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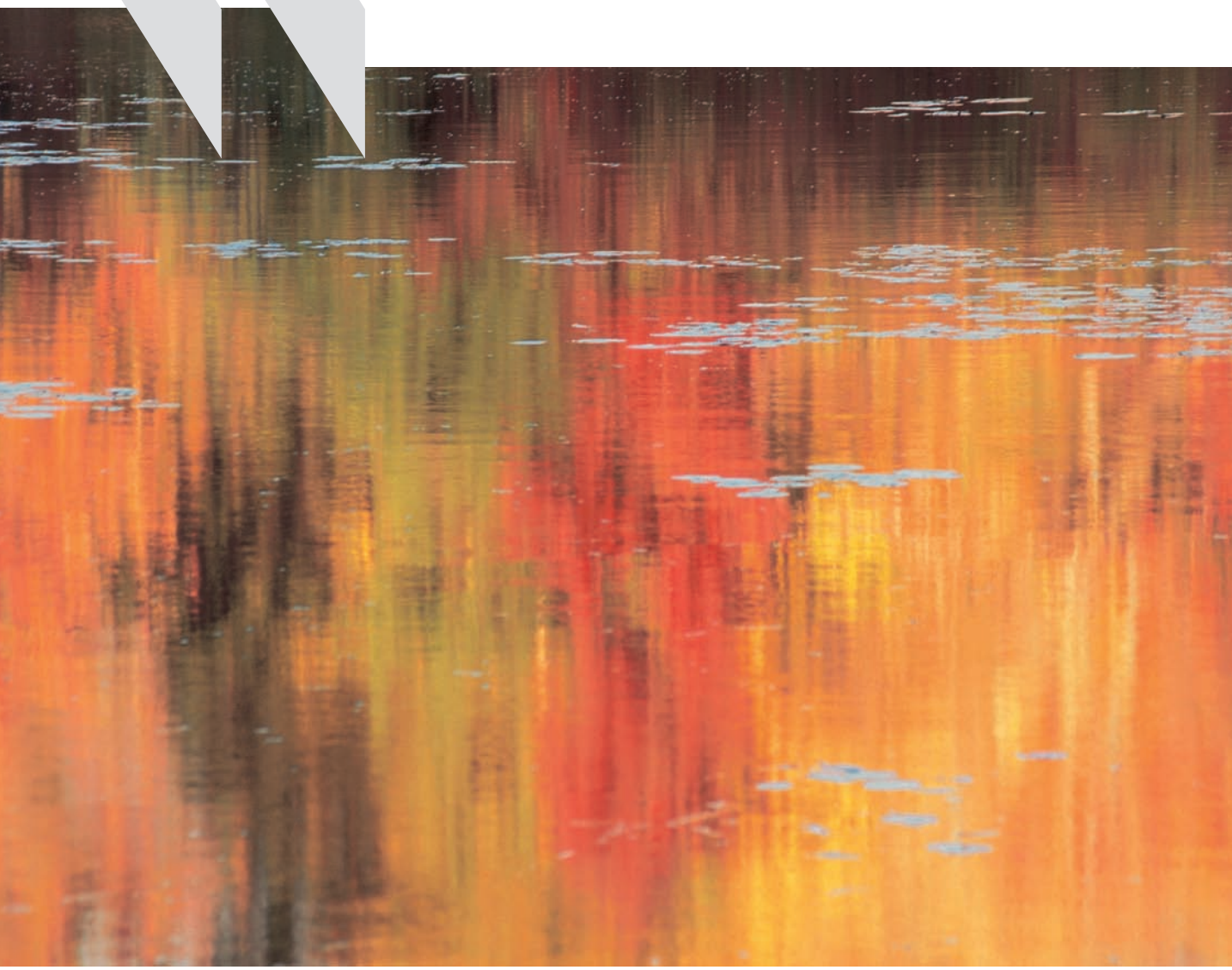
LUXEMBOURG



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The Secretariat's draft report was prepared for the Committee by Sebastian Barnes, Artur Radziwill and Jeremy Lawson under the supervision of Piritta Sorsa. Research assistance was provided by Agnès Cavaciuti, Ane Kathrine Christensen and Isabelle Duong.

The previous Survey of Luxembourg was issued in June 2008.

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BASIC STATISTICS OF LUXEMBOURG, 2009

THE LAND

Area (km^2)	2 586	Major city (thousand inhabitants):	
Agricultural area (2008)	86%	Luxembourg	89

THE PEOPLE

Population (thousands)	494	Employment (thousands):	352
Inhabitants per km^2	191	Agriculture	5
Net natural increase (2008)	2 001	Industry	37
		Financial and business services	101
		Other	209
		Cross-border workers (2008)	146

PRODUCTION

Gross domestic product, euro million	37 755	Origin of GDP in per cent	
Gross national income per head,		Agriculture	0.2
current price (USD PPP, 2008)	63 979	Industry and construction	13
Gross fixed investment		Financial services, services to business	45
Per cent of GDP	17		
Per worker (EUR)	17 200		

THE PUBLIC SECTOR

Per cent of GDP		Composition of Parliament (7 June 2009)	
General government consumption	17	(number of seats):	60
General government current revenues	41	Christian Social People's Party (CSP)	26
General government gross debt (2008)	14	Luxembourg socialist Workers Party (LSWP)	13
		Democratic Party (DP)	9
		Alternative Democratic Reform Party (ADR)	4
		The Greens (Déi Gréng)	7
		The Left (Déi Lénk)	1

THE CURRENCY

Currency units of euro per USD, average of daily figures:			
Year 2009	1.39	March 2010	1.35

Executive summary

Luxembourg has experienced a severe recession, as it was heavily exposed to the fall in world trade and the international financial crisis. Unemployment has risen and the fiscal position has deteriorated. This follows a long period of continuous and rapid economic expansion during which living standards rose impressively and the economy was transformed by the growing financial centre and large flows of cross-border and migrant workers. While there are encouraging signs of recovery, the future growth path is likely to be weaker than in the recent past reflecting the sluggish international recovery, structural factors and a loss of competitiveness.

Exiting from the crisis. *The substantial fiscal stimulus needs to be unwound. The structural deficit in the public finances will need to be addressed given the vulnerability of the Luxembourg economy to external shocks and the longer-term fiscal challenge from ageing. Consolidation plans need to be implemented with an emphasis on containing current expenditure and within a more robust budgetary and institutional framework. The unemployment rate is at a historically high level and could be reduced through appropriate structural measures to boost labour demand and get the unemployed back to work. Economic recovery could be encouraged by improved competitiveness.*

Securing long-run fiscal sustainability. *The main challenge comes from high pension costs due to ageing, generous benefits and the increasing number of cross-border workers who will reach retirement age. Pension reform, together with fiscal consolidation, is required to put the public finances on a sustainable footing. Fiscal consolidation is an opportunity to increase public sector efficiency as well as to strengthen budgetary institutions.*

Avoiding long-term unemployment. *Residents' unemployment rose even during the growth years and the crisis has further increased unemployment. Some groups, including younger and older workers, have relatively low employment rates. The functioning and adaptability of the labour market would be improved by making its regulation less rigid and by ensuring that generous social benefits do not reduce the incentive to work.*

Maintaining a well-regulated financial centre. *Banking and asset management activities in the financial centre play an important role in the overall economy. They were adversely affected by the international financial crisis, although knock-on effects to the real economy have been rather muted. The risks inherent in these activities, related to substantial cross-border exposures, appear to have been well managed. However, the crisis leaves the financial industry's future prospects more uncertain. Effective supervision and improved cross-border co-operation will help to manage risk in the financial system, while solid domestic framework conditions will contribute to the development of the financial centre.*

Achieving growth with flexibility and efficiency. *Though living standards should remain high, it is to be assumed that potential growth is likely to be lower in the coming years. This underlines the need for structural reforms. Competition should be enhanced, notably in the services sectors. Further education reforms are needed to raise skills and knowledge standards. Housing and transport policies should do more to support sustainable economic development and continue to make Luxembourg an attractive location for business. Reducing high per capita CO_2 emissions will be a major challenge.*

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Assessment and recommendations

The economy is coming out of a severe recession

Luxembourg has experienced a severe recession, as its international links exposed it to the financial crisis and the steep fall in world trade. The very open financial and industrial sectors contracted sharply. The financial impact of the crisis has been primarily on internationally-oriented banking and fund management activities. However, there is little evidence of serious credit constraints facing the domestic economy. Luxembourg participated in the cross-border rescue of two financial institutions with extensive local activities, though their local subsidiaries were not at the origin of the problems. Employment growth has stalled, leading to a rise in unemployment among the resident labour force. A large-scale short-time working scheme in manufacturing has contributed to cushion against further job losses. The fiscal stance has eased markedly due to automatic stabilisers, large stimulus measures and lower revenues from financial activities. The accommodative stance of euro area monetary policy has provided further support. Headline inflation has been volatile in recent years due to increases in food and energy prices, and underlying price pressures have been somewhat stronger than the euro area average. Competitiveness has deteriorated in recent years as wage increases have outpaced productivity gains.

The tentative recovery began with a sharp pick-up in activity in the third quarter of 2009, driven by net exports and growth in consumer spending. In the coming years, growth is anticipated to be stronger than the euro area average, but lower than in the pre-crisis years. Indeed, demand will be held back by weak competitiveness, the necessary fiscal consolidation and sluggish growth of potential output. In light of Luxembourg's high exposure to financial and trade developments, this recovery scenario is surrounded by substantial risks. Although living standards should remain high, potential output is likely to be lower in the coming years than previously anticipated. This is the result of reduced financial sector activity and slower euro area growth. There is also great uncertainty about the long-term growth rate, given the highly specialised economy and uncertain prospects for the financial sector in the wake of the crisis, but it is likely to be lower than the trend of past decades. A reduction in the average growth rate over a sustained period will have major implications for the economy and the sustainability of public finances.

Fiscal consolidation is required to restore the public finances

The fiscal position has deteriorated substantially after many years of good performance. The surplus of more than 3% of GDP is likely to turn to a deficit of similar magnitude

by 2010, driven by the automatic stabilisers, one of the largest stimulus packages relative to GDP in the OECD, as well as large falls in revenues from banks. The sound starting position and low debt burden allowed for the large and timely fiscal stimulus package. Nevertheless, its impact on demand is likely to have been modest given the openness of the economy. Some of the revenue shortfall will be permanent: banking sector profitability is expected to be lower than in the recent past because the credit cycle has turned and the volume of assets under management is unlikely to recover fully in the coming years. Meanwhile, spending has continued to rise strongly due to the stimulus measures and higher social expenditures. To reflect the potential effect of implicit liabilities on the long-term sustainability of public finances, the authorities have revised their Medium-Term Objective under the Stability and Growth Pact from a small deficit to target a small surplus. This is appropriate given future ageing-related spending and high dependence on volatile financial sector revenues. However, the consolidation plans set out by the government do not envisage reaching this target for at least five years. *These plans should be implemented and consideration given to adopting a more ambitious consolidation path.* Consolidation will be more effective if it focuses on containing current expenditures, rather than on revenue measures, and if accompanied by more robust fiscal institutions. Given the unusually uncertain long-term prospects, the public finances should continue to be managed on a prudent basis. Budgetary institutions and procedures should be strengthened to facilitate the consolidation process with greater emphasis on multi-year plans.

Fiscal consolidation provides an opportunity to enhance public sector efficiency and responsiveness to citizens. While spending on public services is high, the organisation of the public sector should be adapted to modern practices. In a career-based system with limited ability to bring in outside skills, as well as promotions based on seniority and limited mobility between departments, human resource management remains extremely inflexible:

- *There should be a shift from an input-based to an output-based system for the allocation of public spending.* A *system of performance budgeting should be introduced* to improve resource allocation, with greater localised discretion and effective central monitoring of performance.
- *Capital projects should systematically be subject to cost-benefit analysis* to ensure cost efficiency.
- *Human resource management should be upgraded with the introduction of performance-based advancement/pay and greater openness in recruitment.*
- To ensure access to the widest possible pool of talent, *the law on access of EU nationals to public-service employment should be implemented in a way to make recruitment as open as possible.*
- Health spending cost controls are relatively weak by international comparison. *The health system should be made more efficient by strengthening the control of costs, empowering hospital managers, improving the flow of information and using health facilities in the neighbouring countries.*

Pension reform is needed to achieve long-run fiscal sustainability

While there are few immediate pressures on fiscal sustainability, the long-run budget position is however much weaker due to large future pension liabilities. If potential growth were to slow substantially in the aftermath of the crisis, this would increase fiscal pressures. The short-term financing of the pension system is currently supported by a low

old-age dependency ratio, as well as by contributions paid by relatively young cross-border workers. In the future, both factors will reverse and pension costs are anticipated to increase substantially. Although the government has sizeable and growing pension reserves, they will not suffice to sustain the system in the medium and long term. Pension benefits are very high by OECD norms and the system cannot be sustained without substantive reform. Luxembourg is one of very few OECD countries not to have undertaken major reforms. *The pension system needs to be reformed now*. Reforms could include raising the effective retirement age, reducing the pension replacement rate over time, limiting credits for years spent outside work, introducing actuarial fairness around retirement age and indexing the retirement age to longevity. To raise the effective retirement age, *early retirement schemes should be abolished*.

Making the job market more adaptable will help to boost overall employment and reduce unemployment among residents

Although employment rose strongly in Luxembourg up to 2008, the labour market has been hit hard by the crisis. The unemployment rate has risen to its ever highest level as employment growth has stagnated, despite a large-scale short-time working scheme. The Luxembourg labour market is idiosyncratic: almost half of jobs are held by cross-border workers, who account for a high share of the overall increase in employment in recent years. Despite the crisis, the unemployment rate of resident workers remains lower than in most other OECD countries. However, joblessness was trending up even during the years of strong growth and there are pockets of relatively poor labour market outcomes among the resident population, particularly for the young, the low-skilled, second-earners and older workers. Labour market institutions are relatively rigid and social benefits are generous. Reforms in recent years have been limited. While existing institutions helped to meet Luxembourg's social objectives during its transformation over the past three decades, their impact could be less benign in the future. Some features of these institutions reduce the demand for labour and limit the incentive to work for groups with weak attachment to the labour market.

Luxembourg's exit strategy from the crisis and high unemployment would be helped by structural changes to increase labour demand, encourage participation rates and prevent entrenched unemployment among residents. Although the system of automatic indexation of wages was temporarily suspended during recent hikes in oil prices, this flexibility did not prevent a loss of competitiveness. There is also evidence that relative real wage adjustment may have been held back by indexation. To deal with these problems, the wage-setting system should be reformed. *As a first step, wages should be indexed to core rather than headline prices. The ultimate objective should be to replace automatic indexation with a system of wage determination more closely linked to productivity.* Employment protection legislation is strict compared to the OECD average, helping to preserve existing jobs but making it more costly to create new jobs and leaving the economy less flexible. *Conditions on collective dismissals and social plans should be eased, and trial periods should be lengthened under regular contracts for those with low salaries and skills*. The minimum wage applies to a large share of the workforce. It is high by international comparison, partly reflecting high living costs. This is likely to prevent the creation of some low-skilled jobs. In addition, the high level compared with neighbouring countries makes it attractive for cross-border workers who have lower reservation wages and often better qualifications. *Younger low-skilled residents,*

who do not have access to social benefits, could gain from jobs created by a lower minimum wage. The setting of the minimum wage should focus on its economic impact. An independent Minimum Wage Council should be introduced to help achieve this. In the short run, the minimum wage should not be adjusted to average earnings but only to inflation to lower its level relative to wages. These changes should occur alongside reforms to the generous system of social benefits that are designed to improve labour market incentives for resident workers.

The employment prospects of resident workers can be improved

Generous social benefits provide high levels of protection but weaken incentives to work by creating inactivity traps that reduce employment among Luxembourg residents. The high level of out-of-work benefits reduces the incentive to find employment, particularly for the low-skilled, while pension and early retirement schemes encourage workers to leave the workforce well before the statutory retirement age. The high rate of exit from unemployment at the end of eligibility suggests that *unemployment benefits should be reduced progressively during the period of entitlement. Eligibility conditions should be tightened for young people without work histories to improve incentives to find work*. Ongoing social benefits provide high unemployment replacement rates for those with low market wages. *Replacement rates under these benefits should be reduced over time*. A more comprehensive approach to increasing work incentives would be to *consider introducing a system of in-work benefits* to provide social protection while preserving the incentive to work. Support services for the unemployed are under pressure from the increased number of unemployed and there are long-standing weaknesses in the performance of the public employment service (ADEM). *This service should be rationalised and more resources allocated to helping the unemployed find jobs and to supporting activation in line with ongoing reform efforts. All recipients of the minimum revenue (RMG) should be offered integration contracts to increase their incentives to work*. Spending on active labour market programmes has not been systematically evaluated in terms of effectiveness. Expenditures are biased towards temporary job creation schemes and the focus on getting people back to work is weak. Hence, *existing labour market programmes need to be reviewed in terms of their employment outcomes and funding switched to programmes that are cost effective*.

The financial centre has felt the impact of the international financial crisis and faces a more uncertain future

The financial centre's development was instrumental for Luxembourg's public finances and the increase in living standards. The international financial crisis has had a strong impact: reducing bank balance sheets, lowering the value of assets under management, and posing serious difficulties to two cross-border institutions due to problems at the group level. Nevertheless, the direct impact of these factors on activity in the real economy has been limited due to the highly international nature of the financial centre, which has relatively few links to the rest of the economy and is largely foreign-owned. Cross-border co-operation and a specific winding up procedure for banks have allowed effective crisis resolution in the banking sector. As an international financial centre, banks' balance sheets remain extremely large relative to the size of the economy. In addition, the financial

centre's role as net liquidity provider creates large exposures to parent banks. Liquidity regulation and supervision have already been strengthened in a qualitative way in line with international best practices. *This should be complemented by a quantitative framework in line with evolving EU guidelines. The payout for the deposit insurance scheme should be speeded up and the scheme moved to an* ex ante *funded basis with risk-based premia*. Following difficulties that arose during the crisis, *the requirement on custodian banks to hold assets placed in their trust needs to be enforced more strictly*. Supervisory resources appear to be adequate and measures have been introduced following the crisis to make supervision more effective, both within Luxembourg and through better oversight of large cross-border banking groups. Supervisory responsibility is split between the financial supervisor and the central bank. *At a minimum, an institutional framework should be established to ensure close and effective co-operation between these bodies. Consideration could be given to creating a single supervisory institution.*

The future prospects of the financial sector, which are central to the outlook for the overall economy, are likely to be affected by changes in the financial industry and the regulatory environment. In addition, the new EU directive on investment funds (UCITS IV) could have a major impact on the way the industry is structured. While the financial centre's very high market share in UCITS funds gives it a powerful advantage, other aspects of the liberalisation could be less favourable, both in terms of the location of funds and the amount of economic activity they bring to Luxembourg. The OECD welcomes Luxembourg's withdrawal of its objections to Article 26 of the OECD convention on information sharing for tax purposes and the rapid implementation of this decision. *The attractiveness of the financial sector would be enhanced by maintaining good framework conditions in terms of education, transport, housing and competitiveness.*

Sustaining high living standards will be supported by on-going education reforms

Living standards are expected to remain high, although potential growth is likely to be lower in the coming years. This underlines the importance of implementing structural policies to increase the resilience and efficiency of the economy. In the long run, a well educated population is vital to ensuring an employable labour force in a rapidly changing world and to maintaining high living standards. The performance of the education system is relatively weak, as measured by PISA scores, and the system has to overcome the intrinsic problem of three languages of instruction in a country with a large immigrant population. The school drop-out rate is high and many young people have difficulties making the transition to the labour market. Major reforms to the organisation of the school system are currently being implemented. These are welcome and are likely to contribute to raising the future living standards of Luxembourg's population.

Competition is weak in the services sector

Stronger competition would help to restore cost competitiveness and increase efficiency. While overall trade openness implies that there is strong competition from companies in neighbouring countries, product market regulation in the domestic market is among the most restrictive in the OECD. It has become increasingly out of line with practice in other countries and preserves many important barriers to competition. While access to the network industries has become easier, state controls on prices and industries is more

common than elsewhere and there are heavy administrative burdens on start ups. Many unnecessary restrictions hinder competition in the services sector. For professional services, *reforms should include removing restrictions on advertising and making co-operation between professions easier. Minimum or reference prices should be scrapped. An independent regulator should be introduced for the legal profession, the cap on the number of notaries removed, and a special procedure introduced to deal with small claims without the need for legal representation. Restrictions on the number of pharmacies should be ended and pharmacists allowed to offer generics as substitutes, while the sale of some medicinal products by other retailers could be permitted*. In the retail trade, *shop opening hours should be made more flexible*. Once there is effective competition policy in place, *the retail price ceiling for motor fuel should be removed. Restrictive regulations fixing the number of taxis and limiting their ability to compete should be lifted*.

The enforcement of competition policy is weak due to the inadequate resources of the competition authority and its division into two different bodies. No successful case has yet been mounted. *Sufficient resources need to be provided to the competition authority and the two-tier structure replaced with a single authority*. To investigate the operation of markets where competition might be restricted, *the mandate of the new authority should include producing sectoral reports and the government should be obliged to publish a response*.

Housing and transport policies need to meet the demands of Luxembourg's economy

Housing costs are high in comparison with neighbouring regions and some other financial centres, adding to the number of cross-border workers using the transport network. Housing prices have increased as higher demand, boosted by tax distortions, has pushed against supply constraints. The pressure of a large and increasing number of commuters leads to congestion, strain on the infrastructure and environmental problems. This makes Luxembourg a less attractive location for businesses. While the need to build more and denser housing has been recognised for some time, construction has lagged behind these ambitions. Housing supply is constrained by cumbersome regulations and low property taxes, which encourage the hoarding of building plots. *The planning system should be overhauled to make it easier to build new housing*. In addition, the tax system is very favourable to owner occupation, with low effective property taxes, mortgage interest deductibility, favourable taxation of capital gains on principal residences and interest-rate subsidies. Given limited supply, this largely acts to make housing more expensive. *Consideration could be given to reforming these tax subsidies*. The Transport Sector Plan (PST) sets out a multi-year programme to expand and upgrade the infrastructure with the aim of substantially increasing the public transport share in commuting. *These infrastructure investments should continue*. In addition, *a system of congestion charging should be considered for key parts of the road network* to encourage the shift towards public transport and to improve the efficiency of the use of the existing infrastructure.

Reducing greenhouse emissions will be a major challenge

Luxembourg has the highest per capita CO_2 emissions in the OECD and is committed to making the largest proportional reductions of any EU country. A number of measures have already been taken, including through the National Energy and Efficiency Action Plan. It

aims to achieve around half its targets through improved residential energy efficiency. The EU Emission Trading Scheme covers some large polluters. However, the majority of emissions come from the transport sector. The bulk of motor fuels in Luxembourg is sold to cross-border residents, foreign demand created by a combination of commuting and low fuel taxes compared with neighbouring regions. Fuel taxes have already been raised through the so-called "Kyoto tax", together with changes in car taxes. *Taxes on motor fuels should be increased further* to help achieve Luxembourg's emissions targets. While much of the effect would be to switch fuel purchases back across the borders, there would be a net gain as this would raise the effective price in the region as a whole. This could be less costly for Luxembourg than reducing its domestic emissions in other ways.

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Chapter 1

Recovering from the crisis

Luxembourg has experienced a severe recession as the result of the international financial crisis. Output contracted sharply and unemployment has risen. Luxembourg's economy was heavily exposed to the downturn in world trade and the financial centre has been strongly affected. However, policy support from accommodative euro area monetary policy and a fiscal stimulus package helped stabilise the economy. While recovery is now underway, demand is likely to be held back by a weakness in competitiveness, necessary fiscal consolidation and lower potential output. Growth in the coming years is likely to be lower than before the crisis, although living standards will remain high. The fiscal position has deteriorated rapidly due to a sharp fall in tax receipts from the financial sector, substantial fiscal stimulus measures and rising spending. A consolidation plan has been outlined. This should be implemented and could even be more ambitious, given long-run spending pressures. The consolidation effort would be enhanced by a more detailed, multi-year plan based on limiting current expenditures. Strengthening the budgetary and fiscal institutions would also help. The main challenge for fiscal sustainability is very large future pension costs, with the effects of population ageing amplified by the age profile of cross-border workers. While substantial reserves are being accumulated, the high level of pension benefits needs to be contained through a comprehensive reform of the pension system. The required fiscal consolidation provides an opportunity to improve public sector efficiency, modernise public management and increase value for money. Improving the control of costs in the health system would increase efficiency.

Luxembourg has experienced a severe recession with the economy heavily exposed to the international financial crisis and fall in world trade. The recession follows a remarkable period of almost 30 years of continuous and rapid economic expansion. This has seen living standards rise substantially to reach the highest per capita income in the OECD. The economy has been transformed by the growing financial centre and large flows of cross-border and migrant workers. These changes have been accommodated in a social model based on solidarity and an extensive system of social insurance and protection.

Although there are signs of recovery, growth is likely to be weaker in the coming years than in the run up to the crisis, and the long-term prospects for the financial centre are more uncertain due to changes in the financial industry and the international regulatory environment. At the same time, the unemployment rate has risen to close to 6% of the resident labour force, a budget deficit of around 4% of GDP is opening up, and there has been a loss of competitiveness in recent years. These problems need to be addressed for Luxembourg to exit successfully from the crisis. In the longer term, the prospects for sustaining and further raising living standards will largely depend on how the financial sector develops. Nevertheless, policy can play a role in ensuring the development, sustainability and flexibility of the economic and social model.

This chapter sets out the main challenges as the economy exits from the recession. These include the need to improve competitiveness and restore public finances. Fiscal consolidation should address the future burden of the current pension system, strengthening the fiscal framework, and raising public sector efficiency. To ensure sustainable growth and flexibility in future years, Chapter 2 reviews the pending structural reform agenda, including measures to improve educational attainment, enhance competition in product markets, and ensure environmental sustainability. Chapter 3 identifies structural weaknesses in the labour market and policies that could help raise employment prospects, particularly for low-skilled residents. Chapter 4 discusses developments in the financial sector, together with their implications for regulation and supervision after the crisis.

A sharp recession has followed a long period of economic growth

Financial and trade shocks led to a dramatic downturn

Luxembourg has experienced a severe recession since output began to fall sharply in the second half of 2008 (Table 1.1). After four consecutive quarters of contraction, the peak-to-trough fall in activity was over 7%, a sharper fall than the euro area average. This reflects heavy exposure to the international financial crisis through Luxembourg's role as a financial centre, while industrial production was badly hit by the collapse in world trade and demand for capital goods around the end of 2008. With annual real GDP growth averaging 4.4% over the expansion from 2003 to 2008 and the economy growing by 6.5% in 2007, the slowdown was dramatic. The sharp recession suggests that output is substantially below its potential level, despite a likely slowdown in underlying trend

Table 1.1. **Key macroeconomic developments**

	Current prices (EUR billion)	Percentage changes, volume (2006 prices)			
	2007	2008	2009	2010	2011
GDP at market prices	29.5	0.0	–3.4	2.7	3.1
Private consumption	10.3	3.9	–0.6	1.3	3.2
Government consumption	4.4	3.0	2.9	2.9	3.2
Gross fixed capital formation	6.9	–0.1	–14.9	0.4	2.4
Final domestic demand	21.6	2.5	–3.9	1.4	3.0
Stockbuilding[1]		0.5	–0.5	0.1	–0.2
Total domestic demand	21.7	3.2	–4.7	1.6	2.7
Exports of goods and services	53.8	1.5	–7.6	7.0	3.5
Imports of goods and services	46.1	3.3	–9.2	7.6	3.4
Net exports[1]		–2.1	–0.2	1.5	1.4
Memorandum items					
Consumer prices		3.4	0.4	1.6	1.8
Underlying consumer prices		2.0	1.7	1.4	1.7
Private consumption deflator		3.7	0.0	1.6	1.9
GDP deflator		5.0	–0.7	1.2	2.0
Employment (national accounts basis)		4.7	0.9	0.5	1.6
Unemployment rate		4.4	5.7	6.0	5.9
General government financial balance[2, 3]		2.5	–0.7	–3.8	–4.9
Current account balance[2]		5.3	5.6	6.3	6.0

1. Contributions to changes in real GDP (percentage of real GDP in previous year).
2. As a percentage of GDP.
3. The balance does not include fiscal measures outlined in the Stability and Growth Programme for 2009-14.

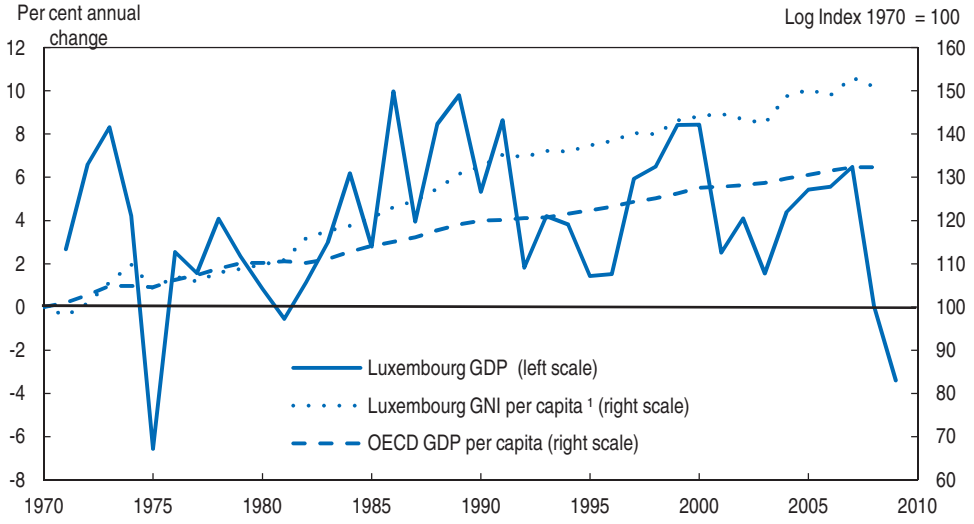
Source: OECD, *OECD Economic Outlook database* and provisional update to the *Economic Outlook 86* projections.

growth in the wake of the crisis. Unemployment has risen, the savings rate has increased and investment has shrunk. Over recent quarters, there have been signs that recovery is underway: GDP rebounded by 4.8% in the third quarter of 2009 and only fell back slightly in the fourth quarter. This recovery largely reflects the rebound in financial markets and improved trade.

The recession follows a remarkably long period of continuous economic expansion: it was the first annual contraction of GDP since the early 1980s (Figure 1.1). Luxembourg has sustained an average growth rate of 4.8% over the past twenty years, more than doubling the size of its economy. This performance was among the strongest of OECD countries, behind only Ireland and Korea, which were experiencing fast catch-up growth. As a small country within a larger region and with strong international linkages, much of this growth was driven by external demand. On the supply side, strong growth was made possible by increasing flows of cross-border workers and by immigration. Luxembourg residents now account only for about 60% of the workforce and increased flows of cross-border workers explain more than two-thirds of the rise in employment over the past two decades. As a result, many of the gains of the economic expansion flow to non-residents. Furthermore, the cost of living has increased as the economy has grown and is high by international comparison. Nevertheless, real incomes of Luxembourg residents have risen at a fast pace and measured living standards are the highest in the OECD.

Macroeconomic developments over recent quarters have been largely driven by the sharp slowdown in financial services and industry (Figure 1.2). Business and financial services, which account for around two-thirds of overall economic activity, contracted by

Figure 1.1. **Growth of real incomes**



1. Gross national income (GNI) has been deflated by the domestic demand deflator.

Source: OECD, *OECD Economic Outlook database and National Accounts database.*

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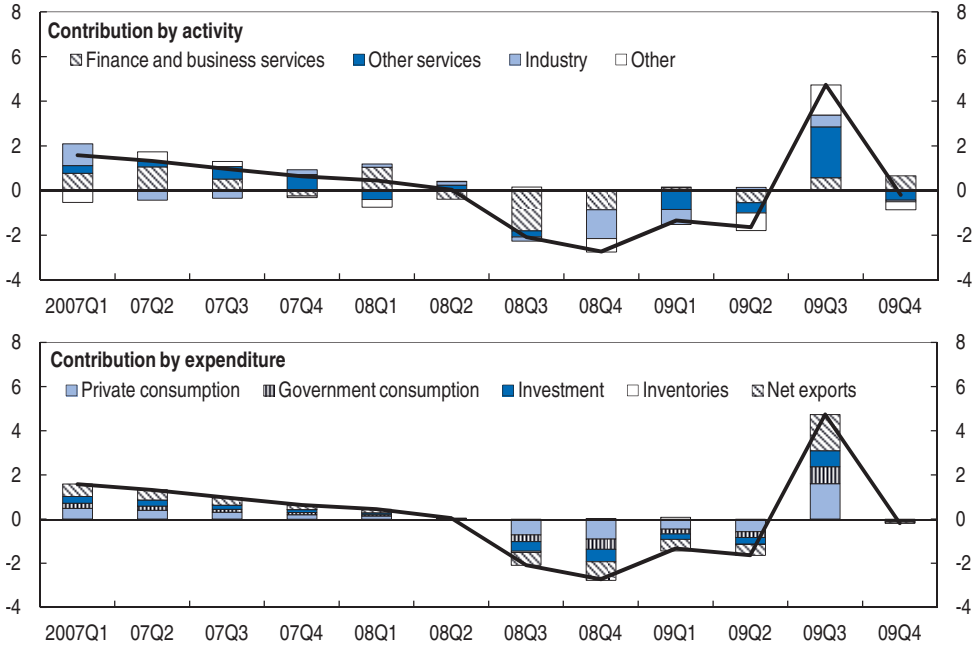
Figure 1.2. **Export-oriented activities have been severely hit**

Percentage point contribution to quarterly change in GDP[1]



1. Chained volume estimates, national reference year 2000, quarterly levels, seasonally adjusted. Shares are calculated from data in current prices.

Source: OECD, *Quarterly National Accounts database.*

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close to 10% from peak-to-trough as the crisis unfolded. Employment in this sector has stagnated. Incomes and measured output have fallen sharply due to a lower value of assets under management and a shrinking bank balance sheet, which reduce the volume of financial intermediation services indirectly measured (FISIM).[1] Although the industrial

sector accounts only for around one-tenth of GDP, the large drop in activity has had a significant impact on the overall economy as world trade and demand for capital goods collapsed around the end of 2008. Industrial production in 2009 was 20% lower than in 2008 and production fell by around one-third in the steel and equipment manufacturing industries. The role of domestic factors in the slowdown appears to have been relatively limited. Credit conditions have tightened and the balance sheets of resident banks have contracted; domestic credit growth has slowed down and even turned negative for some sectors. Consumption has fallen and investment, which tends to be closely related to export demand, has contracted sharply.

The crisis has hit the financial sector hard but with relatively limited wider repercussions

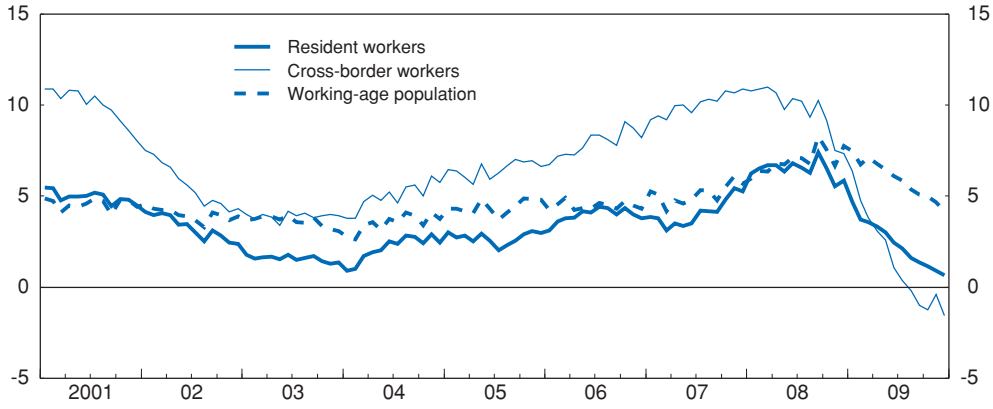
The international financial crisis caused intense stress on large parts of the global financial system, including Luxembourg's financial centre. While the aggregate balance sheet of resident banks has contracted by almost 18% since the peak, this largely reflects a contraction in interbank credit between cross-border institutions based outside Luxembourg (Chapter 4). Survey evidence points towards some tightening of credit conditions for resident non-financial firms and households, but to a lesser extent than for the euro area as a whole; credit standards applied to household loans have only tightened marginally. The growth of credit to domestic non-financial firms has slowed sharply: from rates prior to the crisis that were well ahead of growth in nominal GDP, there was a modest contraction in the year to February 2010. Given the sharp slowdown in activity, it is likely that demand for new loans has been extremely weak. Growth of credit to households has slowed but it has continued to expand overall due to the rising stock of mortgages. There appear to have been few credit-related difficulties during the recession and, despite rapid growth in credit before the crisis, the overall level of indebtedness relative to national income remained modest.

Employment has stagnated and unemployment has risen

The downturn hit employment growth severely (Figure 1.3), although the rise in unemployment has so far been more modest. While employment expanded at an annual rate of over 4% in 2008, it was broadly flat during 2009. The unemployment rate has risen from around 4% of the resident labour force before the crisis to reach 5.9% by November 2009 as the result of continued expansion of the resident labour force, largely accounted for by immigration. It remained close to 6% up to February 2010. Given the large drop in activity, the increase in the unemployment rate so far has been relatively modest and close to the average in the OECD. The impact of the downturn on unemployment rates has also been unexpectedly muted in many other countries compared to past crises (OECD, 2009a). In Luxembourg, this can partly be explained by the fact that the fall in output was concentrated in financial services, which have a low labour intensity and where job losses have been limited. In the industrial sector, the muted reduction in the number of workers reflects labour hoarding, which has been encouraged by large-scale temporary subsidies for short working hours. Overall, employment has largely been maintained for cross-border workers as well as for residents, although the slowdown in employment growth in Luxembourg is likely to have contributed to raising unemployment in the surrounding regions.

Figure 1.3. **Employment growth has stalled**

Annual change in thousands



Source: STATEC.

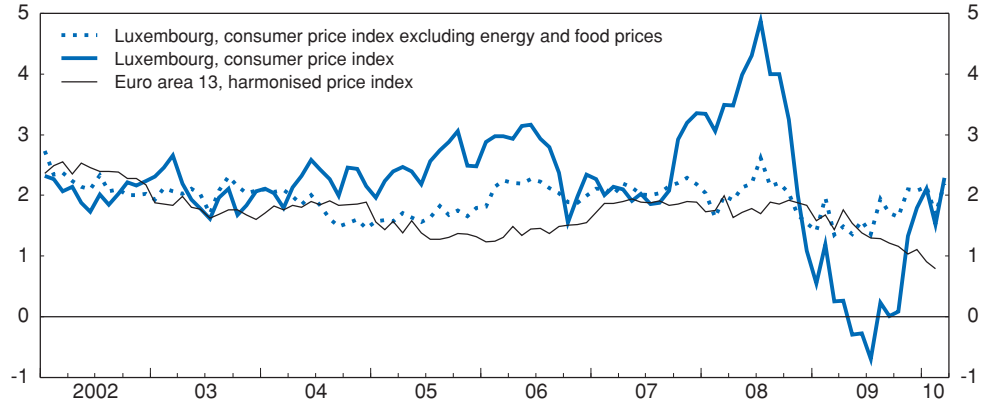
StatLink http://dx.doi.org/10.1787/846378136770

Inflation has been above the euro area average and competitiveness has deteriorated

Headline inflation in 2008 reached its highest level in Luxembourg since the early 1990s, driven as elsewhere in the OECD by sharp increases in global energy and food prices (Figure 1.4). When these factors went into reverse, annual headline inflation briefly turned negative. Underlying these developments, core measures of inflation have been relatively stable and are likely to weaken somewhat as a result of the crisis. As Luxembourg is a highly open economy, inflation differentials with neighbouring countries and their impact on competitiveness are important for external demand. Since around 2005, core inflation in Luxembourg has been somewhat above the euro area average.

