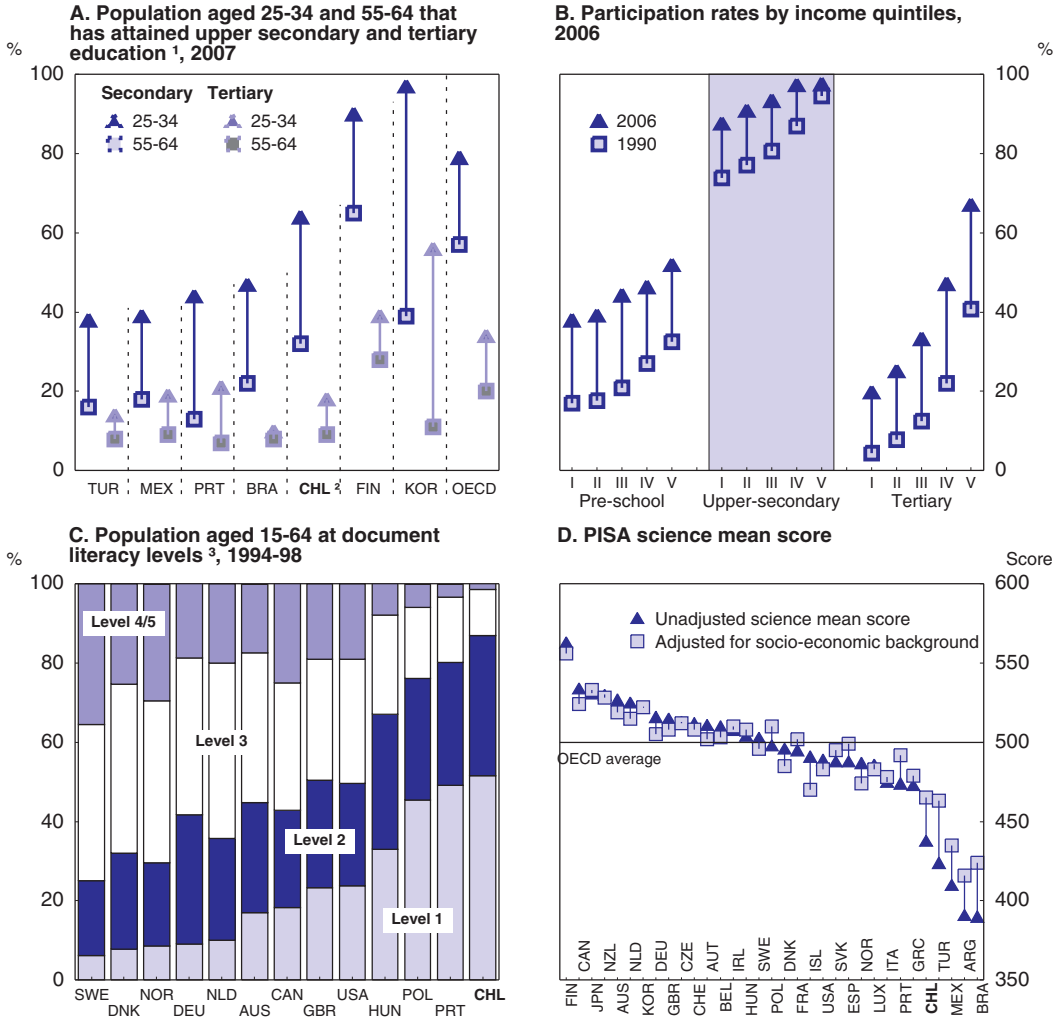
Climbing on giants' shoulders: Better schools for all Chilean children

Chile has made impressive progress in educational attainment. Yet, despite recent improvements, outcomes, as measured by PISA results, still need to catch up with OECD standards and equity problems should be addressed. One decisive ingredient will be better teachers. Chile should aim to attract qualified individuals to the profession and bolster initiatives to improve initial teacher education and training. A second ingredient will be stronger quality assurance mechanisms. For a long time, Chile has relied to a considerable extent on competition to ensure school quality. But there has been limited success, in part due to very unequal conditions for public and private schools to compete in terms of their ability to select children, their flexibility to employ teachers and in terms of financing. Chile has started to address this by prohibiting the selection of students until 6th grade. The ongoing introduction of a nation-wide quality assurance system based on independent evaluation of results is a welcome complement. Finally, Chile will have to improve outcomes for students with poor results even more than for the rest which would lift the average and improve equity at the same time. The government has recently made important changes to invest more in students from weak socio-economic backgrounds. These extra resources can help to make considerable progress.

Educational attainment has increased fast, but quality is still lagging behind

Chile has made impressive progress in terms of educational attainment, that is the highest educational degree that its citizens have obtained. The coverage of primary education is now almost universal and secondary and tertiary attainment rates have increased rapidly (Figure 4.1, Panel A). This is true for children in all income ranges

Figure 4.1. **Educational attainment and outcomes**



1. Excluding ISCED 3C short programmes.
2. Year of reference 2004.
3. Literacy level 1 indicates poor ability to process basic information. Level ? indicates higher-order information processing skills.

Source: OECD, *Literacy in the Information Age 2000; Education at a Glance 2009; PISA Results 2006 Database*; Ministerio de Planificación, Encuesta CASEN 1990 and 2006.

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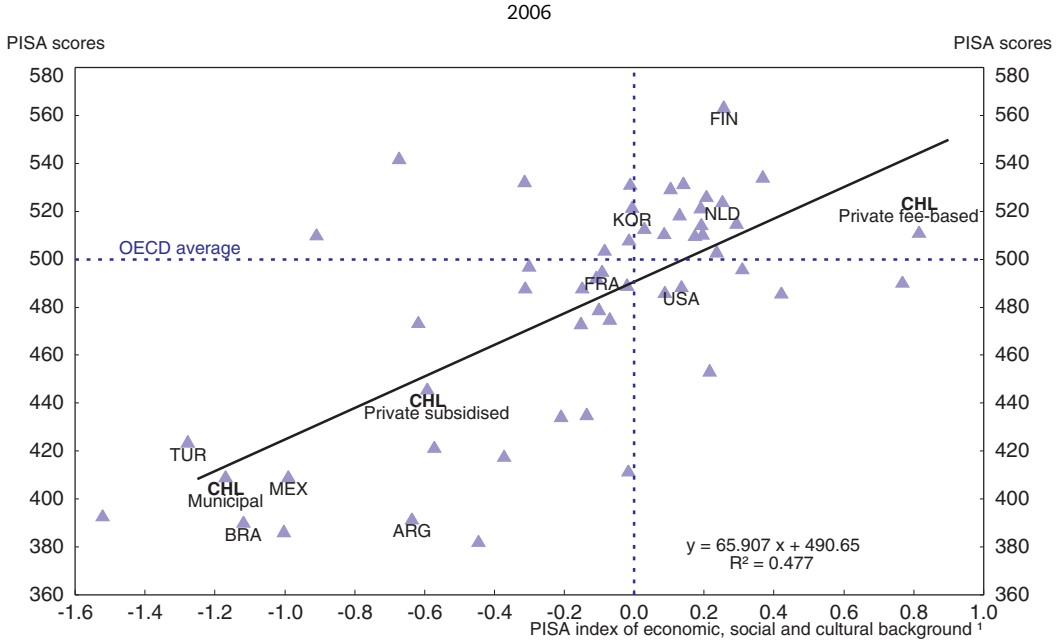
(Figure 4.1, Panel B), but participation rates for lower income children continue to lag behind. This improvement comes against the background of a relatively low level of skills within the entire population. The International Adult Literacy Survey (OECD, 2000), although a bit dated now, had shown that the skills of a large share of the Chilean population were insufficient to master basic tasks (Figure 4.1, Panel C).

PISA results have improved considerably between 2000 and 2006. Nevertheless, the scores of 15 year-olds in science, reading and mathematics are still well below the OECD average, including after adjusting for the lower socio-economic background of Chilean students (Figure 4.1, Panel D). Even high-income children taught at private schools, which devote several times the amount of resources to each pupil compared to publicly funded (municipal and private subsidised) schools, reach results that are only just above the OECD average (Figure 4.2).

Figure 4.2. **Socio-economic background and PISA scores**



1. The PISA index of economic, social and cultural status (ESCS) summarises various aspects of socio-economic background, including father's and mother's education and occupational status and students' access to educational resources. It is normalised to 0 for the OECD average. A higher index value indicates a higher socio-economic background.

Source: OECD, PISA Results 2006.

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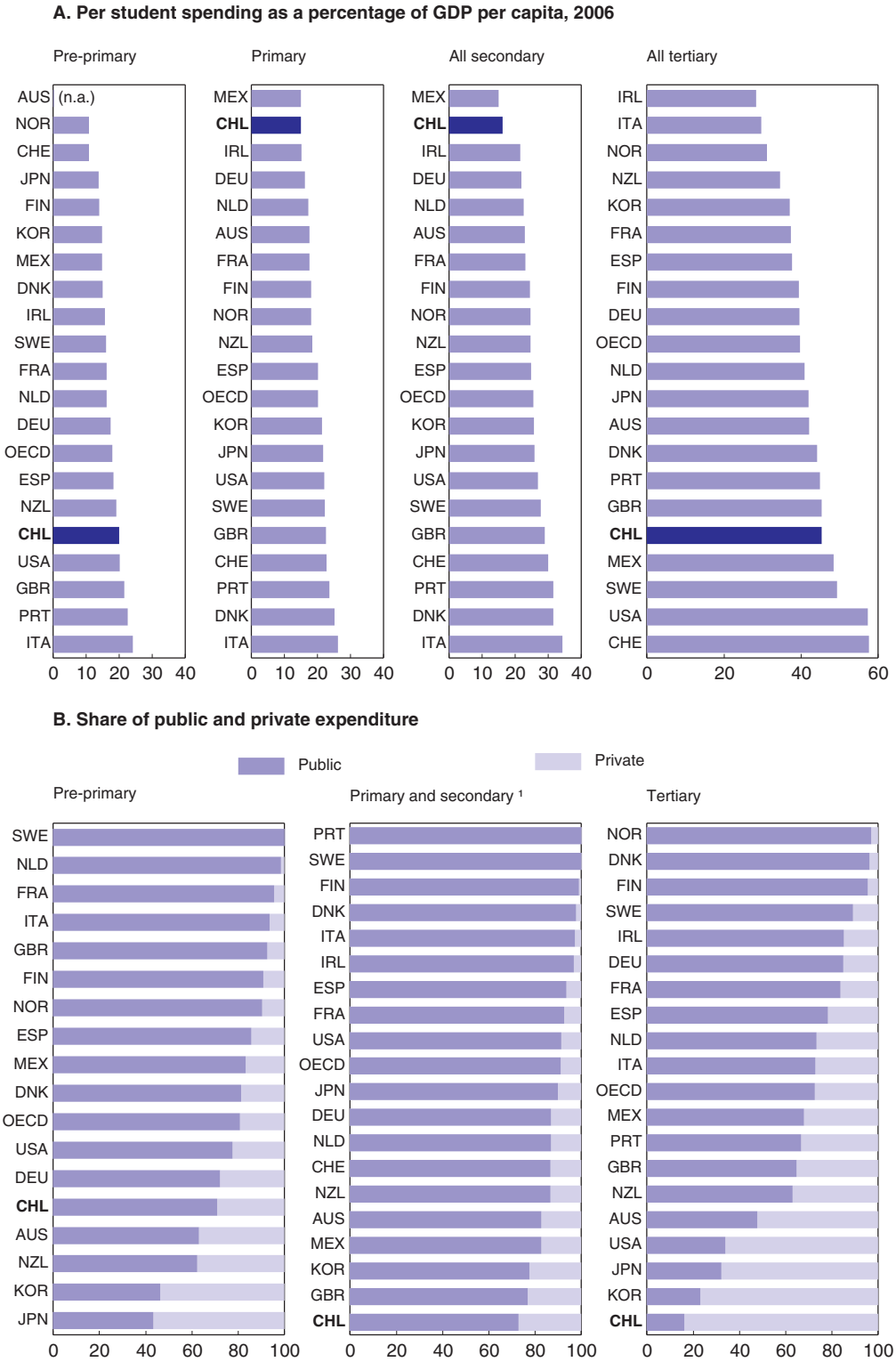
After having achieved so much progress in raising educational attainment it will be crucial for Chile to improve education outcomes, as well. Raising the quality of its human capital will be important for Chile to increase its productivity growth, raise the employment and earnings prospects of its citizens and lower income inequalities over time. There is pervasive evidence that learning outcomes, as measured by cognitive skill tests, are much more important than educational attainment as a determinant of economic growth and employment prospects (Hanushek and Wössmann, 2008). Cognitive skills have also been shown to be closely related to individual earnings (Lazear, 2003) and the distribution of income (Nickell, 2004).

Even if adjusted by Chile's lower per capita income level, education spending per pupil is low at the primary and secondary school level, in spite of comparatively high private spending (Figure 4.3). In fact, the private spending share is high at all levels of education.

Figure 4.3. **Per student expenditures on education**



1. Includes post-secondary non-tertiary education.

Source: OECD, *Education at a Glance*, 2009.

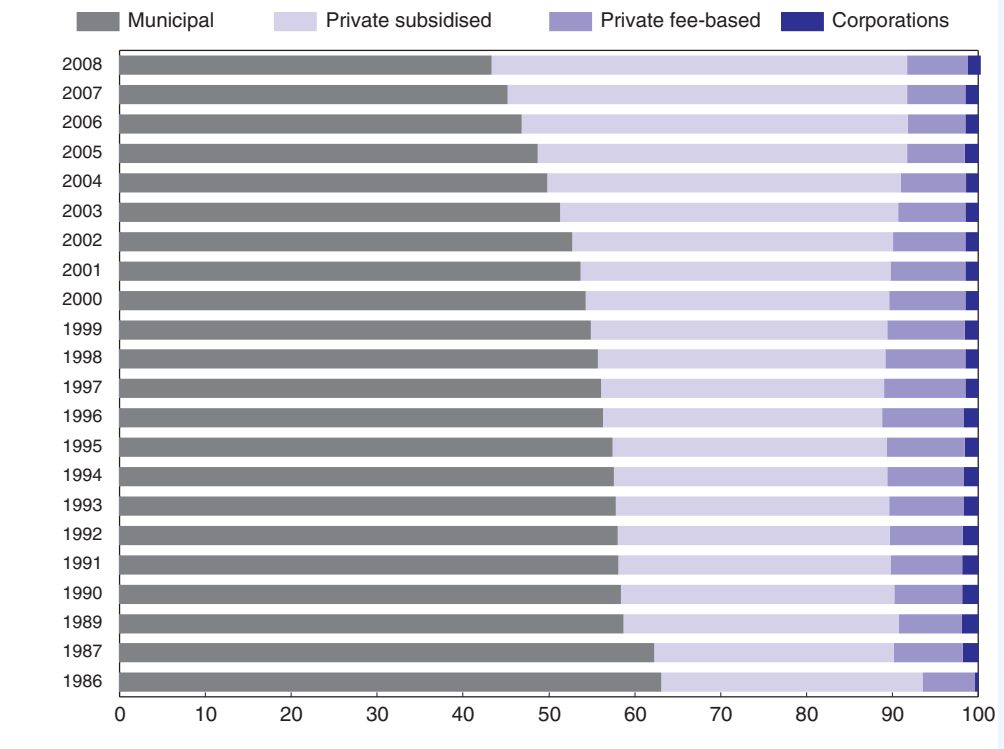
StatLink http://dx.doi.org/10.1787/776665861378

The important role played by private spending in the financing of schools mainly reflects the system of shared financing together with the existence of private fee-based schools (Box 4.1). While high private spending has the benefit of attracting more resources to education it poses equity issues in the context of a highly unequal income distribution in Chile.

Box 4.1. **The Chilean school system**

In the early 1980s, the Pinochet government introduced sweeping market-oriented reforms of education, with decentralisation of school management responsibilities to municipalities and a nation-wide voucher programme. The reform, which has been largely maintained until today, introduced an essentially flat per student subsidy as public financing for municipal and subsidised private schools. In addition, parents were allowed to freely choose their children's school and the school market was opened to new entrants. The reform has led to massive entry of private schools into the market and, as a result, enrolment in municipal schools has declined substantially (Figure 4.4). A number of private schools opted against the voucher subsidy to be able to continue charging fees. These schools are referred to as private fee-based schools in contrast to private subsidised schools which receive the voucher subsidy. The voucher subsidy has recently been raised significantly for the poorest children.

Figure 4.4. **Enrolment rates by school type**



Source: Ministerio de Educación, Departamento de Estudios y Desarrollo 2007/Estadísticas Educacionales (various years).

StatLink http://dx.doi.org/10.1787/776718547142

Box 4.1. **The Chilean school system** *(cont.)*

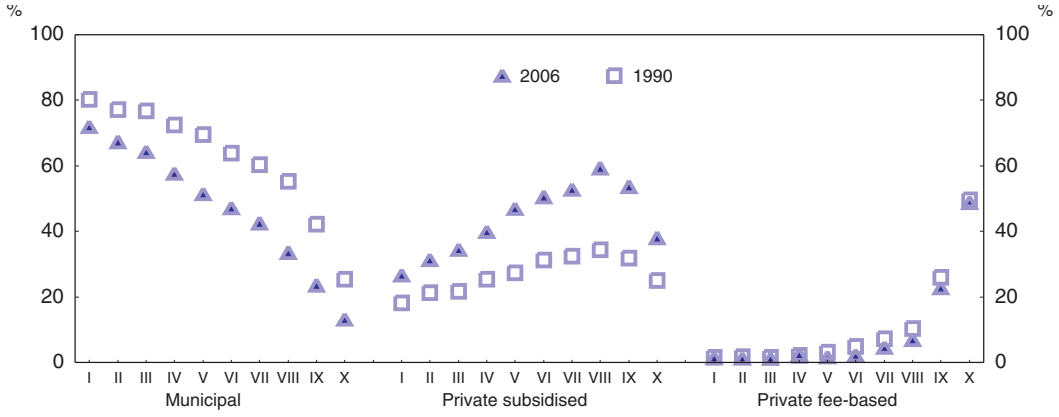
Municipal and private schools operate under rather different conditions. While all private schools had the freedom to select their students until recently, undersubscribed municipal schools are required to admit all children. Chile has recently prohibited the selection of children by ability or socio-economic background up to 6th grade. Moreover, teachers' job contracts differ, as municipal school teachers' wages are negotiated through centralised collective bargaining and there are restrictions on dismissal. In contrast, private school teachers come under the Labour Code like other private sector workers. As a result, private schools have much more flexibility regarding teachers' employment and pay.

Since 1993 private subsidised, but not municipal schools, have been allowed to charge tuition up to a ceiling. The subsidy is gradually withdrawn at increasing rates as school fees rise and once they go beyond a ceiling of roughly USD 125 pupils lose their entitlement to voucher subsidies.

A small share of pupils (around 7%), mostly from high-income families, go to private fee-based schools, while the poorest students go to municipal schools (see Box 4.1). Private subsidised schools receive students from a wide range of backgrounds in between (Figure 4.5). Outcomes measured by results in student achievement tests tend to decrease in that same order (see Figure 4.2). In 2006 the variance of PISA test scores that was explained by socio-economic background in Chile was stronger than anywhere in the OECD (Figure 4.6) indicating that the school system needed to do more to help disadvantaged children catch up. To an extent this is probably explained by the combined effects of segregation, with disadvantaged children often concentrated at the same schools, and fewer resources invested in children whose parents cannot afford to top up or replace the school voucher (see Box 4.1) with their own money. Chile has started to make important improvements to its school financing system just recently and like all investments in education, this will take time to produce higher and more equal outcomes.

Figure 4.5. **Attendance of different school types**[1] **by income decile**

As a percentage of each income decile

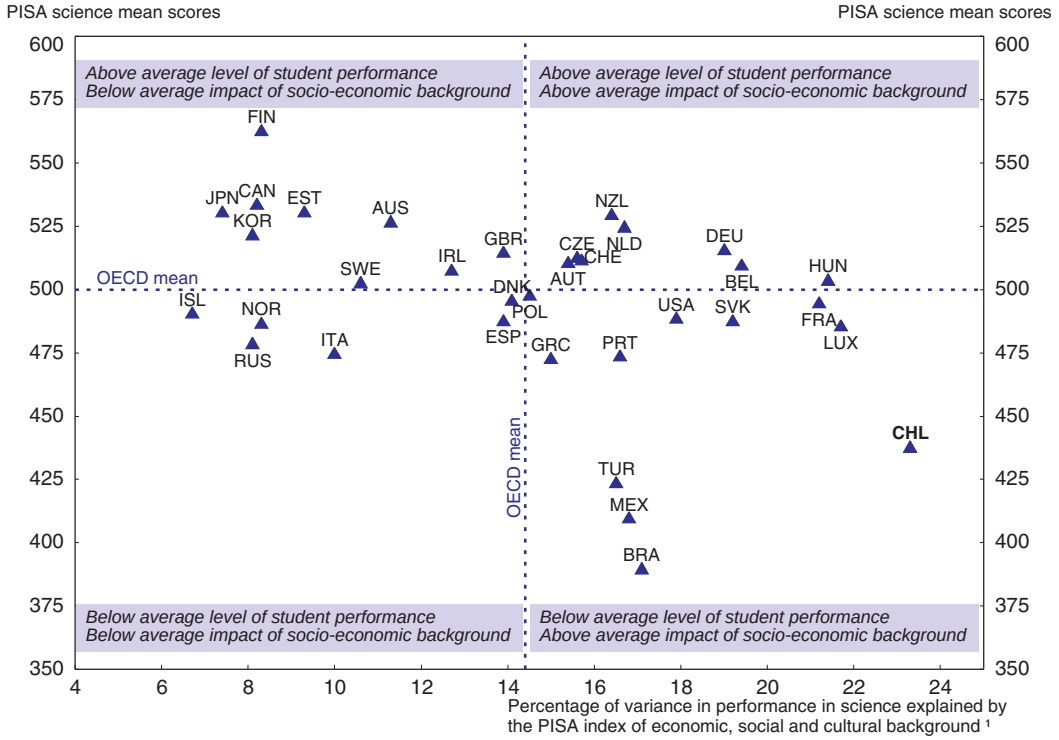


1. Includes primary and secondary schools.

Source: Ministerio de Planificación (Mideplan) – Encuesta CASEN 1990 and 2006

StatLink http://dx.doi.org/10.1787/776723256727

Figure 4.6. **Quality and equity of education**



Source: OECD, *PISA Results 2006*.

StatLink http://dx.doi.org/10.1787/776752075748

Improving teaching quality would raise education outcomes for all students

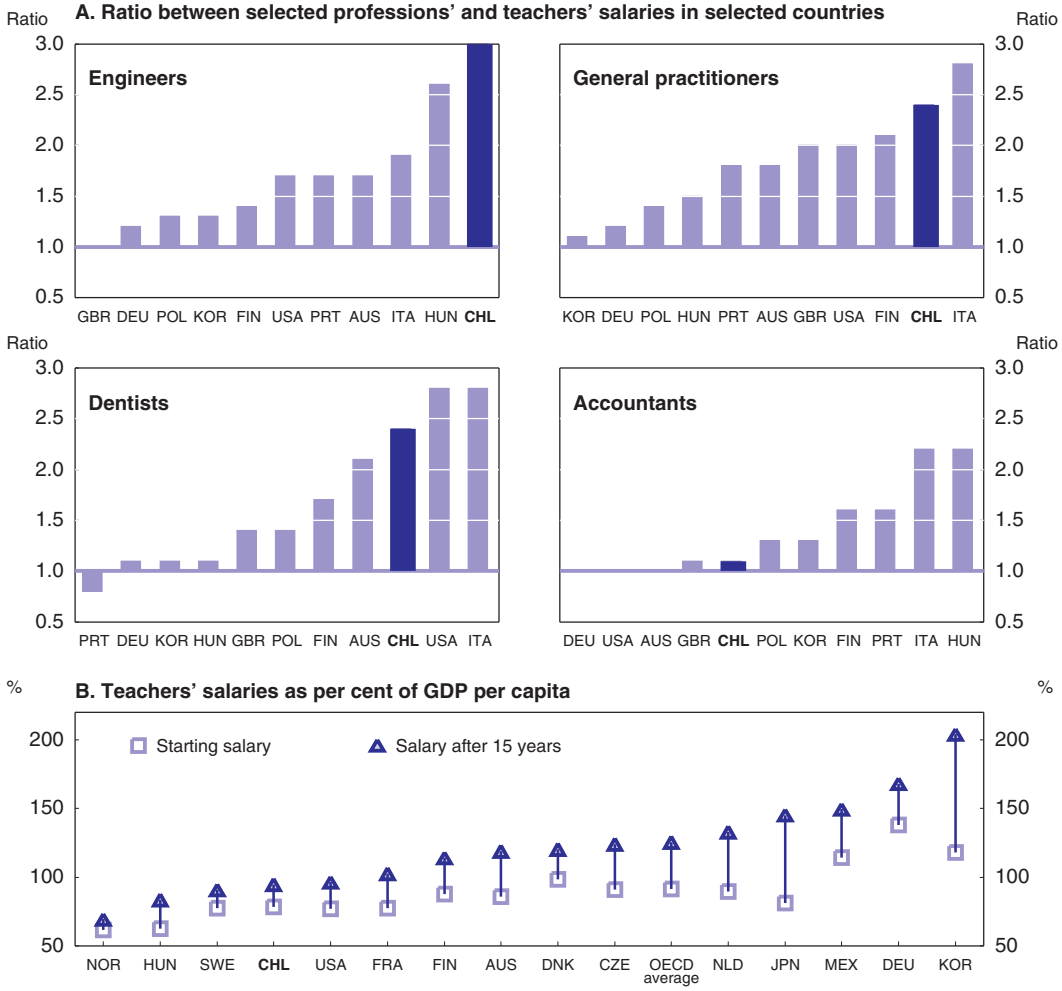
The government could aim to attract more qualified individuals to the teaching profession…

One decisive ingredient to improve schooling outcomes for all Chilean children will be to upgrade teaching quality. Teachers are the single most important input into education. There is pervasive evidence that students will achieve more with teachers who perform well in literacy and numeracy tests (Gustaffson, 2003, Rice, 2003). Moreover, teachers' level of education is positively related to students' performance (Wößmann, 2003). Top performing school systems, such as Finland, Korea, Singapore and Hong Kong, consistently recruit teacher students from the top third of each cohort graduate of their school system (Barber and Mourshed, 2007). In these countries, the teaching profession also enjoys high social status.