Figure 1.4. **Headline and core inflation**

Year-on-year percentage change



Source: OECD, *OECD Economic Outlook database*.

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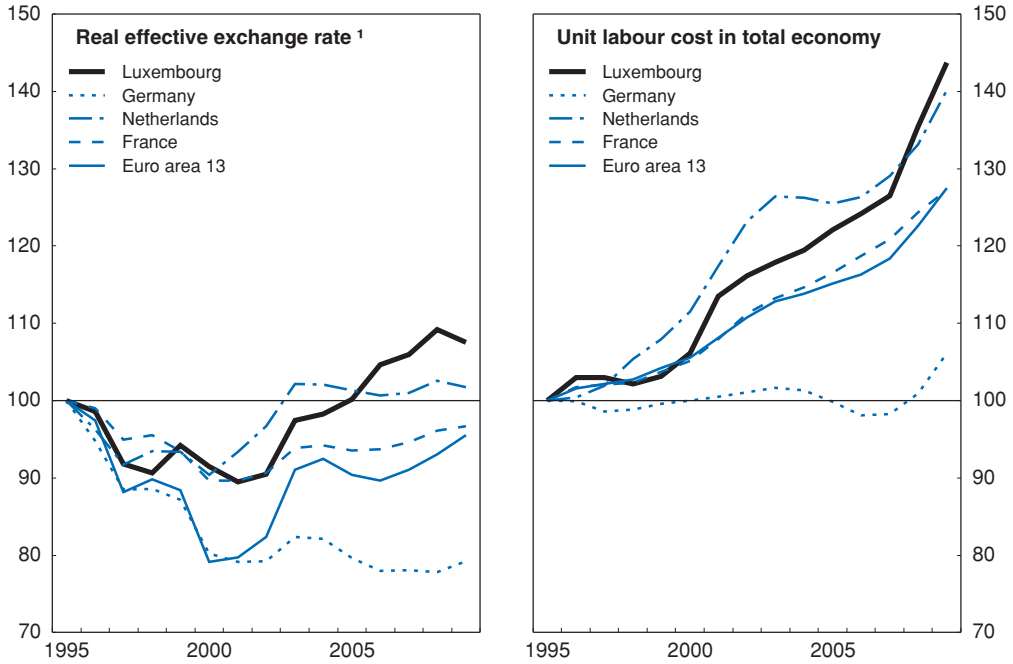
The increase in prices has been faster than in competitor countries and has outstripped productivity growth, leading to a deterioration in competitiveness in recent years, particularly against Germany (Figure 1.5). At the same time, competitiveness of the euro area as a whole has been weakened by the strength of the euro. While Luxembourg's exports have continued to expand at a fast pace over this period as there has been strong

Figure 1.5. **Competitiveness has declined**

Index 1995 = 100



1. Using constant trade weights.

Source: OECD, *OECD Economic Outlook database.*

StatLink http://dx.doi.org/10.1787/846440468824

growth in sectors such as finance where the short-run price sensitivity of exports is likely to be low, this deterioration in price competiveness may have longer-run implications. The loss of competitiveness since 2005 is apparent across a broad range of indicators (Observatoire de la Compétitivité, 2009). As argued in Chapter 3, the legislated system of automatic wage indexation is likely to have contributed to price pressures by allowing some deterioration in the terms of trade to feed into domestic wages and prices, even though the scheme was partly suspended during the period of hikes in energy and food prices. For Luxembourg, the rapid growth of the financial sector has required some reallocation of resources between sectors. Higher prices leading to an appreciation of the real exchange rate is one mechanism by which this is achieved, reducing the competitiveness of the manufacturing sector and holding back its growth (Corden and Neary, 1982). To the extent that wages and other costs in the manufacturing sector have been maintained above productivity by the wage indexation mechanism, the loss of competitiveness and damage to traditional jobs will have been greater than necessary. As the economy recovers, spare capacity and weaker growth in financial sector will tend to put downward pressure on prices and this may contribute to restoring competitiveness, which would help to encourage activity in the industrial sector. Nevertheless, real wage restraint will be required to ensure that this adjustment takes place, particularly in sectors where the level of productivity is most clearly out of line with wages. In addition, measures to increase competition in product markets would boost productivity and lower prices, adding to non-cost competitiveness (Chapter 2).

A recovery is underway

Activity picked up sharply in the third quarter of 2009, supported by improved trade prospects and financial conditions. The recovery in activity has been driven by marked increases in net exports and household consumption, against a background of ongoing weakness in consumption and investment. The increase in net exports can be accounted for by large positive contributions from the financial sector and the industry, although the recovery appears to be broadly based. Confidence indicators have picked up strongly. The outlook is now for a gradual recovery over the coming quarters. Some economic slack will remain, however, with demand dampened by weak competitiveness, the necessary fiscal consolidation and weaker potential output. There are substantial risks around the recovery. In the near term, Luxembourg remains highly exposed to uncertainty about international financial conditions and the recovery of world trade in the short run. Further ahead, there is great uncertainty about the long-run impact of the crisis on the small number of specialised financial and industrial activities that constitute the core of Luxembourg's economy. Changes in the financial industry and the international regulatory environment could have a major impact on the economy as a whole, both negative and positive. This makes it especially difficult to assess the medium-term trajectory of growth following the recovery.

Potential output is likely to be lower than anticipated

Potential output is likely to be lower in the coming years than previously anticipated and there is heightened uncertainty about the future long-term path of the economy (Box 1.1). This largely reflects the impact of the crisis on the financial sector, both in terms

Box 1.1. **Estimating potential output in Luxembourg**

Assessing potential output is inherently difficult because it is unobservable and its future path is uncertain. However, making this assessment is particularly hard for Luxembourg for two reasons. Firstly, it is a highly open economy in terms of trade, labour mobility and capital flows. The standard neo-classical model of factor accumulation and growth therefore cannot be applied as for other countries. High factor mobility means that production can be very sensitive to small changes in circumstances (Krugman, 2009). Secondly, the Luxembourg economy is highly specialised in sectors, such as finance, that are hard to model using standard economic tools.

In essence, the potential output of the economy depends strongly on the foreign demand for Luxembourg's goods and services. This depends on what happens in foreign markets, primarily the euro area, and to competitiveness. The level of demand in the euro area is expected to be weaker in the coming years than previously anticipated following the crisis. Luxembourg's cost competitiveness has deteriorated and other related factors could also play a dampening role, such as high housing costs (Duffy *et al.*, 2005). Developments in the demand for the type of financial services offered in the financial centre will be particularly important. As argued in Chapter 4, the financial crisis will have a lasting impact due to changes it will bring to the financial services industry and the international regulatory environment. It remains unclear what the net effect of these changes will be. Luxembourg has benefited hugely from financial liberalisation in recent decades; this may now evolve at a slower place, although the EU UCITS IV directive will have significant effects on asset management activities.

The OECD has revised its estimates of potential output for all countries in the aftermath of the crisis (OECD, 2009a). In most cases, the level of potential output has been revised down, reflecting a higher cost of capital than during the boom years and an increase in the

Box 1.1. **Estimating potential output in Luxembourg** *(cont.)*

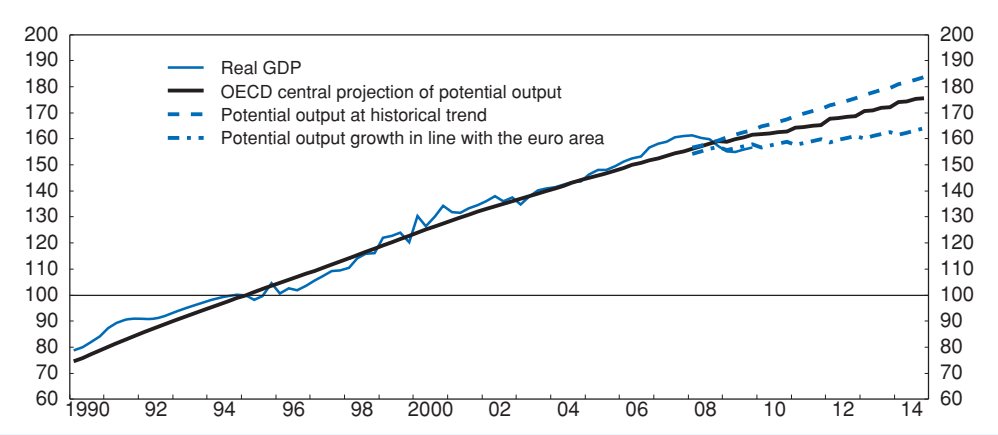
estimated structural rate of unemployment (the so-called "NAIRU") as a result of some cyclical unemployment becoming entrenched. Given the sharp fall in investment and high unemployment, the growth of potential output in the OECD as a whole is assessed to be weak in the near term. Further ahead, international evidence is ambiguous about whether crises have a permanent effect on the growth rate of potential output (Haugh *et al.*, 2009).

For Luxembourg, the immediate impact of the crisis on the level of potential output is assessed as coming largely from reductions in labour productivity in the financial sector. Bank balance sheets and the value of assets under management are unlikely to return to their levels at the top of the credit cycle for some time to come, and so the volume of financial intermediation will remain lower than previously. In addition, the level of overall demand in the euro area will be weaker than before and so demand for Luxembourg's goods and services will be reduced. As the medium-term growth of euro area potential output has also been revised down modestly, growth prospects for Luxembourg are also weaker. Within the OECD's whole economy aggregate production function approach (Beffy *et al.*, 2006) and the simplified framework used for Luxembourg, this translates as a lower level and growth of potential output with broadly similar contributions from weaker productivity and employment growth. Unemployment will be higher and the flow of cross-border workers less than anticipated. While the trend slowdown in aggregate productivity growth over the past decade could be a concern for future prospects, sector analysis based on the OECD Structural Analysis Database (STAN) suggests that productivity growth in most sectors was relatively stable up to the most recent observation in 2007. However, aggregate labour productivity was dragged down by lower output per head in the real estate sector: output in this sector accounts for around a tenth of total value added and is largely measured using imputed rents, while employment accounts for around 1% of total employees but increased at a fast pace over the past decade. This negative effect may unwind or at least halt, and this suggests that underlying productivity growth in most parts of the economy has been more solid in recent years than it may at first appear.

In sum, Luxembourg's potential output is likely to be lower in the coming years than previously anticipated and may grow more slowly (Figure 1.6). The OECD's central forecast

Figure 1.6. **Potential output has weakened**

Log index 1995 Q1 = 100



Source: OECD, *Medium-Term database* and OECD calculations.

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Box 1.1. **Estimating potential output in Luxembourg** *(cont.)*

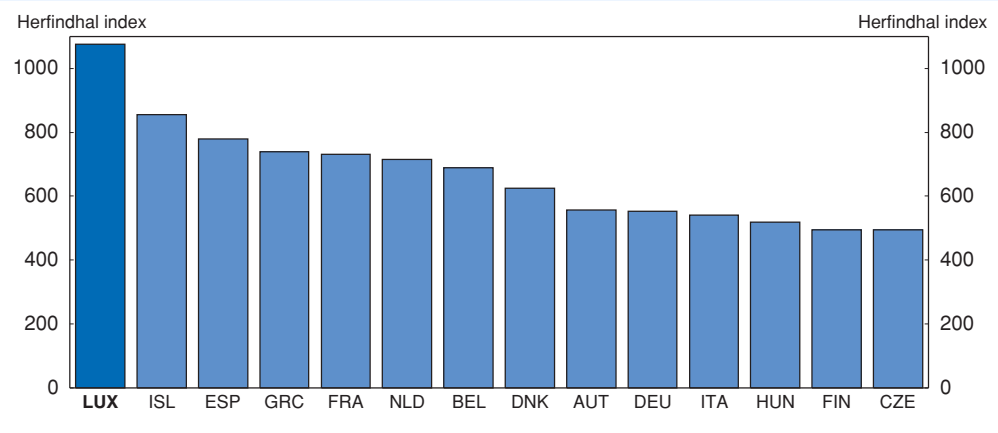
is for trend real GDP growth over a 5-year period covering the financial crisis to be around 2.5% on average in annual terms. This is more than 1 percentage point lower than over the preceding period, leaving the level of potential output somewhat lower than previously anticipated and significantly below what would have been achieved if growth had been sustained at the average rate over recent decades. Although it is highly uncertain, the projection is for growth of potential output of around 3.5% once cyclical effects have been unwound, based on the OECD's estimate of trend growth for the euro area. Potential GDP in Luxembourg in the OECD scenario will grow faster than if Luxembourg's economy were to expand at the average pace of the euro area.

These lower estimates are broadly in line with other projections. Estimates of potential output growth from STATEC were revised down for the ten years from 2001, leading to a substantial reduction in the potential growth rate to around 2% over the forecasting horizon (STATEC, 2009a). The *Banque Centrale du Luxembourg* has set out a number of reasons for which it is likely that the growth of potential output could be significantly below 4% (Banque Centrale du Luxembourg, 2010) and the most recent estimates based on quarterly data suggest this could be as low as 1.2% (Guarda, 2010).

Uncertainty around these projections is extremely large. While potential output and future growth in any country may change unpredictably from one period to another, Luxembourg is highly dependent on a small number of industries to generate its national income: the concentration of industries as measured by the Herfindahl index is well above other OECD economies for which data are available (Figure 1.7). Furthermore, these sectors are in themselves particularly volatile and highly mobile internationally. In particular, the prospects for the financial sector are more uncertain in the wake of the crisis, given changes it will bring to the financial industry and the global regulatory environment (Chapter 4). These could have very significant effects on Luxembourg's growth model. The remarkable economic performance it has achieved over the past two decades has been extremely unusual in the experience of regional economies in OECD countries and it would be exceptional if such a strong growth performance were repeated in the years to come.

Figure 1.7. **Concentration of two-digit ISIC industries**

2007



Source: OECD, *Structural Analysis (STAN) database.*

StatLink http://dx.doi.org/10.1787/846477136784

of a permanently lower level of activity and more uncertain prospects. Luxembourg is a small regional economy within the much larger euro area and is highly open in terms of trade and the mobility of capital and labour. Potential output is therefore largely a question of demand for its goods and services, as well as its continued attractiveness to foreign capital, migrants and cross-border workers. The strength of this demand depends on how the world economy develops, particularly the demand for the financial services that Luxembourg specialises in, as well as international competitiveness. Through relative costs, growth is more sensitive to productivity performance than in more closed economies (Krugman, 2009). While demand plays the major role, appropriate policy settings can also help economic activities to develop and to attract industries to locate and cluster in the local economy (Chapter 2). There is evidence that growth tends to be weak in the years following severe recessions and financial crises (Reinhart and Rogoff, 2009). Luxembourg does not appear to have been seriously affected by some of the factors that create such weakness, such as disruption to the supply of credit. However, to the extent that this has affected neighbouring countries, the growth of external demand for Luxembourg's output is likely to be weaker and this will also restrain supply. The lower level of potential output and any reduction in trend growth will dampen the strength of the recovery and has important implications for the sustainability of the public finances.

Policy measures have helped to support the economy

Monetary policy and financial measures contributed to stabilisation

The economy has been supported during the downturn by an accommodative monetary policy. The European Central Bank (ECB) reduced interest rates sharply from late 2008 to historically low levels and engaged in larger and longer duration monetary operations, leading to overnight market interest rates falling below the official policy rate of 0.75%. While it makes little sense to assess the appropriate monetary stance for Luxembourg itself, the monetary boost to nominal demand in the euro area will have helped to support demand for exports. It has also contributed to the recovery in financial markets that has facilitated the turnaround in activity. While the appreciation of the dollar against the euro over recent years has contributed to a tightening of overall monetary conditions, the impact on the effective exchange rate has been modest as Luxembourg trades overwhelmingly with other euro area countries.

The financial crisis has had a major impact on institutions operating in Luxembourg and global markets. While tighter credit conditions do not appear to have led to substantial constraints on the supply of credit to domestic firms and households, this is partly due to the liquidity provided to the market by the ECB. In addition, the authorities dealt with severe problems at five financial institutions with activities in Luxembourg. While some of these had little interaction with the local economy, the local subsidiaries of the cross-border Dexia and Fortis groups did have important connections to the domestic real economy (Chapter 4). Luxembourg participated in the rescue of these institutions, including through the provision of additional capital equivalent to 6.4% of its GDP to Fortis and a small amount to Dexia. These difficulties appear to have been successfully resolved without a significant impact on credit supply.

Short-working subsidies helped to maintain employment

The rise in unemployment is likely to have been dampened by the large number of workers benefiting from a short-hours scheme (*chômage partiel*). Its coverage is limited to

manufacturing industry. The scheme's use increased from almost nothing to more than 3% of the labour force at the peak of the crisis. Over 2% of workers are still covered, somewhat below the share in Finland and Germany. The scheme compensates employers for the cost of hours during which the employee on short hours is still being paid but not working. Compensation is paid at a rate of 80% of a workers' normal salary during those hours up to a level equivalent to 2.5 times the minimum wage. Applications for the scheme must be approved by the *Comité de conjoncture* and can only be made by firms that have experienced a substantial drop in orders. The scheme was temporarily extended in February 2009 up to the end of 2010: compensation was extended to pay for a worker's first 16 hours,[2] and the scheme was made more flexible by allowing reductions of more than 50% in workers' hours per month (provided that the standard rule of no more than a 50% reduction in working hours over a six-month period is met over the year as a whole). An important feature of the scheme's operation is that actual use of the scheme by firms has typically run at around one-third of the applications approved: this suggests that it may have been important in providing some insurance to firms against further declines in activity, even if their workers were not placed on short-working time.

Temporary schemes of this type can help to avoid unemployment in the short run and preserve valuable job matches. However, the subsidies are costly and assistance may be provided for jobs that might not have been lost, perhaps even increasing the incidence of short working among those who remain in employment. They also imply a transfer between those likely to use the scheme and others, who are contributing to the costs of preserving these job matches. In the Netherlands, by contrast, firms must pay back the support they have received. Such schemes can have mixed effects over time (OECD, 2009a). While there is a value to maintaining good job matches, there is a risk that the scheme avoids or perhaps delays some necessary industrial restructuring. Although screening by the *Comité de conjoncture* should in principle help to mitigate this problem, the requirement that firms in the scheme make no redundancies may aggravate this pressure. Given the importance in the economy of volatile trade-oriented industries, these schemes are likely to have been a useful if costly approach to preventing job losses during the crisis and a way of providing a form of insurance to firms that support was available even if it was not required. As the recovery takes hold, it will be important to ensure that the *Comité de conjoncture* contributes to the winding down of these measures as appropriate, and that the temporary relaxation of the conditions is ended as planned.

Fiscal stimulus measures have been substantial

The fiscal stance has eased substantially with the budget balance anticipated to deteriorate by more than 4% of GDP in a three-year period, from a surplus of 3.6% of GDP in 2007 to a deficit of 0.7% of GDP in 2009. This has been driven by strong automatic stabilisers, declines in revenue from the financial sector, and one of the largest discretionary fiscal stimulus packages among OECD countries as a share of GDP. Discretionary stimulus amounted to around 3% of GDP in 2009, with substantial additional measures in 2010. Luxembourg was nevertheless well-positioned to enact fiscal stimulus given the initial budget surplus, the low level of debt and substantial government assets. However, the impact of the stimulus on the economy is likely to have been small given the openness of the economy.

The main measures, in terms of cost, were increases in income tax thresholds and additional public investment. The package also included higher social benefits, extension of the short-hours scheme and reductions in some taxes paid by corporations. While

infrastructure investment is expected to have relatively strong effects on activity, measures that boost incomes are likely to have more limited effects on GDP since the economy is so open and some of the transferred income will be saved. A study based on the properties of central bank models suggests that the impact of a 1 percentage point increase in government consumption on GDP in Luxembourg is the lowest of any euro area country, about half the average, and close to 0.5 (Fagan and Morgan, 2005), while a STATEC simulation model suggests a slightly stronger effect (STATEC, 2007). At the same time, Luxembourg benefited indirectly from stimulus packages in neighbouring countries. While the deterioration in revenues contributed significantly to the change in the fiscal stance, these stabilisation effects on the domestic economy are attenuated to the extent that this relates to the financial sector, which is largely owned by non-residents.

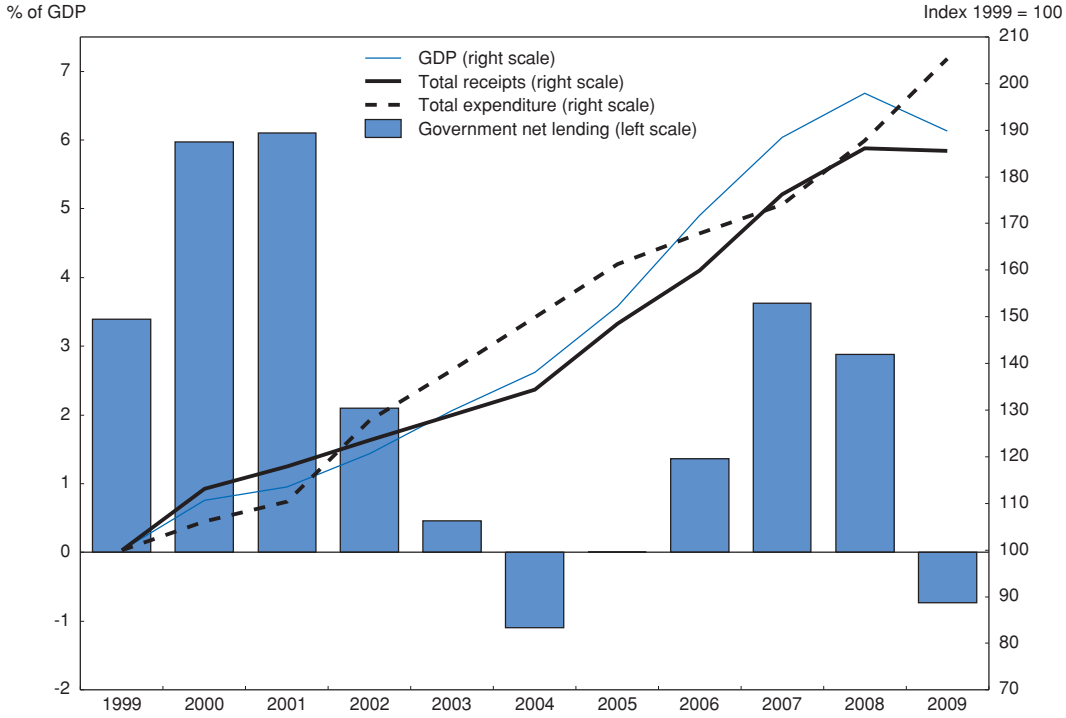
While the packages were timely and targeted, many of the measures have permanent features which will make them harder to withdraw. The timing of the 2009 Budget in December 2008 was fortuitous in relation to the slowdown and measures such as reducing taxation and higher social spending could therefore be implemented rapidly. However, the planned increase in investment, a substantial part of the original package, is yet to be fully implemented. The fiscal stimulus measures in the 2009 and 2010 Budgets did not contain any plan for the withdrawal of support, other than for public investment. This is likely to reduce the demand impact of the measures during the crisis period and worsen public finances in the medium term. Some measures, such as raising social benefits, are likely to be difficult to reverse.

Rebalancing the public finances

There has been a substantial deterioration in the fiscal balance following many years of good performance with surpluses over a four-year period to 2008 averaging close to 2% of GDP. The shift into deficit is the result of weak international economic activity, the automatic stabilisers and a large stimulus package (Figure 1.8 and Table 1.2). As argued in Chapter 4, there are likely to be large and, to some degree, permanent falls in revenues from the financial sector, through the subscription tax on investment funds, as equity prices remain well below their peak level, and because bank profits are likely to be lower after the peak of the credit cycle. These revenue streams are highly volatile and uncertain, both in the short run (in part because of long and variable lags in the collection of corporate tax) and in the longer term because of the difficulty of forecasting developments in the financial sector. While corporate tax revenues appear to have held up in 2009, they are likely to weaken significantly as lags in collection catch up with weaker profitability after the peak of the credit cycle. Expenditures have continued to increase rapidly as a share of GDP. The pace of spending increases from recent years has been augmented by higher social spending due to the weak labour market and fiscal stimulus measures.

While the cyclical recovery will boost revenues and help to contain social spending, an underlying structural deficit is developing given the discretionary fiscal easing and likelihood of less buoyant revenues from the financial sector in the future. Given the low level of the outstanding gross debt and the size of government assets, Luxembourg could theoretically sustain borrowing on this scale for a very long time. Furthermore, this rate of borrowing is less than public investment in GDP so it should be covered by future returns, provided that these investments are productive. However, without consolidation, the current stance of fiscal policy implies a deficit that would erode the net asset position as a share of GDP.[3] This needs to be avoided in view of rising future liabilities such as pensions.

Figure 1.8. **Revenues and spending have become misaligned**



Source: OECD, *OECD, Economic Outlook database.*

StatLink http://dx.doi.org/10.1787/846540513805

Table 1.2. **Overview of the public finances**

Per cent of GDP

	2000	2005	2006	2007	2008	2009
Total revenues	43.6	41.5	39.7	39.8	40.1	41.6
Taxes on financial sector	6.4	4.3	4.4	4.0	2.1	n.a.
Total expenditure	37.6	41.5	38.3	36.2	37.2	42.4
General government balance	6.0	0.0	1.4	3.6	2.9	–0.7
Elasticity of balance with respect to GDP growth[1]		*0.1*	*0.1*	*0.2*	*–0.1*	*0.5*
Gross debt (Maastricht definition)	6.2	6.1	6.6	6.6	13.5	14.5
Gross debt (national accounts definition)	9.2	7.6	11.5	11.4	17.1	18.2
Net debt (national accounts definition)	–50.7	–48.6	–44.4	–44.1	–44.9	–46.1

1. Excluding fiscal stimulus package.
Source: OECD, *OECD Economic Outlook database.*

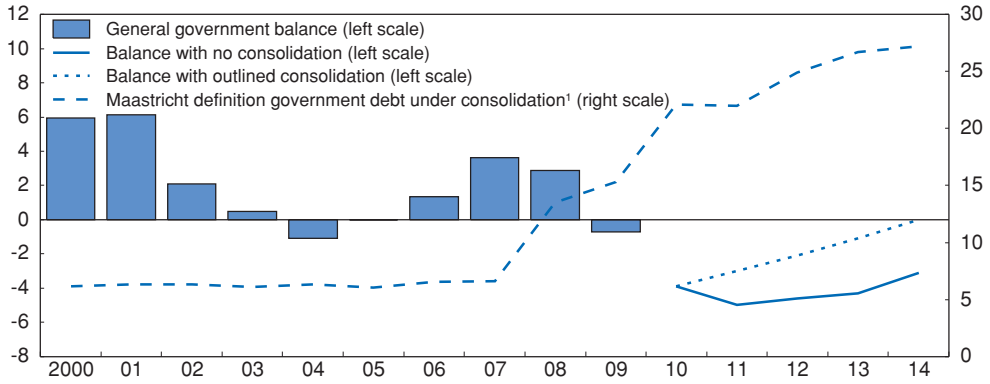
With signs of economic recovery and with the likelihood that potential output will be weaker than anticipated in the coming years, it is appropriate to begin fiscal consolidation soon. Consolidation provides an opportunity to address both the issues of long-run sustainability and inefficiency in public spending.

Consolidation needs to be implemented and the fiscal framework strengthened

The authorities have set out a plan for fiscal consolidation through the Stability and Growth programme (Ministère des Finances, 2010). The envisaged consolidation is around 1% of GDP each year from 2011 to 2014 with the aim of balancing the budget in the final year (Figure 1.9). This plan will be discussed in tripartite negotiations with a view to being implemented in later budgets. Although the programme recognises the need to restore the

Figure 1.9. **Government budget projections**

As a percentage of GDP



1. Incorporates information available up to the end of 2009.

Source: OECD, *OECD Medium-Term database* and ministère des Finances (2010), " 11e actualisation du programme de stabilité et de croissance du Grand-Duché de Luxembourg pour la période 2009-14 ".

StatLink http://dx.doi.org/10.1787/846557873041

health of the public finances, it is not particularly ambitious either in the pace of consolidation or the overall objective of achieving fiscal balance in 2014. Despite five years of projected growth, the plan falls short of meeting the stated Medium-Term Objective under the Stability and Growth Pact of a surplus of 0.5% of GDP. At a minimum, there should be no going back from this outlined plan, and there is a case for consolidating at a faster pace in view of the large future pension liabilities discussed below. There is a balance to be struck with economic activity and employment in the near term. However, the increase in indebtedness of close to 20% of GDP compared with pre-crisis levels under this plan is not prudent in view of future pension costs.

Implementation risks around this plan are increased by the lack of detail, although both expenditure-reducing and revenue-raising measures are mentioned in general terms. Econometric evidence based on the experience of OECD countries suggests that consolidation tends to be most durable where there is an emphasis on controlling current expenditures rather than raising revenues (Guichard *et al.*, 2007). Furthermore, the planned tightening is back-loaded: while this may be justified in the very near term by the state of the economy, it is less clear that this should apply in future years.

To support consolidation efforts, Luxembourg has scope to strengthen its budgetary institutions and procedures in the light of best practice. Multi-year plans for current and capital investment should be set out at the earliest opportunity, following the practice in many other countries. This would help to reduce implementation risks around the consolidation path. In addition, multi-year expenditure plans have proved useful elsewhere to ensure that positive revenue surprises do not translate directly into higher spending and to ensure that expenditure is not pro-cyclical. The strengthening of budgetary institutions and procedures would go beyond the requirements of the Stability and Growth Pact, which are only intended to provide a foundation for sound fiscal policy in the European Union rather than provide the more robust and comprehensive set of fiscal institutions that are useful at national level. There is a case for transparent and sound budgetary practices in Luxembourg, although it has a track record of fiscal surpluses and substantial net government assets. Future spending needs require a relatively high level of government saving on average in the coming years. Furthermore, with its high reliance on

a small number of sectors including finance, revenue in Luxembourg is around twice as volatile as in the neighbouring countries.[4] In the absence of discretionary changes in policy, the cyclical variation of the budget balance would therefore be particularly large. Surpluses should be very large in boom years. Experience from many OECD countries suggests that it can be politically difficult to run surpluses of this size, which may lead to asymmetry in fiscal policy with deficits over the cycle outweighing surpluses. Under the consolidation plans outlined by the authorities, fiscal policy in Luxembourg has been set asymmetrically in this sense over the period since the "dot com" bubble burst. An independent fiscal council would help to commit to addressing this problem.

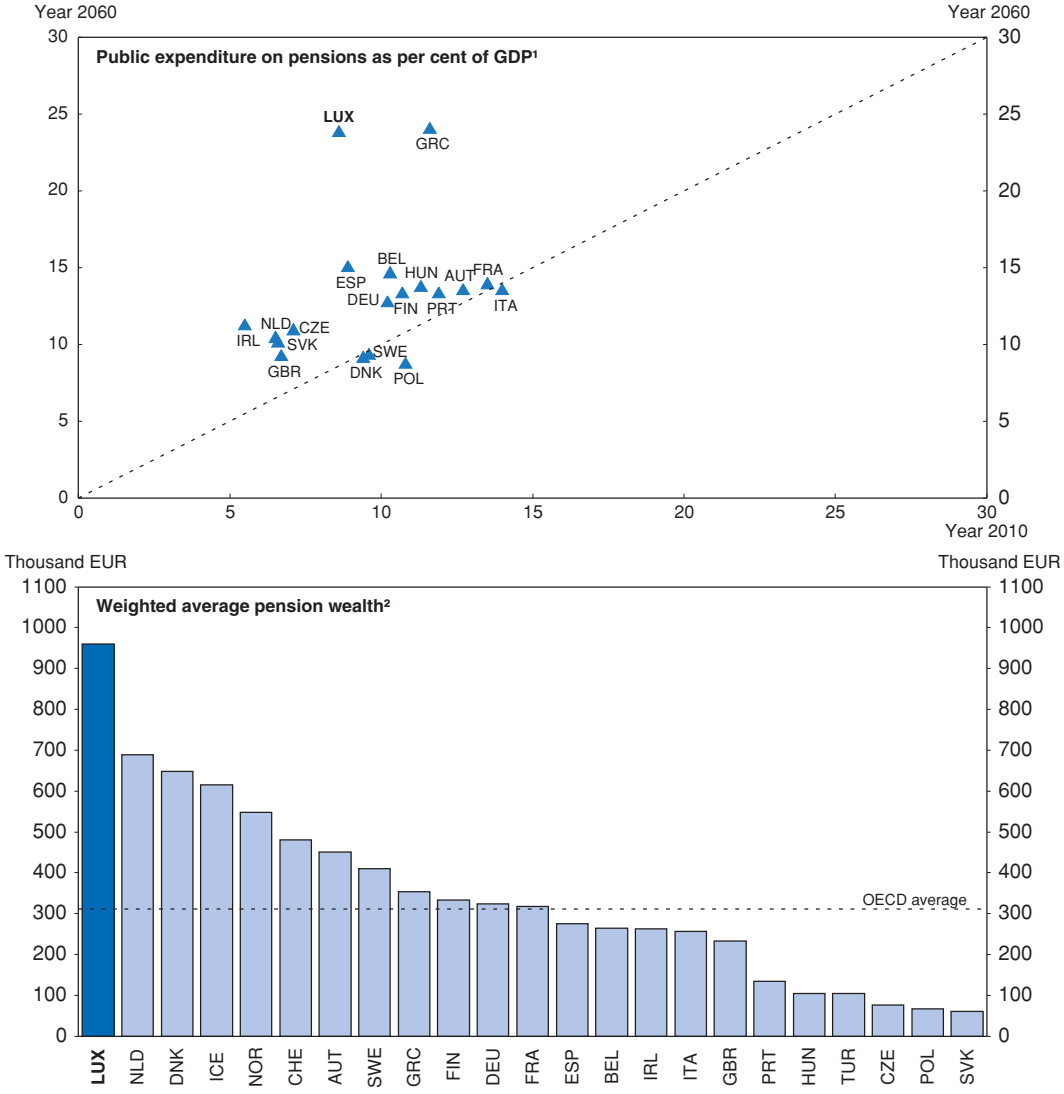
Long-run sustainability requires pension reform

The need for fiscal consolidation in the coming years largely derives from the longer-run sustainability of the public finances, due to high anticipated ageing costs of residents and cross-border workers. The government's financial liabilities are around 20% of GDP, while net financial assets are more than 40% of GDP because of sizeable pension reserves and a substantial portfolio of other assets. However, continuing deficits will contribute to the erosion of this position over the coming years. In light of these considerations, the government has raised its Medium-Term Objective under the Stability and Growth Pact for the structural fiscal balance from -0.8% of GDP to a surplus of 0.5% of GDP, which is more appropriate. While the earlier objective was insufficiently ambitious taking into account the large implicit liabilities, Luxembourg consistently achieved and at times even exceeded this goal.

The long-run fiscal sustainability of Luxembourg requires a fundamental reform of the pension system, as argued in the previous *Survey* (OECD, 2008a) and recognised by the current Stability and Growth Programme. Public spending on pensions is projected to increase from 8.7% of GDP in 2007 to 23.9% by 2060 (European Commission, 2009), the largest increase of any EU country and a share of national income far above what any European country currently spends (Figure 1.10). The strong and steady long-term increase in pension spending is caused by demographic ageing and maturing of the system (Bouchet, 2006). Furthermore, the increase in pension spending is only one facet of the possible costs of ageing. Other costs include long-term care and health care costs, as well as the indirect impact of ageing on government revenues and labour costs. Some of these effects are considered in the estimates from the European Commission. Although these long-term projections are necessarily uncertain, particularly for small and highly open economies, they point to the dramatic increase in total age-related expenditures from 20% of GDP in 2007 to 38% by 2060. In this context, reforms in 2005 to the system of generous state support for long-term care costs and the building up of reserves are useful but only initial steps to address the fiscal burden of ageing.

The standard effects of population ageing under generous pension entitlements are amplified by participation of cross-border workers in the pension system. As their numbers have been increasing rapidly and they are typically relatively young, Luxembourg's pay-as-you-go pension system has benefited from the large flow of contributions with only small flow of benefits paid to this group so far. It is therefore unsurprising that the pension system is in a good short-run financial position. Over time, however, this process will reverse and the effect of the underlying age imbalance of the population on pension costs will be amplified by the surge in employment of cross-border workers since the 1980s. Compared with the euro area average, the demographic profile of Luxembourg exhibits a relatively low proportion of older people (Figure 1.11). This means that future ageing will be more marked

Figure 1.10. **The costs of future ageing and pensions**



1. EU projections for 2010 and 2060.
2. Pension model projections based on situation in 2006. Simple average of gender weighted average pension wealth.