Chile has been successful in attracting progressively better prepared students to the profession, but still not many are from the very top. Substantial pay increases since 1990 have been supplemented with a publicity campaign to encourage college students to become teachers and a scholarship programme for outstanding students to enter teaching studies. These measures helped to substantially increase the number of teacher education applicants. Subsequent cohorts of students entering teacher education have been characterised by higher exam results in the university entrance test at least until 2003 (OECD, 2004), although education is still far from attracting many students from the top third of secondary school graduates. Teachers tend to come from households with a lower

educational background than other professionals with university degrees (Bravo *et al.*, 2006). A majority did not consider teaching a first option in their last year of secondary school, but close to 70% did apply to university choosing teaching as a first option. This indicates that many might have chosen teaching only once it turned out that their university entry exam results did not meet prior expectations. This is in stark contrast to countries like Finland and Korea where top students apply to teaching programmes and only few are accepted. Although salaries were raised, the average per capita household income of teachers in Chile is still 40% lower than that of professionals with a tertiary degree (Bravo *et al.*, 2006) and there is some evidence that the pay gap between teachers and some prestigious professions is larger in Chile than in a number of OECD countries (Figure 4.7, Panel A). This suggests that there is still some scope to raise teacher salaries to make them more competitive. OECD countries with successful school systems offer good, but not outstanding salaries to beginning teachers (Figure 4.7, Panel B).

Figure 4.7. **Teachers' salaries**



Source: ILO – LABORSTA *Labour Statistics Database*; OECD, *Education at a Glance 2009*; IMF, *World Economic Outlook Database 2009*.

StatLink http://dx.doi.org/10.1787/776776550364

Teacher skills need to be further increased. A recent pilot exam, carried out by the government-run programme INICIA, testing the basic language, writing and numeracy skills and subject content knowledge of students who are soon to become primary school teachers revealed deficiencies among many applicants.

Performance-based pay plays an important role already. Salary elements related to special efforts and performance can make up close to 40% of teachers' pay (Vegas, 2007). Taking over administrative tasks or working in difficult schools is also rewarded with extra pay. A well thought-out teacher evaluation programme (*Evaluación del Desempeño Docente*) with rich qualitative information, including a portfolio, references from the principal and a structured interview, was introduced at public schools and teachers with good results can obtain salary bonuses, after taking tests on subject content knowledge and pedagogical skills. Teachers with low scores are offered professional training to overcome their weaknesses and may be removed from the profession in extreme cases when their performance does not improve. Another thorough evaluation of teachers' abilities (*Asignación de Excelencia Pedagógica*) can lead to salary allowances, and teachers who have passed this test can gain extra salary for training other colleagues (*Maestro de Maestros* programme).

There is also a collective performance bonus for teachers in publicly subsidised schools, but using this as a tool to encourage teachers to become more productive is not without difficulties. The scheme entitled *Sistema Nacional de Evaluación del Desempeño de los Establecimientos Subvencionados* (SNED) rewards the collective performance of teachers as measured mainly by the average score in the national student achievement test, *Sistema de Medición de Calidad de la Educación* (SIMCE), achieved by the school and the improvement since the last time the test was taken. The results are adjusted for the school's socio-economic background, for whether or not it expels weak students and some other features of the school. There is some evidence that in schools that have some likelihood of receiving the prize when they apply, average test scores increase slightly (Mizala and Romaguera, 2005a). However, producing meaningful rankings of schools with SIMCE results is difficult. Once results are adjusted for differences in socio-economic background, rankings resemble a lottery with strong variations from year to year (Mizala *et al.*, 2007). Until recently the SIMCE test had not allowed calculating intra-cohort gains, which would be a measure of value added, because the same class was never tested twice. Nevertheless, Carnoy *et al.* (2007b) were able to show that schools that received the SNED on average were not likely to be the ones that achieved the highest intra-cohort gains between 1996 and 2000. This suggests that it might be preferable to base performance-pay on richer information than school rankings of SIMCE scores adjusted for socio-economic background. One way would be move towards generating information on value added. The SIMCE tests have now been rescheduled, so that children tested in fourth grade will be tested again in eighth grade four years later, which is an important improvement. Chile could also consider producing individual value-added data by following SIMCE results for each child over time, although this would be a very expensive investment. However, there is widespread consensus in the literature that measuring teacher performance with quantitative measures of student outcomes alone, even when value-added measures are available, risks punishing or rewarding teachers for results beyond their control (Kane and Staiger, 2002). Career progression and pay should therefore be based on qualitative measures of teaching, as well.

To reward excellence in teaching Chile could define career paths for teachers in publicly funded schools closely linked to performance with opportunities for high ability individuals to progress. Salary increases and interesting position could be awarded based on the kind of thorough teacher evaluations that have been implemented at public schools (Castro, 2007). For this purpose, the evaluations would have to be extended to all publicly funded schools, which would be a desirable step even without new teacher career paths, given that there is scope to improve teacher performance throughout the system. There might be merit in putting more emphasis on the principal's evaluation for this purpose. A good principal who regularly observes teachers in the classroom and follows pupils' progress should be well placed to evaluate teachers' performance. Within the career paths extra pay should also be awarded to teachers working in difficult schools, which is already done in municipal schools, and those who have excelled at difficult schools should be promoted, so as to attract outstanding teachers. Steps in the career ladders for individuals capable of becoming instructional leaders could include becoming an instructor training other practicing teachers and a mentor for novice teachers. These positions should be rewarded with salary or time awards and could become important career steps on the way to becoming a principal or a school supervisor for the school administration. This would also ensure that these positions will be more likely to be awarded to experienced individuals with proven teaching skills and a capacity to help others develop their own, thus putting more emphasis than in the past on the instructional leadership role of these functions than on their administrative side. Other incentives awarded based on excellence in teaching could include winning grants or leave for research studies or teaching experiences abroad. In principal, a more even-handed treatment of public and private subsidised school would be desirable and designing a common career path for both types of school would help promote this. Chile could start out to define different career paths for the municipal and the private subsidised sector initially, however. This could be useful to avoid that the definition of a common career path would introduce rigidities prevailing in the public sector, regarding teacher employment and pay, into the private sector.

Chile plans to allow lateral entry for experienced professionals from different fields into teaching to attract more individuals with an aptitude to teach subject content. This is an important opportunity, because limited subject content knowledge is the Achilles heel of the teaching profession in Chile (OECD, 2004; Cox, 2007). However, experience in other countries has shown that good selection and screening of candidates will be required. Candidates need to go through solid training programmes in teaching methods and classroom basics and they will require close supervision and mentoring in their teaching during the initial phase (Education Commission of the States, 2003).

… improve teacher education further…

While Chile has made some progress in improving initial teacher education, more needs to be done. To be able to teach in publicly funded schools, graduates must now have been through accredited teacher training programmes. Teacher practice has been introduced more widely and tutors and mentors for new teachers are being discussed and in some cases introduced. At the same time, accreditation has only recently been made mandatory and has not yet been entirely effective in controlling teacher education programme quality. As an example, there are special programmes for initial teacher education (*Programas Especiales de Titulación*) which have been shown to suffer from serious deficiencies regarding entry requirements, the quality of their educators and their teaching

programmes (Ruffinelli and Sepúlveda, 2005). More candidates are enrolled in these programmes than at the more traditional universities and this is a cause for concern. The government should apply strict accreditation procedures based on well-defined standards for expected outcomes from initial teacher education that ensure that students learn key skills such as classroom management, teaching methodologies and evaluation of students' performance. Through the accreditation it should ensure that deficient programmes are closed.

Many students still enter teaching programmes with insufficient literacy and numeracy skills and teacher education will have to make up for this. One way to address this would be to make these programmes more selective by applying entry tests, designed either centrally by the Ministry or individually by the universities that try to assess aspiring teachers' literacy and numeracy skills, their motivation and their personal qualities. This practice is common in some countries with the highest performing schools systems, including Finland and Singapore. In Chile, this could have a twofold purpose. Especially able students could be enrolled in accelerated programmes to become educational leaders. This has been practiced in Israel and some cities in the United States that have been able to achieve rapid progress in their students' learning outcomes (OECD, 2005; Barber and Mourshed, 2007). On the other hand, aspirants with deficiencies in literacy and numeracy skills, but sufficient motivation, could be enrolled in remedial classes. For Chile this would be preferable to turning them away altogether as it may not be possible in the short to medium term to attract sufficient numbers of well prepared students to education programmes. Designing and administering entry tests would be a considerable investment and such a reform cannot be implemented in the short run. It may nevertheless be worth considering in the longer term, as it would serve both to identify highly qualified individuals for fast-track careers and to direct aspiring teachers in need of extra support to remedial classes.

Concerns remain regarding the preparation in subject content knowledge, especially for primary school teachers in higher grades. Research has shown a positive impact of teachers' preparation in their subject matter on students' performance (Wilson *et al.*, 2001; Monk, 1994). In Chile primary school teachers are trained as generalists and their teacher education currently does not provide sufficient content courses for mathematics, language and other subjects even in lower grades (OECD, 2004). However, this problem becomes especially acute in the upper grades of primary school. This probably also contributes to the gap between Chilean pupils and their OECD peers in performance tests, such as PISA. The problem is especially pronounced in the public sector where the proportion of teachers in seventh grade with only primary school teacher training reached 80% in 2006 compared with 55% in the private subsidised sector. In contrast, more than 68% of seventh grade teachers in private fee-based schools are trained as secondary school teachers (Cox, 2007). This is a source of concern because pupils in municipal school tend to be those that are most in need of teachers with expert training. Chile has recently legislated a shortening of the primary school cycle from eight to six years. This is welcome, as secondary school teachers with their more specialised training should be better able to teach the required subject content knowledge to students in seventh and eighth grade. However, this change will require a large scale programme for retraining teachers who teach in theses grades. Over time, more specialised training in subject content will also be needed for teachers in grades five and six. There is a small-scale programme that offers a post-graduate degree in specific school subjects for practicing teachers (*Postítulos de Mención*), but this will have to

be expanded so that the subject content knowledge of the existing workforce is upgraded soon.

At the same time, the curricula in teacher training programmes should evolve to ensure that students acquire sufficient knowledge in subject content. Teacher education programmes also need to better prepare primary school teachers in how to teach numeracy and writing skills and the curriculum of their education programmes needs to reflect this. Curricular changes have been financed at 15 institutions that train teachers for grades five to eight. However, it is not clear that the result of this programme has gone far beyond definitions of competences that student teachers should achieve. It is important that the participating universities now improve their curriculum accordingly. Moreover, other institutions that train teachers will have to be induced to make similar progress.

Aspirant teachers also need to be better prepared to develop practical pedagogical skills that they can successfully apply in real classroom situations. Training in pedagogy often remains very theoretical and there is little or no communication between faculties teaching subject content and universities' education departments (OECD, 2004). It would be good if this could improve, as research has shown that pedagogical coursework has positive effects on teacher effectiveness only if it is linked to content knowledge (Rice, 2003). There are now more practice periods for teacher students in schools, but this is not the rule. Experience from other countries shows that teachers perceive their practical experience in schools to be an important component of their initial education (Wilson *et al*., 2001) and students who get field experience also tend to remain in the profession at significantly higher rates than those prepared largely in campus-based programmes (Fleener, 1998). In Chile, as in many other countries, teaching practice is often not well connected to the theoretical content in teacher training courses with opportunities for students to integrate what they learn in the classroom with the rest of the curriculum. The government should work towards making classroom practice an integral part of initial teacher education in all programmes. Over time, partnerships between institutes offering teacher education programmes and schools should become the rule. It would be good if mentors for teaching students with proven skills to plan and teach didactic units and evaluate students' learning outcomes could be selected and trained to transfer their knowledge to student teachers. They should work closely with educators at the universities. Students' experiences in class should be discussed and evaluated in specialised training courses in teacher education programmes to help students develop the skills that they will need to help their pupils succeed in class. Over time, becoming a mentor for student teachers could become an interesting career step for motivated teachers.

Teachers require more focused training in how to deal with students from very different backgrounds and in how to close learning gaps. Given the strong stratification of the Chilean school system, many teachers will confront schools with a large number of poor students in a difficult learning environment. Students are currently not well prepared during initial teacher education for this (Avalos and Aylwin, 2007). They need to learn how to identify students at risk of falling behind and how to give them extra support. The curriculum of initial teacher education programmes should include specialised courses linked to practical experience in schools to better prepare teacher students for this task. There should also be more professional development courses to help practicing teachers develop these skills.

One way for the Ministry to better ensure the quality of initial teacher training programmes would be to introduce external exit exams to certify teachers. This could be a useful quality assurance mechanism in a system like Chile's where teacher education programmes are perceived to be of very variable quality (OECD, 2005). Chile has started to develop qualification tests to be taken by students before graduation. The programme INICIA aims to define standards for teacher candidates. After the 2008 pilot exam mentioned above there will be another examination in 2010, including pedagogical content knowledge. This should be developed further to become an external exit exam for all teaching graduates. It should involve testing of literacy and numeracy skills, subject content knowledge and ideally teaching practice, although the latter could also be included in an examination that certifies teachers for tenure after an induction period and some probationary time at school. It will help to establish a professional standard independent of teaching education programmes. Pass rates and exam results at large would also allow prospective teacher students to assess the quality of the programme where they intend to enroll. Institutions, that turn out not to prepare students effectively for the exam on a prolonged basis, should face sanctions that could ultimately result in a withdrawal of their accreditation.

... and develop professional development and guidance for teachers

Over time Chile should work towards developing an induction programme for teacher novices. Evidence shows that young teachers find their first experiences in school often overwhelming (Veenman, 1984; Britton *et al.*, 1999, Avalos and Aylwin, 2007), as they struggle with motivating students, dealing with individual differences between them, evaluating them and handling the communication with parents. Well designed induction programmes have been shown to reduce attrition rates (National Commission on Teaching and America's Future, 1996) and they help teachers apply their knowledge acquired in the teaching programmes to the complexity of the classroom (*e.g.* Odell and Huling, 2000). Evidence also shows that novice teachers' mentors also benefit from their mentoring experience (Resta *et al.*, 1997; David, 2000; Holloway, 2001, Yosha, 1991), as they reassess their own classroom management (Clinard and Ariav, 1998). Thus, Chile's school system could derive significant benefit from developing an induction programme over time, which could be built on existing programmes, such as *Maestro de Maestros*. It could also be used to certify students teaching skills at the end of the programme as a pre-requisite to obtain a teaching license. If it is impractical to introduce an induction programme, the teaching load for teacher novices could be reduced and they could be given time for supervised individual or group study that helps them plan didactic units, develop classroom management skills, evaluate pupils' learning outcomes and work towards closing learning gaps between different students.

More generally, there is room to improve supervision of teaching in Chilean classrooms and support for teachers to improve their practical skills. Despite recent progress, most school principals are still occupied more with administrative tasks rather than supporting their staffs' work and assuming an instructional leadership role. The classroom is often considered the sanctuary of teachers and supervising their work is not deemed appropriate. In contrast, supervising and guiding the practical pedagogical work of their staff is considered the key task for school principals in many of the more successful systems, like Finland (OECD, 2008) and Cuba (Carnoy *et al.*, 2007a), which according to student achievement tests has by far the best schooling outcomes in Latin America

(UNESCO, 2008). Against this background, the government's recent initiative to train 2000 principals to become instructional leaders is welcome. Pedagogical and management skills and the capacity to lead staff in classroom management should be the main criterion for the selection of principals and focused training should be available to them.

Chile has an extensive system of professional development for its teachers and much progress has been made over recent years, but there is scope for more. The programmes could focus more on closing teachers' knowledge gaps in subject content and could be adapted more to the often especially difficult circumstances. The systematic teacher evaluation that has been implemented in public schools is an excellent starting point to identify teachers' individual strengths and weaknesses and guide them towards tailor-made professional programmes. The example of schools belonging to the *Sociedad de Instrucción Primaria* suggests that extensive in-class support for teachers can be very effective in helping them develop their pedagogical skills and maybe even overcome deficiencies in subject content knowledge (Box 4.2). In Chile a number of teachers are likely to require courses to improve their literacy and numeracy skills and help them teach this especially in the lower grades of primary schools. Extending training to develop more specialised subject content knowledge will also be necessary as outlined above.

Box 4.2. **The Sociedad de Instrucción Primaria**

One example of successful instruction of disadvantaged students is the school network *Sociedad de Instrucción Primaria* (SIP). It runs 17 schools in low- to middle-income neighbourhoods in Santiago. Endowed with a similar level of resources as other private subsidised schools, SIP schools achieve systematically higher SIMCE test scores, with much lower variance, and this is robust to controlling for socio-economic background. In fact, SIP schools' performance is close to that of private fee-based schools, which serve high-income students with much larger resources as a result of their high fees. SIP schools are mainly financed from the national voucher and other subsidies, with a smaller share (20%) coming from parent fees through the shared financing mechanism and private donations. There is a selection process for entry based on parent interviews, although not ability tests. SIP schools do not systematically exclude or expel low-performing students. In part the success seems to be due to efficient management within a network:

Focus on academic performance and systematic testing of learning outcomes: The SIP school network is strongly focused on academic performance and this drives the setting of learning targets, the development of teaching methodologies and the allocation of resources. A centralised pedagogical department develops tests for all SIP schools to systematically evaluate pupils' progress. It also processes the results and generates reports for teachers and parents. This "data-driven decision making" allows for fast and targeted interventions for students that are lagging behind, which can include remedial classes provided by a partner organisation. It also allows the principal to intervene when too many students in one class are falling behind, *e.g.* by directing the teacher to training. In other schools teachers set educational objectives for their students and evaluate their performance largely by themselves. In the SIP network partner organisations provide for professional development as well as remedial classes and psycho-social support for children.

Box 4.2. **The Sociedad de Instrucción Primaria** *(cont.)*

Pedagogical support: Members of the pedagogical department regularly assist classes to observe teaching and assist teachers in improving their skills. SIP school managers stated in an interview that while they had not the resources to hire teachers from the best universities and many entered the school with fundamental deficiencies in maths and writing, this type of in-class support has proved effective in overcoming these deficiencies. Teaching is structured by the objectives formulated by the pedagogical department and financial incentives for teachers are sometimes tied to their achievement. Teachers receive tailor-made training with contents and timing adapted so that they best overcome their weaknesses in effectively helping their students reach their educational objectives. In comparable publicly funded schools, teachers seem to have much more freedom to "teach the way they feel most comfortable" (Henríquez *et al*., 2009), and individual financial incentives tied to the achievement of pre-defined educational objectives is uncommon. The *SNED* is awarded to schools based on their ranking in the national student achievement test, but not based on whether or not teachers have helped students attain their learning goals. Teachers in comparable publicly funded schools have access to training provided by universities and the Ministry, but it is less clearly tied to the specific weaknesses they have shown in helping their students reach their learning goals.

Principals as educational leaders: SIP school principals spend a considerable time in the field, doing in-class observation of their teachers to identify their strengths and weaknesses and direct them to professional development. They highlight the advantage of delegating a number of administrative tasks to a deputy director. Other private subsidised schools, in contrast, often do not have such a deputy director. Similar as in municipal schools principals are selected through a competition. While municipal school principals have a five-year term, SIP school principals have indefinite contracts, but can be dismissed. Unlike principals in other publicly funded schools, they retain a certain autonomy to hire and fire teachers,

Students and family commitment: SIP schools ask for significant parent involvement, especially when the pedagogical department recommends additional support for a student on grounds of test results. Also workshops for parents on issues like family violence are compulsory.

Experience in OECD countries suggests that professional development that is closely linked to the challenges that teachers have to confront in their own classroom and encourages teachers' learning communities is particularly promising. Teachers have to gain an understanding of their weaknesses and ways to overcome these in their specific classroom situation (OECD, 2005). Group study as well as peer review and support among teachers have also been found to be useful. In Japan groups of teachers work together to plan, execute and evaluate individual lessons and instructional strategies to achieve specific learning objectives. They visit each other's classrooms to understand their colleagues' teaching practice. In Finland, teachers are given one afternoon each week for joint planning and curriculum development (Barber and Mourshed, 2007). Chile has some experience with professional development among peers, including communal workshops for teachers. The scheme of rural micro-centres, involving the periodic coming together of teachers in small rural schools, seems to have operated particularly effectively (OECD, 2004). These programmes could be extended to help teachers develop more subject-specific teaching techniques and help groups of teachers to teach these contents to their

particular students. Allowing more time for joint non-classroom activities, such as planning lessons together, visiting each other's lessons and discussing strengths and weaknesses, preferably with structured support from teachers who are trained for this or the principal would seem to be a promising initiative.

School competition has been insufficient to reach the desired quality improvements

Competitive pressures are limited for a number of reasons

Chile's school system is unique in that a version of school competition has been in place since the early 1980s (Box 4.1). Proponents of school choice maintain that this could improve the productivity of the school system, because private schools are more efficient than public schools (Chubb and Moe, 1990; Hoxby 2000). In addition, competition would push all schools to become more productive (Friedman, 1955, Hoxby, 2000), because inefficient schools would be deserted and in the extreme case face closure.

However, there are reasons to think that in some cases competitive pressures in Chile may not be strong enough to lead to the desired productivity-enhancing effect. For example, rural schools will not feel the same competitive pressures as urban schools with a lot of nearby competitors (Carnoy and McEwan, 2000). The same may apply to municipal schools with soft budget constraints, as municipalities often do not rearrange their schools' budgets when their enrollment changes (Beyer, 2001).

In addition, there is evidence that the quality of parents' information about schools is not as good as desirable for competition to lead to higher productivity, and access to this information as well as incentives to use it vary by socio-economic background, raising equity issues. Based on survey data Elacqua and Fabrega (2004) show that parents use few sources of information to choose a school for their children, know little about schools' quality, such as test scores, and consider few different choices. Moreover, the quality of the sources of information that parents use is a function of socio-economic background. Carnoy and McEwan (2003) find that all parents value quality attributes, such as higher test scores and children's socio-economic background in the school, but low-income parents react less strongly to this. In a similar vein, Chumacero, Gomez and Paredes (2008) and Gallego and Hernando (2009) present evidence suggesting that both distance and quality determine school choice, but parents with higher income and socio-economic background value quality relatively more. There may be many reasons for this: Information may be partly governed by internalised viewpoints determined by social-economic status and the cost of access to it could be a function of socio-economic status, as well (Wells and Crain, 1992; Levin, 1991; Carnoy and McEwan, 2003). Moreover, some parents may be discouraged to apply to good schools because of their inability to pay top-up fees and because they are likely to be eliminated through the selection processes.

There is also some evidence that available quality indicators are of dubious usefulness and that both parents and teachers have difficulties interpreting them. One obvious quality indicator that parents could and do consult are the results of the national student achievement test (SIMCE). Average school scores are published in the newspaper. However, as explained before the scores are either heavily dependent on socio-economic background or, once they are corrected for this, they resemble a lottery with strong variations from year to year. There is also evidence that many parents and teachers do not know their school's SIMCE scores or have difficulty interpreting them (Taut *et al.*, 2009). As long as this is the

case, hopes that parents' school choice alone will push schools to improve their quality sufficiently should not be exaggerated.

To some extent competition has led to sorting, reducing positive effects on productivity

Competition between schools may not necessarily be of the productivity increasing kind, because it is easier for schools to compete by selecting students who are good to begin with. Private schools in Chile were allowed to select their students until recently, while municipal schools were not (Box 4.1). As a consequence, rather than striving to increase their students' learning outcomes, private schools might simply compete by trying to attract children who are easier to teach. Indeed, survey evidence from the 1990s suggests that private schools used parents' interviews, entry tests and other tools that help to select students with characteristics that positively influence achievement, such as socio-economic background (Parry, 1996; Gauri, 1998). SIMCE data from 2002 suggests that private schools were also more likely than municipal schools to expel students who repeat a grade (Bellei, 2005). In addition, there is evidence that parents choose schools attended by children with backgrounds similar to theirs, thus reinforcing the effects of selection (Elacqua *et al.,* 2006, Gallego and Hernando, 2009).

There is evidence that competition in Chile has been associated with sorting, weakening potentially beneficial effects on school quality. Overall it is fair to say that the entry of private sector schools into the market has been accompanied by a flight of the middle classes from the public sector (Hsieh and Urquiola, 2006), as the share of children from wealthier and middle-income backgrounds going to municipal schools has declined sharply (Figure 4.4). Moreover, in municipalities with high private entry into the market, a measure of competitive pressures, relative test scores of municipal school children as well as the relative educational background and income of their parents is lower than elsewhere (Hsieh and Urquiola, 2006; Aguste and Valenzuela, 2006, McEwan *et al.,* 2008). This is evidence that higher ability children with a more favourable family background are sorted into private schools. Controlling estimates of educational production functions for selection bias, also provides evidence suggesting that students attending private schools have characteristics that increase their performance (*e.g.* Henríquez *et al.,* 2009 and to some extent McEwan, 2001). Bellei (2005) presents evidence that Chilean schools that expel repeaters obtain higher test scores, suggesting that this type of selective practice is one way to improve results. When schools are able to obtain better results simply by attracting and retaining higher-ability students, this will weaken pressures to add value, no matter whether sorting occurs through active cream-skimming by schools or through self-selection from the demand side.

It is unclear whether competition had positive effects on the quality of education

Even so, competition may still have had a positive impact on school quality in Chile, but separating productivity effects from the impact of socio-economic background and sorting is fraught with daunting econometric and measurement problems (Box 4.3). Among researchers who have used a measure of competition to separate sorting from productivity effects, most have found evidence of sorting. Yet, while Gallego (2006) and Auguste and Valenzuela (2006) also find that competition had a significantly positive effect on average test results, Hsieh and Urquiola (2006) and McEwan *et al.* (2008) find no such effect.

Box 4.3. **Identifying productivity of Chilean schools**

Bellei (2005) shows to what extent results on the productivity differential between public and private schools can depend on the data used to approximate socio-economic background, the aggregation level of control variables and the strategy to correct for selection bias.