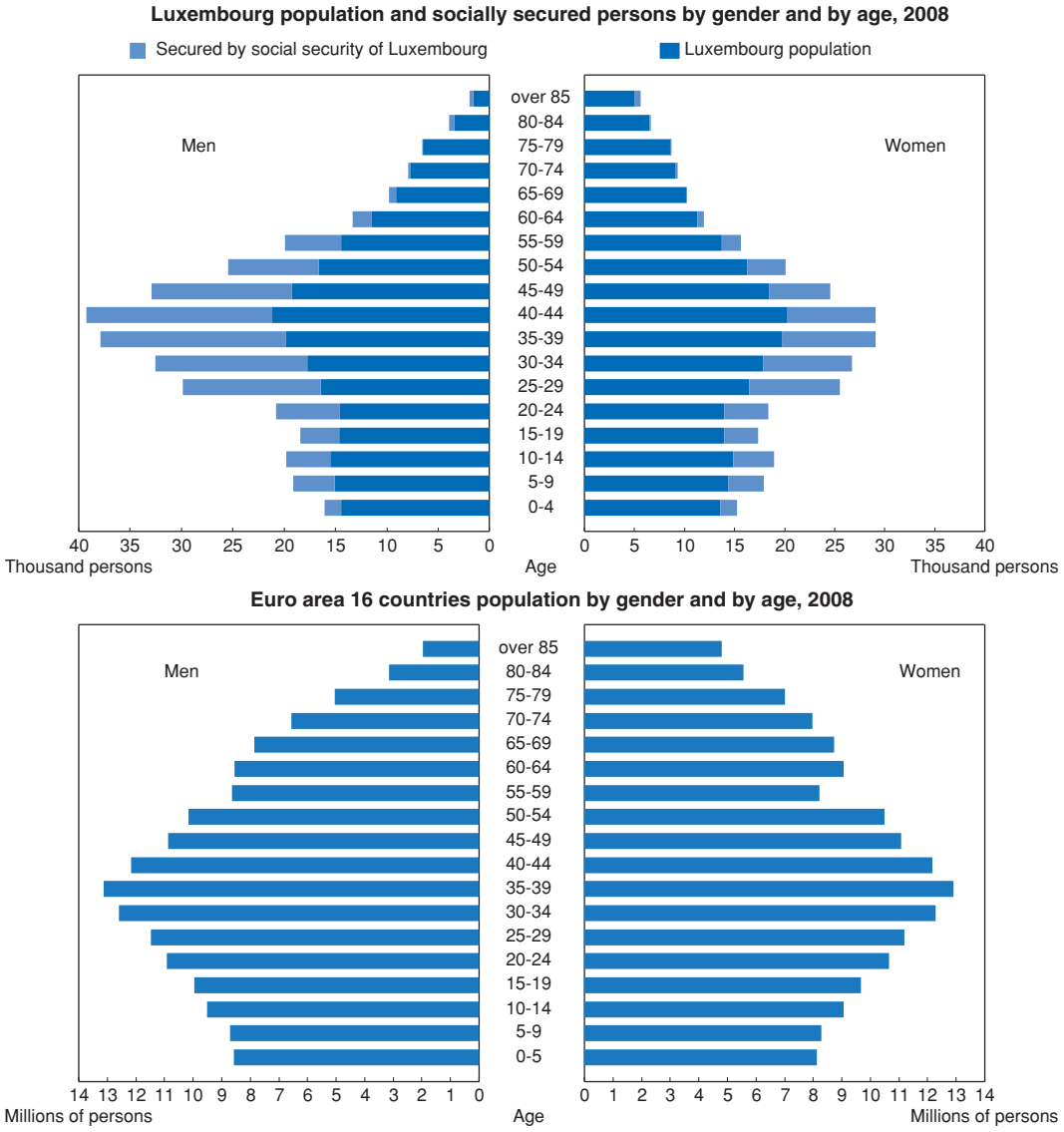
Source: European Commission, *Sustainability Report 2009* and OECD, *Pension at a Glance 2009*.

StatLink http://dx.doi.org/10.1787/846634127313

and this will be only partly attenuated by inward migration of younger people. Moreover, the possibility of future slowdown in immigration and cross-border commuting growth contributes to additional demographic risk (Bouchet, 2003).

Pension reserves are being accumulated to meet future pension costs but are small relative to implicit pension liabilities. Even taking into account the government's other substantial net assets, there will be an important shortfall relative to what is required to meet future pension liabilities. The pension reserves currently stand at around 28% of GDP, one of the largest funds relative to GDP among OECD countries. Social security contribution rates are set with the aim of adding to these reserves. However, the planning horizon for setting these rates is only seven years ahead, which is much too short given that the large wave of retirements of cross-border workers is anticipated to begin after this period. It is

Figure 1.11. **The demographic structure of the workforce reinforces ageing**



Source: Inspection générale de la sécurité sociale, Luxembourg and EUROSTAT.

StatLink http://dx.doi.org/10.1787/846722454700

forecast that, under the current pension system, the pension reserves would become a debt of between 50% and 150% of GDP by 2050 without changes in contribution rates (IGSS, 2006). While meeting the Medium-Term Objective would provide further support, the overall accumulation of assets by the government will not be sufficient to meet the long-term pension costs. In some respects, Luxembourg's relatively low taxation by international comparison may appear to give some scope to raise taxes and contributions, but this could only be a limited part of making the system sustainable. To balance the system, it is estimated that pension-related contribution rates would need to rise permanently from 16% to 24% and up to 40% if the decision is delayed until 2040 (UEL, 2009). Such increases seem infeasible, particularly because the very open nature of the economy makes the tax base highly mobile.

The key problem is that pension benefits are extremely generous, even considering the high level of national income per capita, and cannot be sustained without reform of the pension system itself. Furthermore, the effective retirement age is very low compared with OECD norms at around 60, although it is likely to rise somewhat as fewer cohorts will reach the maximum number of pension contributions later. This means that the average present value of public pension commitments per person is EUR 1 000 000, far above the norm in other countries (OECD, 2009b) and reflecting average replacement rates as high as 95%. The need for comprehensive reform of the pension system led to the creation in 2006 of the "group of reflexion" to analyse different options to ensure the long-term sustainability of the pension system. The government programme states this as an objective and draft legislation is being prepared (Gouvernement du Grand-Duché de Luxembourg, 2009). Some initial proposals include raising the effective retirement age by eliminating early retirement schemes, introducing actuarial fairness for early and late retirement, indexing the standard retirement age to life expectancy, reducing the attribution of pension contributions for periods outside employment and reducing the replacement rate in real terms over time. Achieving ambitious pension reform is difficult and is likely to be more politically effective if a consensus can be built around the new system (Box 1.2). However, there is a need to move decisively and rapidly towards a comprehensive reform package as delay would only lead to even more drastic adjustments in the future. Such comprehensive reform could have other beneficial effects, such as a boosting labour supply.

Box 1.2. **Pension reform in OECD countries**

Luxembourg is one of the few OECD countries not to have undertaken a significant pension reform in the past 15 years (OECD, 2009b). Over the past decade, around half of OECD countries have implemented either far-reaching reforms, such as moving towards notional accounts or defined-contribution schemes, or a series of incremental measures that have had a substantial impact on the sustainability of existing schemes. While the pace of reform has been slower in recent years, some countries have taken further steps.

There is now a high degree of agreement between official bodies and international organisations on the need for pension reform in Luxembourg. However, achieving such reforms can be difficult and painful. The impact of reforms will be felt for decades to come and is necessarily uncertain. Social choice about the pension system has widespread implications for the distribution of wealth and intergenerational fairness, as well as economic efficiency. Reform is likely to create some losers and reductions in anticipated benefits are needed to restore financial sustainability. What lessons can be drawn from the experience of pension reform elsewhere?

Increases in the **standard pension age** have been the most common type of reform. In most countries, this is now set at age 65, as it is in Luxembourg. However, six countries (including Denmark, Germany and Spain) have gone further and raised the pension age to 67. These changes will slow the increase in the expected length of retirement in the coming years. Raising the pension age is a natural response to greater longevity, enabling contribution rates and pension incomes to be maintained more easily as life expectancy increases. However, this type of reform is very transparent and likely to attract considerable discussion.

Box 1.2. **Pension reform in OECD countries** *(cont.)*

The effective retirement age is often well below the standard pension age as the result of **early retirement schemes**. Over the past five years, six countries have phased out or restricted access to early retirement schemes. Around one-third of OECD countries have introduced measures in the past decade to encourage more work beyond the standard pension age. While the very low effective retirement age in Luxembourg of below 60 is likely to rise reflecting past increases in the age of entry to the workforce, raising the effective retirement age by reducing high implicit taxes on continued work appears to be a promising avenue for reform.

Many countries have taken measures to reduce old-age pension **replacement rates**. The more technical and less visible approach of changing the calculation of benefits away from final salaries is not open to Luxembourg as its system already calculates benefits relative to career average pay (adjusted for overall nominal earnings growth). However, Luxembourg does have scope to reduce the attribution of years' of contributions for periods spent outside work. Korea has explicitly cut the target replacement rate. France and Hungary have joined other countries in adjusting pensions in line with prices rather than earnings, which tends to reduce replacement rates over time. The net average replacement rate in Luxembourg is very high at 95%, compared with the average of post-reform OECD countries of 65%. It would be helpful to set out a realistic long-term target for the replacement rate. Ending the practice of adjusting pensions for earnings, above the statutory indexation to prices, could help to achieve the necessary adjustment.

Although average lifetime pension benefits were reduced by over 20% on average in the 16 OECD countries that undertook major reforms up to 2004, many countries have implemented measures in parallel to increase **pension adequacy** in retirement for those with low incomes. In Luxembourg, the net replacement rate for those with below average earnings is currently around 100% so there is little case for providing additional support. However, reforms could be structured to reduce pensions for low earners less than for other groups, for example by concentrating reductions on the earnings-related component.

A high **degree of consensus** about the need and direction for reform appears to be important in putting pension schemes on a firmer footing and ensuring that the new system is stable and sustainable (OECD, 2007). Successful reform requires people to understand the rationale for the proposed changes and adapt to the new system. Many countries established reform commissions to develop a common analysis of the problem and propose detailed solutions. Although the search for consensus can lead to the watering down of required changes, it is important that there is sufficient political will to implement proposed changes. It may be necessary to phase-in some reforms as those close to retirement have less time to adjust their situation to the new system, as well as to avoid unfairness between individuals in adjacent cohorts. Nevertheless, slow transition implies that the eventual adjustment will be somewhat more costly and carries the risk that reforms may be reversed, particularly if the effects have not begun to be felt or if the original consensus was insufficiently strong.

Pension systems operate over very long time horizons and therefore face massive **uncertainty**, not least about future life expectancy. This is compounded for Luxembourg by the uncertainty about long-term growth prospects given that it is a highly specialised and open economy. Setting long-term objectives for the pension system, such as a target replacement rate, introduces some flexibility to deal with future shocks while helping

Box 1.2. **Pension reform in OECD countries** *(cont.)*

people to plan for the future. An automatic link between life expectancy and retirement age (or pension benefits) has been introduced in a number of countries, such as Denmark, Finland and France. This ensures the sustainability of the pension system in the face of demographic risk in a transparent way. Furthermore, agreement about indexation extends the impact of social consensus into the future and avoids the need once again to find difficult political agreements further ahead.

There are also other important downside risks to the fiscal outlook in the long term that call for prudent policies today. As argued above, the likely long-run performance of the Luxembourg economy is more difficult to assess than for larger OECD countries, and revenues depend heavily on the highly mobile tax base in the financial centre. If downside risks to long-term growth were to materialise, this would make the meeting of existing pension liabilities much more difficult. The lack of diversification of the economy at the national level further exposes economic policy to substantial risks (Fontagné, 2009). As the experience of Iceland and Ireland has shown, small countries with extremely large banking and financial systems can in some circumstances experience dramatic changes in the government's net asset position. Luxembourg would therefore benefit from a precautionary approach to managing its public finances. For the longer term, there is a case for building up a large buffer stock of assets, both in anticipation of future social costs but also as a hedge against weaker growth. Net government assets of Luxembourg of around 40% of GDP are large by international comparison but this is broadly unchanged compared with a decade ago. A number of countries have introduced sovereign wealth funds as a way of building up assets, both as a buffer against uncertainty and to smooth national consumption. Norway, another OECD country with high living standards and great uncertainty about its future national income, has built up a large stock of national savings with net government assets of around 1.5 times national income. In Luxembourg, a large share of the government's assets is the social security reserves, which are invested in a broad range of assets. A sizeable share of the remaining assets is in the form of various claims on public and private entities in Luxembourg. The returns on these assets, which are low in measured terms, would be highly correlated with the state of the local economy, both with respect to short-term shocks and their long-run performance. These assets therefore provide insufficient risk diversification. In addition, reducing public ownership could help to boost competition in the domestic economy (Chapter 2).

Consolidation should address inefficient and rigid working practices in the public sector

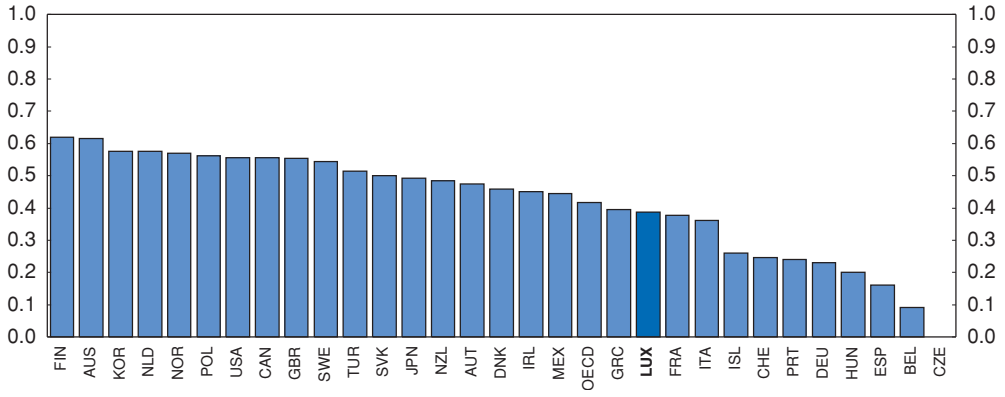
Comprehensive fiscal consolidation could increase the efficiency and effectiveness of government spending by imposing a stricter budget constraint. Government consumption as a share of national income is around the average of OECD countries. While the share of spending is partly pushed up by the cost of services that are related to cross-border workers such as transport infrastructure, the high level of per capita income means that the share of spending in income translates into spending per head that is by far the highest in the OECD and almost twice the euro area average, even taking into account the high costs of goods and services in Luxembourg. With the provision of government services costing around EUR 11 500 per resident per year, it is important that these funds are used

effectively. The forthcoming fiscal consolidation provides an opportunity to raise efficiency by constraining the pace of increase of current spending. Limits on overall resources would impose choices about how resources are used to provide public services. This discipline can be difficult to enforce when overall resources are increasing, in particular as it can be easier to adapt to new demands with additional spending rather than switching resources from programmes that are ineffective. While the budget constraint in Luxembourg is generally met in the sense that non-cyclical spending is typically in line with projections, the overall rate of growth of spending has been sustained at a high level over many years. Announcing multi-year expenditure ceilings in advance has been found in other countries to help raise efficiency, allowing the government to spend less than planned if desired, but preventing higher than expected revenues translating directly into more spending. In addition, the role of the *Inspection Générale des Finances* to assess public spending *ex ante* and the *Cour des Comptes* in *ex post* assessment could be used more extensively.

Spending efficiency could be enhanced by strengthening budgetary processes to shift the focus from an input- to an output-based system. The performance orientation of the central government could be improved. Performance budgeting systems are limited, although only somewhat less developed than in other relatively small OECD countries (Figure 1.12). This means that the mechanisms to target resources to where they have the greatest impact in terms of outputs, both in terms of efficiency in providing services and ensuring that the services provided are effective at meeting social objectives, could be strengthened. This requires good information systems on budgetary processes, and using this information to take sometimes difficult decisions about existing programmes. Ensuring consistency and co-ordination may be further hindered by the relatively large number of government departments considering the size of the population. Efficient allocation of resources is further hindered by the current budgetary approach, largely based on providing the resources to maintain existing programmes. The allocation of capital investment spending to projects of a significant size should be subject to cost-benefit analysis as in many other OECD countries. With a stronger performance orientation and greater delegation of management tasks, the centre of government needs to retain and build sufficient capacity to monitor and ensure the good conduct of local

Figure 1.12. **Use of performance budgeting system by the central government**

Index comprised between 0 and 1,[1] 2007



1. A value of 0 indicates no performance budgeting and 1 indicates a high use of performance budgeting.

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

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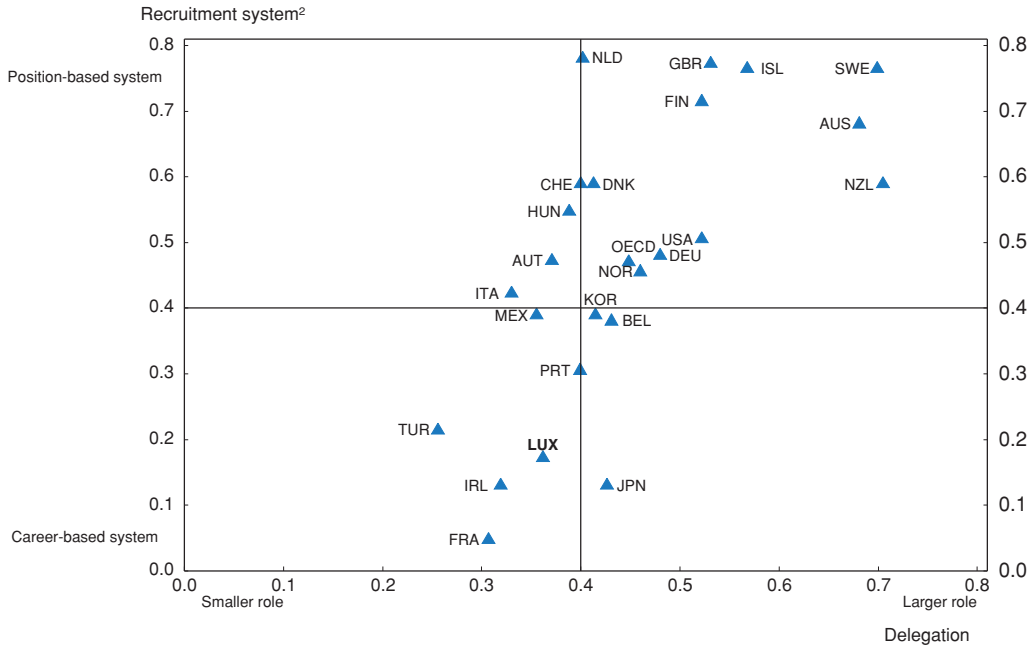
units. Efforts would be needed to ensure that there is sufficient management capacity to assume the new role effectively.

Public sector management practices influence how resources are translated into outputs and outcomes. While the relationship between management and results is complex and the organisation of the public service often reflects wider objectives, there have been a number of common trends in efficient public management in OECD countries over the past 20 years (OECD, 2008b). *Firstly*, efforts have sought to reduce public employment and to lower costs by increasing outsourcing. *Secondly*, general good management practices have been applied more extensively to the public sector, bringing processes and conditions more in line with the private sector. *Thirdly*, public administrations have been changed in the light of societal and economic developments and the need to respond more rapidly to changing circumstances. Changes in Luxembourg have been slow in this regard.

Increasing the flexibility of human resource management in Luxembourg would enhance public sector efficiency. A career-based system limits the ability to bring in outside skills from experienced professionals, including from abroad, and there is little delegation of staffing to local management (Figure 1.13). Promotion is based on seniority and there is limited mobility between departments, despite the small absolute size of the administration. The system of general entry exams is an important barrier to effective recruitment, particularly of foreign or specialised staff. While there may be advantages in terms of creating an experienced group of civil servants, this offers little flexibility to achieve the best mix of skills or to respond to changing circumstances. The advantages of a greater flexibility can be seen in the operation of government agencies that are not covered by these

Figure 1.13. **Recruitment and delegation in HRM systems**[1]



1. Data refer to year 2005. OECD represents the average of 24 countries presented.
2. The recruitment system index of the central government ranges between 0 (career-based system) to 1 (position-based system). The measure is a weighted index of general recruitment policies of civil servants, systems for appointing entry-level positions and allocating posts across departments.

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

StatLink http://dx.doi.org/10.1787/846760416355

restrictions. For example, two-thirds of OECD governments now have systems of performance-related pay, mostly combining one-off bonuses and merit increments with the performance-related element set typically at up to 10-20% of basic salary (OECD, 2008b). The Programme for Government 2009 includes proposals to reform human resource management in the public sector including how promotions are determined, a Code of Conduct for public servants and sanctions for unsatisfactory performance (Gouvernement du Grand-Duché de Luxembourg, 2009). These measures should be implemented and consideration given to a system of performance-related remuneration.

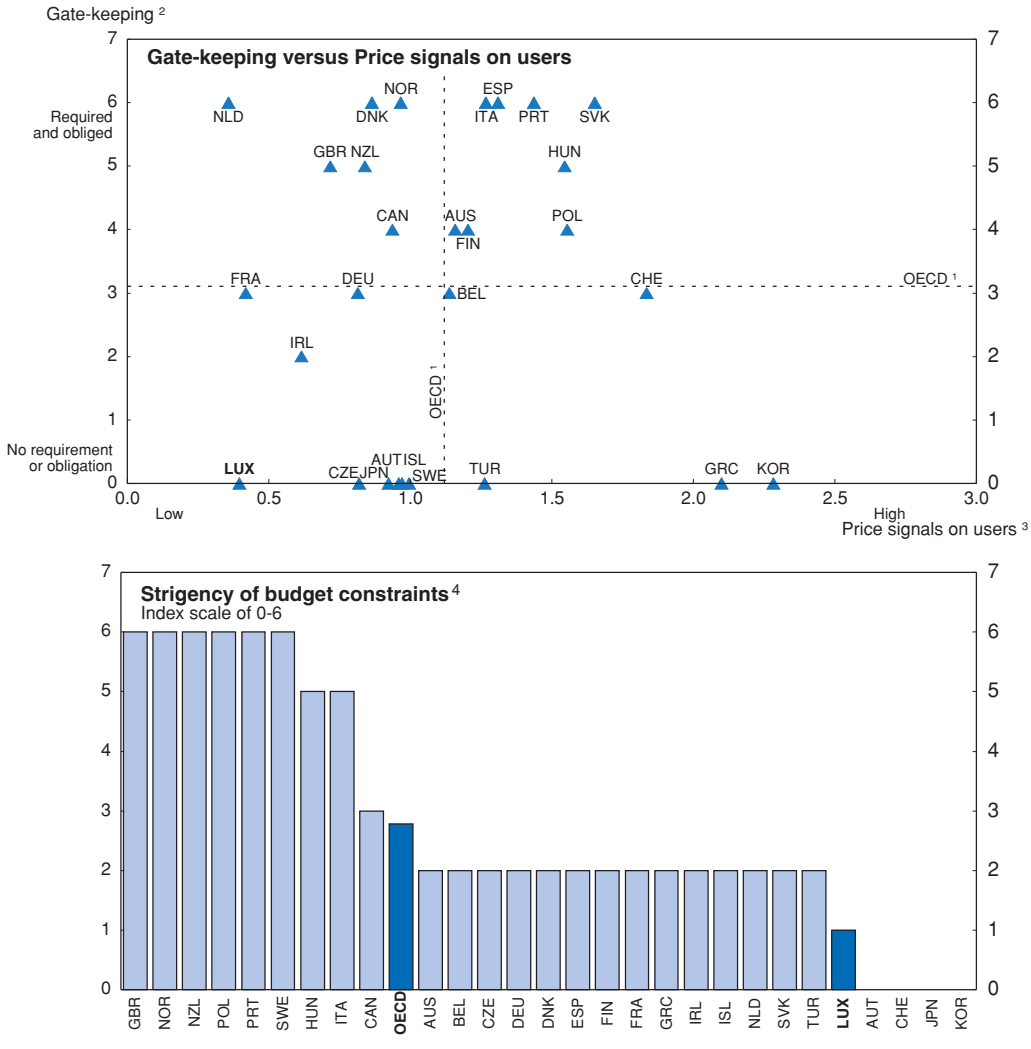
More flexible recruitment of non-nationals to public service would enlarge the pool of talent in a small country. A new framework for the recruitment of EU nationals as public servants passed into law in 2009, broadening their eligibility beyond the previous six sectors, and standardising and modernising the application of the languages tests. These measures should be implemented in a manner that ensures that Luxembourg has access to the greatest pool of talent from which to recruit its public servants. The definition of posts that cannot be held by non-Luxembourg nationals for reasons of the exercise of public authority or safeguarding the interests of the state should not be unduly broad or guided solely by considerations of EU law. The list of open posts should be long and could even be replaced by a short list of jobs that are not open to foreigners because of their sensitivity. With such a small number of nationals, Luxembourg has much to gain from having a relatively open public administration. For example, the Banque Centrale du Luxembourg, which is not covered by these regulations, relies on foreign nationals for around half its staff. The requirement to speak the three national languages should be applied proportionately to the needs of the post being occupied. Many positions could readily be filled by those fluent in either French or German and with some knowledge of Luxemburgish.

There would be large gains from better management of healthcare spending

Efficiency and sustainability call for better value for money and stronger management of healthcare spending. Public sector health spending accounts for around a quarter of current general government expenditure excluding social transfers. Per capita health spending ranks only behind Norway and the United States in purchasing power parity terms, while correcting for the non-resident insured population still places Luxembourg among the biggest spenders per insured person. At the same time, health outcomes in terms of health-adjusted life expectancy at birth and life expectancy at age 65 are generally around the OECD average but below those in other high spending countries. As argued in the in-depth chapter of the previous *Survey* (OECD, 2008a), this is likely to be related in part to inefficiencies in the provision of healthcare and relatively low spending on prevention. Indeed, Luxembourg is among the OECD countries with the most to gain from moving towards the efficiency frontier of health systems. The healthcare insurance system is likely to face significant financial pressures in the coming years due to the impact of low social security receipts due to the recession, while in the long term rising demand for health care from an ageing population will need to be met in the context of larger pensions-related costs (OECD, 2008b).

There is a basic need to bring overall demand for health care in Luxembourg under better control by enforcing a stricter budget constraint and better aligning the incentives of patients and health professionals with the cost of providing care. OECD indicators show that all these actors play a weaker role than elsewhere in limiting demand and forcing suppliers to be more efficient: Luxembourg is an outlier among OECD countries in the combination of weak price signals for users and limited use of gate-keeping (Figure 1.14).

Figure 1.14. **Controls on demand for health expenditure**



1. OECD average excluding Mexico and the United States.
2. The score for "gate-keeping" relates to registration with a primary care physician and the obligation to obtain referral for access to secondary care. A high score corresponds to a high level of constraints.
3. "Price signals on users" measures the degree to which patients face out-of-pocket (OOP) payments. OOP payments include both cost-sharing for care covered by the basic package of health provision, as well as consumption of other health goods and services. The measure is expressed in per cent of OOP payments in current health expenditure.
4. "Stringency of the budget constraint" measures the degree of binding health budget allocations. The indicator is expressed on an index scale of 0-6 from no budget constraint to strict health budgets.

Source: OECD, *OECD Health Policy Indicators database.*

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The effectiveness of the choice of providers is further hindered by more limited information given to users about the quality of care than elsewhere and highly regulated prices. The "fee for service" system of remuneration for doctors creates strong incentives for them to increase the volume of services provided.[5] Hospital managements have little discretion to optimise their services due to a combination of government provision of capital investment, the payment system for doctors and their access to hospital equipment. The government and insurance funds exercise control through prices. However, these are largely based on past costs and do not refer to international

benchmarks, so that prices are often out of line with current costs. Only a small part of the overall budget is available for allocation to priority areas or on the basis of following good management procedures.

The previous *Survey* recommended a set of potentially complementary reforms to address these weaknesses. These included the introduction of diagnosis-related group (DRG) remuneration systems for hospitals (perhaps even making use of the systems already in place in neighbouring countries); introducing elements of a capitation system for primary care; developing clinical guidelines and pathways based on international best practice; strengthening the capacity of the sickness fund to act as a "wise buyer" of medical services; and raising copayments to improve users' incentives. Most OECD countries have now moved to a system of remuneration for physicians that combines fee-for-service and capitation arrangements. The interface with health systems in neighbouring countries should also be improved, not only to allow economies of scale to be exploited by the medical system in Luxembourg but also to encourage the purchase of healthcare provision across the border. In 2007, less than 1% of healthcare provision in Luxembourg was imported despite the proximity of good quality health care services in the wider region. Progress towards the recommended reforms has been limited. The main development has been the welcome merging of the main healthcare funds into the CNS *(Caisse nationale de Santé)* in 2008, which should help to reduce costs and increase the capacity of the insurance providers to act as a "wise buyer". Measures to strengthen control of costs and raise efficiency should be implemented in forthcoming reforms planned for the health system.

Box 1.3. **Main recommendations on recovering from the crisis and fiscal policy**

Exit strategy

Economic recovery now appears to be underway but an exit strategy needs to be put in place:

- Boost labour demand and raise labour supply of resident workers through improved labour market policy settings (see Chapter 3). Use of the short-working hours scheme should be wound down as conditions improve and the temporary changes in conditions ended as planned in 2010.
- Restore competitiveness by reducing labour market rigidities, including the effect of automatic legislated wage indexation, and other structural reforms to reduce costs and increase efficiency.

Fiscal policy

A large fiscal stimulus package was adopted against the background of an initial surplus, low debt and a substantial positive government net asset position. The budget has weakened and consolidation is now required:

- Implement the outlined consolidation plan and consider making it even more ambitious.
- Budgetary institutions and procedures should be strengthened to facilitate the consolidation process with greater emphasis on multi-year plans.
- Reform the pension system. This could include raising the retirement age, reductions in the retirement replacement rate over time, avoiding increases in pensions in line with wages, limiting credits for years spent outside work, introducing actuarial fairness around the retirement age, and indexing the retirement age to longevity. Abolish early retirement schemes.

Box 1.3. **Main recommendations on recovering from the crisis and fiscal policy** *(cont.)*

- Modernise the organisation of the public sector to increase the emphasis on outputs rather than inputs through a system of performance budgeting with greater local discretion and effective central monitoring. Modernise human resource management with performance-based advancements and pay, and greater openness in recruitment. Large investment projects would benefit from a cost-benefit analysis.
- Implement the law to generalise access to EU nationals to recruitment to the public service with a view to widening the pool of talent as far as possible.
- Raise the efficiency of the health system by strengthening the control of costs, empowering hospital managers, improving the flow of information and making use of health facilities in neighbouring countries.

Notes

1. See Box 1.1 "The financial sector and the national accounts" (OECD, 2008a).
2. The scheme previously required employers to make this minimum payment.
3. This holds under reasonable assumptions about future growth and interest rates. These pressures are exacerbated by the low measured level of returns on government assets, which are well below the government's cost of finance.
4. Measured as the standard deviation of total government receipts from the five-year average in per cent over the period 1992 to 2008.
5. Since 1993, this system operates on a "cost-plus" basis based on historical comparisons reduced by a target efficiency gain (OECD, 2008a).

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Chapter 2

Achieving sustainable improvements in living standards

Luxembourg has achieved rapid and sustained growth over the past 25 years and living standards are the highest in the OECD. However, following the crisis, it now faces the possibility of weaker performance in the years to come even if living standards will remain high. This underlines the importance of structural policies to help boost growth and sustain high incomes. Apart from measures to improve the functioning of the labour market and raise public sector efficiency, there are a number of policy priorities. Education performance is relatively weak: it does not match the demand for high-skilled workers and makes it harder for residents to find jobs. Major reforms now underway to improve the education system are welcome. Product market regulations are highly restrictive of competition, particularly for professional services and in the retail sector. This leads to high prices and inefficiency. The weak enforcement of competition policy is due to inadequate resources and the fragmented structure of the competition authorities. Housing costs are high by comparison with the surrounding region and other financial centres. This contributes to large flows of commuters. While increasing housing supply is recognised goal, this has been frustrated by policy barriers that restrict house building. At the same time, housing demand is boosted by tax subsidies. The transport infrastructure is being upgraded and extended. However, the existing network could be used more efficiently through user charges. Luxembourg has the highest per capita CO_2 emissions in the OECD. It is committed to making large reductions, and measures to increase energy efficiency are being put in place. The key problem, however, is large sales of motor fuels to people who live in the surrounding countries. Car taxes and fuel duties have increased but there is scope to go further.

Luxembourg experienced a remarkably long period of continuous, sustained and rapid economic growth up to the recent recession. This transformed the economy and led to a large increase in per capita incomes, already among the highest in the OECD. At the same time, the social pressures of such rapid changes have been well managed in many respects and there has been only a modest rise in income inequality despite the development of the high-wage financial services sector. While economic performance over the cycle from 2003 to 2008 was broadly in line with developments since the late 1980s (Table 2.1), the level of potential output is likely to be lower than previously anticipated following the crisis and there is heightened uncertainty about long-run growth prospects (Chapter 1).

Table 2.1. **Summary of structural economic developments**

Average annual growth rates

	1988-2008	2003-2008
Trend GDP growth	4.8	3.9
Labour productivity[1]	1.8	0.6
Labour utilisation	3.0	3.3
Average hours	–0.4	–0.2
Employment	3.4	3.5
Contribution of residents	1.2	1.4
Employment rate (level)[2]	62.4	64.6
Working-age population[2]	1.2	1.7
NAIRU (level)[3]	2.9	3.9
Contribution of non-residents	2.2	2.0

1. Labour productivity in terms of hours worked.
2. Calculated for residents only.
3. Non-Accelerating Inflation Rate of Unemployment.

Source: OECD, *OECD Economic Outlook 86 database*.

While living standards will remain high, the more uncertain outlook for future growth underlines the importance of structural policies to sustain growth and to provide flexibility should performance weaken. In particular, if the financial sector were to be negatively impacted by developments in markets or international regulation, new sources of growth would be needed. Furthermore, the case for reform is often difficult to make when the economy appears to be performing well: there have been few major reforms in Luxembourg in recent years, although significant changes are now underway in education and some important efforts have been made in other policy areas (Fontagné, 2009). A slowdown can therefore be a good opportunity to build agreement and undertake reform. Even if the economy continues to grow at a strong pace, improved policy would pay off as high growth itself creates bottlenecks, such as in transport and housing, which need to be addressed to ensure balanced and sustainable development. In recent years, the OECD has identified seven priority areas for structural policies in Luxembourg (OECD, 2010a): improving job search incentives, easing employment protection legislation and reducing implicit taxes on continued work are discussed in Chapter 3, while raising public

sector efficiency is discussed in Chapter 1. This chapter outlines remaining structural issues that need to be addressed: improving the education system, increasing competition, tackling high housing costs, improving the transport system and "greening" the economy. Most of these policy areas have been identified as priorities in the OECD's *Going for Growth* framework but progress towards these objectives has generally been limited (Annex 2.A1). Implementing the measures identified would help to create jobs, boost growth and sustain overall living standards.

A major reform of education is underway

A well-educated and highly-skilled population is required to sustain strong labour productivity and high incomes for Luxembourg residents. As discussed in the two previous *Surveys*, students' secondary school performance is relatively weak on average by international standards, as measured by PISA scores, and showed little improvement between 2003 and 2006. At the same time, the high school drop-out rate is relatively high and many young people have difficulties making the transition to the labour market, despite the strong growth of labour demand in recent years (Chapter 3).

Wide ranging reforms have been introduced to the education system from the 2009/10 school year (Annex 2.A1). Following pilot schemes, the overall approach is based on a new competencies-based framework and makes use of modular learning. These more flexible two-year cycles should help to lower the number of students forced to repeat the school year. In addition, reforms have been made to work practices with teachers now engaged in more team- and interdisciplinary-working, and head teachers have been made more accountable for the performance of their schools. Greater efforts have been made to help students from disadvantaged and migrant backgrounds, including greater flexibility about language requirements and more intensive support prior to full integration into the mainstream school system. Special needs education is now the responsibility of a single body. For early school-leavers with inadequate qualifications to integrate into the labour market successfully or continue with further or higher education, a law was passed in 2009 to create a system of *école de la deuxième chance*. In tertiary education, the university has been allocated additional funding and continues to develop its activities. The current reforms and these other developments will enhance the education system and should lead to substantial improvements in the skills and prospects of Luxembourg residents.

Greater competition would increase productivity and make the economy more flexible

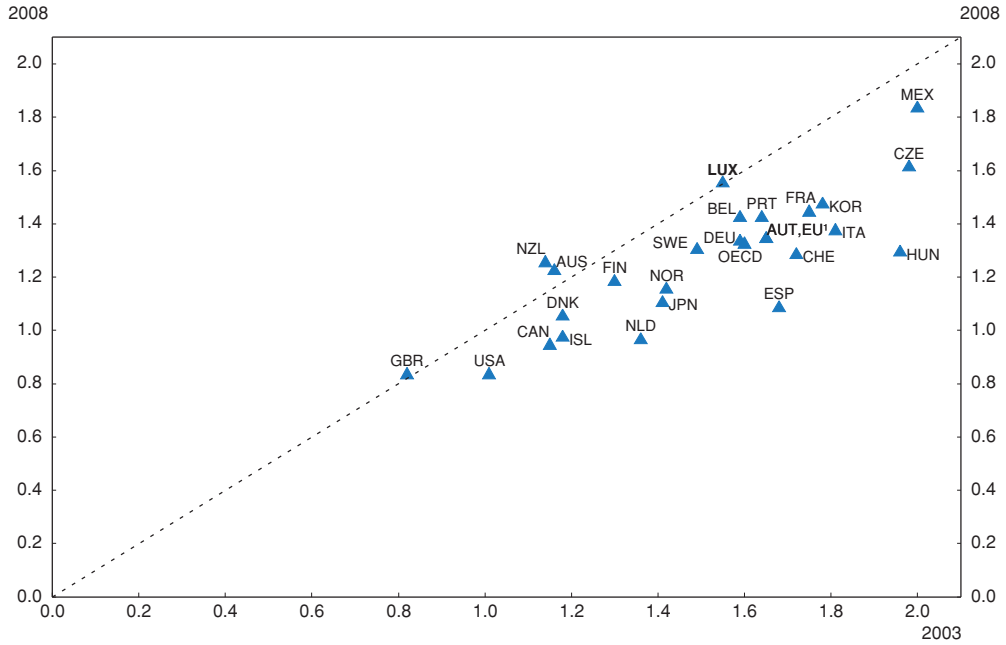
Stronger competition would help to improve cost competitiveness through lower prices, and more efficient and innovative provision of goods and services. Luxembourg's highly open economy and position within the greater region creates competitive pressures in many areas, but some sectors remain relatively sheltered. Competition in the domestic services sector is particularly weak. This sector is important in determining overall living costs and Luxembourg's attractiveness to foreign workers and companies. In addition, the services sector is labour-intensive. Allowing competition and encouraging expansion of these activities, such as retail, has the potential to provide jobs for Luxembourg residents who currently have difficulty entering or adhering to the labour market.

Strict product market regulations hinder competition

Competition is reduced by product market regulations (PMR): these are among the most restrictive in the OECD with only a handful of lower income countries having tighter policies. While there has been some easing in these regulations across OECD countries since 2003, these have actually become more restrictive in Luxembourg. Thus, its relative position is becoming increasingly out of line with the norm (Figure 2.1). While market access to network industries has become somewhat easier, state control of prices and on industries remains more common than in most other countries. Barriers to entrepreneurship are high with heavy administrative burdens on start-ups and a large array of sector-specific regulations. While some regulations are needed to ensure the good functioning of specific industries, the current burden is excessive and unnecessarily limits entry and hinders competition (Figure 2.2). Removing these regulations would boost productivity and create a more competitive economy: if Luxembourg were to reduce restrictive PMR to the 25th percentile of OECD countries, econometric estimates based on cross-country growth models suggest that the direct increase in GDP per capita could be of the order of 1.5%. More favourable competitive conditions would boost information and communication technology (ICT) investment, business research and development (R&D) expenditures, and employment for some groups. The EU Services Directive should be implemented swiftly.

Figure 2.1. **Product market regulation (PMR) remains restrictive**

Index scale of 0-6 from least to most restrictive



1. EU average corresponds to EU19 countries.

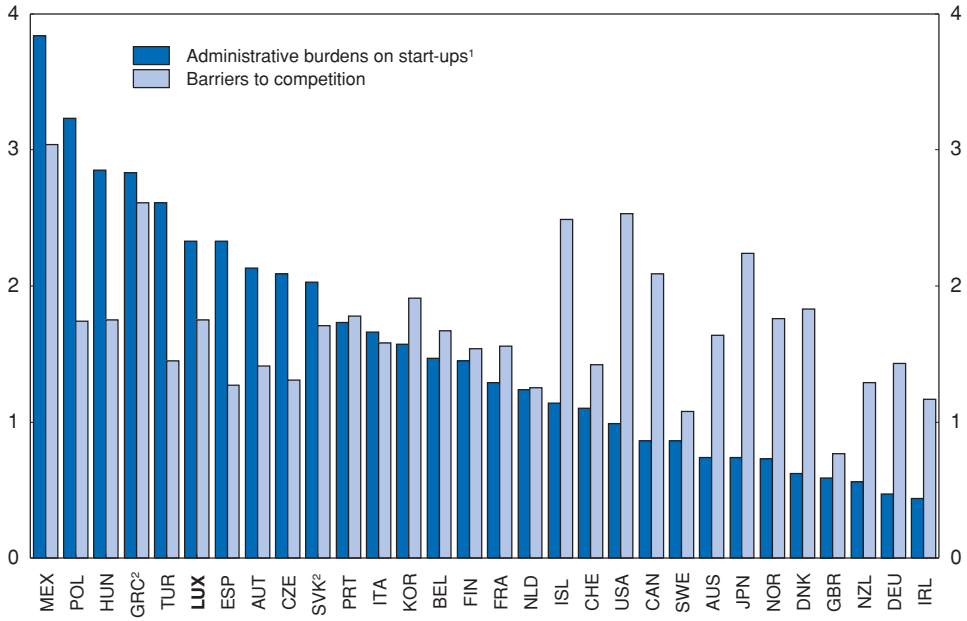
Source: OECD, *Product Market Regulation Database.*

StatLink http://dx.doi.org/10.1787/846774776035

Regulation of professional services remains particularly restrictive and there has been little reform in recent years. Regulation is among the most restrictive in the OECD for architects, engineers, and accountants (Conway and Nicoletti, 2006). Regulation of pharmacies is also strict (Paterson *et al.*, 2003). Across professional service activities,

Figure 2.2. **Barriers to new entrants and competition are high**

Index scale of 0-6 from least to most restrictive, 2008



1. Countries are ranked from highest to lowest administrative burden.
2. Data for Greece and Slovak Republic are for 2003.

Source: OECD, *Product Market Regulation Database*.

StatLink http://dx.doi.org/10.1787/846806304131

licensing restrictions should be eased and certification used to protect standards without unduly restricting competition. The role of paraprofessionals can be increased. Ending restrictions on advertising would be beneficial, particularly those that hinder price competition. The rules governing business and inter-professional co-operation are restrictive. For example, it would be more efficient if accountants were permitted to incorporate with other professions such as tax advisors. Minimum or reference prices for architects and engineers should be removed. Furthermore, specific measures could increase efficiency and the quality of service in certain professions:

- For *lawyers*, a key problem is that the profession is self-regulating in the sense that it implements regulations covering its members and is responsible for disciplinary matters. This generates a conflict of interest and lacks transparency from the consumer's perspective. For instance, it is the profession rather than legislation which prevents lawyers from advertising their financial terms. An independent regulator for the legal profession would better protect consumers' interest: although there is an ombudsman, this role is usually undertaken by a senior lawyer. Such a reform is particularly necessary given the small number of lawyers in Luxembourg. The creation of a procedure for dealing with small claims, outside the monopoly of lawyers, would further improve the services available. The total number of *notaires* should not be restricted by law and the profession should be opened to all appropriately qualified EU citizens.
- For *pharmacies*, the overall number of outlets and the allocation of state concessions is determined by the Minister for Health based on a set of criteria, rather than allowing new pharmacies to open up if entrepreneurs expect them to be profitable. This can slow adaptation to changing needs and limits competitive pressures from new entrants.

These restrictions can be removed. In addition, pharmacies and medical professionals have a monopoly of the sale of medicinal products. In many other countries such as Austria, Germany and the Netherlands, retail shops are able to sell a range of such products, providing greater choice and convenience.

There are a number of other important sectors which are relatively sheltered from cross-border competition and where regulations restrict competition, leading to high prices and less choice for consumers:

- In *the retail sector*, shop opening hours remain highly restricted with outlets required to close by 8 p.m. on working days and 1 p.m. on Sundays and public holidays. While agreement was reached in 2008 for five chains of stores to open until 9 p.m. on Saturdays and before some public holidays, flexibility remains limited. This reduces the productivity of the retail sector and adds to congestion. As argued in the previous *Survey*, more flexibility is required in planning decisions to support effective competition.
- *Taxis* are subject to a cap on overall numbers and licenses issued at the level of the *commune*, restricting choice and the development of an effective national taxi market. This leads to inefficiencies and, in some cases, a shortage of provision. There are high levels of consumer dissatisfaction with the service and high prices (Observatoire de la Compétitivité, 2009). The taxi market should be deregulated and opened to competition subject to the minimum necessary requirements. While in some cases consumers may benefit from regulated fares, there seems to be no justification for limiting the overall number of taxis (OECD, 2007).
- *Petrol retailing* is subject to restrictions that may represent obstacles to price competition: based on the moving average of wholesale petrol prices, the government sets a maximum retail price, based on the price in Rotterdam and a margin for costs set in negotiation with the *Groupement pétrolier luxembourgeois*, a federation of major oil companies (IEA, 2009a). All retailers must display this price, which is typically charged by the large petrol retailers and undercut by independents who account for around one-third of the market. This places a substantial administrative burden on the government to set the price and there is a potential conflict of interest where the retailers contribute to the cost-setting process. The retail market for fuel is highly concentrated with a Herfindahl index value of over 8 000 (based on the number of stations owned by each retailer) and is dominated by vertically-integrated retailers.[1] Fuel is not sold by other retailers, such as supermarkets. This creates the risk of collusive behaviour, which is a common feature of petrol retailing in OECD countries. Setting a price ceiling is one method of avoiding high monopolistic prices. However, it is an imperfect substitute for effective competition that could lower *pre-tax* prices, offering the prospect of either lower prices or higher government revenues. The potential effects of vertical integration are ambiguous, as this reduces competition at the retail level but may avoid a problem of inefficient double margins. Nevertheless, the experience of other OECD countries suggests that a strong independent sector can help to discipline vertically-integrated suppliers and lead to a more competitive outcome (OECD, 2008a). While there is risk that removing the ceiling puts independents out of business through a price war, a more desirable outcome is to remove the maximum price when the competition authority is in a position to enforce effective competition.

The enforcement of competition policy is weak

The enforcement of competition policy is weak within Luxembourg. Although EU competition law is applied and cases involving some large Luxembourg undertakings have been investigated by the European Commission, few measures have been taken to ensure effective domestic competition. The competition authorities have very limited resources even compared with other small countries (Table 2.2). Furthermore, resources are split between two institutions: the Investigation Division for Competition Affairs and the Council for Competition Matters (chaired by one person). It is therefore unsurprising that there has not been a single successful case brought against uncompetitive practices nor any pleas for leniency. As the Council is not able to direct the Investigation Division, prioritisation of the use of the scarce resources tends to be driven by specific complaints, which is ineffective.

Table 2.2. **The competition authorities have few resources**

	Competition authority	Number of staff	Population
Iceland	Icelandic Competition Authority	30	319 300
Ireland	The Competition Authority	51	4 422 100
Luxembourg	Investigation Division for Competition Affairs and Council for Competition Matters	4	488 600
Slovenia	Competition Protection Office	18	2 021 300

Source: Annual reports of the national competition authorities and OECD, *OECD Economic Outlook database*.

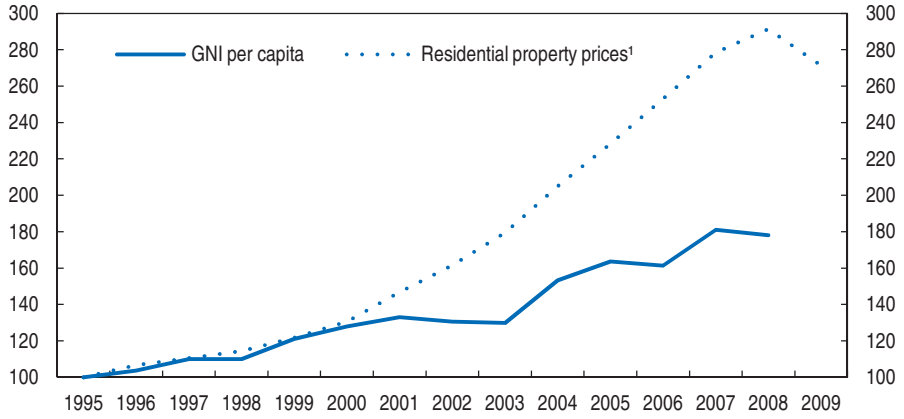
It is important to increase rapidly the effectiveness of competition enforcement. Time is required to build up the necessary case law and to earn the reputation that would create the necessary deterrence effect that other smaller OECD countries have begun to achieve. The resources of the competition authorities need to be increased and the current institutions replaced by a single unified agency as is envisaged in draft legislation. In addition, the scope of its mandate ought to be widened to include an enlarged advisory function and the publication of sectoral reports in line with practice in other countries. These sectoral reports could investigate thoroughly competition issues in such areas as professional services and retail. This is particularly important given that product market regulations are relatively restrictive. Despite the highly open economy, there is scope for anti-competitive practices.

Housing costs are driven up by weak supply and tax subsidies

Housing costs in Luxembourg are high. Housing in Luxembourg City is among the most expensive of European capital cities and financial centres (ERA Immobilier). House prices are also much higher than in neighbouring regions, with the average apartment price in the region of Lorraine around EUR 1 800 per square metre compared with EUR 3 300 in Luxembourg (Immoprix, STATEC, Observatoire de l'habitat). This contributes to cross-border commuting as workers find it too expensive to live in Luxembourg. It has also led to increasing numbers of Luxembourg's citizens moving across the borders. This effect concerns the young especially: while the overall home ownership rate in 2000 was broadly the same as in Belgium, the rate among 25 to 34 years olds was significantly lower. These trends have been exacerbated by rising house prices and rents in recent years (Figure 2.3).[2] The affordability of housing is further complicated by the low share of the rental market,

Figure 2.3. **Residential property prices outpaced national income**

Index 1995 = 100



1. The residential property price index data are from 1996-2007 based on index of residential property price. For 2008-09, they are based on the price (per square metre) of sold apartments only.

Source: OECD, *Annual National Accounts database*, STATEC and Banque Centrale du Luxembourg.

StatLink http://dx.doi.org/10.1787/846836451703

which represents only 30% of total housing market compared with 45% in France and 57% in Germany (OECD, 2008c).

The housing challenges were explicitly recognised in 2002 in the Integrated Traffic and Territorial Development Concept for Luxembourg known as "IVL" (ministère de l'Intérieur, 2002). This outlined two alternative scenarios for economic development until 2020: the first scenario primarily involved an increasing number of cross-border commuters (filling 75% of new jobs), while the second was based on a more balanced mix between commuting and increasing residency (40% of new jobs filled by cross-border commuters and an increase in the number of residents to 560 000 by 2020). While policy aimed to achieve the second scenario, the employment expansion in subsequent years has continued to depend primarily on the increase in cross-border commuting.

Supply constraints are a key explanation for the rapid growth in housing prices. Many of these barriers are policy-induced. According to official projections, around 3 400 new dwellings need to be built each year to keep up with the growth of housing demand. However, this rate has never been reached in the past twenty years with an annual average of around 2 300 new dwellings constructed. This development has continued the pattern of urban sprawl and low-density development. The anaemic housing supply in the presence of potentially available building plots and large price differentials across national borders indicates deep institutional barriers to new housing developments (OECD, 2008c). *Firstly*, existing regulations and exceptionally low property taxation encourage land hoarding, when further land price increases are expected. *Secondly*, current property owners have no incentive to vote for local policies promoting increased housing supply, while communities have strong autonomy in spatial planning. *Thirdly*, administrative procedures related to housing authorisation are very cumbersome, cover multiple administrative fields and require complex co-ordination among different actors. *Finally*, housing policy has been complicated by the fact that the right of expropriation has been blocked since 2003 and the right of pre-emption has only existed since the Housing Pact law introduced at the end of 2008. Furthermore, Luxembourg's tax system is very favourable to owner occupation of housing. The taxation of imputed rents in a way that is neutral with respect to other assets

is extremely difficult and many countries' tax systems are biased towards housing. However, the tax subsidy in Luxembourg is particularly large compared with other euro area countries (van den Noord, 2005): effective property taxes are low because the rates are applied to valuations that are far below the current market level; mortgage interest payments are deductible from income tax up to a ceiling; capital gains on principal residences enjoy favourable taxation; and there are interest rate subsidies. Given the restricted supply of housing, one of the main effects of these demand subsidies is to raise housing costs.

The Housing Pact law, introduced in 2008, aims to provide stronger incentives to local authorities to stimulate new housing development. Localities that sign the Pact and adopt national strategic priorities in their General Planning Programs (PAGs) will benefit from additional financial resources. To reduce the administrative burden, there is a five-year initiative to review, revise and simplify procedures affecting construction project authorisation. This will help, although the administrative simplification programme could be speeded up. However, more comprehensive housing reforms are required. This should include reform to property taxes to encourage sales of building lots and restoring expropriation for public purposes. The creation of a public land agency with broad powers, endowed with the right of pre-emption, could also be considered. Regular monitoring of land and housing prices in Luxembourg against neighbouring regions would provide quick feedback about progress in easing supply constraints.

The transport infrastructure needs to be upgraded and used more efficiently

The pressure of a large and increasing number of commuters leads to congestion, excessive strain on transport infrastructure and environmental challenges (OECD, 2008c). These pressures stem from both resident and cross-border commutes, which are broadly similar in number. High and increasing number of commutes among residents is reflected in Europe's highest car ownership rate and one of the highest annual distances covered by automobile per capita. For cross-border commutes, 85% are made in passenger cars without use of public transport. These patterns lead to alarming levels of congestion on the main road transport corridors and there are now severe bottlenecks at the entrance to urban areas, notably in the city of Luxembourg. This results in wasted time, unsafe driving conditions, noise and high levels of emissions and local air pollution. These quality of life problems also reduce the attractiveness of the Luxembourg labour market for highly skilled professionals.

Luxembourg has followed since 2004 an integrated strategy to tackle transport problems through the IVL (see above) combining planning of housing, transport and sustainable development. This approach is reflected in the draft Transport Sector Plan (PST), formulated in October 2008, involving all levels of national administration and key stakeholders. It sets out a multi-year financing schedule for 49 infrastructure extension and upgrade projects, notably in railway transport. The fiscal stimulus package included measures to speed up investment in these areas. The objective is to encourage a shift in the modal split from individual to public transport so that the share of public transport doubles to 25% by 2020. Several initiatives have already been put in place, including extension of train and bus connections, construction of park and ride centres and promotion of car-sharing.

An important area for further progress is enhancing co-operation with the adjacent regions. This process began in 1995 but has been complicated by the large number of actors in the region and difficulties with cross-border burden-sharing. Luxembourg has provided financial support to extend public transport beyond its borders, including infrastructure

projects such as the high-speed rail line. Unified ticketing systems have been put in place and some rail and bus lines operate into neighbouring regions with full or partial financial support from Luxembourg. In the near term, making multilateral and bilateral technical and commercial co-operation with neighbouring regions more effective is a priority, including the exchange of traffic data, coordination of timetables, harmonisation of fares and the wider introduction of mixed travel passes. Luxembourg should continue to be prepared to finance key infrastructure projects beyond its national borders. Finally, while the upgrade of public transportation infrastructure is essential, changes in commuters' incentives are needed, including increases in fuel prices.

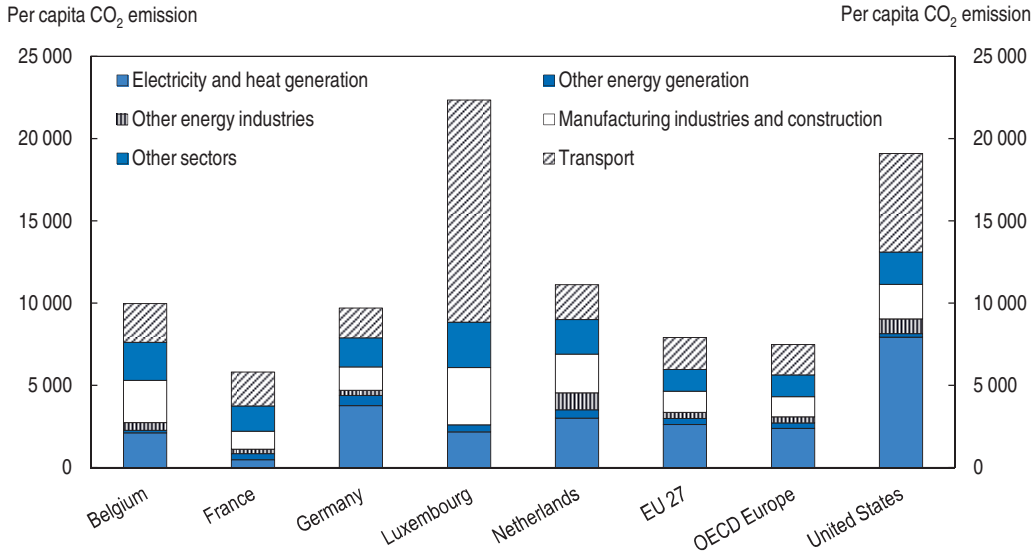
While providing additional public infrastructure and subsidies may help, changing the relative price of different transport choices may be an effective way of changing commuting patterns, particularly in the longer term. To date, a system of restrictions on the number of parking spaces within the Luxembourg City has been used to tackle congestion. While there is a system of *vignettes* for heavy goods vehicles differentiated by their level of emissions, there is no direct user-charge for roads. Introducing a system of congestion charging around Luxembourg City and congested road bottlenecks may help to induce a shift towards public transport or sharing of car journeys. By charging for each journey, this policy solution would help to align the private costs of undertaking a journey with the congestion externality exerted on other road users. In addition, with appropriate differentiation of prices, congestion charging could improve the efficiency with which new infrastructure is used by, for example, encouraging road users to shift their journeys from peak periods to other times when the infrastructure is less intensively used. The experience of similar schemes in London and Singapore could be considered. Such a scheme should be introduced in a non-discriminatory way for both residents and those living in other countries. While such initiatives could reduce the attractiveness of working in Luxembourg for cross-border workers, this could be offset by other policy measures such as increasing the tax deduction granted to commuters.

"Greening" the economy will be a major challenge

Luxembourg's environmental policies have achieved significant progress in recent years but there remain strong pressure on sustainability in terms of air quality, waste, water and land use. The measured intensity of environmental pressures is often influenced by the large volume of commuters, which adds to strains imposed by high levels of consumption and rapid economic growth. A recent review by the OECD of environmental performance makes a wide-ranging set of recommendations to strengthen environmental sustainability (OECD, 2010b). Recurrent themes from this analysis include: the need to implement environmental commitments more effectively; strengthening the application of the polluter-pays principle; ensuring that environmental objectives are met in the most cost-effective way; and better policy co-ordination within the Luxembourg government and with authorities in the wider region.

Limiting the emission of greenhouse gases to mitigate climate change will be a major global challenge in the coming decades. Luxembourg has the highest per capita CO_2 emissions in the OECD (Figure 2.4). It is committed to playing its part in this process through international and EU agreements. It is required to reduce its greenhouse gas emissions to 28% below their 1990 level for the period 2008-12. Further ahead, emissions from 2005 to 2020 should be on average around 20% lower than their 2005 levels. This is a major challenge and the required percentage reductions are the largest in the European

Figure 2.4. **High per capita CO_2 emissions are related to transport fuels**



Source: IEA, *CO_2 Emissions from Fuel Combustion database.*

StatLink http://dx.doi.org/10.1787/846845218844

Union. EU targets further mandate that the share of renewable energy in final consumption should rise from under 2% today to 11% by 2020, including a tenth of transport fuels to come from renewable sources, and that energy demand should fall by one-fifth from business-as-usual levels.

These objectives will be difficult to achieve. There is some scope to use the "flexibility" mechanisms that allow Luxembourg to purchase reductions in its emissions from elsewhere. The European Union Emission Trading System scheme (ETS) is the mechanism for addressing emission from six high-emitting stationary sources of emissions (OECD, 2009). In 2008, the Luxembourg government published the National Energy and Efficiency Action Plan (NEEAP). This aims to reduce energy use by 2016 to 9% below its average level from 2001 to 2005. Almost half of the planned reductions arise from increasing the energy efficiency of residential buildings, including a higher level of building standards in terms of energy efficiency. Taxing residential heating fuel would help to provide better incentives to raise energy efficiency. In 2007, there were important changes in motor vehicle taxes to favour owners of cars with smaller engines and lower emissions. Furthermore, a car scrappage scheme introduced during the crisis was designed to reduce emissions from the stock of cars, although take up appears to have been limited.

The essential problem, however, is high sales of petrol and diesel in Luxembourg to non-residents. These are counted towards Luxembourg's emissions. Cross-border purchases represent 75% of sales. This partly reflects the large number of cross-border workers coming into Luxembourg by car each day, which in turn is related to problems of housing and transport policy, as well as road hauliers transiting through the country. However, the decision to purchase in Luxembourg is driven by low taxes compared with nearby regions: the final price of fuel in 2008 was in the range of 13 to 24% higher in the neighbouring countries (IEA, 2009b).[3] The effects of raising fuel taxes are complex given both the cross-country nature of emissions and the tax base (Box 2.1). Luxembourg has already increased taxes in recent years through the so-called "Kyoto tax". This raised excise duty on petrol by 2 cents and diesel by 1.25 in 2007 with a further increase in line

Box 2.1. **Raising the price of fuel**

Reducing demand in Luxembourg for transport fuels (petrol and especially diesel) is necessary to meet commitments to cut the emissions of greenhouse gases. Per capita motor fuel sales in Luxembourg are currently very high by international comparison, reflecting important cross-border fuel sales to foreign households and of diesel to the road haulage industry. This is encouraged by Luxembourg taxing fuel less heavily than the neighbouring countries, both through lower excise duties and value-added taxes.

There are several effects of increasing the taxation of motor fuels in Luxembourg given the strong possibility of cross-border purchases. Increasing taxes would tend to raise the post-tax price, although not necessarily by one-for-one given the market power of retailers. This would lower demand through two channels. Firstly, the incentive for cross-border fuel purchase would be reduced and more fuel would be purchased in the surrounding regions. Secondly, the low taxation in Luxembourg effectively sets the lowest price in the region and hence the overall effective fuel price in the region would be higher. Only the second of these channels would lead to lower overall emissions. This would work through the impact on the transport choices of cross-border workers. It might also affect Luxembourg's high rate of car ownership and the emissions-intensity of car choices.

In financial terms, Luxembourg's tax take would be higher on each litre of fuel sold but this would tend to be offset in terms of total revenues by reduced fuel sales in its jurisdiction. As a large part of these revenues come from foreign residents, this would be a loss to national income rather than simply a change in transfers within Luxembourg. However, the cost of reducing emissions in other ways to offset emissions related to automotive fuels also needs to be taken into account so the government would save this cost if fuel sales were to fall.

The net impact of these effects depends critically on the price-elasticity of fuel demand. These are difficult to evaluate when the economy is undergoing rapid structural change, oil prices are extremely volatile and with strong cross-border effects. Government policy is based on estimated elasticities of 0.5 in the short term and up to 1.6 in the long term (ministère de l'Économie et du Commerce extérieur, 2006), which are somewhat higher than commonly assumed for countries with less open fuel markets. Based on these elasticities, it is likely that some increases in taxation would be beneficial when the cost of carbon emissions permits is taken into account.

In a broader sense, lower fuel sales in Luxembourg would partly be offset by increases elsewhere, so the impact of this policy on overall emissions would be limited. In addition, taxes on motor fuel in the European Union are already much higher than is consistent with the implied cost of emissions derived from the ETS, although there are other public finance arguments that are relevant to determining the appropriate level of taxation. The main justification for higher fuel taxes in Luxembourg stems from the externality imposed by the tax levels in neighbouring countries: while high taxes there shift revenue to Luxembourg, there is a parallel shift in recorded emissions that needs to be priced correctly. In addition, Luxembourg's commitment to meeting most of its Kyoto objectives through reducing its own emissions rather than through "flexible mechanisms" may mean that it ultimately pays a higher price for abatement than other countries.

with the EU directive on the taxation of energy products of 1.25 cents for diesel in 2008. However, consideration should be given to further increases as part of the overall package of measures to reduce emissions of green house gases.

Box 2.2. **Summary recommendations to support sustainable growth**

Education

- Continue to implement and monitor ongoing reforms to the school system.

Competition policy

- Encourage competition by removing unnecessary administrative burdens on starts-ups, licensing requirements and price controls.
- For professional services, remove restrictions on advertising and make co-operation between professions easier. Remove minimum or reference prices. For the legal profession, eliminate the cap on the number of notaries, establish an independent regulator and introduce a special procedure without the need for legal representation for small claims. Remove the restriction on the number of pharmacies and allow pharmacists to offer generic medicines as substitutes for prescribed drugs, as well as allowing the sale of some medicinal drugs by other retailers.
- For the retail trade, make shop opening hours more flexible. When the competition authority has sufficient capacity, remove the price ceiling for motor fuel retailing.
- Remove restrictive regulations fixing the number of taxis and their ability to compete.
- Increase the resources for enforcement of competition policy to a sufficient level. Replace the existing two-tier structure with a single authority and extend its mandate to producing sectoral reports.

Housing, transport and climate change

- Encourage housing supply through simplification of construction authorisation, removal of tax incentive for property hoarding, and the creation of a public land agency with broad powers to enforce housing policy objectives. Consider changes to the tax system to reduce the bias in favour of housing.
- Continue investment and further enhance co-operation with adjacent regions to increase the capacity of the public transport system.
- Consider introducing a system of congestion charging to increase the efficiency of the use of the road network.
- Further increase the taxation of petrol and diesel to reduce Luxembourg's carbon emissions.

Notes

1. The index is on a scale between 0 and 10 000, the latter corresponding to a pure monopolist. This analysis is based on the number of petrol stations in January 2005 as measured by the *Groupement pétrolier luxembourgeois*. In the United States, anti-trust authorities consider a market with a Herfindahl based on sales of over 1 800 "highly concentrated".
2. There have been significant improvements in the availability of housing data for Luxembourg. STATEC now publishes a quarterly indicator based on detailed transaction data covering apartment prices collected by the land registry (*Administration de l'enregistrement et des domaines*). This gives prices per square metre.
3. Excise duties on diesel were raised in 2008 in line with the EU directive related to minimum levels of taxation on energy prices. The rate is now similar to that in Belgium but well below the rate applied in France and Germany. In addition, the VAT rate of 15% is well below the rates applied in neighbouring countries.

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ANNEX 2.A1

Progress in structural reform

This annex reviews actions taken on recommendations from the previous *Survey* that are not fully covered in the main text.

Past recommendations	Action taken since the June 2008 *Survey*
EDUCATION	
Improve the match between the education system and the need for high-skilled workers, including reworking the curriculum, deemphasising and redesigning language education and improving the funding of higher education.	Major reforms are underway: • In pre-primary and primary education, a new law in 2009 introduces a competence-based approach. • Reforms have been introduced to in-service training for teachers and the institution in charge of the assessment of school standards (*Service de Coordination de la Recherche et de l'Innovation Pédagogiques et Technologiques).* • There has been a reform of the vocational education and training system since 2008. • A new framework for dealing with early school leaves has been introduced (*École de la deuxième chance*). The competence-based approach introduces a new approach to the teaching and evaluation of languages. Teaching of languages is intended to be more structured and effective. In addition, reforms are planned to the structure of the upper division of secondary education (including a more differentiated curriculum for the language teaching); the first cycle after primary education; and the initial training of secondary school teachers. The University of Luxembourg now offers 12 bachelor programmes and 21 master programmes. It has 123 professors and post-doctoral assistant-professors for 4 365 students. The budget increased more than 2.5-fold from 2005 to 2009 to reach EUR 86 million.
Restrict the extent of tracking in lower secondary education in all schools and raise the age at which tracking decision is made.	In the lower section of several technical secondary schools, tracking has been restricted. If the PISA 2010 results confirm apparent gains, restricted tracking in the lower section will be introduced in all technical secondary schools.
Increase the accountability of schools for educational results by publishing tests results corrected for socio-economic background.	The results of students of all secondary and technical secondary schools in the final examination are published every year by the Ministry of Education.
Strengthen the role of headmaster by giving more decisional freedom and using contract renewal to reward good performance.	The reform of pre-primary and primary education foresees the creation of a "school committee" for each school to increase managerial autonomy and responsibility. The role of the inspectorate will be reviewed to improve quality control. This builds on earlier reforms to raise the autonomy and accountability in secondary and technical schools. Time-limited contracts have been introduced for headmasters.
Merit-based remuneration and promotion should be introduced for teachers and teaching hours expanded to increase interaction with students and extra-curricular activities.	The presence at school of teachers in primary and secondary schools has been increased by two hours per week to encourage interaction with students, parents and extra-curricular activities.

Past recommendations	Action taken since the June 2008 *Survey*
HEALTH	
	The Minister of Health and Social Security is preparing a reform bill on the health care system to increase the efficiency of the system and guarantee the financial equilibrium of the health care insurance.
Encourage the *Union des Caisses de Maladie* to act as a "wise" purchaser based on up-to-date cost-efficiency analysis and international benchmarks.	
Expand the health care reserve funds to pre-fund future costs.	
Maximise the economies of scale from the merger of health insurance funds and bringing in the four remaining funds.	
Increase out-of-pocket payments for ambulatory care substantially, possibly facilitated with tax credits for poorer households.	
Make hospital managers accountable for outcomes and budget decisions. Consider introducing activity-based funding through a Diagnosis-Related Group (DRG) system, taking into account capital and staff costs.	
Increase standardisation of medical care by introducing clinical guidelines and pathways, and holding doctors more accountable.	
Remove the distinction between the three hospital regions to allow hospital services to be designed on a national basis.	
Facilitate treatment abroad with appropriate safeguards by reducing the administrative burden for surgery abroad and introducing the "money-follows-the-user" principle.	
Use of the harmonized electronic patient dossier should be further promoted to strengthen control of use of ambulatory care.	
Base doctors' remuneration on a system mixing capitation and for-service fees.	
Monitor doctors' prescribing more closely and sanction poor practice.	
Update the positive drug list more regularly and differentiate reimbursement rates based on the relative effectiveness and cost of the drug.	
Remove the statutory barrier on the number of pharmacies and allow pharmacists to offer generics.	

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Chapter 3

Making the labour market work better

Rapid economic growth over the past two decades has substantially increased employment in Luxembourg, which has largely been met by in-flows of cross-border workers and, to a lesser extent, immigration. Unemployment has remained low compared to other European countries. These significant social changes have been absorbed without substantially widening income disparities, facilitated by the generous welfare system made affordable by the strong economy. However, this favourable overall picture masks weaknesses in the design of labour market institutions and social transfers that reduce incentives to work for resident workers. Despite the strong economy, this has resulted in lower employment rates for certain groups of residents, notably those who are second-earners, younger or older, or from poorer socioeconomic backgrounds. Furthermore, the incentives provided by existing labour market institutions could make adjustment to changed economic prospects more difficult. The functioning and adaptability of the labour market could be improved without undermining social cohesion through a range of related measures. This could include aligning minimum wage adjustments more closely with economic conditions, which could be achieved through a Minimum Wage Council, and softening employment protection legislation. To raise incentives of residents, social benefits should be decoupled from average wages, and social transfers could be reoriented towards in-work social benefits.

Luxembourg's labour market is unusual compared with other OECD countries. As a small state sharing a border with Belgium, France and Germany, it functions as part of a larger labour market, in which the dynamism of the local economy has encouraged almost half of its workforce to commute from outside of the country each day. These cross-border employment flows play a much greater role in adjustment to shocks than in other OECD countries (Pierrard, 2008). At the same time, Luxembourg's labour market institutions and system of social transfers also differ in important ways from the countries and regions that surround it. Cross-border and migrant workers are more likely to accept jobs for a lower salary given their qualifications than resident workers, making it difficult for low-skilled resident workers to find employment. The generous benefits available for residents also reduce their incentives to supply labour (OECD, 2006).

Another special feature of the Luxembourg labour market is the very high share of output and employment devoted to financial and related services. This presents a number of challenges. Although the growth of this sector has raised overall labour demand, high salaries push up prices and therefore costs in other sectors, which may have contributed to the deterioration of competitiveness. The special skill requirements of financial services firms, together with their pace of expansion, has also meant that much of the increased demand for labour has been soaked up by cross-border workers and migrants. Meanwhile, the need to maintain social cohesion in the face of rapid change has encouraged Luxembourg's system of social transfers to focus on providing generous social benefits to help reduce poverty and inequality, sometimes to the detriment of work incentives. Although Luxembourg's success in achieving strong growth while avoiding a rise in inequality is admirable, the likelihood of slower growth in the wake of the financial crisis means that more attention is needed to improving work incentives amongst residents. In addition, the education system has to find the right balance between equipping students with the skills for employment in growth sectors, and providing the language skills needed to maintain the social cohesion.

As in other countries, the Luxembourg labour market has been hit by the crisis. Unemployment has increased from 4.2% at the end of 2007 to close to 6%, its highest recorded level, and resident employment has stagnated. Moreover, these numbers understate the weakness in labour demand, as they do not include jobs subsidised through the partial unemployment scheme and the so-called "mesures pour l'emploi" ("employment measures"). Their inclusion would raise the unemployment rate to around 8%. The immediate impact of the crisis on the labour market is analysed in more detail in Chapter 1. This chapter focuses on structural and institutional factors inhibiting the flexibility of the labour market and reducing the labour supply of Luxembourg residents. These factors are important both for the exit from the crisis and in the longer term.

The first section outlines in more detail some key stylised facts about the Luxembourg labour market, including institutions that affect labour market outcomes – the system of wage determination, employment protection legislation, the system of social insurance and transfers, employment services for the unemployed and the education system. The second section analyses how the design of these institutions affects firms' demand for

labour, the incentives of different types of residents to supply labour and the capacity of the labour market to adjust to shocks. The chapter concludes by identifying measures to improve the functioning of the labour market, focusing on those reforms that can improve efficiency without significantly compromising the country's emphasis on maintaining social cohesion. The reforms outlined should help to minimise the permanent impact of the crisis on the labour market.

A snapshot of the Luxembourg labour market

Luxembourg is a small country with a population of just under half a million people. It is positioned at the centre of a wider economic region and a labour market that encompasses the Wallonia region of Belgium, the Saar and the Rhineland-Palatinate regions in Germany and Lorraine in France. The close proximity of several towns across the border from employment centres in Luxembourg has encouraged large cross-border flows of workers (Box 3.1), which were also influenced by lower land prices and less strict residential planning laws in the surrounding regions. The rapid increase in cross-border workers has placed significant pressure on the transport infrastructure, necessitating closer co-ordination of planning with regions in neighbouring countries. The importance of cross-border workers also presents challenges for the design of labour market institutions and social insurance policies. In particular, cross-border workers' reservation wages are below those in Luxembourg due to lower wages in neighbouring countries, lower minimum wages and less generous social transfers than for Luxembourg residents. These differences lead to stronger incentives to work for cross-border workers than for the resident population (OECD, 2006). In total, the number of unemployed in the bordering regions is just over half as large as the total number of employed persons in Luxembourg, implying strong competition for jobs in Luxembourg.

Immigration to Luxembourg has also been important, even if growth in cross-border workers accounts for most of the increase in total employment. Overall, around 44% of the population was born outside the country, which is the highest proportion in the OECD. Although much of the increase in gross immigration is explained by the strong demand for skilled labour in the financial sector, growth in unskilled immigration has also been rapid. Fast demographic change is of itself not a problem; the Luxembourg economy would not have been able to grow as quickly as it has without its high immigration rates. It does, however, create challenges. For example, the Luxembourg education system places a large emphasis on students acquiring fluency in the three official languages to help maintain social cohesion. However, for children from immigrant families where none or only one of the official languages is spoken at home, gaining proficiency in all three languages is difficult. Moreover, for students without fluency in all languages, a number of career paths are effectively closed off, including the public service.

Luxembourg's labour market performance appears strong at the aggregate level, but looking beyond the headline figures reveals a more nuanced picture. Employment growth has been much higher than the OECD average over the past decade, and the unemployment rate has been below the average. However, the unemployment rate had been trending up throughout the decade, despite strong economic and employment growth. While some of the increase may have been frictional, the rate of long-term unemployment has doubled during the course of the decade. Recent estimates suggest that the NAIRU may have also practically doubled since 1995 (Guarda, 2010). The high aggregate employment rate masks very different patterns across demographic groups

Box 3.1. **Cross-border workers, immigration and the interpretation of labour market statistics**

Calculating and interpreting labour market statistics in Luxembourg is complicated by the fact that around 42% of the people employed within the country commute from the surrounding regions each day. Although cross-border workers are a large component of aggregate employment in Luxembourg, only resident workers are included in the Labour Force Survey measures of unemployment, labour force participation and employment rates. There are conceptual difficulties of including cross-border workers in such statistics. For example, including cross-border workers in a measure of the labour force participation rate would raise questions about the relevant working-age population for comparisons. In addition, governments tend to be more interested in the labour market performance of residents to whom they are democratically accountable, and who are more directly affected by their policy decisions.

Table 3.1. **Labour force statistics in Luxembourg: 1991 to 2008**

	1991	2008	% change
Population	387[1]	489[1]	26
Of which: Foreign-born	*113*[1]	*216*[1]	*91*
Employment	195[1]	349[1]	78
Of which: Residents	*164*[1]	*217*[1]	*32*
Non-residents	*31*[1]	*131*[1]	*320*
Public sector	*23*[1]	*33*[1]	*41*
Resident unemployment	2[1]	10[1]	330
Resident labour force	166[1]	227[1]	37
Working-age population	267[1]	332[1]	24
Unemployment rate	1.4[2]	4.4[2]	
Employment rate	61.5[3]	65.5[3]	
Participation rate	62.4[3]	68.4[3]	

1. In thousands.
2. Resident unemployment in per cent of the resident labour force.
3. Resident employment in per cent of the resident working-age population.

Source: OECD, *Labour Force Statistics database* and STATEC.

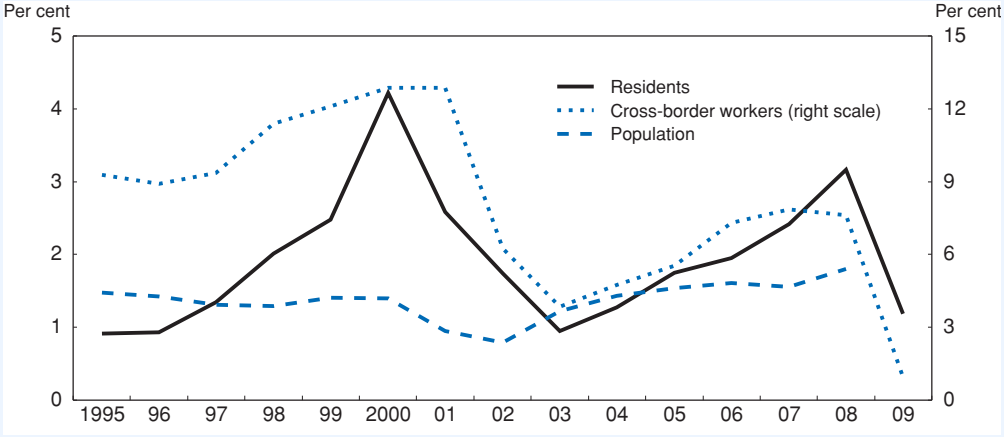
There have been profound changes in key demographic and labour force variables in Luxembourg since 1991 (Table 3.1). Luxembourg's population increased by 26% mainly due to high rates of net migration, particularly from Portugal. Migrants are included as residents. Aggregate employment growth has been even more rapid thanks to the large increase of cross-border workers, which have averaged 8% per annum since the early 1990s (Figure 3.1). Although weaker than non-resident employment, resident employment growth has also been stronger than in most European countries over this period. Both the employment and participation rate have increased over the past two decades, primarily due to rising participation rates amongst women and older workers. However, the flip-side has been a noticeable increase in the unemployment rate and large increase in the number of unemployed.