While it is in principle possible to control for the effect of socio-economic background on schooling outcomes with good data, results can depend a lot on how this is measured. Based on SIMCE data from 2003, Bellei (2005) finds that using a categorical index variable based on parents' education, family income and the proportion of at-risk students in the school, which is widely used in the empirical literature on Chilean school outcomes (Mizala and Romaguera, 2000 and 2002; Bravo *et al*., 1999; Gallego, 2002) to control for the impact of socio-economic background, the apparent private-public productivity gap is reduced to a large extent, but remains significant. It remains so if the logarithm of mean family income at the school level is used instead, but the size of the gap is further reduced. Once control variables approximating cultural capital, such as the school mean of parents' education (used in Carnoy and McEwan, 2000; Sapelli, 2003 and McEwan, 2001) or books at students' home (McEwan, 2001), are entered at the school level instead or in addition to this, the result is turned around and public schools appear more effective than private subsidised or fee-based schools.

Bellei also shows that it can significantly affect results whether only student-level control variables are included (as in Sappelli and Vial, 2002), only school-level variables or both (McEwan, 2001). With his particular dataset, Bellei finds that the private-public gap remains positive and significant as long as only student-level variables are introduced, such as parents' education, gender and a fixed effect for repeating students. Yet, it disappears once school-level controls for cultural capital are included into the regressions. This holds for Ordinary Least Squares regressions as well as multi-level regressions as employed in Mizala and Romaguera (2002) to account for the effect that students' results in the same school cannot be expected to be independent.

Some, but not all researchers have tried to control for selection bias, with a Heckman-like two-stage procedure, where school sector selection is estimated at the first stage (Auguste and Valenzuela, 2006; Gallego, 2006; Henríquez *et al.,* 2009, McEwan, 2001) However, this approach rests on strong assumptions regarding normality and homoscedasticity. What is more, the validity of the instrumental variables used in the first stage is often dubious. They should explain school selection, but be independent from test results and unobservables affecting these.

Likewise, results on whether or not private schools perform better than public schools after accounting for differences in socio-economic background and – in some cases – selection bias, that is whether apparent superior performance is based on schools' ability to choose higher ability students to begin with, remain inconclusive. Mizala and Romaguera (2000) and Bravo *et al*. (1999) find no consistent differences in achievement between public and private schools. By contrast, Mizala and Romaguera (2002), Henríquez *et al*. (2009), Anand *et al*. (2009) and Sapelli and Vial (2002) and (2005) find that private subsidised schools have better outcomes than public schools, although the advantage is often very small. Studies differentiating between different types of students add a nuance to these findings. Mizala *et al*. (2005) find that public schools have an advantage at

educating children with weak socio-economic background. Tokman (2002) presents a similar finding.

Some evidence suggests that it is important to differentiate between different types of private schools, but even so, results remain conflicting. Chumacero and Paredes (2008) find that private for-profit schools perform better than public schools, with some indication that private non-profit schools perform even better. In contrast McEwan (2001) finds that private fee-based schools and catholic private subsidised schools have higher achievement than public schools, while private non-religious schools do not. It should be noted that catholic schools and private fee-based schools spend more money per student than municipal and most non-religious private subsidised schools, so this is not necessarily a sign of higher efficiency. McEwan and Carnoy (2000) present a similar result based on school-level data. In contrast, Elacqua (2009) finds that private for profit franchise schools, belonging to a group, and catholic schools have a substantial advantage over public schools, while private independent for profit schools have none. These schools often tend to be small scale, sometimes run by teachers and are often located in poor areas. Therefore, they have few opportunities to exploit economies of scale in terms of management and they often struggle with the same problems of high concentration of vulnerable students as municipal schools.

In aggregate terms, competition alone does not seem to be sufficient to bring about the desired improvements in schooling outcomes. Between 1970 and 1999, after almost 20 years of school competition, Chile's relative position in TIMSS, an international math and science test at the primary school level, had not improved (Hsieh and Urquiola, 2006). This was a period of fast economic growth, but without strong increases in primary school attendance which could blur the results. In addition, the performance gap in terms of SIMCE test results between private and public voucher schools, where competition is believed to take place, and private fee-based schools has not narrowed between 1982 and 2006. Nevertheless, improvements have been visible in the most recent period, for example when comparing PISA results from 2000 with 2006. Chile has made substantial efforts since the 1990s to improve initial teacher education and the results of poor students with policies that go beyond competition. This has included P-900, a programme directed at schools with weak learning outcomes, and the rural school programme, both entailing teacher workshops, enhanced learning material and management support. The *Montegrande* project aimed at fostering innovation in secondary schools to solve some of the achievement problems of students in marginalised contexts. Chile has also launched the third consecutive programme to improve initial teacher education in some universities. It is unclear whether recent improvements in learning outcomes are related to these efforts, to beneficial effects of competition or both. In any case, experience so far seems to suggest that while there would be ways to improve the functioning of competition, complementary measures to improve quality are desirable, as well.

The functioning of competition could be improved, but more state intervention is needed, as well

Some measures could be taken to improve the functioning of competition…

To increase chances that competition leads to higher quality rather than to cream-skimming, it is important to ensure equal conditions to compete for schools, including regarding selective procedures. It is difficult for municipal schools to compete on an equal

footing if other schools can select and expel students with much more ease, diverting the most disadvantaged students to municipal schools. Against this background, the prohibition for schools receiving public funds to select students based on their socio-economic background or prior education outcomes until the end of primary school (sixth grade) as legislated in the *Ley General de Educación* is an important principle. So is the requirement for schools to allow students to repeat a class at least once before expelling them. The new law may not prevent schools from applying some more subtle methods to select students as discussed further below, but without creating equal conditions for all schools, at least *de jure,* to select and expel students the government cannot hope that schools will compete mainly by trying to improve their productivity.

The government should also work towards creating more equal conditions in terms of employment of teachers and pay. Private schools enjoy much more flexibility in terms of teachers' pay and dismissal (Box 4.1). In fact, they have a tendency to hire very young teachers, dismissing them once they get older and more expensive. Municipal schools cannot do the same, as teachers' salaries are negotiated centrally, teachers are assigned to individual schools by the municipality and they enjoy more extensive job protection. As a result, their workforce is much older and more expensive than in private schools (OECD, 2004). This distorts competition. The government should work towards creating more equal conditions for teacher employment and pay decisions in the publicly funded sector (private subsidised and municipal schools). While some of the relative security of the teaching profession could be maintained to make up for some of the higher pay in other professions, all schools should have some flexibility over teacher employment and pay. Wage negotiations for public schools could be decentralised to the municipal or school level. If this is not feasible, the government and private providers could team up to negotiate wages centrally.

A number of education policy initiatives aimed at alleviating disadvantages of poor children are targeted at schools classified as vulnerable rather than at the children, possibly creating lock-in effects. Unlike voucher subsidies, which follow students, income-related benefits, including free school meals, are allocated directly to schools. Their coverage is concentrated at some municipal schools and private subsidised schools in poorer areas, as they are targeted to the socio-economic composition of the school. This may discourage poor parents from sending their children to schools which are not classified as vulnerable (Sapelli and Torche, 2002). The government may want to consider whether some of these benefits can be made portable in order to prevent lock-in effects.

There is a need for more information on schools' quality that is readily accessible and easier to interpret. As it is, school managers, but also teachers and parents need more information on how to read SIMCE results, as they are often not able to interpret them (Taut *et al.*, 2009). The new timing of the test, which now ensures that the same classes are tested twice, once in fourth grade and once in eighth, should help to get a better grasp of value added. Chile might also want to explore whether gathering panel data that would allow for calculation of individual level gains would be a fruitful investment. Chile plans to introduce a Quality Assurance Agency (*Agencia de Calidad de la Educación*) which will be responsible for evaluating students' learning outcomes, as well as the quality of schools and their operators, and for informing the public. This will be an excellent opportunity to base performance assessment on a larger set of instruments, including qualitative and possibly value-added indicators, to make it more reliable, and to make performance

reporting more systematic with sufficient explanation for all stakeholders to interpret results.

... but the government is also well advised to strengthen complementary quality assurance mechanisms

Chile has made important steps to strengthen its state-run quality assurance system. Among the more successful school systems, even the most decentralised ones have stronger quality assurance and performance reporting systems than Chile (World Bank, 2007). At a minimum, they evaluate whether schools and teachers meet minimum quality standards, as in New Zealand, and they can revoke licenses to operate or to teach if these standards are not met. The same standards apply to private and public schools. In other systems, such as England, Finland and some districts in the United States the state intervenes actively if schools perform poorly rather than simply revoking the license. These models also promote information sharing so that successful programmes and teaching methodologies are disseminated through the system. Chile has now moved to strengthen its quality assurance system. Until recently performance reporting was limited to publishing aggregate SIMCE results. Comprehensive evaluation of teacher performance was introduced a few years ago, though it only applies to municipal schools. As discussed above a number of programmes were introduced in recent years to improve the quality of schools, many targeted at those with weak outcomes or operating under difficult conditions. This has included a quality assurance system directed at schools that accept the increased voucher subsidy for poor children, which was introduced recently. The new comprehensive quality assurance system for all publicly funded schools will build on this. Eventually the two systems will be merged.

It is commendable that a comprehensive quality assurance system will now be directed at all schools, as quality improvements are desirable across the whole system. Within the new system the Education Ministry would continue to be responsible for policy design and standard and curriculum setting. The *Consejo Nacional de Educación* comprised of independent education experts will approve the curriculum and the standards proposed by the Ministry. A new *Superintendencia de Educación* will be responsible for ensuring the compliance of schools with laws and regulations. It will have the power to ask the Ministry to nominate a provisional administrator for schools that are deficient several years in a row. It can also apply other sanctions that can ultimately result in the revocation of the official recognition of the school. It will respond to inquiries and investigate complaints from members of the school community and can function as a mediator. A newly created *Agencia de Calidad de la Educación* will be responsible for independent evaluation of students' learning outcomes and the performance of schools and their operators. The agency will also validate teachers' evaluation instruments. Negative evaluations and interventions by the Ministry can also lead to sanctions for schools which may ultimately lead to a revocation of their license. Both the *Agencia de Calidad de la Educación* and the *Superintendencia* are required to report the results to the public. The Quality Agency will also inform parents about students' learning outcomes.

The reforms have the potential to bring Chile closer to international best practice and this may help to raise the quality of its education system. But the government should be careful to ensure that the new agencies co-operate efficiently. The new institutional setup assigns clearly defined quality assurance responsibilities for each participant in the educational process to different agencies. Reporting requirements for all performance

evaluations are now spelled out, as are the consequences for schools falling short of expected standards, including support mechanisms and sanctions. Much will depend on how this system is implemented. The number of agencies that will now have to co-operate and interact efficiently is rather large. While it can be an advantage to have a system of checks and balances, there is also a risk that the process could become bureaucratic and cumbersome with a costly duplication of tasks. The government should closely monitor the interaction of the newly created agencies and merge some of them if this helps avoid a duplication of tasks.

A law proposal also foresees a strengthening of technical-pedagogical assistance again by creating a number of new services. A new *Servicio Nacional de Educación* would help private subsidised and municipal school providers implement policies and assure quality improvements. In addition, the government plans to transfer the management authority for public schools from municipalities to local educational authorities. These can comprise one or more municipalities and will have access to qualified staff for technical-pedagogical and for administrative and financial tasks. Staffing the authorities responsible for municipal schools appropriately is commendable, as differences in municipal resources had formerly created serious inequalities in the capacity of municipalities to effectively run their schools. Some wealthier municipalities have been able to sustain large and well qualified staff focusing on administrating education and sometimes taking over technical-pedagogical supervision and support, otherwise located at the Ministry, based on well developed municipal education plans. In contrast, rural and geographically remote municipalities can barely maintain a small group of staff and these are often not dedicated exclusively to education (OECD, 2004). Allowing municipalities to team up can be efficient when they are located close together so that they can reap economies of scale. The benefits are less clear for remote, rural communities that are located far from each other and the implementation of the law should be adjusted accordingly.