Residency has some important effects on access to welfare and other social entitlements. Although cross-border workers have full access to the Luxembourg pension scheme upon reaching retirement age, they are not entitled to the minimum guaranteed income (RMG) or other social benefits. In addition, when cross-border workers become unemployed, they are not entitled to full payments from Luxembourg's unemployment

Box 3.1. **Cross-border workers, immigration and the interpretation of labour market statistics** *(cont.)*

Figure 3.1. **Employment of residents, cross-border workers and population**

Year-on-year growth rate



Source: OECD, *OECD Economic Outlook database.*

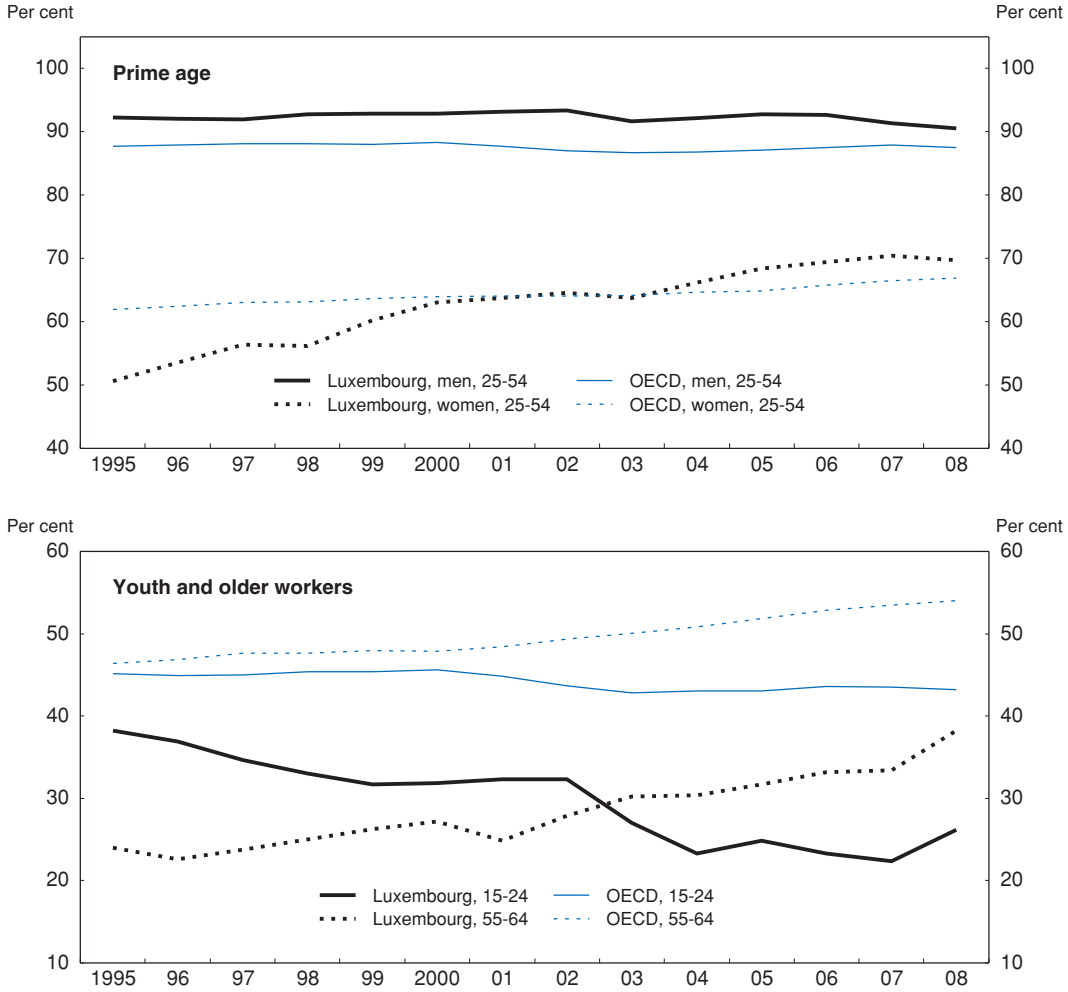
StatLink http://dx.doi.org/10.1787/847010353471

insurance scheme. Instead, Luxembourg contributes payments equivalent to three months of the unemployment benefits of the person's country of origin, calculated as if the person had been working in their country of residence. However, they do qualify for certain labour market programmes and related assistance (Grubb, 2007).

(Figure 3.2). Consistent with other countries, employment rates are highest amongst prime-aged males (aged 25 to 54), and have been relatively stable over time. Employment rates of prime-aged women have increased sharply over the past two decades reaching the OECD average in 2000, and exceeding it by 3 percentage points in 2008. By contrast, employment rates amongst younger (aged 18 to 24) and older (55 to 64) workers are significantly below the OECD average. While the gap has been closing for older workers as incentives to retire before 60 have been reduced, the youth employment rate has increasingly lagged the OECD average. The downturn at the beginning of the 2000s saw a particularly pronounced fall in the youth employment rate and there has been little subsequent improvement, despite the strength of the overall labour market. Of particular concern is the persistence of joblessness for disadvantaged younger workers (Figure 3.3).

Labour market outcomes are correlated with the type of household to which a person belongs. According to household survey data, employment rates among men in Luxembourg are highest and for women the lowest amongst those that are married and have children. In comparison with bordering countries, overall employment rates for single men and women in Luxembourg are high (Table 3.2). However, they are noticeably lower for married women with dependent children. The same data suggest that human capital is only weakly correlated with employment outcomes for men in Luxembourg. For example, men aged 25 to 44 with a tertiary qualification have similar employment rates to those with only a primary school education. Although the education gradient is steeper amongst women, like men, it is much flatter than in the bordering countries.

Figure 3.2. **Employment rates of residents**

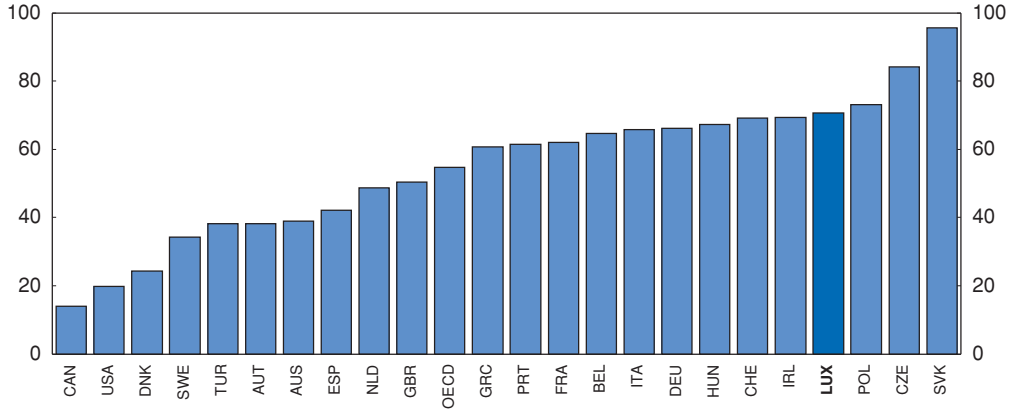


Source: OECD, *Labour Force Statistics database.*

StatLink http://dx.doi.org/10.1787/847044484343

Figure 3.3. **Percentage of jobless 25-34 year-olds who are long-term unemployed**

Persons with below upper secondary qualifications, 2007



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

StatLink http://dx.doi.org/10.1787/847061622045

Table 3.2. **Employment rates and individual characteristics**

		Men		Women	
		Luxembourg	Neighbouring countries[1]	Luxembourg	Neighbouring countries[1]
Household type					
	Single	0.70	0.52	0.44	0.33
	2 adults, no children	0.74	0.67	0.63	0.61
	Single parents	0.21	0.33	0.55	0.56
	2 adults, 2 children	0.78	0.81	0.50	0.66
Education					
	Primary	0.90	0.73	0.61	0.47
	Lower secondary	0.92	0.82	0.69	0.58
	Upper secondary	0.92	0.90	0.68	0.73
	Vocational qualification	0.98	0.88	0.67	0.74
	Tertiary	0.90	0.94	0.76	0.85

1. "Neighbouring countries" refers to the average of Belgium, the Netherlands, France and Germany.
Source: European Union Statistics on Income and Living Conditions (EU-SILC).

The pockets of weaker outcomes raise challenges for labour market and social policies. The young, unskilled, second-earners and older workers have low labour market attachment, and outcomes for the young, unskilled and to some extent prime-aged males have deteriorated. As discussed below, this pattern can be explained in part by labour market institutions and social transfer policies, combined with the availability of a large pool of well-trained cross-border and migrant workers who have lower reservation wages and often better adapted skills than the resident population. Jobs requiring low or medium levels of qualification are now extensively occupied by cross-border and migrant workers, who are sometimes over-qualified for the jobs they are willing to take. However, another contributing factor to poor outcomes among some groups is likely to be the rapid growth of the financial sector and the increasing orientation of activity towards this specialisation. The financial and business services sectors (which are closely linked) are the country's largest employer, accounting for around 30% of total employment in 2008, up from 20% in 1995. Over this period, the share of the industrial sector, the country's largest employer until the 1980s, declined from 16% to just 10%. Although the share of public sector employment in the total has also declined, its share amongst Luxembourg residents has been broadly unchanged. These trends have important consequences for the employment of Luxembourg residents because foreign workers account for the majority of jobs in the financial sector. As outlined in Chapter 1, although the growth in the financial sector has significantly raised aggregate incomes and employment, it has also contributed to reducing competitiveness in other sectors of the economy, such as the industrial sector, a trend amplified by wages policies that have impeded relative price adjustments. Because Luxembourg residents are more likely to be employed in the non-financial sectors, structural change is likely to have made it more difficult for some people without the appropriate skills to find employment. This means that there is a significant challenge for the authorities either to ensure that the education system equips residents with the skills to be competitive for jobs in the economy's growing financial sector (Box 3.2), or facilitate more job creation in other sectors of the economy for which they are suited.

While Luxembourg's overall labour market performance is strong compared with other OECD countries, the outcomes are less impressive compared with other OECD regions. This regional perspective is arguably more relevant: national averages in most

Box 3.2. **The labour market and the education system**

Well-designed education systems are critical for providing individuals with the human capital necessary to compete in the labour market, contribute to economic growth and participate fully in civil society. Achieving these goals is difficult for all countries, but Luxembourg's education system faces two unique challenges. It has to provide students with the skills that are in demand in a labour market with strongest employment growth in the financial sector and related services; and equipping students with the language skills necessary to communicate effectively and work within a country with three official languages. Meeting these twin challenges is made harder by the fact that many students are likely to be unsuited to specialised careers in financial services, and their immigrant and low socioeconomic backgrounds make it harder to achieve fluency in three languages. This box briefly reviews some of the structural features of the education system inhibiting improved educational outcomes, and through that the performance of the labour market.

Luxembourg's education system has the following key features (OECD, 2006):

- Pre-school education begins at the age of 3, but is non-compulsory until the age of 4. It then lasts for two years.
- Primary school begins at the age of 6 and lasts for six years. Most instruction takes place in German.
- At the end of primary school, students are sorted into three tracks for lower-secondary school (again largely German-based instruction), which lasts for three years:
  - Academic general education (30% of students in 2003-04).
  - Vocational secondary education (58% of students).
  - Modular vocational education for those with education difficulties (12% of students).
- At the end of lower secondary school, students are again sorted into three tracks for middle- and upper-secondary school:
  - Academic general education that lasts for four years and prepares students for university. Most instruction in this track takes place in French.
  - Technical vocational education that lasts for four or five years and prepares students for either university or tertiary vocational education.
  - Technical training courses and vocational training that last for three years and lead to either a vocational or manual skills certificate which can then lead to an advanced trade qualification.
- The minimum school leaving age has recently been raised to 16.

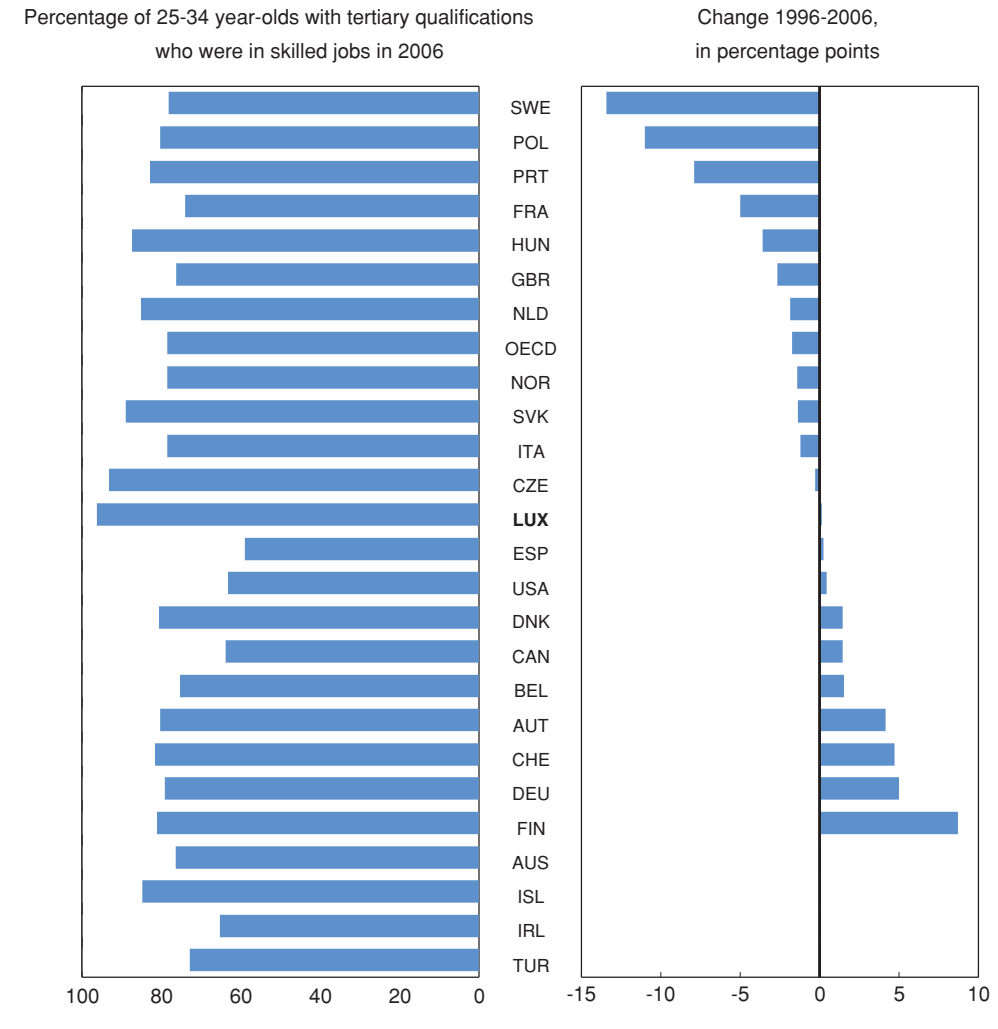
Education outcomes in Luxembourg are below the OECD average across a variety of indicators (OECD, 2009). Although primary school students perform well on standardised tests compared with other OECD students, performance at the secondary level is well below the OECD average. Low achievements are concentrated amongst poorer households and immigrant groups. Overall, very few top-performers come from lower socio-economic backgrounds compared with other countries. Students' language performance on PISA tests is poor by OECD standards (OECD, 2008a). Grade repetition is also common, particularly amongst children of immigrants. The secondary school drop-out is very high; only 70% of 25 to 34 year olds have finished high school, which is slightly below the OECD average and considerably lower than in neighbouring countries.

The weak performance of the education system has a number of implications for the labour market. In a high wage economy where resident workers are competing for good jobs with a large pool of highly qualified cross-border workers, lower levels of human

Box 3.2. **The labour market and the education system** *(cont.)*

capital amongst young residents diminish their job prospects. There is also evidence that the education system is not providing enough highly skilled graduates to meet the demand in the labour market. Although there has been no increase in the proportion of 25 to 34 year olds with tertiary qualifications in skilled jobs over the past decade, this is not because underlying demand for tertiary education has been weak (OECD, 2009). Indeed, graduate wage premia (for men) are very high in Luxembourg (Strauss and de la Maisonneuve, 2007) and 96% of tertiary graduates are already in skilled jobs (Figure 3.4). Instead, many private firms obtain skilled graduates from the pool of cross-border workers; despite strong underlying demand there has been no increase in tertiary enrolment rates over the past decade.

Figure 3.4. **Young graduates and skilled jobs in OECD countries**



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

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Box 3.2. **The labour market and the education system** *(cont.)*

The reasons for the weak performance of the education system are complex. However, the most important problems identified in previous *Surveys* (OECD, 2006; OECD, 2008a) include:

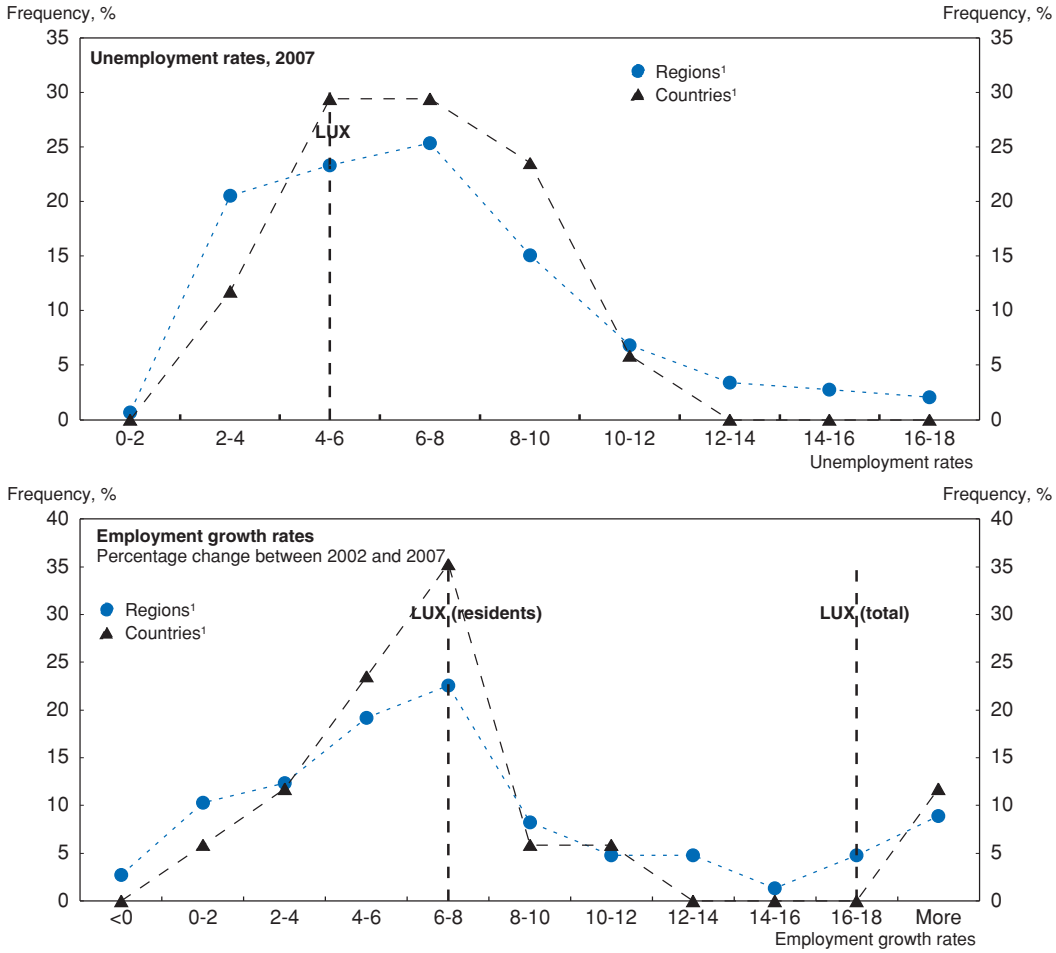
- The difficulty of children from a low socioeconomic or immigrant backgrounds to achieve fluency in all three official languages and the limited options for students to receive most of their education in their strongest official language.
- The early commencement of educational tracking, the narrow criteria on which these tracks are determined and the lack of permeability between the different education tracks.
- A shortage of second chance arrangements for unqualified school leavers and inappropriate financial incentives provided by the welfare system to drop out of education.
- Large cultural barriers between teachers and immigrant children, a high proportion of secondary teachers that are not certified and teacher pay arrangements that reward seniority rather than performance.
- Curricula insufficiently attuned to helping students acquire skills most in demand in the labour market.
- Insufficient accountability and autonomy for schools, as well as a lack of parent involvement in school choice and tracking decisions.

Recommendations from previous *Surveys* have aimed to provide options that can help overcome structural weaknesses of the education system. They have focused on reforms that will help labour market integration of immigrants and that will ensure that there is less of a mismatch between skills demanded in the labour market and those supplied by the education system. The authorities have responded by beginning the task of reworking curricula and introducing programmes and options to reduce linguistic barriers for children of immigrants.

countries mask significant regional disparities with some areas that are very dynamic while others are in relative decline, so that the national average is based on a mixed picture overall. By contrast, the national average for Luxembourg refers only to one very fast-developing region. In addition, regions have many of the same characteristics as the Luxembourg economy in terms of being highly open and specialised. Luxembourg is among the countries with the lowest unemployment rates but is only around the 30th percentile compared with other regions (Figure 3.5). Total employment has grown much faster than in almost any other region, but the increase in the employment of resident workers is relatively close to the norm. These performances are better than the average but have been achieved against the background of growth that is exceptionally strong for a European region.

Despite rapid overall employment growth, the rise in the overall unemployment rate also points to structural problems in the labour markets. Typically, economies with rapidly expanding employment would be expected to experience larger falls in the unemployment rate than those with weaker growth. This relationship holds true across European countries and rising unemployment in Luxembourg is somewhat of an outlier in this respect. However, the correlation is lower at a regional level (Figure 3.6). This suggests that regions can adjust to shocks in different ways with net migration playing a more important role in adjusting to changes in demand for regions than it does for countries. Even so, many regions that experienced employment growth rates similar to those in Luxembourg saw their unemployment rates fall or stay the same rather than increase.

Figure 3.5. **Regional and national labour market performance in Europe**



1. European countries and regions cover the euro area 13 as well as the Czech Republic, Norway, Sweden and the United Kingdom.

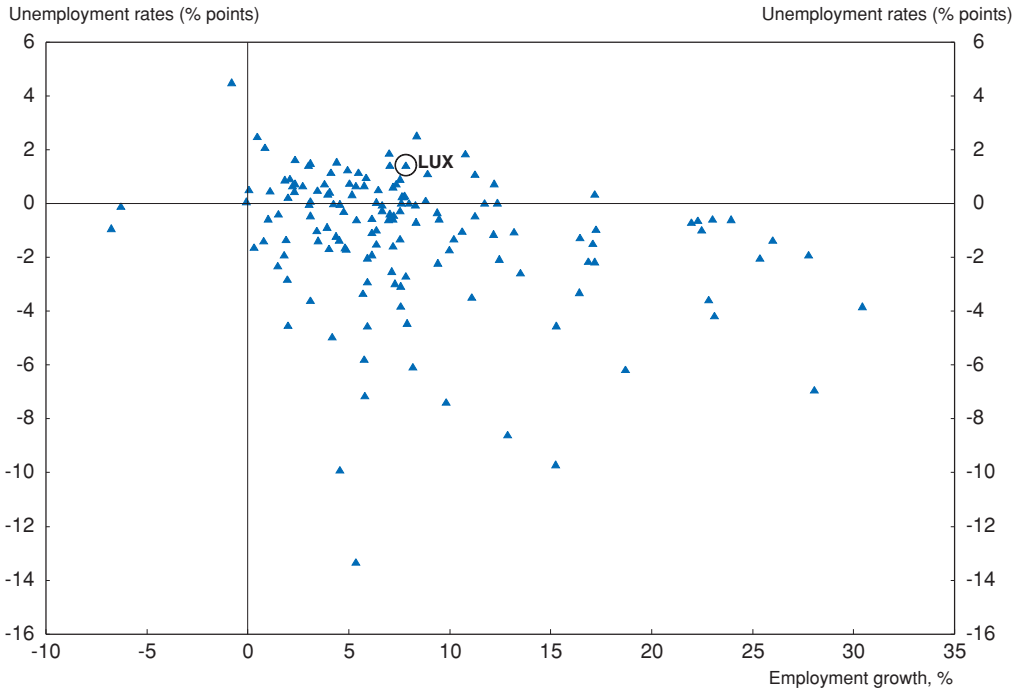
Source: OECD, *Regional Statistics database* and *OECD Economic Outlook database*.

StatLink http://dx.doi.org/10.1787/847107286420

Labour market performance has to be balanced against success in maintaining income equality and social cohesion in a strong growth environment. Most institutions that influence labour demand and labour supply in Luxembourg have broader social goals (Langers *et al.*, 2009). Although poverty rates (measured in relative terms) have increased over the period, the change has been small and income inequality remains in the lower half of OECD countries (Figure 3.7). Institutional factors are likely to have contributed to this outcome. First, wage growth toward the bottom of the earnings distribution has broadly kept pace with earnings growth in the middle and top of the distribution. This is in part due to minimum wages, which apply to around 15% of workers, their indexing to average wages, and indexing of all wages to inflation. Second, for those who are not in paid employment, social transfers are generous. The net replacement ratio for a person in receipt of unemployment insurance who earned average wages is between 80% and 90% depending on the circumstances, while a minimum guaranteed income scheme (RMG) supports inactive individuals in poorer households with an income just below the full-time minimum wage. The pension system is also one of the most generous in the OECD.

Figure 3.6. **Regional unemployment rates and employment growth**

Change between 2002 and 2007



Source: OECD, *Regional Statistics database.*

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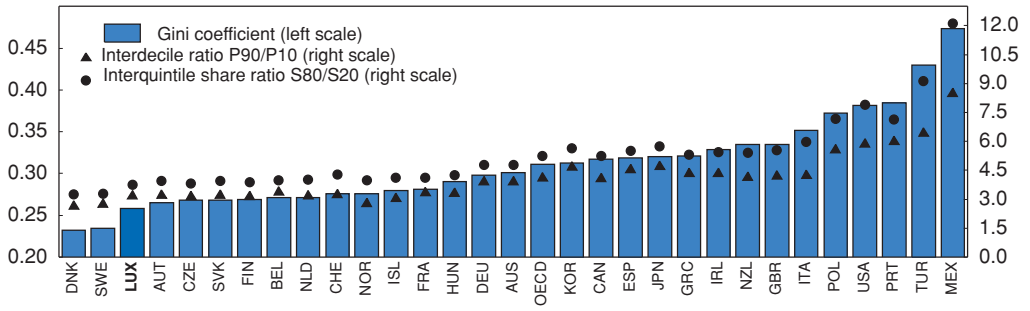
Figure 3.7. **Income inequality in OECD countries**

Mid-2000s



Note: Countries are ranked, from left to right, in increasing order in the Gini coefficient. Data refer to the mid-2000s for all countries except for Japan and Switzerland, where they refer to 2000. The income concept used is that of disposable household income in cash, adjusted for household size with an elasticity of 0.5.

Source: OECD (2008), *Growing Unequal? Income Distribution and Poverty in* OECD Countries.

StatLink http://dx.doi.org/10.1787/847146775302

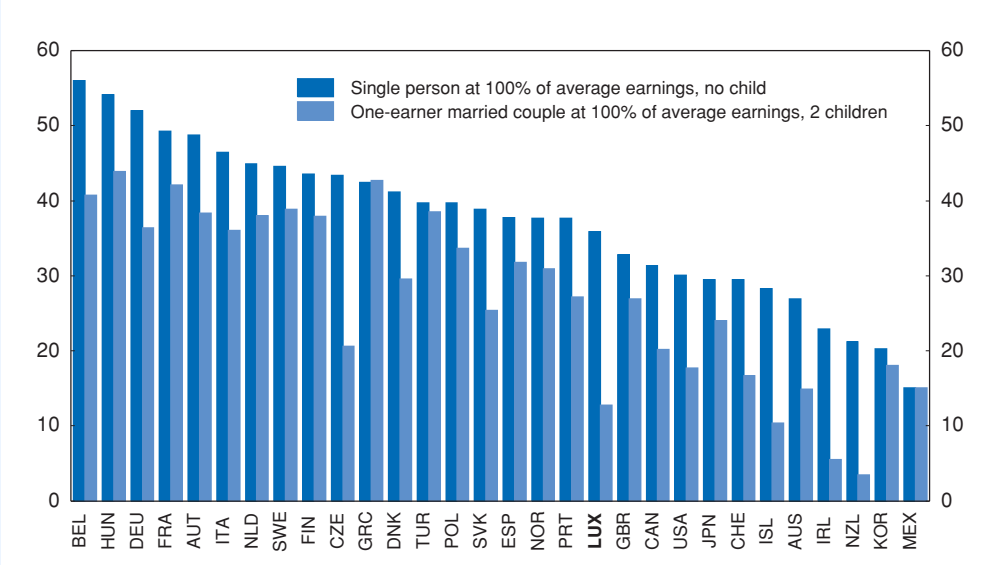
Generous social benefits, either in terms of the unemployment insurance, minimum guaranteed salary or pensions, influence reservation wages especially of lower income workers and families. The system of taxes and social benefits also affects the labour market through its impact on labour costs and incentives to work for different groups (Box 3.3). The net tax wedge tends to vary widely between single or family workers due to generous social benefits. Although at 33%, the average net tax wedge for single workers (the ratio of labour taxes to total labour costs) was only just below the OECD average in 2008, the net tax wedge for couples with children was just 12%, amongst the lowest in

Box 3.3. **Labour taxes, social transfers and employment programmes**

Labour taxes. Luxembourg operates a progressive income tax system and taxes labour less than most other European countries (OECD, 2008c). There are 16 different marginal income tax rates ranging from 8% to 38%, with the top rate kicking in at a taxable income of around EUR 40 000. Although at 33%, the average net tax wedge for single workers (the ratio of labour taxes to total labour costs) was only just below the OECD average in 2008, the net tax wedge for couples with children was just 12%, amongst the lowest in the OECD (Figure 3.8). The difference is explained by the generous social benefits available to families in Luxembourg. Overall, employer and employee social security contributions make a larger contribution to the tax wedge than income taxes. Although the family is the tax unit in Luxembourg, there is a tax allowance for second earners to reduce marginal effective tax rates for second earners.

Figure 3.8. **The composition of the net tax wedge**

As a percentage of labour costs, 2008[1]



1. Employees' and employers' social security contributions and personal income tax less transfer payments as a percentage of gross labour costs (average rate in %).

Source: OECD, *Tax database*.

StatLink http://dx.doi.org/10.1787/847271461721

Social transfers. There are five types of programmes:

Families are entitled to a number of generous non means-tested allowances:

- A one-off childbirth allowance worth EUR 1 740.
- A child allowance that can continue up to the age of 27 if children remain in full-time education for the whole period. The state pays EUR 180 per month for one child with higher payments per child for larger families.
- Government-financed parental leave is available prior to each child's fifth birthday providing parents have worked for their employer without a break for at least a year. Leave can be taken for either six months full-time or twelve months part-time. Those taking full-time leave are entitled to a net EUR 1 716 per month.
- A special allowance is available until each child turns two for parents who reduce their working hours to below 20 per week. This allowance cannot be received at the same time as parental leave.

Box 3.3. **Labour taxes, social transfers and employment programmes** *(cont.)*

Contributory, time-limited **unemployment insurance** usually expires after 12 months, although workers over the age of 50 can qualify for insurance for up to 24 months. During this period of eligibility, the scheme is one of the most generous in the OECD: the replacement rate is up to 90% of the previous gross wage, and the ceiling on benefits is 2.5 times the minimum wage (falling to twice the minimum after six months). Young people are able to obtain unemployment benefits without a prior work history if they wait between 26 and 39 weeks after registering as unemployed, though recent reforms have attached greater conditionality to this access. In addition to unemployment insurance, there is also a system of short-time work or partial unemployment benefits. Under this scheme, the insurance fund pays 80% of an individual's salary at eligible firms wanting to temporarily reduce their labour use without permanently dismissing workers (see Chapter 1).[1]

Those in receipt of unemployment insurance are required to register as unemployed with the employment agency (ADEM), which is responsible for trying to place unemployed people into vacant jobs and providing training and other labour market programmes to make it easier for the unemployed to find employment. Case workers are also tasked with monitoring the search activity of unemployed people and can temporarily suspend benefit payments for those that refuse a suitable job offer or a training place. In 2008, there were 3 246 people in labour market programmes (*mesures pour l'emploi*), of which:[2]

- 968 people were in special programmes to provide training with non-profit associations aimed at reintegration in the labour market for unemployed without insurance.
- 575 were in programmes to re-integrate the unemployed into the labour market through training towards recognised practical qualifications.
- 462 were in the temporary work scheme run in conjunction with the RMG.
- 365 were on youth employment contracts, a 12-month programme for youths to provide practical on-the-job training with private employers.
- 339 were in professional retraining programmes for those unemployed aged over 30 that require theoretical and practical training as part of a workplacement.
- 450 persons were in a variety of small schemes.

Disability benefits (*travailleurs à capacité de travail réduite,* CTR). Under laws that came into effect in 2002, there are four stages of assessing work capacity (OECD, 2006):

- A compulsory medical examination by the medical service of the Social Security for those taking a long period of sickness leave.
- A second medical examination to determine whether a person is capable of working once they apply for a disability pension.
- An assessment by the Occupational Medicine Department to determine if the person is capable of returning to their previous job. If not, a redeployment procedure is launched that favours redeployment within the same firm. If this is not possible, ADEM is tasked with finding the person suitable work with another employer.[3]
- Receipt of a waiting allowance equal to the disability pension if the person does not find employment within the period in which they are eligible for unemployment benefits.

In the disability benefits, payments match the replacement rates of unemployment insurance and the RMG (though disability benefits are not means-tested), the regime of activity testing and re-integration into the workforce differs. Although the medical criteria for determining incapacity were not changed with the 2002 reform, applicants now have to demonstrate not only an inability to return to their previous job, but also an inability to be redeployed to other types of jobs in other firms and industries. Employers and employees also

Box 3.3. **Labour taxes, social transfers and employment programmes** *(cont.)*

receive financial incentives to increase redeployment rates. This process of assessing work capacity significantly reduced flows into the disability pension scheme and this has led to a reduction in the stock of recipients of around 13% since the peak in 1998. However, progress has stalled more recently with little change in the number of invalidity benefit recipients over the past five years and around 5% of the working-age population in receipt of these benefits.

The minimum guaranteed income scheme (*revenu minimum garanti*, RMG) provides a financial safety net for low income families. The RMG is largely accessed by unemployed people (and their families) not or no longer eligible for unemployment insurance, as well as those that are not actively looking for work for other reasons but are not eligible for disability benefits or the pension scheme. In 2009, around 16 000 people were in households receiving the RMG with over 8 000 claimants (equivalent to more than 3.5% of the resident labour force), predominantly of working age. Individuals under the age of 25 are not entitled to RMG unless they have dependents. One-third of new claims in 2008 came from those whose unemployment benefits had come to an end (*Inspection générale de la sécurité sociale*, 2009). Lone parents account for a large share of households on the RMG. Like the minimum wage, the level of the RMG is indexed to average wages. Although the transition to the RMG from unemployment insurance involves a lower income for most eligible households, means testing implies that the amount of this reduction varies according to household circumstances.

In general, replacement rates are highest for low income households and those with children (OECD, 2007). For example, while the replacement rate is around 75% for a single person without children who initially held a minimum wage job, it is closer to 90% for a married person who earned the same but has two children and a spouse without a job. By contrast, the replacement rate is 55% for a person with an average wage job with two children and a spouse earning ⅔ of the average wage.

Individuals covered by the RMG who are assessed as being able to work are required to sign an integration contract with a case manager. This requires participants to actively search for employment and participate in labour market programmes. There are three main types of labour market programmes available to those with integration contracts: preparation for work; temporary public work; and subsidised work with an employer. Participants in these programmes receive an income supplement. The wage subsidies offered are very high: for a minimum wage worker, the subsidy is nearly 100% and can last for up to 3 years.

Pensions. Luxembourg's pension system is generous by OECD standards. The pension replacement rate reaches more than 100% of net income for low and average income workers. Both public and collectively bargained sectoral pension plans enable older workers to leave the workplace before the legal age of 65 and pre-pension schemes allow workers to quit the labour market aged 57 if they have accumulated 40 years of pension contributions. Early retirement is available at age 60 if workers have 40 years of employment service. However, time spent in education before the age of 27, child-rearing and periods of unemployment for younger workers are also taken into account when assessing years of service. Although the pre-pension schemes are available for a maximum of three years, participants can move immediately to the early retirement schemes if eligible.

1. At the end of 2009, just over 8 000 people were in this scheme, which is more than the total number of people in receipt of unemployment insurance.
2. *Mesures pour l'emploi* in the Luxembourg usage is not equivalent to labour market programmes as defined by OECD and Eurostat because it excludes individuals receiving employment incentives (re-employment bonuses, measures of professional integration of disabled workers, aid for employing long-term and old unemployed).
3. During this stage the person receives unemployment benefits and has the same responsibilities as a regular unemployed person.

the OECD. The lower tax burden for families is mainly due to generous family benefits, which, as in most European countries, are not means tested, and therefore do not affect marginal effective tax rates. However, the availability of two different types of government-financed leave for parents implies that long periods of labour market inactivity may be encouraged for some individuals, particularly women who have more than one child. This may weaken their attachment to the labour market or hinder their employability, leading to a lasting impact on employment. Further empirical analyses of the impact of these leave programmes on labour supply would be useful.

Improving the adaptability of the labour market

There is no one-size-fits-all approach to designing labour market institutions (Bassanini and Duval, 2006). Empirical evidence suggests that both decentralised and corporatist institutions can be associated with good labour market outcomes as long as the determination of wages and employment conditions takes into account macroeconomic conditions, and the different circumstances of industries, firms and employees. Indeed, the co-ordination that is a central feature of corporatist systems such as Luxembourg's can make it easier for wages to respond to macroeconomic shocks and be an effective instrument for maintaining cohesion across different social classes. Nevertheless, there are features of Luxembourg's labour market institutions that may make it more difficult for the labour market to adapt to shocks, prevent wages from moving in line with changes in labour productivity in some sectors, and unnecessarily reduce labour demand for some social groups.

Luxembourg's labour market outcomes have been influenced by the institutional setting. Two-thirds of wages are set in a tripartite industrial-relations system. Wage bargaining and negotiations over employment conditions in the private sector largely take place between employers and unions (or employee representatives) with the government also playing a role.[1] Around 40% of the workforce is member of a union, with membership rates highest in the industrial and public sectors. Government involvement in wage setting and the determination of employment conditions through minimum wage determination, wage indexation, and employment protection legislation (Box 3.4) are likely to have affected the aggregate demand for labour as well as incentives to supply labour.