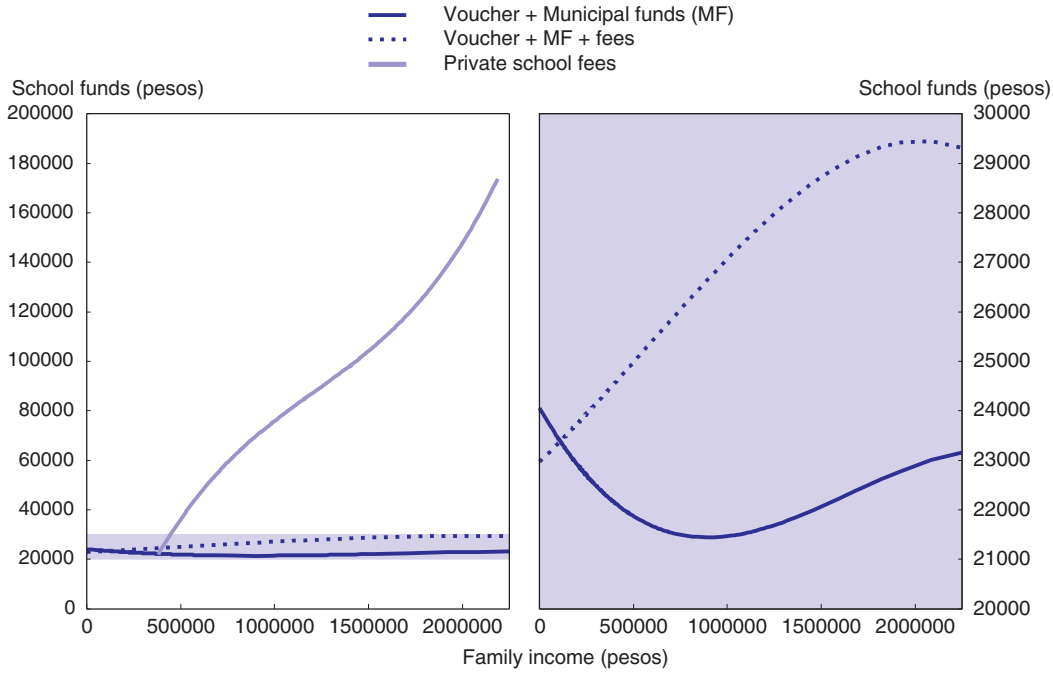
School supervision and support for improvement should be available to all publicly funded schools. It is not clear how the quality assurance system is going to work exactly as a number of laws have not yet been passed, but given that quality is wanting across the whole system, it will be important to apply quality assurance mechanisms even-handedly. The new agencies should evaluate all publicly funded schools in the same way along with their teachers and their management. There should be no differentiation between school types for offering support or applying sanctions. For private fee-based schools there should be a certification process to ensure that they comply with minimum standards.

Equity issues need to be addressed

Increasing public resources directed at poorer children is important to raise their results…

While helping raise resources for investment in education, the high share of private spending raises equity issues in the context of a highly unequal income distribution. While education spending is reasonably efficient in Chile (Schwellnus, 2009) it is low by international standards, especially public spending (see Figure 4.3). The shared financing mechanism described in Box 4.1 attenuates the difference in resources per pupil invested between the publicly subsidised and the private fee-based sector slightly, but resources invested in municipal school children are lower still (Figure 4.8), although they were recently raised substantially for the poorest children. Moreover, the base voucher was increased by 15% in 2008. These recent changes are not accounted for in Figure 4.8, which

Figure 4.8. **School funds per student depending on family income (CLP 2001)**



Source: "Vouchers, Inequalities and the Chilean Experience", González P., Mizala A., Romaguera P., Occasional Paper Series N.94, National Center for Study of Privatisation in Education, Teachers College, Columbia University, 2004.

StatLink http://dx.doi.org/10.1787/776803220432

depicts the situation in the Metropolitan region of Santiago in 2001. Because of the top-up fee system free school choice depends in fact a lot on ability to pay. While there is a grant system for private subsidised schools to ensure that some poor children can have access to schools with top-up fees that are out of reach for them, there is no such system for private fee-based schools.

It is appropriate for Chile to invest more public resources in education. Because of the strong inequalities persisting in the society and the stratification of the school system, Chile has to make greater efforts than richer and more egalitarian societies to achieve comparable results. The impact of individual socio-economic background on education outcomes is particularly strong in Chile, thus more efforts and resources are required for poor children to reach adequate educational outcomes. Moreover, the impact of the socio-economic background of classmates on individual schooling outcome is also strong (Ammermueller and Pischke, 2009; Hanushek *et al.*, 2003; Vigdor and Nechyba, 2006; Schneeweis and Winter-Ebmer, 2007). In fact, results with PISA data suggest that this effect is even stronger than the effect of students' individual socio-economic background (OECD, 2007a and Box 4.5) implying that the cost of educating poor children is even higher when they are concentrated as in municipal schools in Chile and in some of the private subsidised schools that are located in poorer areas. After having attracted a lot of private resources to the school system, increasing public money that is efficiently spent is likely to have higher returns than increasing private expenditure even further. Chile can best raise the skill level of its population as a whole by raising schooling outcomes for the poor.

Against this background the government's initiative to raise the base value of the voucher, while increasing it substantially for the poorest children, is welcome. The base value of the voucher was increased by 15% in 2008. This is the first time that it has been increased beyond the inflation rate. At the same time, the voucher is now differentiated by the socio-economic background of children with a substantial increase of resources directed at the poorest children and some extra payments for schools where these children are concentrated (Box 4.4). There is a quality assurance system, including improvement plans for schools that want to accept this voucher. If the extra money is well spent, it could increase the chances of poor children receiving high-quality education. It will also make education financing a little less regressive at the lower end of the income distribution, although top-up payments by parents at private subsidised schools will remain in place and it would be very difficult for the government in the short run to close the financing gap between publicly funded and private fee-based schools.

Box 4.4. **Extra money for poor children: The *Subvención Escolar Preferencial* (SEP)**

The *Subvención Escolar Preferencial* (SEP) subsidy introduced in 2008 involves financial support and follow-up for schools that enroll disadvantaged students. Acceptance of the extra voucher is voluntary and it works as follows:

- The subsidy for vulnerable students is increased substantially over and above the otherwise essentially flat per capita rate of the voucher, and there is additional financial support for schools with a high proportion of these disadvantaged students. Disadvantaged students are identified through socio-economic criteria already implemented in the country to target social policies.
- Schools receiving the SEP have to design a Plan for Educational Improvement (PME), with targets for progress in educational outcomes in a period of 4 years and measures to help students lagging behind. SEP schools cannot select students by ability or socio-economic background, nor can they impose tuition fees on SEP students.
- Schools applying to the preferential voucher are classified as "autonomous", "emerging" and "recovering" schools, based on SIMCE results and, to a lesser extent, other performance criteria. Schools classified as autonomous are largely free to design their own educational improvement plan, although they remain accountable for results, especially for disadvantaged students. By contrast, schools in the last two categories are subject to supervision by the Education Ministry with a relatively prescriptive PME as a framework. Extra money for "recovering" is conditional on PME implementation and improvement in educational outcomes. Failing to reach the emerging category after 4 years may trigger revocation of the eligibility for subsidies of all kinds.
- There is technical assistance for school improvement including through certified private providers and an education quality assessment system for which there is public access. Parents are informed about the progress of their children and their school.

An autonomous school where less than 15% of the students are disadvantaged students receives approximately a 50% increase in the school subsidy for each vulnerable child. If the concentration of disadvantaged students is at least 60% schools can receive approximately an extra 10% of the base voucher for every student, including those who are not classified as vulnerable.

... and can be developed further to invest more in children who need it most

The government should also evaluate whether there is scope to develop the *Subvención Escolar Preferencial* (SEP) further to direct more public resources at more children with limited means. The extra subsidy for poor children invests more in the poorest children, but this could be developed further. One way would be to make the voucher more generally dependent on income (Beyer, 2009) or on socio-economic background (Sapelli, 2006). Rather than withdrawing the voucher subsidy depending on the top-up money that parents pay, it would be withdrawn depending on parents' income or socio-economic background, for example by creating several income brackets that would receive an increasingly lower subsidy. Over time, Chile could then increase the voucher for all children, while keeping it progressive, if it wishes to increase public spending on education. In the longer term, this would be a way to gradually move away from the shared financing mechanism, which may be worth considering, although this is not feasible in the short term given the large amount of private resources flowing into the system. Yet, cross-country empirical evidence suggests that a large share of privately operated schools has a positive impact on PISA results, but only if the share of public financing remains high (Wößmann, 2005). In contrast, school systems with a high share of private financing achieve weaker results than others.

Free school choice should depend less on the ability to pay and a more progressive voucher would be an opportunity to achieve this. There is a grant system for public subsidised schools, but more money could be devoted to it to help a larger number of children to attend schools that are currently beyond their reach. Another, probably more effective option would be to make the voucher more dependent on income as outlined above and require schools to accept all children with a maximum top-up payment that would be zero for the poorest children, in line with current laws, and increase gradually across the different income brackets. This would replace the system whereby schools can set top-up payments freely as long as they remain below a certain threshold. This system should be calibrated so as to limit a negative impact on work incentives that could arise from such a progressive school subsidy system.

The government should ensure that the extra money for poor children is well spent

The government should evaluate results and offer support to schools to ensure that the extra money is well spent; this may require extra efforts to reach remote schools. It will be important to identify which tools work for schools with vulnerable students to improve their results and which ones do not. The government should therefore provide for independent evaluation of methods employed to enhance the learning of vulnerable students. It could think about experimental application of some new methods limited to a group of schools or a region to allow for a robust evaluation of the efficiency and effectiveness of these tools. This would help identify good practices and disseminate them through the system. Schools with SEP students are also likely to need managerial and technical-pedagogical assistance. The government already provides technical assistance to design school improvement plans, which is welcome (Box 4.4). However, first evaluations of the scheme suggest that schools with limited administrative capacity and those in remote rural areas, where technical assistance is scarce, shied away from applying for the SEP voucher (Elacqua *et al.*, 2009). Reaching these schools is likely to require extra efforts, *e.g.* strengthening the capacity of the Ministry of Education's staff located at the provincial level and making sure that they can travel even to remote schools or making extra funds

available so that private technical assistance agencies can send staff to assist these schools.

Good teachers and good school leadership skills will be the key to improve learning outcomes of students falling behind. Research suggests that while effective teaching is particularly helpful for low performers, they are often less likely to receive it (OECD, 2005; Darling-Hammond, 2000). One good use for the extra resources would be to increase wage incentives for teachers of proven excellence to teach at these schools. Another important element for good results is capable educational leadership. Chile has already launched a promising programme to train principals, and it should develop this further. Principals in many schools are overburdened by administrative tasks and have not enough time to supervise their teachers and elaborate methodological directions. Another good use for the extra funds could be to provide principals with sufficient staff to delegate administrative tasks and train them continuously to develop their educational leadership skills.

It will also be important to enhance methods that identify students at risk of falling behind and help them catch up. For this, Chile can look at other countries' experiences and its own. In Finland, a system with consistently high outcomes and equity, well-trained teachers identify these students and give them extra support either one-on-one or in small groups. If that is not sufficient, teachers' assistants and especially trained special education teachers will provide extra support under the supervision of the teacher. Close to 30% of the student population receive support in this way each year (OECD, 2007b). If all of these measures fail, a multi-disciplinary team comprised of the teachers and social workers, psychologists and representatives of health and public housing authorities, if necessary, work out a plan of support. Hiring more special education teachers at schools that receive the extra voucher may be another good use of this money to help students at risk of falling behind to catch up. A family of methods called formative assessment, whereby teachers concentrate on students' progress towards learning goals rather than their absolute level of attainment, while employing varied instruction methods to meet diverse student needs, has also proved very successful in improving the results of students at risk of failure (Black and William, 1998; OECD, 2007). Reading recovery, a short-term one-on-one intervention to help low achieving third graders catch up to their peers (Burroughs-Lange, 2000; Brooks, 2002), is a further method that has proved very successful. Finally in Chile, school reinforcement programmes for vulnerable children provided by charity organisations have been effective in improving these children's grades (Contreras and Herrera, 2007). Grade repetition, in contrast, is costly and not very effective and it should be limited (OECD, 2007b).

Further measures could attenuate stratification and improve equality of opportunity

Vulnerable students in particular stand to gain a lot in Chile if they were given more chances to learn in schools with a higher socio-economic background. While the effect of a student's socio-economic on her learning outcomes is strong in Chile, the impact of other children's socio-economic background on it is even stronger (Box 4.5). This in itself would suggest that all children, including those with weak socio-economic background, should be given a chance to study with higher-ability peers. A number of studies find that the peer effect, as measured by the average ability of students in a class or the average socio-economic background, is stronger for weaker students (Schindler-Rangvid, 2003; Levin, 2001; Sacerdote, 2000; Zimmer and Toma, 2000), although others find no such asymmetric effects (*e.g.* Ammermueller and Pischke, 2009).

Box 4.5. **Effects of individual and school socio-economic background on schooling outcomes in Chile**

Parental socio-economic background is an important determinant of students' learning outcomes probably because parents from more advantaged backgrounds tend to impart a richer vocabulary on their children (Willms, 2002), which is an important basis for acquiring further knowledge, and they are also more likely to have high expectations for their children and promote their learning success. The socio-economic background of other children in the same school is also often found to have an important effect on learning outcomes (OECD 2007a). This may be due to peer effects, *e.g.* because pupils are more likely to dedicate themselves to learning if their peers do. In addition, it could be due to contextual effects, because schools with students of higher socio-economic background are likely to have fewer disciplinary problems, better teacher-student relations higher teacher morale and a climate that is more oriented towards higher performance (*e.g.* Baker *et al.*, 2002).

Table 4.1 shows the coefficients of a regression of PISA science scores of Chilean students on their individual socio-economic background, as measured by the PISA Index of Economic Social and Cultural Status (ESCS) and the average socio-economic background of children in the same school. Both are highly significant. As in many OECD countries the effect of schoolmates' socio-economic background on pupils' learning outcomes is even stronger than their own. Column 3 includes the standard deviation of the ESCS-index as a measure of school diversity. The coefficient is not significant, suggesting that school diversity has no impact on learning outcomes in Chile.

Table 4.1. **Effect of socio-economic background on PISA outcomes**

ESCS index	(1)	(2)	(3)
Individual socio-economic effect	37.237***	11.826***	11.364***
	[1.699]	[1.265]	[1.583]
School socio-economic effect		46.996***	23.997***
		[3.002]	[8.935]
School diversity			–25.895
			[24.001]
N	4 989	4 979	2 906
R-squared	0.25	0.34	0.32

***robust at the 1% significance-level.
Note: The dependent variable is the PISA science score. Regressions are least-squares using weights for students' sampling probability. Boostrapped robust standard errors , shown in brackets, are clustered by school. All regressions include a constant. Control variables (results not shown) as in Causa and Chapuis (2009).

Results of a regression that divides the Chilean student population into students with high, medium and low socio-economic background suggest that the impact of school socio-economic background is particularly strong for pupils with low socio-economic background. However, dividing the sample by ability, as measured by PISA scores, instead results in a higher impact of the school socio-economic effect for the highest-ability children.

Box 4.5. **Effects of individual and school socio-economic background on schooling outcomes in Chile** *(cont.)*

Table 4.2. **Impact of school socio-economic background by tertiles of the ESCS-Index**

	ESCS tertiles			PISA scores tertiles		
	Low	Medium	High	Low	Medium	High
	(1)	(2)	(3)	(4)	(5)	(6)
School socio-economic effect	0.800***	0.607***	0.744***	0.182***	0.084***	0.294***
Standard error	[0.110]	[0.102]	[0.084]	[0.055]	[0.030]	[0.044]
Controls	Individual, school and ESCS index					
N	969	956	981	921	1 008	977
R-squared	0.19	0.22	0.35	0.083	0.052	0.194

Note: Dependent variable is the PISA science score. Regressions are least-squares using weights for students' sampling probability. All regressions include a constant. *** $p < 0.01$. Boostrapped robust standard errors, shown in brackets, are clustered by school. The 4 individual and 12 school control variables are the same as in Causa and Chapius (2009). The sample is divided in three quantiles based on the ESCS index (Columns 1 to 3) or PISA scores (Columns 4 to 6).

In particular, there is evidence that a less stratified system would be one element in reducing the especially strong impact of socio-economic background on schooling outcomes in Chile. A number of studies have shown that the impact of parental background on schooling outcomes is stronger in school systems that track students by ability early in their school career (Wößmann, 2007; Hanushek and Wößmann, 2006; Schütz *et al.*, 2005), which certainly happens *de facto* in Chile. While Brunello and Checchi (2007) find no such effect of early tracking on literacy, they do find that it increases the impact of parental background on educational attainment and labour market outcomes. Meghir and Palme (2005) found a significantly positive effect of the abolishment of tracking in Sweden in the 1950s on the educational attainment and earnings of individuals with low-skilled fathers, while earnings of individuals with high-skilled fathers were negatively affected. The effect of early tracking on average outcomes is less clear, with some studies finding positive and others negative effects, while most find no significant effect at all (Meier and Schütz, 2007). PISA results for Chile presented in Box 4.5 suggest a strong school socio-economic effect, while a greater diversity of backgrounds in a school has no effect on learning outcomes, a somewhat controversial result that is however confirmed by a number of studies (Causa and Chapuis, 2009; Hanushek *et al.*, 2003; Schindler Rangvid, 2003, Vigdor and Nechyba, 2006, Schneeweis and Winter-Ebmer, 2007). Together these results suggest that a more integrated school system could be beneficial, especially for students from vulnerable socio-economic backgrounds without necessarily hurting those with a stronger background. For equality of opportunity it will be important to create a school system with high academic expectations, encouragement and support for all students and equal chances to attend schools with high-ability peers.

The prohibition of selection as foreseen by the *Ley General de Educación* is welcome. Given the undesirable consequences of stratification for equality of opportunity, selecting students based on their socio-economic background or prior academic outcomes should not be encouraged. Poor parents may feel more confident trying to enroll their children in

the schools that they deem best for their children if they know that they cannot be turned away based on their socio-economic background. Through its new *Superintendencia de Educación* the government should ensure that discriminatory selection practices by schools are identified and that the law to prohibit selection is enforced. Requiring oversubscribed schools to apply lotteries may be the safest way to avoid cream-skimming and attenuate segregation.

The government could consider prohibiting selection by ability or proxies thereof, including socio-economic background, for secondary school admission, as well. The argument used against this is in Chile is that some highly selective municipal schools have improved social mobility for children who are admitted to them (González and Mizala, 2006). This argument essentially refers to a few selective public schools in Santiago, including the *Instituto Nacional*, which have consistently helped students from lower socio-economic backgrounds to access good universities and jobs. However, this argument has to be treated with caution. Research about selective *versus* comprehensive school systems in the UK has shown that the effect on the schooling outcomes of "borderline" children who just make it into selective schools can indeed be very positive, although high-ability students seem to perform just as well in comprehensive schools. Yet, this has to be weighed against negative effects on students who narrowly fail to gain access to these schools (Schagen and Schagen, 2001; Boaler *et al.*, 2001). Rather than keeping the practice of selecting children it would be preferable to create a climate of high achievement and aspirations for all children in less segregated schools.

The increased subsidy for vulnerable children could help attenuate the stratification of the school system, and this would be welcome. However, it remains to be seen whether the monetary incentive that comes with the extra voucher is sufficient for schools that attract parents based on the high socio-economic background of their children to water down this advantage. Schools who receive SEP children will not be allowed to collect fees from them. The mean school fee in private subsidised schools is relatively low, a little more than 10 USD (Gallego and Hernando, 2008), or about one eighth of the base voucher of a full day primary school, but it can be much higher than that. The extra subsidy for poor children increases the base voucher by 50% (Box 4.4) and a bit more for schools with a high concentration of poor children, but at the upper end, parents' co-payments can increase it by more than that. So in pure monetary terms, the incentive should be sufficient for some schools, but not for others, especially considering that vulnerable children are more difficult to teach, so schools may require more money to be willing to accept them. Moreover, schools that now attract parents because of the favourable socio-economic background of their students may fear that accepting poor children could reduce this advantage. The government should monitor whether the SEP voucher is sufficient for good schools to accept vulnerable students and to educate them effectively. If needed, the extra voucher subsidy should be increased for all schools.

However, the scrutiny that the government has foreseen for schools that enter the SEP system and accept the extra subsidy, but not for others, may be a disincentive to accept it. In fact, as long as the government leaves it to schools whether they want to accept the extra voucher, while attaching strong strings to this, incentives for reputed schools to accept poorer children risk being weakened. Therefore, the government should integrate the quality assurance system for SEP schools quickly into the new national quality assurance system for all schools. First, evaluations of the scheme show that mainly schools who already educate many poor students have applied to the scheme, while more selective

schools did not (Elacqua *et al*., 2009). The government should require all schools to accept the SEP subsidy without extra fees levied on the parents. Otherwise, there is a risk that the voucher will mainly provide more resources to schools who teach vulnerable students already today. While this is welcome, an important opportunity to provide free school choice for the poor and attenuate the strong stratification of the Chilean school system would be weakened.

The government could work towards opening private fee-based schools at least to some children whose parents cannot afford the high fees. Today, schools that receive children from the wealthiest families are practically removed from the rest of the education system because their high fees are out of reach for most others. Learning conditions are exceptionally favourable in these schools due to the strong socio-economic background of their children and their considerable resources which are far above those at publicly funded schools. Evidence from the UK suggest that the most deprived children, but also others, gain significantly in terms of schooling outcomes when they attend the most advantaged schools (Noden and West, 2009; Zimmer and Toma, 2000). At a minimum, private fee-based schools should be allowed to accept some voucher children with no top-up fees or reduced fees depending on their parents' ability to pay, provided that they accept laws and regulations applying to private subsidised schools. Currently, only schools whose fees do not surpass a threshold of around USD 125 are allowed to accept voucher children, and this particular rule could be softened. Since many private fee-based schools may not want to accept voucher children to avoid watering down the advantage of the high socio-economic background of their students, the government could also go a step further and impose quotas regarding a minimum number of voucher children on private fee-based schools. The government could also establish a grant-system to be co-financed by private fee-based schools similar to the one that exists for public subsidised schools. Transport subsidies, although expensive, could also help children from poorer backgrounds to become more mobile and help them attend high-quality schools that are not close to their homes.

Investing more in preschool education to enhance equality of opportunity

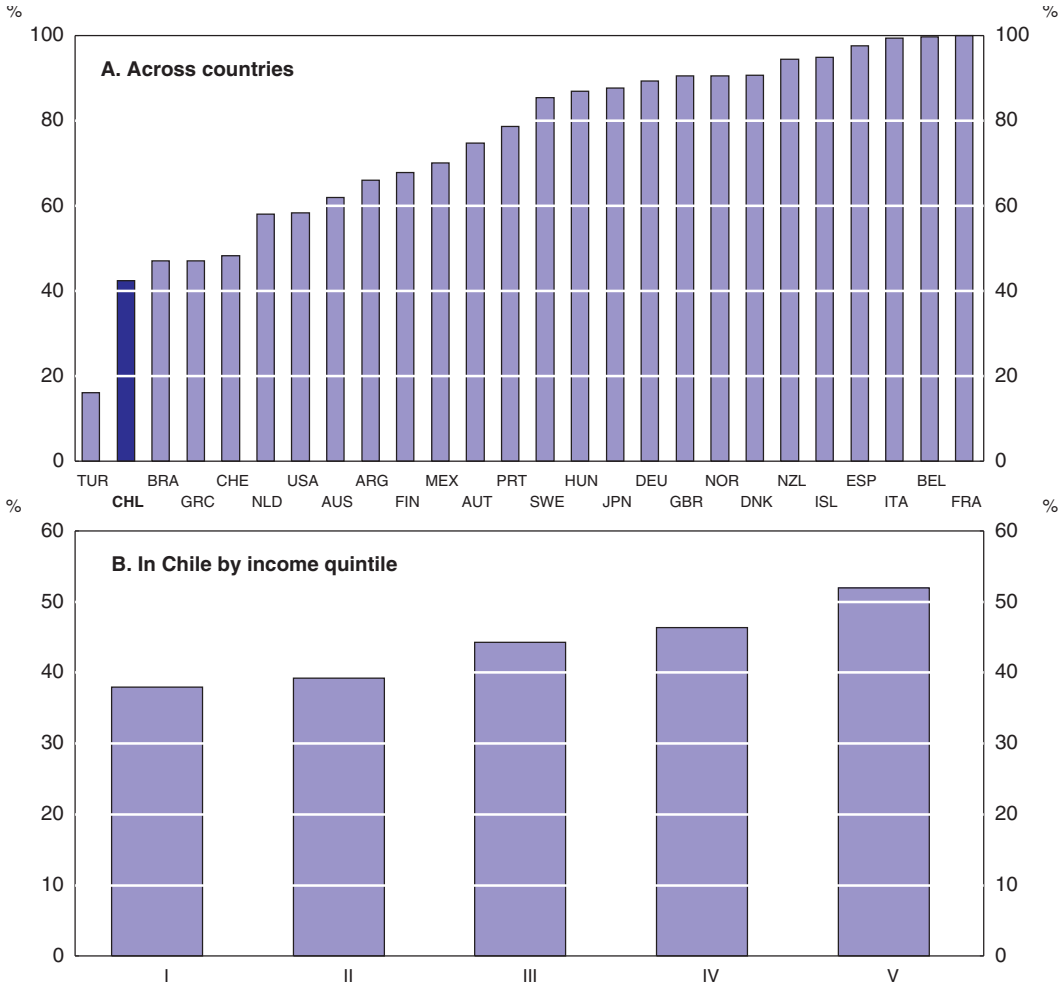
One efficient way to improve on inequalities in education and reduce the impact of socio-economic background on results is to invest more in preschool education. Fundamental cognitive and non-cognitive abilities are built in the early years of childhood. Yet, children from disadvantaged backgrounds receive much less cognitive and emotional stimulation to develop these, producing a gap in abilities already in early years (Heckman and Masterov, 2007). This has been shown to be decisive for learning abilities later on (Carneiro and Heckman, 2003) as well as for labour market opportunities and earnings (Currie and Thomas, 2001). Yet, there are ways to attenuate these inequalities. Early intervention, *e.g.* high-quality preschool centres and home visits to help parents mentor their children, has been shown to be highly effective in strengthening the abilities of disadvantaged children permanently (Heckman and Masterov, 2007; Campbell *et al*., 2002; Albornos Cabezas *et al*., 2005). The positive impact of a high-quality preschool education has also been shown to be stronger for children who start with weaker abilities (Connor *et al*. 2006), indicating that it can be a good way to close learning gaps.

The government has made the expansion of access to preschool education a policy priority and this is welcome. It has doubled spending on preschool education between 2005 and 2010 to increase the number of subsidised kindergarten places by 55% and to create

70 600 new places in nurseries. The voucher subsidy has been extended to children of age four. In addition, the *Chile Crece Contigo Programme* includes assistance for vulnerable families to enhance the psycho-social development of their children from birth to age four and free access to childcare and preschool education for children from the 40% poorest families. This is important progress because participation in preschool in Chile is low by international standards (Figure 4.9, Panel A), especially so for children from weak socio-economic backgrounds (Figure 4.9, Panel B). In part, this may be linked to the fact that the private share in education financing is relatively high, making it more difficult for children from poor backgrounds to attend preschool. Facilitating access to preschool education for poor families can be a cost–effective measure to improve learning outcomes for those who need it most.