Reforming wage setting would improve real wage flexibility and competitiveness

Luxembourg is one of the few OECD countries to maintain a system of automatic legislated wage indexation. Although this was temporarily suspended in 2006, it came back into operation in January 2010. The system is problematic as it locks in price rises stemming from negative supply shocks (such as food and energy). This reduces competitiveness of local firms and prevents downward adjustments of real wages in firms and industries where productivity has declined, either as the result of shocks or on-going structural adjustments. Wage indexation can therefore raise inflation, reduce the demand for labour, and may have accentuated the relative decline of the industrial sector. Competitiveness indicators point to a serious erosion of relative unit labour costs in Luxembourg over the past decade (Chapter 1).

Recent empirical analysis of monthly administrative wages data between 2001 and 2006 provides evidence that wage indexation in Luxembourg could contribute to higher downward real wage rigidity relative to other industrial countries (Figure 3.9). The overall frequency of wage changes is driven by institutional wage changes that are not at the discretion of the firm (wage indexation, minimum wage changes and bargained premia

Box 3.4. **Wage setting and employment contracts**

Indexation. In normal times, wages of all employees are increased whenever the six-month moving average of the national index of consumer prices increases by 2.5% relative to its level at the previous wage indexation (the system is symmetric and would treat price level falls in the same way). This process is independent from the system of collective wage bargaining and is strictly enforced by the government. Between 2006 and 2009, there was a temporary change in the indexation mechanism to reduce the pass through of the steep increase in oil prices over that period. For example, in December 2006 wages were increased by 2.5%, which was 1.4 percentage points less than the increase in the price level since the previous indexation. The regular system was reinstated in January 2010.

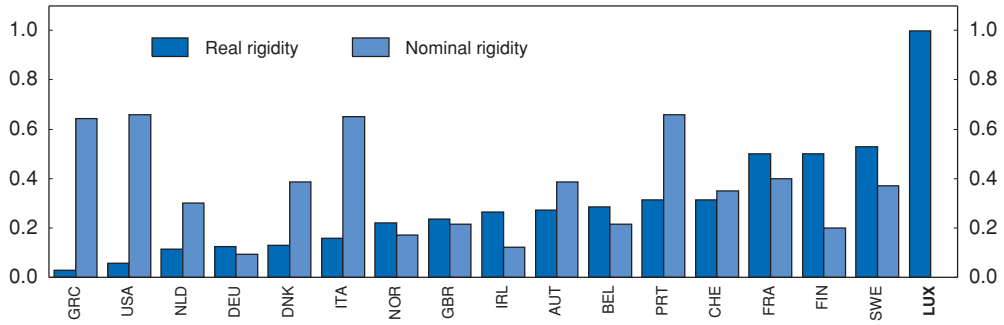
Minimum wages. Changes in the minimum wage unrelated to indexation are first negotiated within the tripartite framework, and then the government makes an adjustment based on real wage developments in the economy. This effectively indexes the minimum wage to average wages. At 50%, the ratio of the minimum wage to average gross monthly earnings in the industry and services sector is amongst the highest in the OECD. The minimum wage is reduced for youth aged less than 18 (20 to 25%) and there is a 20% premium for workers with formal qualifications.

EPL. Temporary contracts are restricted to specific tasks and usually cannot be extended beyond 24 months. Trial periods under regular contracts, which depend on salaries and qualifications, are short (a maximum of six months and sometimes much shorter) and notice must be given at least 24 days before dismissal. Compensation is available to employees in cases of unfair dismissals, though employees are rarely reinstated. For procedural irregularities in dismissal, at least one month's compensation is usually granted, while for more serious irregularities compensation depends on the material impact on the employee. Arrangements for collective dismissals by firms apply from 7 dismissals within a 30-day period or 15 within a 90-day period. Collective dismissals require firms to negotiate a social plan with the relevant trade union or employee association within two weeks of the collective notice being given. Only once the social plan is concluded can individual notification of dismissal occur and only then after 75 days.

that depend on age and marital status). After correction of measurement error, there were very few nominal wage reductions during the sample period and there was a heavy bunching in the distribution of annual wages around 2.5%, the rate of the regular indexation adjustment (Lünnemann and Wintr, 2009). The fast pace of growth and benign world economic conditions over this period reduce the likelihood that these constraints from indexation were binding, although energy-related increases in consumer prices would have tended to tighten this constraint. In the current period where growth is slower, the cost of these rigidities may become more apparent.

To improve adjustment to shocks and competitiveness, the current system of automatic legislated wage indexation to the headline consumer price index should ultimately be ended to allow for negative terms-of-trade shocks as well as the required adjustment in relative wages across firms and industries. Many European countries have moved away from such systems of automatic legislated indexation. Only two larger OECD countries have indexation. However, the Belgian scheme is not tied to the headline consumer price index, while the system in Spain is more limited in scope. Co-ordination of overall wage growth would remain desirable if automatic indexation were ended, and

Figure 3.9. **Wage rigidity across countries**[1]



1. Mixed Method of Moments estimates of the prevalence of downward real and nominal wage rigidity, averaged across all dataset-years for each country. By construction, the measures range from 0 (where no one is subject to the rigidity) to 1 (where all workers are potentially affected).

Source: Dickens, W. *et al.* (2007), "The Interaction of Labour Markets and Inflation: Analysis of Micro Data from the International Wage Flexibility Project" and Lünnemann, P. and L. Wintr (2010) "Downward Wage Rigidities and Automatic Wage Indexation: Evidence from Monthly Micro Wage Data", Banque Centrale du Luxembourg, *Working Paper* (forthcoming) for Luxembourg results.

StatLink http://dx.doi.org/10.1787/847273352140

could take place within central bargaining to ensure that wages evolve in line with productivity, competitiveness and labour demand. As a first step, the temporary adjustment process put in place from 2006 to 2009 should be reinstated. By indexing wages to core consumer prices (excluding food and energy), the effect of temporary shocks to energy prices and other idiosyncratic price movement would not be automatically passed through to costs and the price level.

The setting of the minimum wage needs to take into account the impact on employment

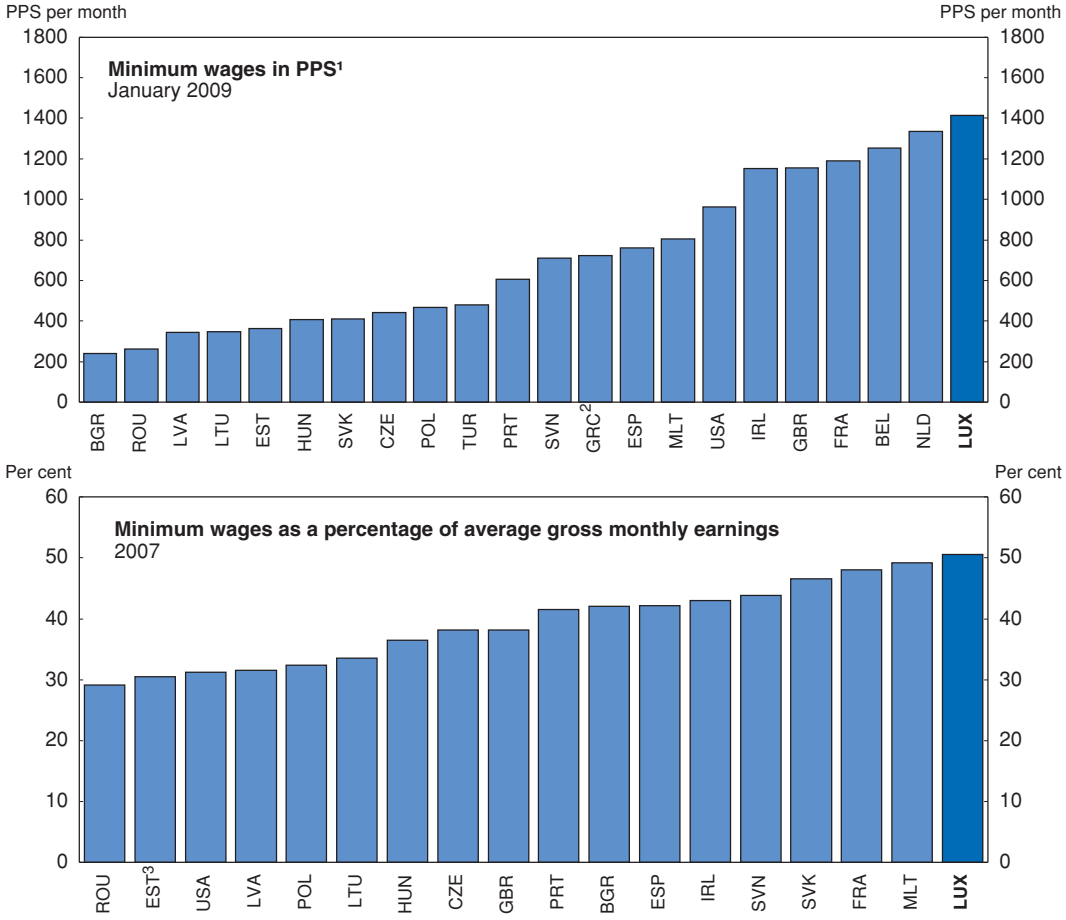
Most OECD countries have a minimum wage floor to protect the incomes of low-skill workers (Funk and Lesch, 2006). Basic microeconomic theory suggests that minimum wages reduce employment below the level that would apply without the price floor as long as the demand curve for labour is downward sloping (Neumark and Wascher, 2006). The magnitude of the employment effect depends on how responsive both labour demand and supply are to changes in wages, and whether firms have any monopsony power that allows them to depress wages below their market clearing levels.

The size of the impact of minimum wages on labour demand has been much debated in the empirical literature (Bassanini and Duval, 2006; Card and Krueger, 1995; Dolado *et al.*, 1996; Neumark and Wascher, 2006). Labour demand and supply elasticities vary across different types of workers and depend on the design of tax and benefit systems. For example, labour demand tends to be more price elastic for the young and unskilled, while labour supply tends to be more price elastic for women and second earners (Saez, Slemrod and Giertz, 2009). Overall, evidence from OECD countries (Immervoll, 2007) suggests that minimum wages can have important costs but these can be minimised when the minimum wages are:

- Are low enough to encourage employers to hire lower skilled workers and do not serve mainly to protect "insiders" with jobs.
- Take account of variations in the impact on different types of worker and macroeconomic circumstances.
- Take account of their interaction with the tax-benefit system.

When this international experience is applied to Luxembourg, it seems likely that the minimum wage is unduly constraining labour demand and reducing the labour market's adaptability to aggregate and industry specific shocks. Not only is the level of the minimum wage high both in absolute terms and as a share of average wages relative to other OECD countries, but the large share of private sector workers receiving the minimum wage suggests it is widely binding. In January 2009, the absolute level of the minimum wage (adjusted for differences in the price level across countries) was the highest in the OECD and at least 10% higher than the minimum wage in neighbouring countries (Figure 3.10). In 2007, around 18% of female full-time employees received the minimum wage, mostly in the services sector. The 20% premium for workers with vocational qualifications also suggests that the minimum wage is being used as an incomes policy rather than as a means to protect vulnerable workers from abuse. Moreover, the indexation of the minimum wage to average wages means that reductions in employment levels are likely to be the main adjustment mechanism to shocks.

Figure 3.10. **Minimum wages in selected countries**



1. Estimated values based on 2008 Purchasing Power Standards (PPS) data.
2. July 2008.
3. 2006.

Source: Eurostat.

StatLink http://dx.doi.org/10.1787/847318184175

To help raise labour demand and improve the efficiency and adaptability of the labour market, changes to the minimum wage should focus on the macroeconomic circumstances and the likely impact of minimum wage changes on employment rates of low-skilled and inexperienced workers. A good solution to help ensure that economic considerations are central would be to establish an independent Minimum Wage Council, along the lines of OECD countries such as Australia and the United Kingdom. These bodies set minimum wages taking into account the factors that influence demand as well as changes in the cost of living (Box 3.5). The decisions of such a Council are best delegated to experts. However, the role of the current tripartite groups could be incorporated into the new system in the form of submissions to annual minimum wage revisions. Broad social support for the new Council could be enhanced by ensuring that members come from a variety of social and employment

Box 3.5. **Minimum wage determination in Australia and the United Kingdom**

In 2010, 21 OECD countries had a statutory minimum wage, while another 6 others maintained wage floors through collective bargaining agreements with wide industrial coverage. In most countries, statutory minimum wages are set by the government, usually in consultation with social partners (employee and employer representatives). The criteria used to set minimum wages vary across countries, but are most commonly adjusted in line with changes in consumer prices or wage developments in the broader economy. Few countries explicitly take macroeconomic criteria or the impact of minimum wages on the employment prospects of low-wage workers into account. The level of statutory minimum wages (relative to average wages) also varies significantly across OECD countries, with some countries using wage minima as a genuine wage floor, and others using them as a quasi-incomes policy.

In the past decade Australia and the United Kingdom have both taken steps to delegate minimum wage determination to independent, specialist bodies, and take macroeconomic criteria and employment effects more explicitly into account.

The United Kingdom's Low Pay Commission (LPC) was set up in 1997 to define a National Minimum Wage and make a recommendation about the level at which it should be introduced. The Commission is made up of 9 commissioners from union, employer or labour economics backgrounds. In making decisions, it relies on its own statistical and economic analyses as well as written and oral evidence from key stakeholders. Although the LPC focuses on earnings and employment developments when setting the minimum wage, it also takes into account consumer prices, firms' non-labour costs and profitability, as well as changes in productivity amongst the low-paid. The government has accepted all of the Commission's recommended minimum wage changes since its inception.

In Australia until 2006, minimum wages, together with minimum employment conditions for people working outside the scope of collective bargaining agreements, were set by the Australian Industrial Relations Commission (AIRC), a legal tribunal that also certified collective bargaining agreements and resolved industrial disputes.

Between 2006 and 2009, responsibility for minimum wage decisions was transferred to the independent Fair Pay Commission (FPC), which, when setting minimum wages was required to more explicitly take into account the impact of changes to the minimum wage on the employment prospects of the unemployed and those in low-paid jobs, and broader competitiveness criteria. Previously, the AIRC had focused on providing a safety net for the low-paid. Like the LPC in the United Kingdom, the FPC was staffed by economic experts, as well as people from a union or employer background, and made decisions based on its own research, as well as submissions from stakeholders.

Box 3.5. **Minimum wage determination in Australia and the United Kingdom** *(cont.)*

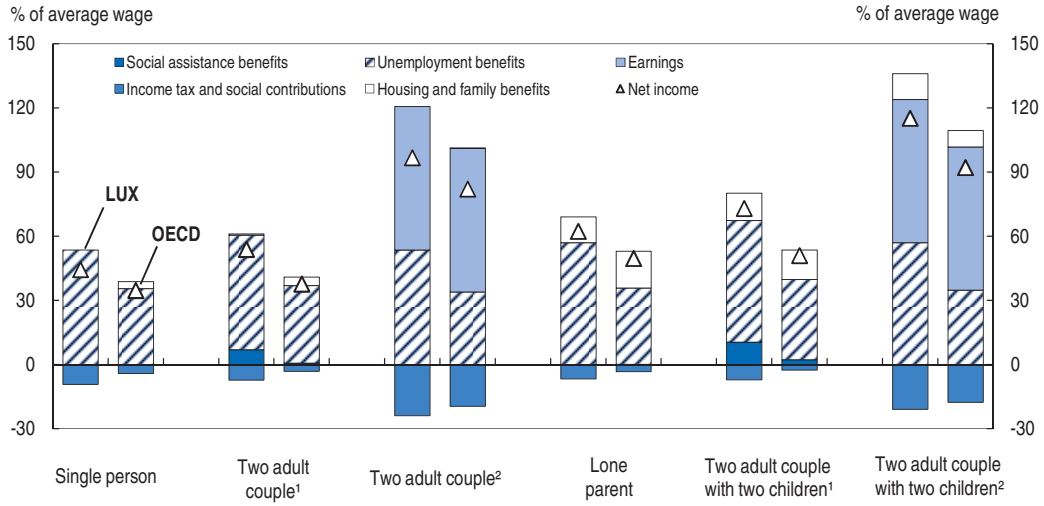
From 2010, responsibility for setting the minimum wage will be transferred to a new body – Fair Work Australia (FWA). Although FWA is also independent from the government, its President has a legal, rather than an economic background. The Minimum Wage Panel that has been set up within FWA will also be required to take macroeconomic criteria into account, but will have a greater emphasis on social inclusion and wage inequality than the FPC.

backgrounds. Reaching the social consensus necessary to establish such a Council could take some time. During the interim period, the minimum wage could be allowed to fall relative to average wages by indexing it to core inflation rather than average wages, and the minimum wage premium for workers holding trade qualifications phased out.

However, changes to the system of setting minimum wages also require reforming the design of social transfers. The minimum guaranteed revenue (RMG) and unemployment insurance interact to produce high net replacement rates compared with other OECD countries (Figures 3.11 and 3.12). Without social assistance, the average unemployment net replacement rate across four family types and two income levels over five years is 25%, well below the OECD average. But, the average net replacement rate is 70% higher once the RMG and other complementary allowances for children are taken into account. In addition, the RMG acts as a gateway to a wide range of other in-kind benefits and allowances. The RMG substantially boosts the income of low-wage households to an extent that is sizeable compared to most other OECD countries, particularly for one-earner couples. This is because the first 30% of a household's labour market earnings are not clawed back through withdrawn benefits or higher taxes. However, because benefits are withdrawn one-for-one with earnings once the 30% threshold is exceeded, effective marginal tax rates are very

Figure 3.11. **Out-of-work tax-benefit position**

With previous earnings at 67% of average wage (AW), 2007



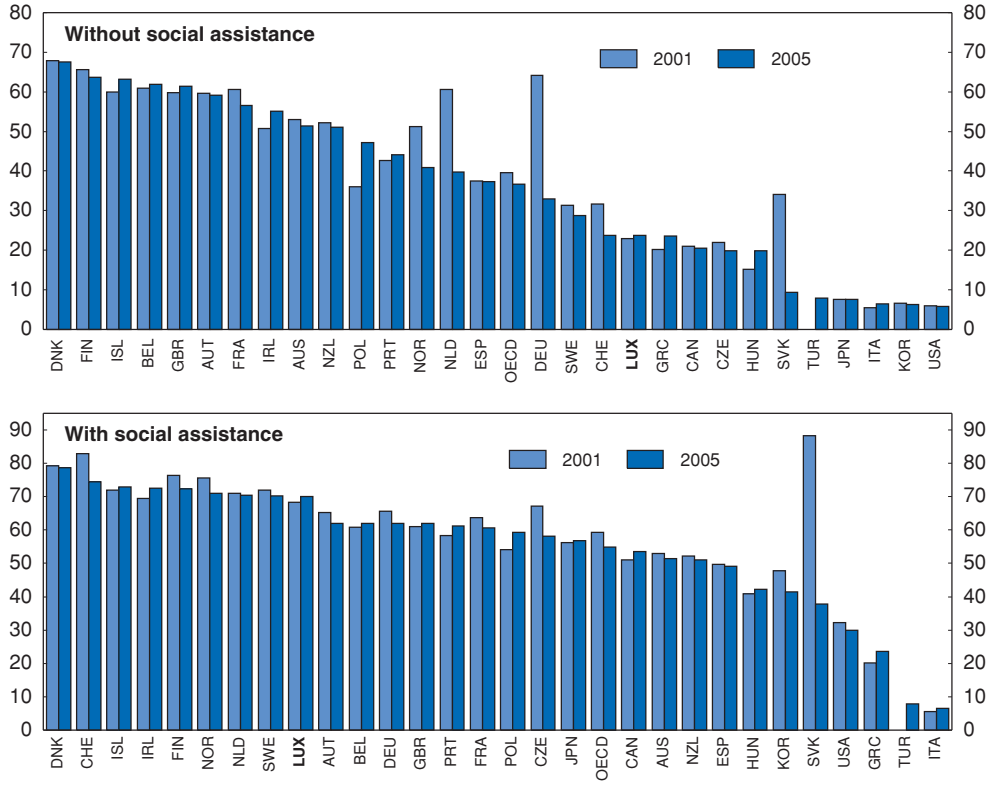
1. First spouse, unemployment benefits (previous earnings = 67% of AW); second spouse inactive.
2. First spouse, unemployment benefits (previous earnings = 67% of AW); second spouse's earnings = 67% of AW.

Source: OECD, *Tax-Benefit Models*.

StatLink http://dx.doi.org/10.1787/847331232843

Figure 3.12. **Average of net replacement rates over a period of 60 months**[1]

In per cent



1. Unweighted averages over 60 months of unemployment, for earnings levels of 67% and 100% of AW (APW in the case of Ireland, Korea and Turkey) and four family types (single persons, lone parents, one-earner couples with and without children). Any income taxes payable on unemployment benefits are determined in relation to annualised benefit values (*i.e.* monthly values multiplied by 12) even if the maximum benefit duration is shorter than 12 months. For married couples the percentage of AW relates to one spouse only; the second spouse is assumed to be inactive with no earnings. Children are aged four and six and neither childcare benefits nor childcare costs are considered. OECD average excludes Turkey.

Source: OECD, *Benefits and Wages 2007: OECD Indicators*.

StatLink http://dx.doi.org/10.1787/847334646474

high for part-time workers increasing their hours. Furthermore, there is requirement to reimburse payments received under the RMG under certain conditions. This can further reduce the incentive to return to paid employment given that this can trigger the repayment of benefits received.

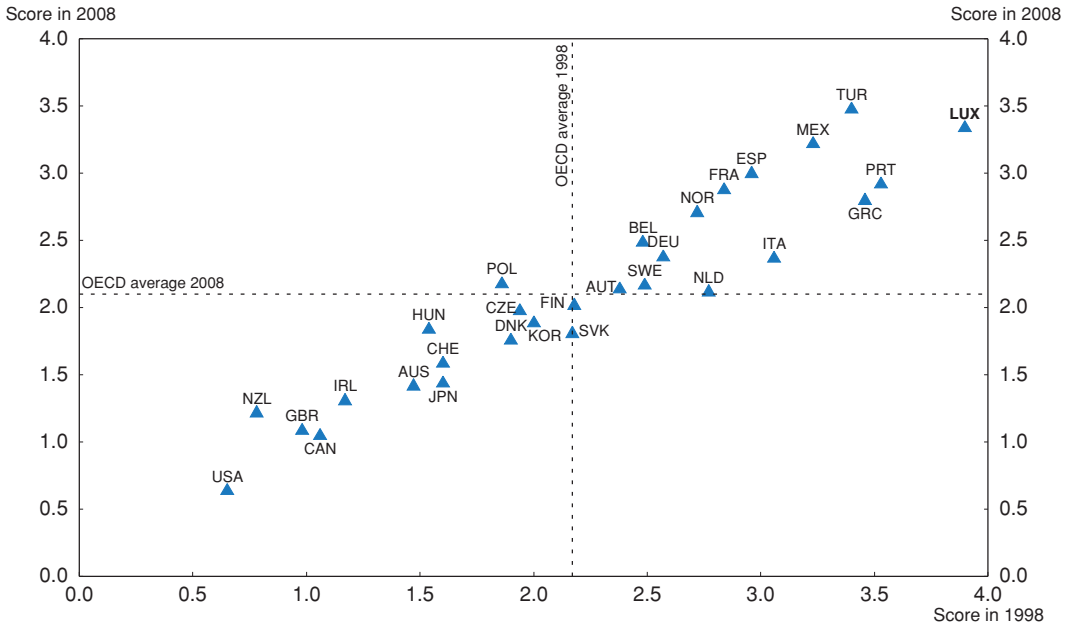
Generous benefits are likely to mean that employment levels among Luxembourg residents are constrained by transfer-induced barriers to the supply of labour, in addition to the impact of the minimum wage on labour demand for younger resident workers. The present configuration of the tax-benefit system in Luxembourg raises the reservation wages of residents, especially of more mature workers, to a high level relative to the minimum wage. At the same time, there is a large pool of potential cross-border workers in neighbouring regions for whom working for the Luxembourg minimum wage is highly attractive relative to the social benefits available in their countries. Any reforms to minimum wages that increase firms' hiring incentives could thus raise total employment without having much impact on resident employment unless there are simultaneous reforms to increase their incentives to work.

More flexible employment protection would boost productivity and create jobs for young people

The employment protection legislation (EPL) system in Luxembourg is the strictest in the OECD (Figure 3.13). Of particular concern are the heavy restrictions on temporary contracts. Although it is important to avoid dualism in the labour market, temporary contracts can be well-adapted to the circumstances of some employers and workers. Restrictive regulation of these contracts limits their use and only just under 7% of workers were on temporary contracts in 2008, mostly in the education and hotels and restaurant sectors. Although the overall strictness of rules governing regular contracts are only slightly above the OECD average, collective dismissals for those on regular contracts are particularly tightly regulated (OECD, 2006). There have not been major reforms in this area over the past two decades.

Figure 3.13. **Strictness of employment protection**[1, 2]

Scale index of 0-6 from least strict to strictest regulation



1. Luxembourg data are from 2003 and 2008.
2. The OECD indicators of employment protection are synthetic indicators of the strictness of regulation on dismissals and the use of temporary contracts. For more information and full methodology, see *www.oecd.org/employment/protection*.

Source: OECD, *Labour, Employment Protection database*.

StatLink http://dx.doi.org/10.1787/847352832368

Cross-country empirical evidence suggests that overall labour utilisation rates are not robustly correlated with the tightness of employment protection legislation (EPL). This is because there are offsetting effects of tight EPL on reducing employers' hiring incentives and limiting employers' ability to shed labour (Bassanini and Duval, 2006). However, there is evidence that strict EPL increases the average duration of unemployment spells along with employment rates of older workers at the expense of younger workers, and inhibits the reallocation of labour across sectors and firms, thereby reducing labour productivity. Although EPL may protect workers for a time after a large shock, the negative consequences of tight EPL may tend to show up most strongly in the recovery phase of shocks when labour may need to be reallocated between sectors and tight EPL inhibits firms' hiring incentives.

To reduce the negative impacts of tight EPL, the 2006 *Survey* recommended several reforms. These included removing undue restrictions on temporary contracts by allowing a longer total duration of fixed-term contracts and more renewals;[2] lifting thresholds for collective dismissals; reducing additional notice periods and severance payments following the negotiation of social plans; and extending trial periods for regular contracts to ensure that protection for younger workers with low seniority does not unduly reduce employers' incentives to hire younger workers. Implementing these reforms now would encourage recovery in the labour market. Luxembourg's youth employment rate is amongst the lowest in the OECD. If Luxembourg reduced its EPL score to the OECD average, the youth employment rate in normal times could be boosted by up to two percentage points (Bassanini and Duval, 2006), especially if accompanied by reforms to boost labour supply. The positive effects on youth employment could be even larger in the aftermath of the current recession (OECD, 2008a).

Policy reforms to raise labour supply

Reforming wage indexation, minimum wages and employment protection legislation would boost aggregate employment rates by ensuring that legislated wage and employment conditions do not unduly reduce firms' demand for labour and price marginal workers out of the labour market. To ensure that these reforms also translate into higher employment rates amongst resident workers and labour supply is raised more generally, reforms to Luxembourg's tax and benefit system are necessary. Social spending on income support has also increased substantially in recent years. In terms of share in net national income, Luxembourg is second after Denmark in the OECD (Grubb, 2007).

Low-wage and inactivity traps can be alleviated by in-work-benefits

Labour supply decisions can be analysed through a framework that assumes that individuals choose to work the number of hours that satisfies their own preferences for consumption and leisure subject to a budget constraint (Immervoll *et al.*, 2005).[3] Work incentives are influenced by marginal effective tax rates (METR), which relate to how much can be gained by working more, and participation tax rates (PTR), which relate to how much can be gained from working at all. Although marginal tax rates in Luxembourg are relatively low, the combination of generous benefit replacement rates and the rapid withdrawal of many of those benefits raise METRs and PTRs for some low-income earners. Overall, METRs for average hourly wage employees seeking to increase their hours are close to the OECD average. However, METRs for one-earner married couples (both with and without children) moving from ⅓ to ⅔ of full-time hours are the highest in the OECD. These high rates imply that some households within this income range would be financially better off not increasing their hours worked (OECD, 2007). These weak incentives are largely the result of the rapid claw back of the RMG as earnings increase.

Participation tax rates for the unemployed are also often very high. PTRs for the short-term unemployed in Luxembourg are high for all household types, and the financial benefit of taking a full-time job, or accepting a lower paying job, in the first year of unemployment is particularly low compared to the OECD average (Table 3.3). Although the reduced benefits under the RMG mean that the incentives for the long-term unemployed to take average wage jobs are higher than for the short-term unemployed in most cases, PTRs remain high for individuals transitioning from the RMG to minimum wage or other low-paying jobs. The rapid withdrawal of benefits as labour market earnings increase also affects the

Table 3.3. **Participation tax rates (PTR) for short-term unemployed moving into low-wage jobs**[1]

2005, different working hours, in percentage

	Less than 2/3 of full-time						Full-time or more					
	No children			Two children			No children			Two children		
	Single person	One-earner married couple	Two-earner married couple	Lone parent	One-earner married couple	Two-earner married couple	Single person	One-earner married couple	Two-earner married couple	Lone parent	One-earner married couple	Two-earner married couple
Australia	58	50	25	56	73	50	49	44	27	56	66	45
Austria	82	83	87	87	89	91	70	70	73	73	74	76
Belgium	85	75	76	77	73	76	76	67	69	70	66	69
Canada	90	90	90	86	88	97	72	73	71	79	80	79
Czech Republic	78	82	81	77	66	85	62	66	64	72	62	69
Denmark	75	75	75	80	80	78	78	76	75	81	81	77
Finland	64	75	64	77	80	64	68	76	68	80	82	72
France	74	70	74	70	69	72	77	74	76	73	72	76
Germany	88	84	102	93	93	108	77	73	86	80	79	90
Greece	57	60	45	67	70	51	51	53	43	55	57	44
Hungary	62	65	62	65	65	65	61	62	61	64	64	62
Iceland	73	59	74	79	64	79	63	53	63	68	58	69
Ireland	41	56	40	9	54	44	42	54	42	32	58	45
Italy	89	91	89	90	89	92	72	75	72	77	77	75
Japan	67	65	68	64	63	72	52	51	53	49	49	55
Korea	45	45	45	46	45	45	35	35	35	35	34	34
Luxembourg	90	88	85	91	86	85	90	87	86	93	89	89
Netherlands	72	70	70	71	72	69	76	75	75	76	76	75
New Zealand	62	44	35	66	48	50	51	47	31	69	55	42
Norway	74	74	74	84	76	76	74	74	74	81	76	76
Poland	82	83	65	99	72	71	66	67	55	85	68	59
Portugal	113	111	116	108	108	115	86	81	87	83	79	87
Slovak Republic	56	51	61	48	43	61	47	39	50	42	34	51
Spain	72	71	72	81	80	85	70	69	70	79	79	81
Sweden	74	74	74	82	77	74	74	74	74	80	76	74
Switzerland	77	79	75	88	83	82	78	79	77	87	89	84
Turkey	69	69	69	69	69	69	57	57	57	57	57	57
United Kingdom	68	68	38	73	71	43	57	57	37	68	68	39
United States	76	74	76	54	50	75	71	69	71	62	58	72

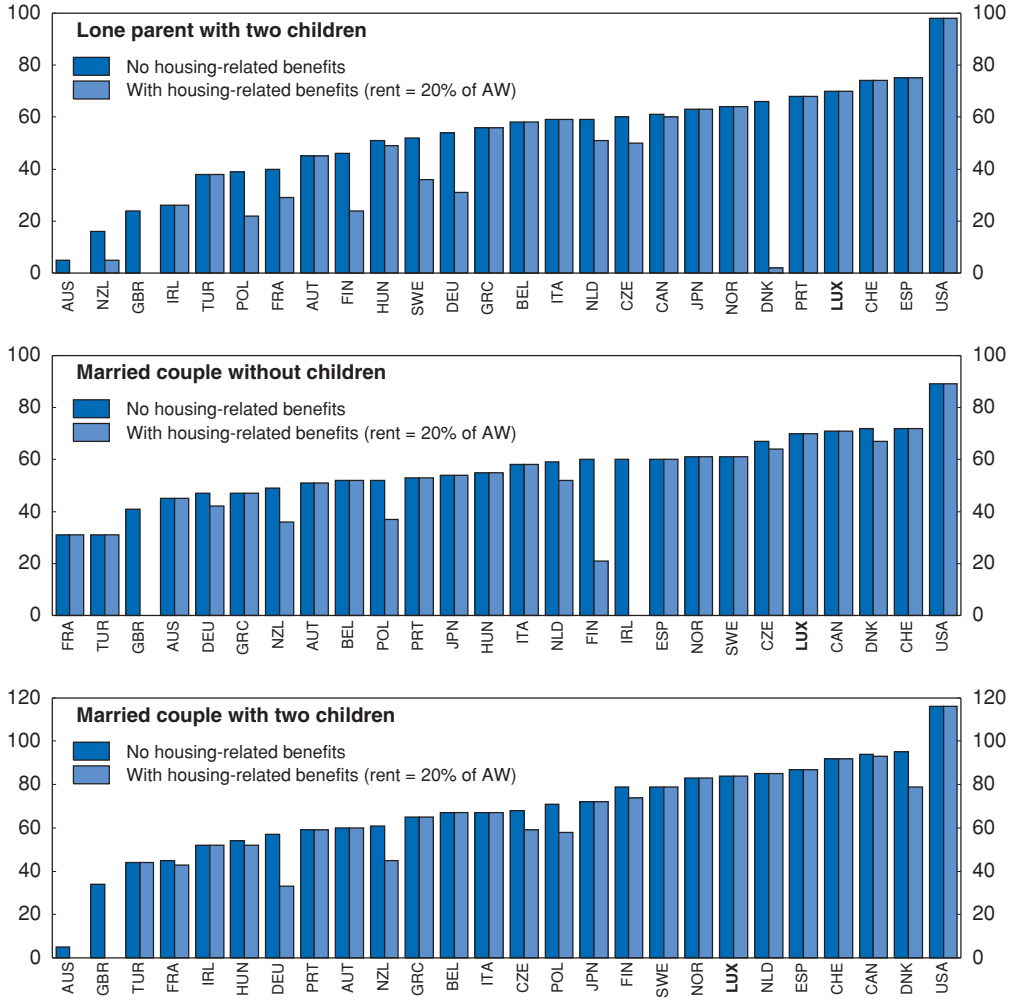
1. The short-term unemployed person is assumed to have earned an average wage before becoming unemployed.

Source: OECD, *Benefits and Wages 2007: OECD Indicators*.

primary objective of the welfare system to ease poverty (OECD, 2007): for lone parents as well as one-earner couples, gross earnings in the labour market have to reach 70% of the average wage before they move above a poverty threshold of 60% of the median income (Figure 3.14).[4]

Figure 3.14. **Gross earnings required to reach a poverty threshold of 60% of median income**[1]

Percentage of average worker wage (AW), 2005



1. Results are shown in relation to the 60% of median income poverty threshold computed for a year around 2000 and uprated to 2005 with the consumer price index and relate to persons earning hourly wages equal to the weekly AW divided by 40. In countries where tax-benefit rules depend on working hours (*e.g.* in the case of IW benefits), net incomes may differ for different hourly wage rates. In the married-couple case, it is assumed that there is only one earner.

Source: OECD, *Benefits and Wages 2007: OECD Indicators*.

StatLink http://dx.doi.org/10.1787/847377322113

The costs of these potential low-wage and inactivity traps in Luxembourg are hard to measure precisely. There is a dearth of empirical studies attempting to identify how the design of the tax-benefit system affects labour supply in Luxembourg and the issue is complicated by the large flows of cross-border workers from neighbouring countries with different wage setting and tax-benefit systems. Nevertheless, the costs are likely to be high (Pierrard, 2008). Empirical studies of cross-country differences in employment rates

suggest that high unemployment benefit replacement rates tend to significantly reduce employment rates (Bassanini and Duval, 2006), while microeconometric evidence for other countries suggests that labour supply is very sensitive to high participation tax rates (Blau and Kahn, 2007; Blundell and Macurdy, 1999; Chetty, 2009; Eissa and Hoynes, 2006; Gruber and Saez, 2002; Immervoll *et al.*, 2005; Saez *et al.* 2009).

Cross-country econometric analysis suggests that, if Luxembourg were to reduce its average unemployment benefit net replacement rate (measured over five years) to the average of OECD countries, the unemployment rate could fall by up to 1 percentage point (Bassanini and Duval, 2006). Although strong economic growth over the past decade has somewhat masked these weaknesses in the design of the tax-benefit system, the simultaneous rise in long-term unemployment amongst less skilled and inexperienced resident workers is a sign that the labour market is not functioning as well as it should. Analysis of labour market flows within Luxembourg is also consistent with weak labour supply incentives; amongst the individuals that became unemployed between 2001 and 2006, 48% were still unemployed 12 months later (Brosius and Zanardelli, 2009). The fact that neighbouring countries have recently undertaken labour-supply enhancing reforms, while policies in Luxembourg have remained unchanged, is likely to have further reduced residents' relative incentives to work.

A number of reform options could raise incentives to supply labour in Luxembourg. Unemployment benefit replacement rates could be reduced, or phased down with the length of the unemployment spell,[5] and eligibility tightened for young people without work histories (OECD, 2006). Increases in social benefits could be decoupled from average wages and instead indexed to core inflation. A more comprehensive approach to increasing work incentives that would complement these reforms would be through a system of in-work benefits (IWBs). Around half of OECD countries have introduced such a system over the past two decades (Immervoll and Pearson, 2009). Although the design of IWBs varies across countries, they generally work by offering a tax credit that is triggered when low-income individuals or families reach a particular threshold of hours worked in a week or month. Their key objectives are to raise employment rates of target groups by increasing the financial rewards for remaining in or taking up low-paid work, while at the same time increasing incomes of disadvantaged workers and their families. Their advantages over high minimum wage floors are that they can support the incomes of the low-skilled without simultaneously reducing firms' demand for low-skilled workers. They can also be more narrowly targeted at the working poor. The advantage of IWBs over standard out-of-work benefits is that they improve labour supply of target groups by reducing the high participation tax rates that often apply to disadvantaged groups transitioning from welfare to work. The principal disadvantages of this type of scheme include reducing the relative living standards of people who cannot find employment and higher effective marginal tax rates further up the income distribution as in-work benefits are phased out.

Accumulated empirical evidence from those countries that have introduced in-work benefits (Immervoll and Pearson, 2009; Blundell and Hoynes, 2004; Eissa and Hoynes, 2006) suggests that, although the positive employment effects amongst low-skilled and other disadvantaged groups have been widespread, IWBs have been most effective in achieving their twin equity and efficiency goals when:

- They are generous enough to significantly alter the benefits of working *vis-à-vis* not working. For example, the *Prime pour l'emploi* (PPE) introduced in France appears to have

had only a small impact on employment rates of low-skilled workers in part because the in-work benefits are low.

- It is relatively simple for targeted individuals and households to assess their eligibility, and then apply for and receive the benefits they are entitled to.
- They distinguish between low wages and low working hours to ensure that benefits are targeted at the low-skilled.
- They target all low-skilled individuals facing large work disincentives, and not just families with children.
- They do not in parallel create disincentives to work for second-earners.

Given these complex issues, the precise design of a system of in-work benefits for Luxembourg would have to be carefully evaluated. The introduction of such a system would also have to be accompanied by complementary reforms to minimum wages to ensure that the reform both raised work incentives and boosted disposable incomes for targeted individuals and families. IWBs would have to be customised to the distribution of working hours in Luxembourg (Immervoll and Pearson, 2009).[6] Although the benefits of well designed in-work benefits could be substantial (Box 3.6), it must be remembered that

Box 3.6. **The simulated impact of introducing in-work benefits in Luxembourg**

Evidence from an OECD micro-simulation study implies that the introduction of a simple in-work benefit financed by higher taxes on higher income workers could enhance welfare in Luxembourg (Immervoll *et al.*, 2005), depending on the social welfare function. Redistribution with in-work benefits tends to be less costly than by means of out-of-work benefits. Table 3.4 compares the simulated impact of two policies that redistribute income from high-income to low-income households under different assumptions about the participation elasticity (η) and the hours of work elasticity (ε). The "demogrant" policy (pure lump-sum transfer based on demographic characteristics) redistributes income from high-wage earners to both low-wage earners and the unemployed. The "working poor" policy redistributes incomes from high-wage earners to low-wage earners, while keeping the incomes of the unemployed constant. Efficiency denotes the marginal efficiency cost of the extra tax used to finance the higher welfare costs – a negative number is an efficiency cost. The trade-off denotes the ratio of the welfare reduction of losers to the welfare increase of gainers from the reform.

Table 3.4. **The simulated welfare effects of a "working poor" policy in European countries**

	Benchmark scenario				Large hours responses				Working poor policy		
	η = 0.2 (on average) and ε = 0.1				η = 0.2 (on average) and ε = 0.2						
	Demogrant policy		Working poor policy		Demogrant policy		Working poor policy		Share of gainers across family income deciles		
	Efficiency	Trade-Off	Efficiency	Trade-Off	Efficiency	Trade-Off	Efficiency	Trade-Off	Average deciles 1-3	Average deciles 4-6	Average deciles 7-10
Luxembourg	–0.26	1.98	–0.06	1.29	–0.38	2.82	–0.22	2.71	0.90	0.67	0.32
Scandinavian countries	–0.67	13.26	0.42	3.10	–0.83	20.89	No gainers		0.82	0.55	0.47
Other European countries	–0.36	2.88	–0.02	1.28	–0.50	5.38	–0.27	7.35	0.79	0.64	0.36

Source: Immervoll, H. *et al.* (2007), "Welfare Reform in European Countries: A Microsimulation Exercise".

Box 3.6. **The simulated impact of introducing in-work benefits in Luxembourg** *(cont.)*

The simulations suggest that under most plausible scenarios the "working poor" policy involves a smaller loss in efficiency and a smaller trade-off than the "demogrant" policy in Luxembourg, though the relative effects on efficiency and the trade-off depend on both the participation and the hours of work elasticity (Table 3.4). For example, if the participation elasticity was zero (which is highly unlikely), there would be no relative efficiency dividend in Luxembourg under the working poor policy. Similarly, the trade-off between the welfare reduction of losers and the welfare increase of gainers increases as the hours of work elasticity increases.

Overall, the aggregate relative benefits of a "working poor" policy in Luxembourg are lower than in many other European countries where average participation tax rates are considerably higher. Nevertheless, because of the high marginal tax rates that apply to some part-time workers, as well as the high participation tax rates for the short-term unemployed and those long-term unemployed looking for low-wage or part-time employment, in-work benefits could be particularly beneficial in raising labour supply of these groups. In addition, the gainers from a well-designed "working poor" policy are likely to be heavily concentrated in the bottom half of the income distribution.

policies to make work pay do not "solve" the problem of low employment and low wages of those with low skills. In the case of low-skilled labour, the most direct way of addressing limited earnings potential and employability is to improve skills and human capital of this group (Immervoll and Pearson, 2009).

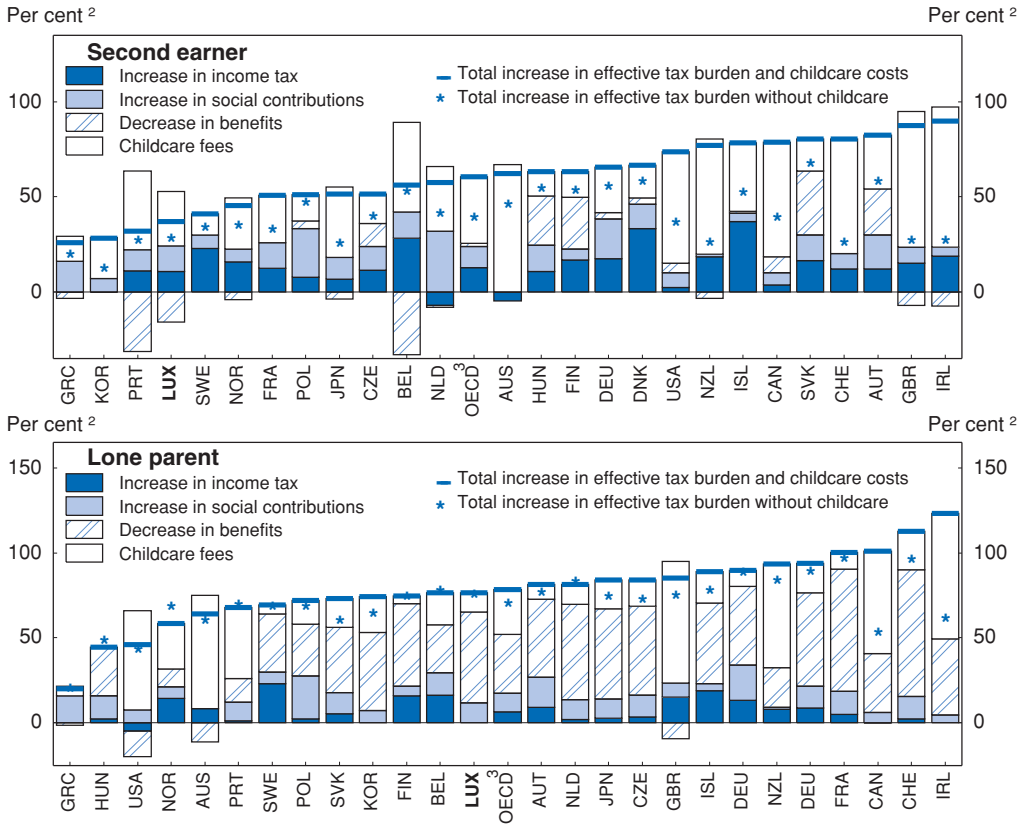
Work incentives for second-earners and lone parents could be improved

Empirical research suggests that the labour supply of second earners (usually women) with children and sole parents is more sensitive to economic incentives than for other types of workers. Out-of-pocket childcare costs can also be an important barrier to raising their labour force participation rates (Blau and Kahn, 2007; Immervoll *et al.*, 2008; OECD, 2007). Participation and marginal tax rates on second earners and sole parents should therefore be kept low and child care costs should not soak up too much of the additional income derived from working.

Overall, Luxembourg appears to do a reasonable job of preserving work incentives for many second earners compared to other OECD countries (Immervoll *et al.*, 2008). Although joint taxation of couples usually raises effective tax rates for second earners, there is a generous tax deduction if they work. This helps to keep participation tax rates for second earners lower than for primary earners, or second earners in other countries. In addition, generous rebates keep out-of-pocket childcare expenses low for most families, despite the fact that fees charged by childcare centres rank amongst the highest in the OECD (32% of the average wage). This implies that second-earners keep most of their additional earnings, even when taking a low-wage job (OECD, 2007). For example, second-earners in Luxembourg with two children under the age of five taking up a full-time job retain 63% of their additional earnings once income taxes and social contributions, reductions in benefits and childcare fees are taken into account (Figure 3.15). This is high compared to other countries, where out-of-pocket childcare fees can soak up more than half of additional earnings.

Figure 3.15. **Moving into low-wage jobs: what is left after childcare**

Childcare fees and change of taxes and benefits relative to earnings[1]



1. Transitions from labour-market inactivity to a full-time low-wage job (67% of AW). Same family situations as in Chapter 3 (Table 3.5) of the source publication except that children are aged two and three. Assumes full-time centre based care while in work and no childcare costs while out of work. Benefits available only on a temporary basis immediately following the transition into work are not taken into account. See sub-section c for information on childcare fees and Annex A of the source publication for further details on the model calculations.
2. Per cent of gross earnings in new job.
3. OECD average excludes Italy, Mexico, Spain and Turkey.

Source: OECD, *Benefits and Wages 2007: OECD Indicators*.

StatLink http://dx.doi.org/10.1787/847426102566

Nevertheless, some second earners and lone parents still face barriers to increasing their labour supply and, despite increases in recent years, employment rates of second-earners are low compared with other OECD countries. Distortions include:

- Participation tax rates for low-income second earners are close to 100% when spouses are in the bottom decile of the earnings distribution.
- Marginal tax rates for second earners are higher than marginal tax rates on primary earners when primary earners are in the top half of the earning distribution, which could reduce second earners' incentive to increase hours (Table 3.5).
- Lone parents moving into low-wage jobs keep just 23% of their additional earnings once child-care costs and changes in taxes and benefits are taken into account.

Reforms could focus on raising the incentives of lone parents to take up employment and reducing participation tax rates on second earners with very low-income spouses. This could best be done within a system of in-work benefits as outlined above. With regard to childcare, the system of rebates does a good job of keeping out-of-pocket expenses low.

Table 3.5. **Marginal tax rates for second earners**

Countries	Primary earners	Secondary earners	PE tax/ SE tax
Austria	0.52	0.44	1.19
Belgium	0.65	-0.60	1.08
Denmark	0.58	0.54	1.07
Finland	0.54	0.47	1.16
France	0.53	0.53	0.99
Germany	0.54	0.59	0.92
Greece	0.37	0.28	1.32
Ireland	0.43	0.43	1.01
Italy	0.52	0.48	1.07
Luxembourg	0.41	0.44	0.95
Netherlands	0.52	0.47	1.12
Portugal	0.44	0.42	1.03
Spain	0.37	0.32	1.17
Sweden	0.59	0.54	1.09
United Kingdom	0.37	0.31	1.21

Source: Immervoll, H. *et al.* (2008), "An Evaluation of the Tax-Transfer Treatment of Married Couples in European Countries", EUROMOD Working Paper, No. EM 7/08.

However, the labour force participation rates of second earners and lone parents relative to primary earners are amongst the lowest in the OECD, as are childcare enrolment rates for children under the age of four (OECD, 2007). The high fees charged by childcare centres are suggestive of significant supply constraints, while the generous parental and educational leave entitlements outlined earlier may also be contributing to the reduced labour supply of second earners. More research is warranted to understand the relative importance of these different factors.

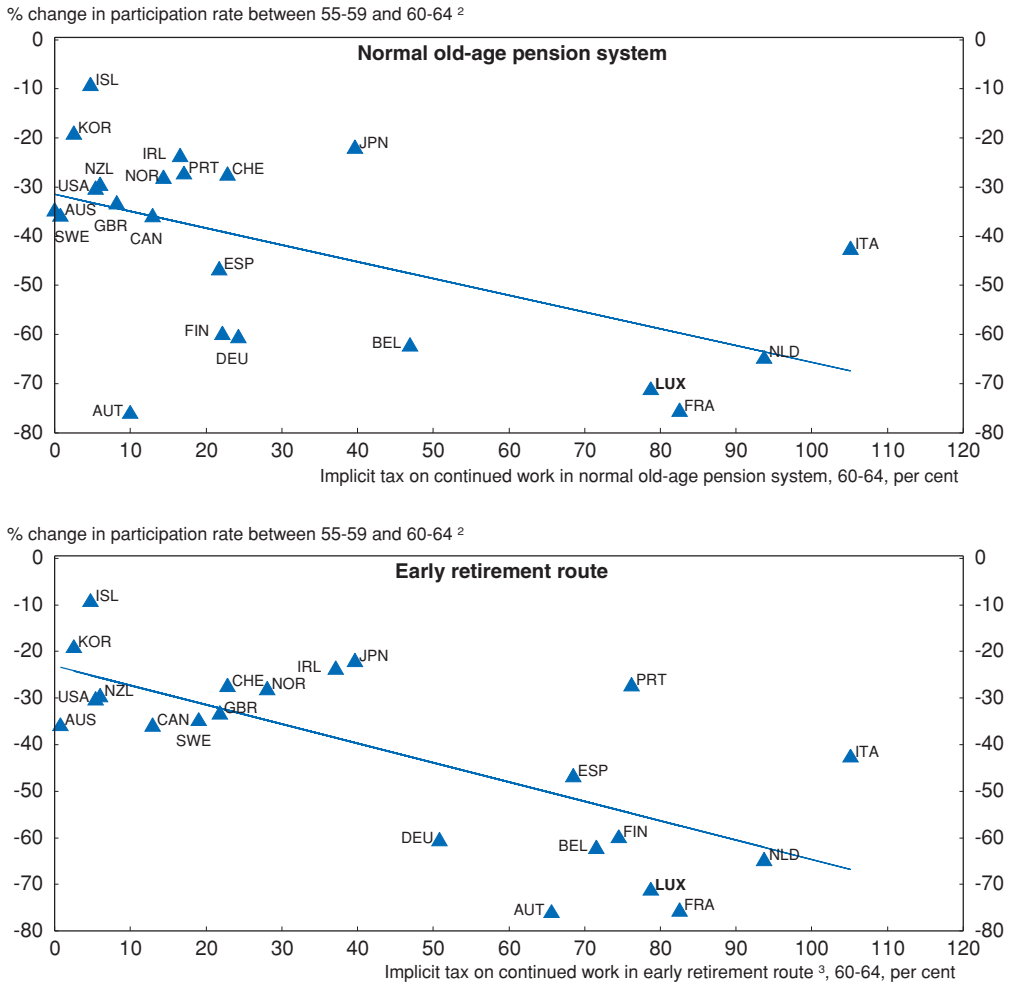
Incentives for older workers to remain in employment are weak

Generous pension replacement rates and access to pre-pension and early retirement schemes help to explain the very low employment rates of older workers in Luxembourg compared to other OECD countries (Duval, 2003). Although increasing post-secondary education rates mean that fewer workers are qualifying for early retirement schemes over time, there is still little incentive to work beyond the age of 60.[7] There is a statistically significant negative correlation across OECD countries between implicit taxes and changes in labour force participation amongst older workers (Figure 3.16). Luxembourg fits this pattern well. Implicit tax rates on continued work for workers over the age of 60 are amongst the highest in the OECD, as is the decline in labour force participation between the ages of 55-59 and 60-64.

The 2006 *Survey* had many recommendations for increasing older worker participation rates and these still serve to boost employment. These included phasing out pre-pension systems and increasing the discount on early retirement pensions relative to those taken at the official retirement age to the actuarially neutral rate. In addition, incentives to work could be strengthened by reducing the overall generosity of pension benefits and making it harder to accumulate imputed years of contributions. Such reforms would reduce implicit tax rates on continued work and would be a particularly important avenue for bolstering labour utilisation rates as Luxembourg's population continues to age. Similar reforms have been very effective in other European countries such as France and the Netherlands. If the

Figure 3.16. **Old male participation rate and implicit tax rates on continued work**

Single worker APW earnings, 1999[1]



1. Because the data underpinning this figure are from 1999, some countries' implicit tax rates have changed considerably. Consequently, this figure is no longer representative for Switzerland, Finland, the Netherlands and France.
2. Calculated as the difference between the 60-64 and 55-59 participation rates divided by the 55-59 participation rate, in per cent.
3. The early retirement route is modelled as the unemployment benefits / assistance pathway into retirement with the exception of Ireland, where the modelling refers to the pre-retirement allowance, and Luxembourg, where disability benefits were considered, given their widespread incidence among pensioners. In those countries where it was considered that no early retirement scheme could be widely used to withdraw from the labour market before the minimum pensionable age (Australia, Canada, Iceland, Italy, Japan, Korea, New Zealand, Norway, Sweden, Switzerland and United States) the retirement scheme considered in the chart is simply the regular old-age pension system.

Source: Duval, R. (2003), "The Retirement Effects of Old-Age Pension and Early Retirement Schemes in OECD countries", *OECD Economics Department Working Papers*, No. 370, OECD, Paris; and OECD (2010), *Labour Force Statistics database*.

StatLink http://dx.doi.org/10.1787/847444762650

implicit tax rate on continued work in Luxembourg was reduced to the OECD average, the employment rate amongst 55 to 64 year olds could be boosted by more than 5 percentage points (Bassanini and Duval, 2006). At the same time, insufficient incentives to remain in work are just one of the structural problems with Luxembourg's pension and retirement system (Chapter 1). Consequently, reforms addressing work incentives must also be considered within the broader context of improving pension sustainability.

Improving activation policies and labour market programmes would reduce unemployment

Publicly-funded employment services can be an effective way of identifying the barriers to employment. Intensive assistance can either match the unemployed with suitable vacant jobs with local firms, or offer retraining and other support to gain the skills necessary to find a job. Employment services can also help to identify those unemployed not engaging in active job search and offer a range of carrots and sticks to increase the intensity of job search. Activity testing is an essential complement to changes in tax-benefit systems that raise financial incentives to look for and accept low-wage jobs. More generally, high replacement rates are only sustainable if there is a strong approach to labour market activation. Empirical evidence indicates that employment rates are higher in those countries that spend more money per unemployed person on active labour market programmes (ALMPs) such as training, job creation schemes and wage subsidies to firms (Bassanini and Duval, 2006).

The Luxembourg employment service (ADEM) does not provide adequate support to jobseekers and firms (Grubb, 2007; OECD, 2006). Caseworkers assigned to unemployed people are overburdened, which reduces the effectiveness of assistance. The agency often misclassifies job seekers' skills and placement officers do not always understand employers' needs, leading to unsuitable people being sent to interviews. In turn, this undermines confidence in the agency and means that employers tend to draw employment from the pool of cross-border workers instead of domestic workers looking to change jobs. There are also too many placement services catering to different types of unemployed people, which spreads resources too thinly and prevents co-ordination of activities and information flow.

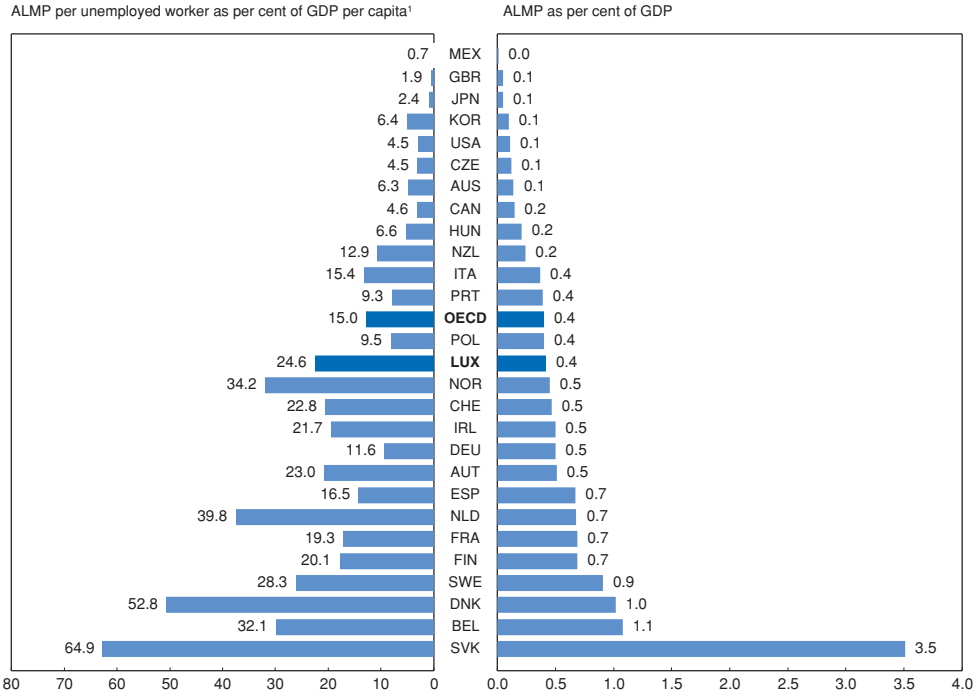
The activation system has other weaknesses. Although activity testing has increased in recent years and the agency is empowered to suspend insurance if the unemployed do not comply with job search or training requirements, there is insufficient gradation in penalties effectively and fairly to encourage job search. A further problem is the split responsibility for the unemployed between ADEM and the SNAS (*Service national d'action sociale*) that administers the RMG. Unemployed people sign integration agreements and become eligible for more intensive assistance only once they are no longer eligible for unemployment insurance. This means that short-term unemployed people at high risk of becoming long-term unemployed do not receive adequate early intervention. In addition, the two organisations run separate labour market programmes and it appears that too many people are assessed as unfit for, or unable to find, work.

The surge in unemployment since the beginning of the financial crisis means that it is crucial that support services for the unemployed operate effectively to help prevent short-term unemployment translating into long-term unemployment. This can be achieved by reducing the caseloads of ADEM employees by adding staff and rationalising the placement services. This would allow more personalised assistance for the unemployed (OECD, 2006). The organisation should be more responsive and there is scope to encourage competition between local employment agencies by issuing public ratings of their success in matching jobseekers with available jobs. More could also be done to ensure a seamless transition between unemployment insurance and the RMG and provide early intervention to jobseekers at risk of becoming long-term unemployed. This could be done by instituting a mandatory assessment of jobseekers' progress after three months of registration with ADEM: those assessed as at risk being required to sign integration

agreements similar to that required of RMG recipients. Risk assessments should then be repeated as the length of an unemployment spell increases. Implementing the recommendations in this regard of the 2006 *Survey* would be particularly useful in the current circumstances of increased unemployment.

Job prospects amongst the unemployed and cost effectiveness would benefit from a better design of labour market programmes. Luxembourg's spending on active labour market programmes per unemployed person (scaled by GDP per capita) is about average in the OECD (Figure 3.17). Labour market programmes are subject to only a basic evaluation of their effectiveness, which makes it difficult to determine their true impact. The analysis that has been conducted has found "no systematic" favourable impact (Grubb, 2007); this is a concern when the government currently spends just under EUR 20 000 per unemployed person on ALMPs. This low effectiveness is partly because ALMPs in Luxembourg are heavily biased towards temporary job creation schemes. In 2008, only 25% of ALMPs had any training content. Job creation schemes are generous, excessively long (often 12 to 24 months) and many encourage "carousel" effects whereby most participants return to unemployment after their completion. The authorities could initiate a comprehensive review of existing active labour market programmes, institute a robust strategy to evaluate their effectiveness in accelerating jobseekers employment prospects and reducing long-term unemployment, and scrap any programme not delivering value for money. The savings accrued from more cost-effective labour market programmes could be diverted to supporting stronger activation policies.

Figure 3.17. **Share of spending on active labour market programmes, 2007**



1. Countries are ranked from highest to lowest labour market program share of GDP in 2007.

Source: OECD, *Labour Market Programmes database.*

StatLink http://dx.doi.org/10.1787/847558030848

Conclusions

With powerful macroeconomic forces driving employment growth in Luxembourg in recent decades, labour market institutions have had to deal with a number of complex challenges. The rapid development of the financial sector has necessitated a reallocation of capital and labour within the economy that has at times been painful for people trained to work in the economy's more traditional sectors. It has also encouraged the authorities to try to offset the impact on income inequality of high financial rewards from working in the financial sector through redistributive wage and benefits policies. Strong growth has attracted a large number of immigrants from linguistic and cultural backgrounds very different to that of longer-standing residents, as well as stimulating large flows of cross-border workers from neighbouring countries. The latter has in turn drawn attention to how the different design of labour market institutions and tax-benefit policies impacts work incentives on either side of the border.

In many ways, Luxembourg has coped well with these challenges. Employment rates amongst prime-aged males and females are high by international standards, the unemployment rate has long been below the euro area average, and income inequality has increased little over the past decade. Aspects of the design of labour market institutions and tax-benefit policies have contributed to these outcomes. Tax wedges and marginal tax rates are low for most workers and the tax-benefit system penalises many second earners less than in many other countries. The large cross-border employment flows also help to absorb the idiosyncratic shocks hitting the economy.

Nevertheless, important aspects of the country's labour market institutions and the design of the tax-transfer system would benefit from reforms towards current international best practice. The current system reduces firms' demand for younger and less skilled workers, and diminishes incentives to supply labour for older, younger and prospective low-wage workers. It also makes the labour market vulnerable should the future macroeconomic environment be less favourable than that of recent decades. Luxembourg is one of only a few OECD countries not to have instituted significant reforms to modernise labour market institutions and the tax-benefit system and is now lagging behind best practice. The gradual increase in Luxembourg's unemployment rate over the past decade is an indicator of the costs of this lack of reform.

Although the focus of the chapter is on structural issues and longer term trends rather than the impact of the financial crisis and recession on labour market outcomes, an important lesson from the crisis is that for small, specialised, open economies like Luxembourg, strong growth cannot be taken for granted. Labour market institutions need to adapt to changes in economic circumstances. If longer run growth in the financial sector slows significantly, the imperfect design of local labour market institutions could interact with weaker labour demand to produce larger amounts of inactivity. Box 3.7 summarises the reforms outlined throughout the chapter that, if implemented, could significantly improve the overall functioning of the labour market.

Box 3.7. **Policy recommendations to improve the functioning of the labour market**

A number of reforms would increase the adaptability of labour market institutions and increase incentives to supply labour. Some of these recommendations were already set out in previous *Surveys* to help improve the functioning of labour markets so as to produce better employment outcomes and bolster living standards. The recovery from the recession represents an opportune time to tackle these reforms. Prompt action will help to keep the increases in unemployment temporary rather than permanent.

To boost overall labour demand and help the labour market respond to future economic shocks the authorities should:

- Reform the system of wage setting. As a first step, wages should be indexed to core rather than headline prices to help prevent energy shocks from being permanently built into the price level. Ultimately, the system of legislated automatic wage indexation should be ended to ensure that wages remain competitive and allow necessary adjustments in relative wages. Wage co-ordination remains desirable and the objective could be achieved by centralised wage bargaining.
- Enhance the effectiveness of the statutory minimum wage by ensuring that the focus in setting it is the economic impact. An independent Minimum Wage Council should be set up to set the minimum wage taking into account macroeconomic conditions, as well as impacts on low-skilled and inexperienced workers. Phase out minimum wage premia for workers with trade qualifications.
- In the period before the Council becomes operational, allow the minimum wage to fall relative to average wages by indexing to core inflation rather than average earnings.
- Reduce the strictness of employment protection legislation. Undue restrictions on temporary contracts should be limited by extending their total duration and facilitating renewals. To ease conditions for regular workers, lift thresholds for collective dismissals; reduce additional notice periods and severance payments following the negotiation of social plans; and extend trial periods for regular contracts.

To boost work incentives and ensure that the reforms to labour market institutions raise employment amongst resident workers the authorities can:

- Phase down unemployment benefit replacement rates for workers during the course of the insured period and further tighten young people's eligibility for unemployment insurance.
- Reduce the generosity of social benefits and decouple increases from average wages by indexing those benefits to core inflation only.
- Consider introducing a comprehensive approach to raising work incentives such as a system of in-work benefits (IWBs). Ensure that the system of IWBs is properly integrated with the existing tax-benefit system, is tailored to the distribution of working hours and that disposable incomes are genuinely raised for targeted individuals and families.
- Implement recommendations from previous *Surveys* to reform the pension and related schemes to reduce incentives for older workers to retire early.
- Improve the efficiency of the public employment service and strengthen activation policies by: rationalising placement services for different types of jobseeker; improving accountability of local employment centres by publicly rating their success in moving jobseekers into work; bringing forward interventions for jobseekers at risk of becoming long-term unemployed; ensuring that all RMG recipients with the potential to work are offered integration contracts; and raise resources available to ADEM for stronger activation.
- Comprehensively review existing active labour market programmes with a view to improving their effectiveness and impact on employment outcomes. Reallocate funding from all programmes that are not cost-effective to support stronger activation policies.

Notes

1. 20% of employee contracts are covered by firm-specific collective bargaining agreements, which are most common in the manufacturing sector. A further 42% of workers are covered by industry-wide collective bargaining agreements that are most common in the construction, health and financial sectors. 36% of employees are not covered at all, most commonly in the hotel and restaurant sector.
2. There is a literature arguing that social costs, such as increased use of unemployment insurance, to firing workers justify policies such as layoff taxes that encourage firms to internalise these social costs by reducing the rate at which they lay off workers. These social costs can be particularly high in countries like Luxembourg with generous unemployment insurance. Instead of addressing this externality with layoff taxes, some countries instead seek to reduce these social costs through tighter EPL and in particular restrictions on the use of temporary contracts that can be associated with more regular unemployment spells once contracts come to an end. In practice policymakers need to consider the trade-off between the benefits of greater labour market flexibility and the social impact of lay-offs. Luxembourg's heavy restrictions on temporary contracts appear to go too far in reducing labour market flexibility.
3. Because the slope of the budget constraint corresponds to the net increase in disposable income from undertaking an additional hour of work, it is affected by marginal tax rates and the rate at which social benefits are withdrawn as individuals in employment increase their hours worked (the intensive margin) or as unemployed or inactive individuals transition to employment (the extensive margin). The implied marginal tax along the intensive margin is often referred to as the Marginal Effective Tax Rate (METR) and the implied marginal tax rate along the extensive margin is often referred to as the Participation Tax Rate (PTR). To take into account evidence from microeconometric studies that labour supply elasticities at the extensive margin are greater than labour supply elasticities at the intensive margin, individual preferences in this model incorporate a fixed cost of working (Immervoll *et al.*, 2005; Gruber and Saez 2002). The model predicts that labour supply will be negative related to METR and PTRs and there is an extensive empirical literature that attempts to estimate how labour supply elasticities vary across countries and individuals with different characteristics.
4. Moreover, the generosity of the benefit system provides little incentive for low-skilled unemployed Luxembourg residents to relocate to other countries in search of better employment prospects. This helps to raise reservation wages for Luxembourg workers relative to potential cross-border workers in surrounding regions.
5. The ceiling for unemployment insurance payments is currently phased down from 250% of the social minimum for the first six months to 200% for the remaining 12 months and then 150% in cases where it is further extended. However, payments are not systematically reduced for claimants not concerned by these ceilings.
6. The government should also consider their impact in the current context of weak economic growth and labour demand and higher rates of involuntary unemployment. Although IWBs that address labour supply are unlikely to raise employment levels in a weak labour market, they are likely to be a more efficient way of cushioning income losses than increases in the minimum wage (Immervoll and Pearson, 2009).
7. Implicit taxes on continued work are calculated as the net cost of remaining in work for an additional year (foregone pension benefits and additional contributions minus the increase in future pension benefits) as a ratio of annual average earnings. They are a broader measure of pension generosity than the replacement rate (Duval, 2003).

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Chapter 4

The Luxembourg financial centre and the international financial crisis

Over past decades, Luxembourg has emerged as a major international financial centre. This has been crucial to the development of its economy and the financial sector has come to play a large role in economic activity, employment and government revenues. The financial centre is specialised in the management of interbank liquidity for international cross-border banks and asset management activities. The global financial crisis has had a strong impact on the financial sector with a substantial contraction of banks' balance sheets, mostly related to lower interbank lending, and a fall in the value of assets under management due to the drop in equity prices. Two large cross-border banks came under severe pressure and were supported by the authorities in Luxembourg and their home countries, while three small subsidiaries of foreign banks were put into administration. However, the impact on the wider Luxembourg economy may be more limited than anticipated. The crisis had a big direct impact on financial activity and tax receipts, but the fall in financial sector employment has been modest so far. The scale of support to the banking sector has been manageable. Despite a very large financial sector in relation to the overall economy, the wider effect has been muted by the limited links between financial centre activities and provision of credit to the local economy, the role of the banking centre in managing liquidity rather than extending credit to the non-financial sector, and high foreign ownership of the main institutions. Nevertheless, the crisis has underlined some of the inherent risks associated with activities in the financial sector. In particular, it is important that the regulation of liquidity is effective and cross-border supervision works well. The resolution mechanism for banks appears to have worked effectively, although there is scope to strengthen the deposit guarantee scheme. In the aftermath of the financial crisis, there will be significant changes in the financial industry and the international regulatory environment. In addition, a new EU directive on investment funds (UCITS IV) is likely to lead to some restructuring of asset management activities. It will be a significant challenge for Luxembourg to adapt to these changes and ensure that its financial sector remains a success and continues to develop.

Luxembourg is a major European and international financial centre. The growth of these activities has been crucial to the country's economic and social development over recent decades (OECD, 2008a): the financial sector accounted for 29% of GDP in 2008, 12% of employment and around one-fifth of total tax revenues, a share well above that in any other OECD country. The Luxembourg financial centre plays an important role in the Europe's financial system, both in terms of channelling funding to international banks and in asset management activities.

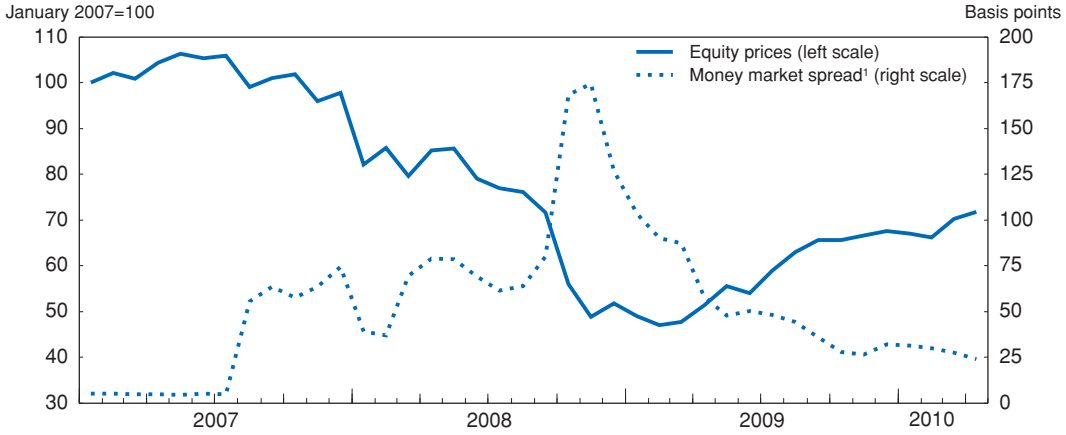
The global financial crisis had a strong impact on the Luxembourg financial centre. As elsewhere, banks and money market funds came under pressure as funding conditions in the interbank market became difficult. Balance sheets contracted significantly. Two major cross-border banks with large local subsidiaries required direct government intervention by local and home governments, and three relatively small foreign-owned institutions were put into administration. The overall value of assets under management fell sharply as stock markets plummeted. World financial markets have now recovered since the worst days of the crisis and market conditions have eased. Although the overall impact on the financial sector may be more limited than anticipated, activity in the financial centre is lower than before the crisis. Employment in the financial sector has contracted modestly to date and tax revenues are lower.

Looking ahead, the crisis is likely to have a lasting effect on Luxembourg as the financial industry evolves and the regulatory system is strengthened. In addition, a new EU directive on investment funds (UCITS IV) will have a large impact on asset management activities. The crisis exposed some of the risks in the international banking system and, given its role in the economy as whole, it is important that Luxembourg continues to strengthen financial regulation and supervision in the light of this experience.

The financial crisis had a strong impact on Luxembourg

While the proximate causes of the international financial crisis lay outside Luxembourg, the turning of the credit cycle had a significant impact on its financial centre. The crisis has its origins in a pronounced global credit cycle created by a combination of inappropriate monetary policy settings, financial innovation and regulatory failings (Ahrend *et al.*, 2008). As the cycle turned, asset prices collapsed and credit spreads increased in many markets (Figure 4.1). In particular, in the wake of the sub-prime crisis and then the bankruptcy of the investment bank Lehman Brothers, banks and financial institutions became very reluctant to lend to each other. This led to severe financial stress and higher funding costs for banks. Policy action was taken at the European and international level to guarantee bank deposits and other liabilities and recapitalise banks (OECD, 2009). In addition, changes in the scope of monetary policy operations by the ECB have increased the volume of monetary operations by around two-thirds from their pre-crisis level, as well as lengthening the maturity of credit on offer. These measures contributed to stabilising the financial system and are now being withdrawn. However, financial conditions remain tighter than prior to the turning of the

Figure 4.1. **Euro area financial conditions**



1. Spread between three-month EURIBOR and EONIA swap index.

Source: Datastream.

StatLink http://dx.doi.org/10.1787/847611027068

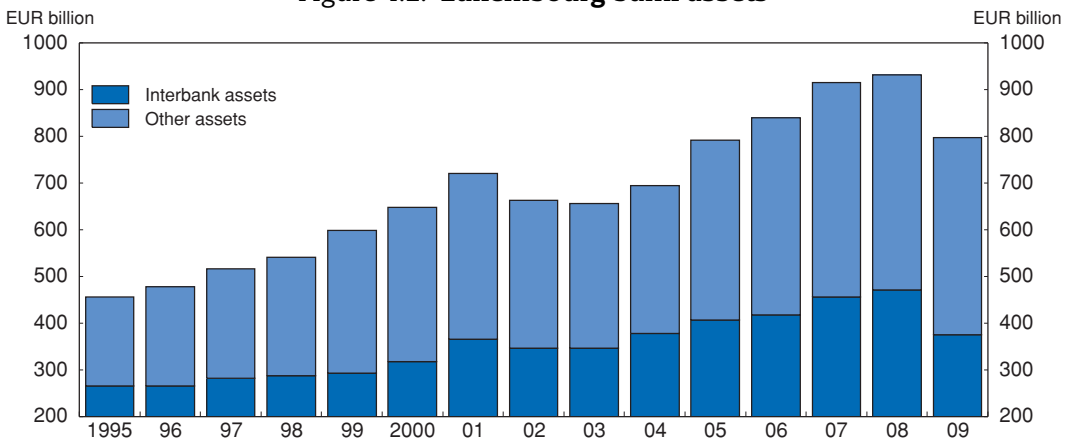
cycle. This has affected Luxembourg through a reduction in activity and tensions in the interbank market, a fall in the value of assets under management and the wider impact of these developments on the local economy.

The interbank market was at the centre of the storm

Pressures on the banking system and tensions in interbank markets had a large effect in the Luxembourg financial centre, given its specialisation in intermediating interbank funding between different institutions and its provision to international banks in other countries. Tensions in the interbank market from the summer of 2007 led to increased demand for funding and interbank operations in Luxembourg, given that liquidity in the market as a whole was in short supply, and interbank loans from Luxembourg banks continued to rise from mid-2007 to autumn 2008. This changed dramatically following the collapse of Lehman Brothers as banks' willingness to lend dried up: loans to other euro area monetary and financial institutions (MFI) are now more than 25% lower than the peak and there has also been a sharp reduction in lending to non-euro area residents (much of which is interbank business). These developments largely account for an overall contraction in bank balance sheets of around 17% in 2009 compared with the previous year (Figure 4.2). This represents a sharp turnaround in balance sheet developments compared with average annual growth of close to 7% in the five years up to 2007.