Figure 4.9. **Preschool participation rates**

2006



Source: MIDELPLAN, Encuesta CASEN 2006 and OECD, *Family Database*.

StatLink http://dx.doi.org/10.1787/777114363334

It is important to stress, however, that the positive impact of preschool education depends much on its quality. There are some indications that this could be improved in

Chile and this will be particularly important when rapidly expanding coverage, as this will make it more difficult to assure high levels of quality. The number of hours spent in preschool education, the quantity and quality of language directed at children, the number of children per adult and the training of educators have all been shown to be important factors in the linguistic, cognitive and emotional development of children (National Institute of Child Health and Human Development (NICHD), 2000; Connor *et al.,* 2006). There are some indications that there is scope to improve the quality of preschool education in Chile. Some studies suggest that the quality of preschool education is not always sufficient to help children from poor socio-economic backgrounds progress and some of them even fall behind (Eyzaguirre and Le Foulon, 2001). More concretely, other studies have found that the time dedicated to exposing children to language in Chilean kindergartens, *e.g.* teaching them new words, letters or phonetics, and contact with reading is scarce. This is independent of the kindergartens' results in the SIMCE, the socio-economic background of its children or the type of the provider (Eyzaguirre and Fontaine, 2008; Strasser *et al.,* 2009). This is important, because the focus on stimulation of language has been shown to be one of the most important determinants for a positive impact of early childhood education on the cognitive skill development of children (NICHD, 2000; Ramey and Ramey, 2006; Rolla and Rivadeneira; 2006).

Information and research about initial education for preschool personnel is scarce, but there are some suggestive indications that there remains room for improvement. On the positive side, preschool teachers are generally educated at universities combined with practice in preschool institutions and many practitioners have followed training programmes. However, initial education programmes differ a lot in content, suggesting that there is no shared notion what a preschool teacher should know. There seems to be insufficient emphasis on general education, which is a problem, given that preschool educators are among the first people to expose children to learning. There is also insufficient emphasis on the special requirements needed for educating children from vulnerable backgrounds, interaction with their parents and the specific needs at nursery schools (García-Huidobro, 2006). Developing standards for initial education of preschool teachers that emphasise these aspects and making it a pre-requisite for accreditation would be an important step ahead. Certifying the skills of preschool teachers through external exit exams could help to ensure the quality of their initial education. There is also a need to improve the preparation of auxiliaries practicing at preschools because they are often the ones who interact most with the children. Due to the weaknesses in Chile's secondary school system, the basic language, reading and numeracy skills of both aspirant preschool teachers and auxiliaries are likely to be insufficient in many cases. Including remedial classes in the early years of their initial education to help them close these gaps could help.

While raising the quantity of preschool education is welcome, it will also be important to make sure that the quality of preschool education is adequate. The new quality assurance system is a good opportunity to raise standards in preschool education and ensure that they are met through systematic evaluation and support for preschool institutions that need to improve. In particular, it would be important to set quality standards that include devoting sufficient time to linguistic interaction between educators and children. The government could consider evaluating some new methods in preschool education by limiting application initially to a region or a group of preschools and compare

outcomes between children who had access to the new methods and a comparator group that had not.

Inequalities in the access to high-quality tertiary education and financing need to be addressed

While Chile has achieved much in terms of better access for lower-income students to tertiary education, there is still a big gap to be closed between different income groups. Tertiary education coverage has expanded rapidly in recent years and this has also benefitted students from lower-income families. However, the gap in tertiary education coverage between the highest and the lowest income quintile has increased, not narrowed (Figure 4.1, Panel B). A breakdown by institutions shows that lower-income students are underrepresented in all types of tertiary education institutions, except maybe technical training centers (OECD, 2009).

Not surprisingly, the strong inequalities remaining in the school system translate to inequalities in the access to high-quality tertiary education. Chances to enter high-quality universities and access to financial aid for them are very much dependent on results at a university entry exam, called *Prueba de Selección Universitaria* (PSU). There are some recent improvements, however, as the government has expanded access to financial aid for technical education without a minimum PSU score requirement. The PSU is organised by the Council of Rectors (*Consejo de Rectores*) of a group universities which, like many other tertiary education institutions, make entry dependent on exam results. When the *PSU* was introduced, replacing an aptitude test, the idea was that testing the national curriculum instead would help hold schools accountable for teaching the curriculum successfully. In principle, this is a good idea. Not surprisingly given PISA and SIMCE results, PSU exam results are strongly dependent on family income and the school type that pupils attended, with the highest failure rates among low-income pupils and those who attended municipal schools. Yet, while the exam has laid bare the deficiencies of the Chilean school system, more needs to be done to hold schools accountable for this. In fact, most Chileans do not seem to expect schools to prepare pupils adequately for the university entry exam, as those who can afford it take private tutoring to prepare for it.

Children from high-income families do not only go to schools that prepare them better for the PSU test, but they are also more likely to receive private tutoring that is out of reach for lower-income families. Tutoring is available at institutions called *pre-universitarios* that cost USD 40-50 per months and teach students typically during the last one or two years of secondary school during evenings or week-ends or by arrangement with (private) schools during school hours (OECD, 2009). There are hardly any scholarships or subsidies available for these institutions. That means that those students who have been least well prepared by their schools for the PSU test are also least likely to have access to extra resources to close this gap.

The government needs to take steps to hold schools accountable for the results of their pupils in the university entry exam and to improve the preparation of low-income students. The most important step will be to improve the quality and equity of the schooling system, but this will take time. As the new quality assurance system is implemented, PSU exam results of their pupils should serve as one quality indicator for the evaluation of schools. The government will need to intervene in those schools where it identifies shortcomings. More immediately, the government will have to find means to better help young people with university aspirations at disadvantaged schools to prepare

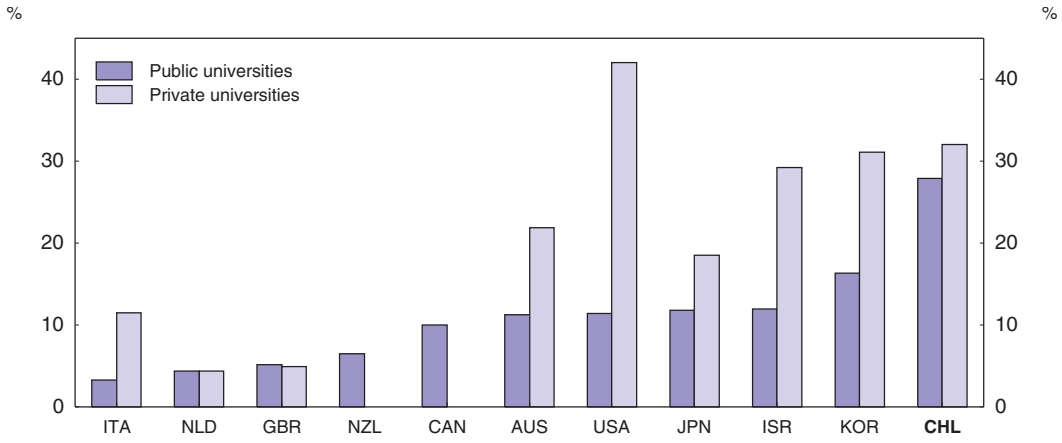
for the university entry test. The government and universities have made free online courses available to prepare for the exam, which is a first step. However, students with knowledge and cognitive skills gaps due to insufficient preparation at their schools are likely to be in need of special tutoring to reap their full potential at the exam. Options would include developing *pre-universitario* type programmes at disadvantaged secondary schools with teachers who have proven skills of identifying and filling pupils' knowledge gaps. Alternatively, the government could fund institutions outside the school system or special access courses at the university to perform the same task.

The university entry exam should be evaluated to see whether it is really a good predictor for success at the university or whether reforms are needed. One problem with the PSU is that its adequacy and that of its critical scores to properly evaluate the aptitude of students to successfully follow tertiary education courses have not been systematically evaluated (OECD, 2009). This should be done and if needed the test should be developed further to be sure that it identifies the skills that are needed to be successful at university. The Catholic University of Chile and some partners have recently designed a complementary university entry exam and first evaluations revealed that this has the potential to reduce the socio-economic gap in university admission, while being a good predictor for later success at the university (Santelices, 2009). This suggests that it could be possible to develop adequate exams that make access to university easier for more disadvantaged children.

Over time the government should consider replacing the university entry exam with a national school leaving exam as the prime criterion for entry into tertiary education institutions. This could establish a closer link between test results and the school that is responsible for them, making it easier to reach the goal that has been pursued with the introduction of the PSU. There is evidence that central curriculum-based exit exams are strongly and positively related to student academic performance (Wößmann, 2005; Bishop, 2006). To allow students to show in more detail their knowledge and their ability to apply it, the school exit exam could be a bit more in-depth than the multiple-choice PSU, including verbal and non-verbal reasoning.

Tuition fees are very high in Chile in international comparison (Figure 4.10); at the same time access to scholarships and financing is more difficult than elsewhere. Chile has put in place an extensive programme of financial aid for low-income students, including scholarships, maintenance grants and student loans. Government funding for scholarships has increased a lot over the past few years, by close to 70% over 2007-2009. However, until recently only 13.8% of students enrolled in tertiary education received a scholarship compared with more than 50% in the United States. Less than half of the students from the lowest two income quintiles received scholarships and these were not sufficient to pay university fees (OECD, 2009). There is a wide array of scholarships available with different admission criteria. There are also two student loan schemes, which can make up for the relatively low coverage of scholarships. However, until recently most of the financial aid was directed at students who were set to study of one of the *Consejo de Rectores* universities, while financial aid for studying at technical training centers was much scarcer. This was a problem because low-income students are more likely to study at technical training centers. It is therefore welcome that the recent increase in scholarships was to a large extent directed at students engaging in technical studies. In addition, one of the loan schemes has shifted its focus beyond *Consejo de Rectores* universities. Nevertheless, the government should streamline financial aid, ideally into a single scholarship and a

Figure 4.10. **Tuition fees**
As a percentage of per capita GNI



Source: OECD, *Reviews of National Policies for Education: Tertiary Education in Chile*; IBRD/World Bank.
StatLink http://dx.doi.org/10.1787/777142616386

single student loan scheme, which should be available for students to study at any tertiary education institution that is accredited. Income-contingent repayment schemes would also lower barriers to finance tertiary education for lower-income students who are more likely to engage in technical studies often leading into lower paying jobs.

Conclusion

Chile still has some way to go to improve the quality of its education system and converge with OECD standards. At the same time, the government has introduced many promising policy initiatives. A number of them are quite innovative. If Chile pursues this path further it should be possible to achieve improvements over time.

Box 4.6. **Recommendations to improve education outcomes**

Improving teaching

- Evaluate whether teacher salaries should increase further to make the profession more competitive and define teacher career paths for publicly funded schools with promotions closely linked to performance.
- Implement teacher evaluation in all publicly funded schools.
- Make sure that deficient initial teacher education programmes are closed.
- Upgrade the subject content knowledge of teachers, especially in the upper grades of primary schools, through richer curricula in initial teacher education programmes and post-graduate programmes for practicing teachers.
- Develop an induction programme over time.
- Introduce external exit exams for initial teacher education.
- Strengthen educational leadership by continuing efforts to train principals and by making sure they have sufficient time for teacher supervision and support.
- Better prepare teachers for instructing pupils from different backgrounds and helping those at risk of falling behind.

Box 4.6. **Recommendations to improve education outcomes** *(cont.)*

Enhancing the functioning of competition and complementary quality assurance mechanisms

- Make sure that the prohibition of selection is implemented by schools, consider extending it to secondary schools and strengthening it by requiring lotteries at oversubscribed schools.
- Create more equal and sufficiently flexible conditions for teacher employment and pay at all publicly funded schools.
- Make sure that teachers, school managers and parents have sufficient information how to read results of the national student achievement test, SIMCE, and complement it with richer quality indicators, including qualitative information and possibly value-added indicators.
- Implement the legislated quality assurance system, while making sure that the newly created agencies interact efficiently.
- Make sure that all municipalities have qualified administrative and technical-pedagogical support staff.

Improving equity

- Consider introducing higher subsidies at decreasing rates for several income brackets and limit top-up payments dependent on parents' income.
- Evaluate results of the increased subsidy for poor children systematically and inform and support schools to make sure that successful methods are disseminated quickly.
- Require all publicly funded schools to enter the *Subvención Escolar Preferencial* system with extra subsidies for poor children and use the new quality assurance system to exercise scrutiny for all schools on an equal footing.
- Consider allowing private fee-based schools to accept some voucher children, with no or limited top-up fees or imposing quotas.
- After significantly expanding access, systematically evaluate quality at preschools and make sure that initial education prepares preschool teachers and aides to enhance children's abilities and learning skills.
- Hold schools accountable for their students' university access exam results and improve children's preparation for the exam at schools. Evaluate the university entry exam, consider enriching it beyond multiple-choice and moving to a centralised school exit exam over time.
- Streamline scholarships and student loan schemes and make them available for all accredited tertiary education institutions.

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