Severe difficulties during the crisis in a number of specific institutions required intervention by the authorities. Two large cross-border institutions (Dexia and Fortis) came under critical pressure and public support was required (Box 4.1). However, government support in the form of guarantees and capital was more limited than in many other OECD countries, both relative to the size of the financial system and GDP (OECD, 2009). Nevertheless, the rescue of Fortis involved a government recapitalisation equivalent to more than 6% of GDP. In addition, three relatively small subsidiaries of Icelandic banks were put into administration by the financial supervisor. All these problems had substantial cross-border elements. Nevertheless, their resolution was achieved relatively smoothly and contagion to other institutions in the financial centre was avoided.

Figure 4.2. **Luxembourg bank assets**



Source: Banque centrale du Luxembourg and Commission de surveillance du secteur financier.

StatLink http://dx.doi.org/10.1787/847626488600

Box 4.1. **The resolution of difficulties at specific institutions during the crisis**

Fortis is a major cross-border European financial group and had total group assets of around EUR 800 billion before the crisis. Originating from the merger of Belgian and Dutch insurance companies, the group purchased *Banque Générale du Luxembourg* (BGL) in 2000. BGL was the third largest bank in Luxembourg with close links to the local economy. In 2007, the assets of the BGL-Fortis subsidiary were around EUR 50 billion (135% of Luxembourg's GDP). Following Fortis' takeover of ABN Amro in 2007, it sought to raise more capital. Doubts emerged about its solvency during 2008 as the international banking crisis unfolded and investors began rapidly to lose confidence in its viability.

Between 28 September and 5 October 2008, the French, Belgian and Luxembourg authorities put in place a number of rescue measures. Fortis' Dutch operations were eventually taken over by the Netherlands government. The Belgian government provided extensive liquidity support to the remaining entity, of which 75% was sold to BNP Paribas and the rest held by the Belgian state. In December 2008, a subordinated loan from the Luxembourg government of EUR 2.5 billion (6.4% of GDP) was converted into equity. Following further operations, Luxembourg now holds one-third of the capital of BGL with the rest owned by BNP Paribas. The government intends to divest itself of this stake in the coming years.

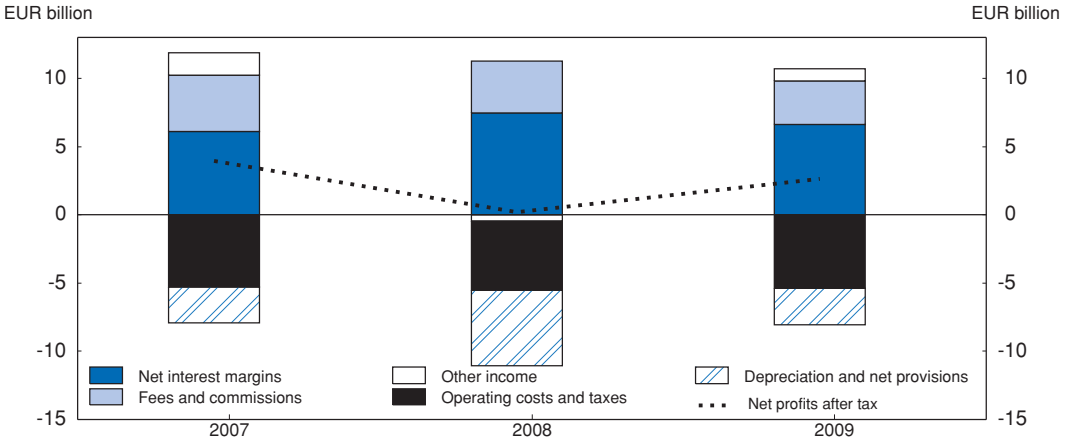
The Dexia group arose from cross-holdings of three banks in Belgium, France and Luxembourg (*Banque Internationale à Luxembourg*, BIL) with BIL ultimately almost entirely owned by the group. Dexia was active in financing local authorities, commercial and private banking. The group had assets of around EUR 600 billion prior to the crisis with BIL's assets close to EUR 60 billion (around 160% of Luxembourg's annual GDP). The Dexia group was heavily exposed to the sub-prime crisis through a US subsidiary, recording losses of EUR 3.3 billion for 2008. This led to increasing pressure from financial markets, which was augmented by fears of contagion from the difficulties at Fortis. In the autumn of 2008, EUR 6 billion of additional capital was injected by the Belgian and French states. Luxembourg committed EUR 376 million of further capital. Furthermore, a state-guarantee of up to EUR 150 billion was provided jointly by the three states, the Luxembourg share amounting to 3% of the total (EUR 4.5 billion).

Box 4.1. **The resolution of difficulties at specific institutions during the crisis** *(cont.)*

Three Icelandic bank established subsidiaries in Luxembourg prior to the crisis (Glitnir Bank, Kaupthing and Landsbanki). Much of their business was conducted outside Luxembourg. In early October 2008 and with mounting problems in their parent companies, the Luxembourg financial supervisor placed these banks into administration using a special procedure in place for banks. This resulted in claims on the deposit insurance scheme of around EUR 300 million (0.7% of GDP). This may be repaid as the firms are wound up and investors in these banks are likely to recover much of their losses.

After several years of high and sustained earnings, the profitability and financial position of banks has weakened significantly as a result of the crisis. For the Luxembourg banking sector as a whole, profits net of provisions collapsed in 2008 compared with the previous year (Figure 4.3). This was almost entirely due to the sharp rise in debt provisioning and depreciation, largely attributable to mark-to-market losses on banks' securities portfolios. With the subsequent market recovery, 40% of these losses had been recouped by the end of September 2009. Income from commissions and "other income", which is linked to stock market trends, also declined sharply as markets fell. These effects were partly offset by higher net interest margins, reflecting high market interest rates relative to the cost of funds for banks. As a key role of banks in Luxembourg is to redistribute liquidity on the interbank market, they were well placed to profit from the rate differentials. For 2009, profits increased as provisions on mark-to-market losses were smaller and other income increased significantly. However, profits remained below their pre-crisis levels and may be squeezed in the coming years if net interest margins narrow as policy rates are raised.

Figure 4.3. **Luxembourg banking sector profitability**



Source: Banque centrale du Luxembourg.

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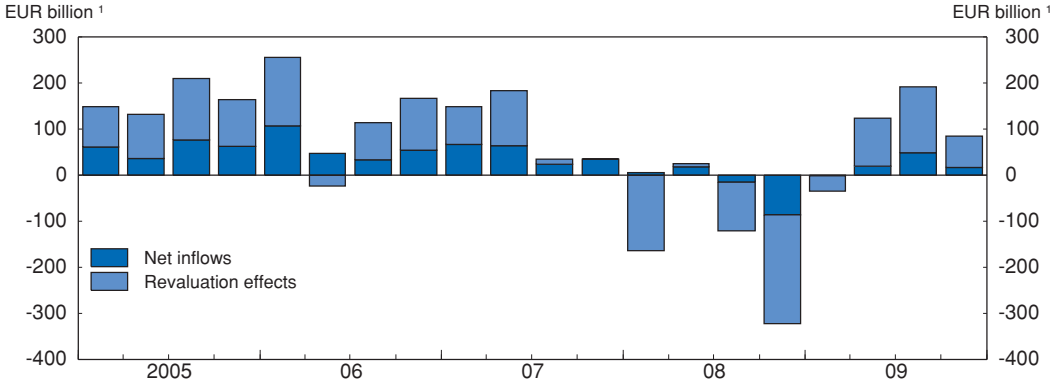
The investment fund industry is recovering

The balance sheet of the investment funds industry contracted significantly as asset prices tumbled. The net value of their holdings fell by a quarter during 2008, compared to only 8% during the 2001-03 "dot com" crisis. The reduction in assets under management

was largely due to falling prices, although there were large net outflows of funds at the end of 2008. While the net inflows from clients over 2008-09 were much weaker than before (Figure 4.4), the value of assets under management has increased again and stood at the end of 2009 at just below 13% of the peak value.

Figure 4.4. **Investment fund assets**

Changes in assets under management



1. Quarterly changes based on sum of monthly changes.

Source: Commission de surveillance du secteur financier.

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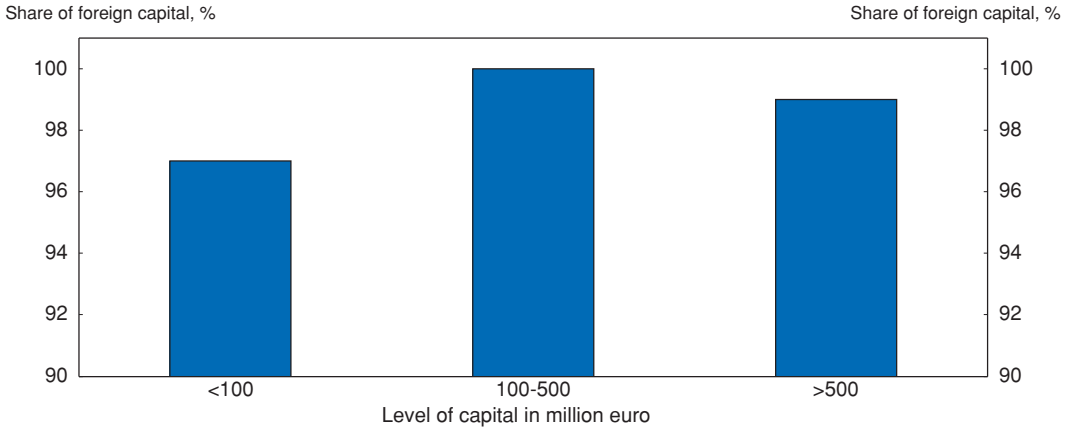
The crisis in the financial system has affected the wider economy

The financial crisis has had an impact on the wider Luxembourg economy, although the effect on the real economy has been less severe than in some other countries and limited relative to the scale of the crisis and the size of the sector. The sharp slowdown in financial sector activity directly explains about half of the overall peak-to-trough drop in GDP, and somewhat more if related activities such as business services are taken into account. However, Luxembourg suffered much less than other small OECD countries with large financial sectors, such as Iceland and Ireland, owing to the nature of its financial activities. Banking activities in Luxembourg are based around intermediation of liquidity rather than structured instruments or proprietary trading, and mostly relate to the foreign rather than the domestic market. Only a small share of overall banking activities involves the supply of credit to the domestic economy. This configuration is reflected in high foreign ownership (Figure 4.5), which also reduces the wealth effects of banking difficulties on the local economy. 76% of the assets of resident banks are held by the subsidiaries of foreign-owned banks with a further 19% in the branches of international institutions, leaving only a small share in the hands of Luxembourg-based banks. Recovery in the financial sector explains much of the pick-up in activity since the third quarter of 2009, as well as stronger exports.

There is no evidence of a material credit crunch in the domestic economy, although the growth of overall credit to Luxembourg residents has slowed significantly. Credit to the resident household sector has actually continued to expand during the crisis, albeit at a much slower pace, and lending to domestic non-financial corporations was only marginally lower in the year to February 2010. The *Banque Centrale du Luxembourg* Bank Lending Survey shows a moderate tightening in corporate credit standard compared with the euro area at large, while credit standards applied to household loans have only tightened marginally.

Figure 4.5. **Foreign ownership of Luxembourg banks**

2004



Source: STATEC.

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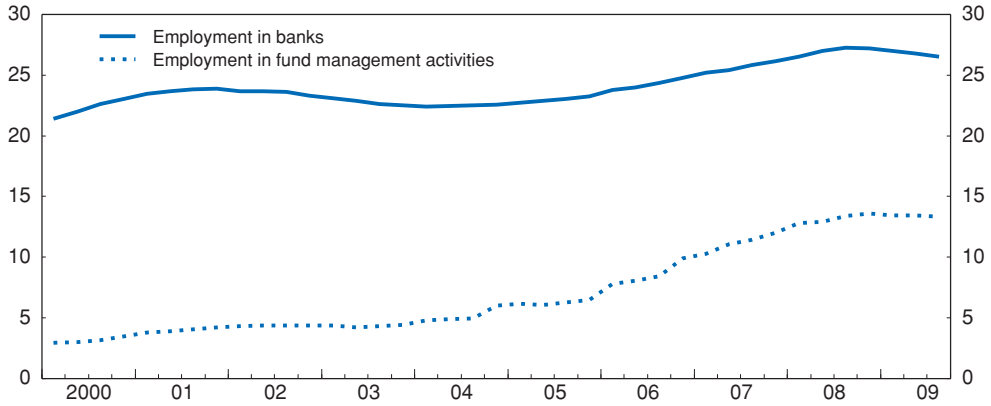
Despite the drop in growth, employment in the financial sector has fallen only modestly. The number of jobs in banking has been cut by around 3% since its peak, and employment in asset management activities is only slightly lower (Figure 4.6). Many of the job losses in banking are due to institutions closing down their presence in Luxembourg and so may be permanent. Following the "dot com" crisis, bank jobs continued to decline for a couple of years and developments to date appear similar. This could mean that the overall fall may be somewhat greater than seen so far. By contrast, employment in asset management has stagnated over the past year rather than fallen. Over time, asset management has come to account for around one third of employment in the financial sector, although this partly reflects widening of the definition of "financial sector professionals". The recent weakness is in contrast to the experience after the "dot com" crisis, when investment funds continued to expand their workforce which may suggest that this slowdown is having more severe consequences for employment.

Figure 4.6. **Employment in the financial sector**

Thousand persons



Source: Central Bank of Luxembourg and STATEC.

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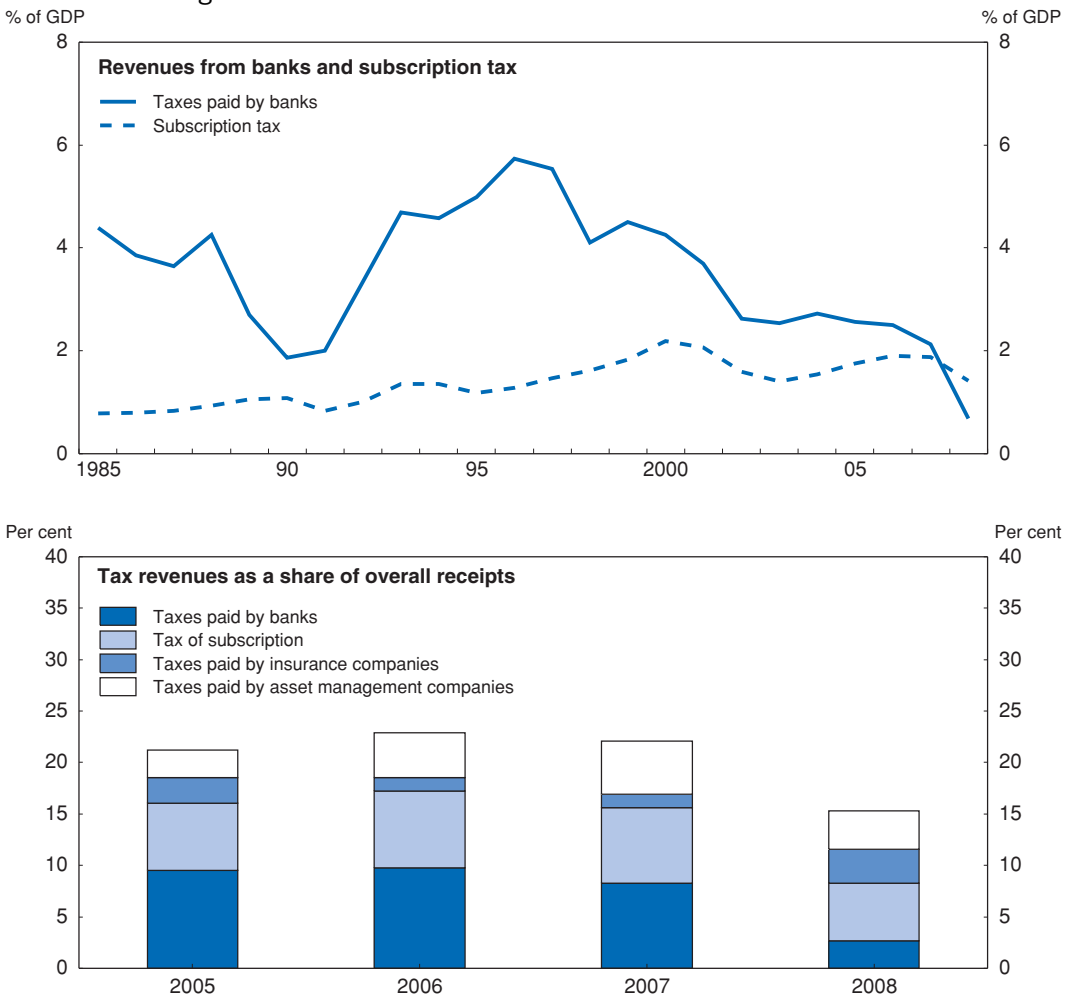
The downturn in the financial sector has had a large impact on government revenues. Taxes from this sector have yielded around a fifth of total receipts in recent years (OECD, 2008a). Taxes paid by banks fell by two-thirds in 2008, reducing their yield to less than 1% of GDP, well below the level in recent years and by even more compared with the 1990s (Figure 4.7). This drop reflects the exceptional jump in provisioning and the exercise of the option under accounting rules to activate future tax charges during a year when the company has suffered losses. The full effect of the crisis on tax revenues will only become apparent after a certain delay, as corporate profits and corporation taxes are only finally determined after couple of years. The tax on investment fund subscriptions, an annual tax on the value of assets under management, is the other major source of revenue from the financial sector. It has become increasingly important as asset management sector has grown substantially. With lower equity prices, revenue from this source fell by about a fifth in 2008 and will decline again sharply in 2009. A partial recovery is likely in 2010. Overall, the loss of tax revenue from the financial sector appears more severe than during the crisis of 2001-02.[1]

Figure 4.7. **Tax revenues from financial sector activities**



Source: Statec, Commission de surveillance du secteur financier and OECD, *OECD Economic Outlook database*.

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The international banking sector is highly specialised and large relative to the economy

Luxembourg is a major financial centre specialised in interbank liquidity operations, alongside asset management activities (Table 4.1). These activities are linked through various channels. As an international banking centre, Luxembourg is a location for pooling and transferring liquidity between different financial actors. Liquidity comes from three major sources: loans from international banks with excess funding provide around 45% of funding, with the remainder mostly provided by deposits and by money market mutual funds. Intra-group lending, by which local entities provide funding to parents in other countries, plays an important role. Although the financial centre is highly specialised in these activities for international banks, Luxembourg-resident monetary financial institutions (MFIs) are relatively small in the context of the euro area, and account for around 3% of overall assets and less than 7% of loans to other euro area MFIs.

Table 4.1. **Balance sheets of main Luxembourg financial institutions**

EUR billion

	2007	2008	2009
Banks			
Assets	920	930	790
Loans	650	680	560
Interbank loans	460	470	370
Of which: Intragroup	*330*	*370*	*n.a.*
Securities	220	200	190
Of which: Claims on banks	*100*	*90*	*90*
Other assets	50	50	40
Liabilities	920	930	800
Deposits	300	280	250
Debts	450	490	390
Of which: Owed to banks	*440*	*480*	*370*
Other	170	160	160
Investment funds			
Assets	2 060	1 560	1 840
Of which: Money market funds	*250*	*340*	*320*
Loans	60	110	50
Of which: Interbank loans	*60*	*110*	*50*
Securities	190	230	260
Of which: Claims on banks	*110*	*150*	*150*
Other	0	0	10
Memorandum items:			
GDP	37	39	37
Central bank assets	60	100	80
Of which: Claims on banks	*30*	*40*	*20*

Source: Banque centrale du Luxembourg and Commission de surveillance du secteur financier.

The management of banking group liquidity leads to a concentration of risks

Luxembourg's resident banking sector is better capitalised than the EU average and more profitable (Table 4.2). This reflects its role in channelling liquidity through subsidiaries and branches to the major international banking groups that have a need for funds in excess of their own deposit base. These subsidiaries typically have much lower leverage than their parent companies (IMF, 2009). Interbank lending accounts for over half

Table 4.2. **Banking sector indicators**

Per cent

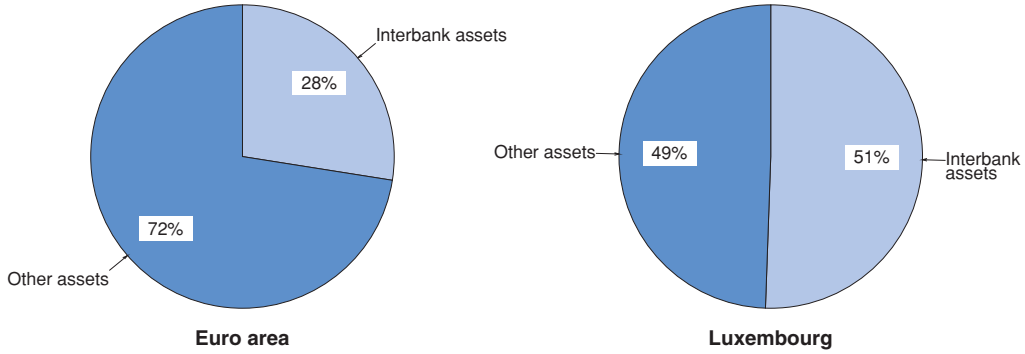
	Luxembourg	EU average (large domestic banks)
Solvency		
Tier 1 ratio	12.74	8.02
Overall solvency ratio	15.14	11.44
Distribution		
< 8%	0	0.54
8-10%	10.24	20.19
10-12%	8.78	38.58
12-14%	19.69	20.13
> 14%	51.29	20.5
Average risk weights for credit risk	26.26	39.85
Profitability		
Operating profit (share of assets)	0.65	0.4
Provisions and depreciation (share of assets)	–0.56	–0.53
Return on equity	1.07	–5.71
Liquidity		
Cash, trading and available for sale ratio	20.01	32.54
Interbank market dependency ratio	42.86	12.85
Funding base stability ratio	38.88	51.01

Source: ECB, *EU Banking Stability*, August 2009.

of credit in Luxembourg compared with only 28% for the euro area as a whole (Figure 4.8). This is part of a growing trend toward centralisation of liquidity management within international banking groups (Basel Committee on Banking Supervision, 2006). The rationales for centralisation are the optimisation of financing costs for the group as a whole, diversification of financing sources, the underlying dispersion of funds across different entities, and other practical aspects of how financial transactions are structured. The acute crisis of confidence in the interbank market in 2007 and 2008 showed some of the advantages of this approach with some parent banks relying heavily on funding from the Luxembourg banking centre.

Figure 4.8. **Share of interbank lending**

Average 1999-2009



Source: Banque centrale du Luxembourg and Commission de surveillance du secteur financier.

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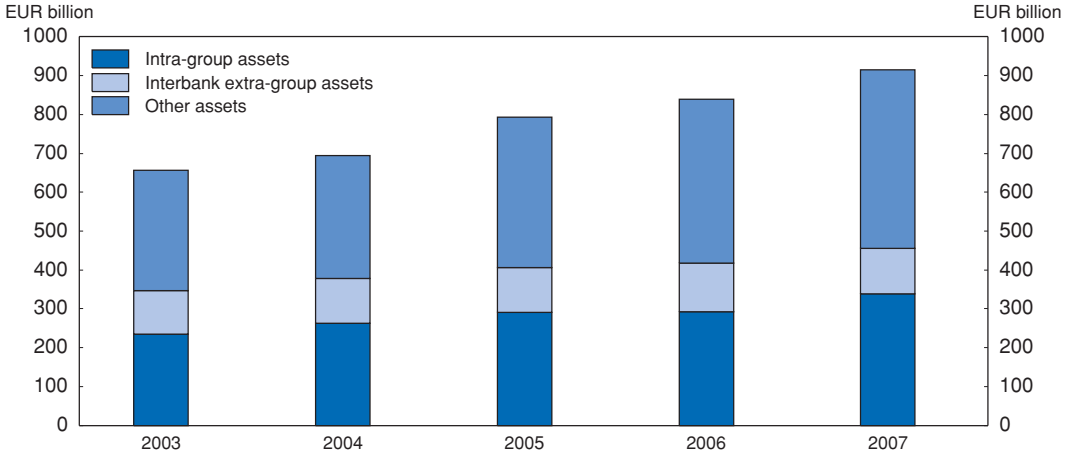
Figure 4.9. **Intra-group, interbank and other banking assets**



Source: Banque centrale du Luxembourg and Commission de surveillance du secteur financier.

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Large intragroup exposures imply a high concentration of risks of local entities. Funding obtained by Luxembourg subsidiaries and branches is channelled to parts of the same groups located in different countries. Intra-group assets accounted for almost 40% of Luxembourg bank assets in 2007 with exposure for some individual institutions likely to be far higher (Figure 4.9). As they are typically in surplus, these local entities of international banks are exposed to large risks on their assets, which are concentrated on a small number of counterparties from the same group (Rychtarik, 2009). Local entities are vulnerable to problems at other institutions in the same group through two channels of contagion:

- The local entity's direct exposure to the wider banking group. This exposure is often very large for assets with short-term maturities.
- Any information about the group can be taken as providing new information on the local entity, which may have negative consequences on depositors' and investors' confidence. Given imperfect information, this form of contagion may also arise from unfounded expectations about difficulties at subsidiaries.

It is hard to judge the size of these effects, not least because support from the group can also provide protection to the local entity in other circumstances. Contagion has, however, tended to spread from subsidiaries to the group. A study of contagion effects focusing on large banking groups from 1999 to 2003 did not find any clear evidence that subsidiaries of banking groups are more vulnerable than banks that are less integrated into a group (Derviz and Podpiera, 2007). Exposures to the intra-group capital market are not in themselves riskier than those on the external market. While the risk for the Luxembourg entities that had difficulties stemmed from the group, underlying problems at Dexia and Fortis were a mixture of group and local pressures.

The high concentration of assets on a single, foreign, parent banking group, nevertheless remains an important source of risk for the Luxembourg banking sector. In prudential matters, the European "large exposures" rule calls for preserving banks against default by a counterparty or group of counterparties in the wake of exceptional events, by limiting the concentration of exposures. As in many other countries, Luxembourg's regulators have used the possibility of excluding short-term intra-group and interbank exposures from this rule.[2] Given the current architecture of the international system, this

approach could not be changed without fundamentally calling into question the way global capital markets are structured.

Regulation of banking liquidity is being strengthened to reduce risks

The inherent risks raised by the role of Luxembourg subsidiaries in the wider banking system mean that liquidity regulation is particularly important. Internationally, policies in this area prior to the crisis were less sophisticated and comprehensive than in other areas, such as capital adequacy. In the European Union, the regulatory framework left a comparatively wide role to national regulation in liquidity management. The Luxembourg regime was essentially to require maintaining liquid assets at 30% of liabilities and did not take into account off-balance-sheet positions. Following banking liquidity problems during the financial crisis, the European Committee of Banking Supervisors (CEBS-BCBS) has issued recommendations for new procedures (CEBS, 2009). Accordingly, banks should maintain adequate liquidity reserves composed of cash and liquid assets to deal with a liquidity crisis. The results of stress tests should also be reported to the supervisory authorities. These recommendations are further designed to ensure close co-operation among supervisors of cross-border banking groups to improve understanding of the liquidity risk profile of such groups.

Luxembourg is implementing the reinforced liquidity rules. The Financial Sector Supervisory Commission (CSSF) and the central bank have instituted a new qualitative liquidity regime, intended to transpose the CEBS recommendations on liquidity risk.[3] These go further than the European rules in stipulating that, for financial institutions that are branches or subsidiaries, taking into account liquidity risks at the level of the group will not be enough. Luxembourg entities must have their own capacity to manage local liquidity risks, to conduct stress tests covering the liquidity risks of the Luxembourg institution, and to manage situations of liquidity crisis. In addition, the CSSF reserves the right to restrict intra-group transactions that are deemed contrary to the principle of sound and prudent management of liquidity risk for institutions in Luxembourg. It is commendable that this application exceeds the simple recommendations of the CEBS and in effect provides Luxembourg with stronger regulatory and supervisory requirements in these areas.

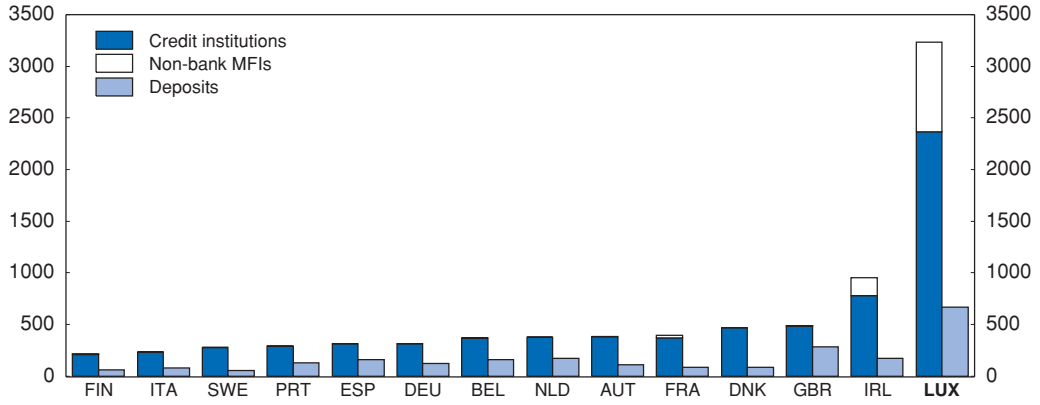
To strengthen regulation in a quantitative sense, the CEBS has proposed two ratios to measure liquidity risk (CEBS, 2009). These can be used as guides in constituting liquidity cushions: the short-term ratio (30-day Liquidity Coverage Ratio) calls for the stock of highly liquid assets to be 100% or more of net cash outflows; and the medium-term ratio (Net Stable Funding Ratio) is a relationship between stable funding available and stable funding needs over a period of one year. In principle, these rules are intended to be applied to an entire banking group on a consolidated basis, but the CEBS encourages the authorities to implement them for each member of a group so as not to discriminate between domestic banks and members of international groups. The CSSF is preparing proposals in this area in the light of the evolving international and European debate. These should be designed to align Luxembourg's standards with best international practices, taking into account the specific features of the Luxembourg banking system and avoiding excessive risk taking by local entities.

Large financial institutions present significant risks for a small economy

The financial sector balance sheet is exceptionally large relative to the size of the local economy (Figure 4.10). While some other OECD countries with large bank balance sheets relative to GDP have experienced serious difficulties, Luxembourg's experience during the

Figure 4.10. **Alternative measures of banking sector size**

Per cent of GDP, 2008



Source: ECB database and ECB (2010), *Structural Indicators for the* EU *Banking Sector*, January.

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crisis has been less difficult, although substantial fiscal resources were called upon. As discussed above, the largely international activities and foreign ownership of Luxembourg's financial institutions protected the local economy. In addition, the role of these institutions in providing credit to the domestic economy is limited and the overall level of indebtedness of the real economy is fairly low, despite increases during the past decade. Nevertheless, the large size of many financial activities does have important implications and carries risks for the local economy.

Governments in OECD countries put in place substantial support for banking sectors threatened by the financial crisis. Measures included guarantees of bank liabilities, unconventional monetary policy operations, reinforced deposit insurance arrangements and bank recapitalisation (OECD, 2009). As outlined above, Luxembourg has been involved in these measures for a number of cross-border institutions. These interventions can be justified in the interest of financial stability. However, they are undesirable in the sense that they encourage moral hazard: banks have incentives to take excessive risks if they know that the state will intervene when losses are large. Stronger regulation will be therefore necessary to offset the increase in moral hazard in the global financial system.

Only a handful of resident financial institutions have strong links to Luxembourg's non-financial sector or to domestically-focused financial institutions. Furthermore, with the exception of the state-owned *Banque et Caisse d'épargne de l'État* (BCEE), these banks are largely foreign-owned. Any losses therefore would not be borne by Luxembourg taxpayers. This illustrates a fundamental difference between Luxembourg's situation and that of Iceland and Ireland. The eventual rescue of Luxembourg entities of international banks therefore predominantly relies on the budgetary resources of other countries. Whether this occurs is a matter for the authorities in banks' home countries. Most of the major banking groups in Luxembourg are likely to be considered systemic at their home countries, as they retain very significant assets, employment and activity (Houben *et al.*, 2008), and are therefore likely to be rescued. During the crisis, this is what occurred as the Belgian, Dutch and French governments took the lead in supporting their home institutions that had a presence in Luxembourg. However, there can be a problem if the government of the parent company has limited resources, as occurred with the Icelandic subsidiaries.

Problems in Luxembourg could still arise, if a systemically large institution was not rescued by its home government and it was too large for the Luxembourg authorities to support. The massive scale of bank balance sheets relative to the size of the local economy means that Luxembourg could provide only limited support. Each of around 25 resident banks has local assets larger than Luxembourg's annual GDP and aggregated local assets are almost 35 times greater than annual GDP. Although at present it is not explicitly backed by the state, the deposit guarantee scheme also has large potential liabilities relative to GDP. While failure of individual banking institutions might have few direct effects on the real economy, the consequences of such failures could be serious for others within the international financial centre such as other banks or money market mutual funds (Box 4.2). This does not appear to have been a problem to date, although the crisis has underlined these issues. One solution might be for Luxembourg to negotiate burden sharing agreements with home countries of large banks (IMF, 2009), although it is difficult to envisage circumstances under which other countries would agree to provide such support. By participating in the rescue of Dexia and Fortis, Luxembourg has signalled its willingness and ability to contribute to such operations when there is a link to its wider domestic economy.

Box 4.2. **Money market mutual funds in Luxembourg**

The money market fund (MMF) industry in Luxembourg is the second largest in Europe with more than a quarter of total European MMF assets under management. MMFs play an important role in channelling liquidity into the European money markets, mainly from the non-banking corporations to banks. They account for more than a quarter of the overall liabilities of resident banks, while deposits and securities issued by banks across the world amount to around two-thirds of Luxembourg MMFs total assets. From the investor's point of view, MMFs are a close substitute for bank deposits, but they have the advantage of providing credit diversification compared with placing deposits in a single bank. However, in the European Union, retail MMFs are typically not insured, in contrast to bank deposits.

Because of their size and systemic importance, risks associated with MMFs have repercussions for the Luxembourg and European banking sectors. Indeed, pressure on MMFs domiciled in Luxembourg mounted during the period of highest turbulence in financial markets in October 2008. In the face of increased volatility of spreads, uncertainty and drying up of international money markets, fears of failure to meet the maximum possible redemptions ("breaking the buck") could have led to a run on the funds. While this was avoided, several MMFs had to be assisted by their sponsoring banks with short-term loans to finance redemptions. Unlike banks and in contrast to the practice in the United States, European MMFs do not have direct access to central bank liquidity facilities. While the government of Luxembourg made statements of support to domestically domiciled MMFs, the country did not have financial means to provide guarantees as MMF assets were nine times larger than GDP. Nevertheless, the pressures eased and MMFs recorded renewed inflows in the following months.

While the MMF industry in Luxembourg showed resilience facing the immediate threats of the financial crisis, there are important indirect implications. Firstly, in the aftermath of the crisis, there is much stronger international recognition of the importance of liquidity in prudential regulation and supervision, as reflected in emerging Basel Committee proposals. The treatment of MMFs in these proposals might imply very different prospects for the industry, which contributes around 2% of Luxembourg GDP (CSSF, 2009). In particular, the failure to recognise MMFs as highly liquid assets could lead to replacing

Box 4.2. **Money market mutual funds in Luxembourg** *(cont.)*

MMFs with other financial instruments in European money markets with a smaller role for Luxembourg. Secondly, there is a widely articulated need for a more precise European definition of MMFs and greater transparency about portfolios and eligible investments, which could also change the landscape in the industry. Thirdly, the inability to provide the guarantees at a level comparable with other financial centres may represent a competitive disadvantage of the MMF industry in Luxembourg.

There is a specific resolution procedure for banks and deposit insurance has been strengthened

Compared with many other countries, Luxembourg has an efficient bank resolution process that should help to reduce moral hazard as well as ensuring swift resolution of banking problems. There is a special regime for banks to suspend payments in case of distress. This has served it well during the crisis and contributed to the smooth resolution of the problems with the Icelandic banks. The first-best solution for bank failures is to have efficient mechanisms to avoid or manage them. This requires effective mechanisms to wind down failed banks that minimise uncertainty and disruption in the financial system. This can reduce the need for government support through an established path into bankruptcy, rather than a slow and undefined process. Many OECD countries have paid a high price for not having had such institutions prior to the crisis.

Deposit guarantee schemes can smooth bank resolution and help avoid bank panics by reducing or eliminating the incentive to withdraw funds, if they are perceived to provide a credible guarantee. In Luxembourg, the guarantee was increased during the crisis from EUR 20 000 to EUR 100 000, in line with EU policy, and there are no copayments. Payout is currently expected to require several months, which may not always provide sufficient reassurance. Many depositors in Luxembourg have high net wealth and large deposits: although their sophistication may increase their sensitivity to perceived financial distress at their bank, they may have a more limited motive to withdraw when fearing temporary loss of access to their liquid assets. However, for small retail depositors it can be more important that funds can be released rapidly. To enhance credibility, the pay-out time should be reduced to a few days for the insured portion of deposits, beyond the requirements of the current EU directive. Operational arrangements should be put in place to ensure that this can be achieved. A reform of the deposit guarantee scheme is currently underway and will be finalised once new EU requirements have been established.

Ex ante funding of deposit insurance would add to the soundness and credibility of the scheme. It is currently financed by an *ex post* system underwritten by the banks. Prior to the crisis, accumulated reserves in the fund amounted to EUR 900 million with additional cover from bank provisions for potential liabilities. The winding up of the Icelandic banks led to a claim on the fund of around EUR 300 million. Given the concentration of the banking sector, most of the contributions to the fund would be expected to come from a small number of large banks. Risk-based premia would help ensure that *ex ante* funding does not distort incentives.

Ensuring more effective regulation and supervision of international banking groups is crucial

Given its large financial centre, international and cross-border regulation are especially important to the financial stability of Luxembourg. International agreements, such as the Basel Accords, provide a framework, while EU directives lay out the basic regulatory set-up (Lawson, Barnes and Sollie, 2009). EU directives impose a number of requirements in terms of regulations, although there are many areas where individual member states may apply stricter standards. The 2006 Capital Requirements Directive (CRD) had close to a hundred options that national jurisdictions could apply more strictly, although it can be difficult to apply tougher standards given Europe's integrated financial markets and the consequent competitive pressures and regulatory arbitrage. The EU framework sets out regulatory requirements in the main areas such as capital requirements, accounting standards, large exposures and deposit guarantee schemes. An important risk is that the exceptions to this framework lead to inconsistencies in the integration of capital markets in Europe, as well as a bias towards the minimum standards. Luxembourg should continue to play its part in international efforts to strengthen financial regulation in the aftermath of the crisis to make the financial system more stable and reduce moral hazard. However, its role is necessarily limited given the small size of its financial system and the EU competences in the area.

The application of regulatory standards and effective supervision of large, complex international banking groups is complicated because it necessarily involves the "home-host" principle and a number of supervisors in other jurisdictions (Box 4.3). The first-best approach to aligning supervisory incentives for cross-border banks and ensuring full sharing of relevant information would be to create a single European regulator for large international banks (OECD, 2008b). Given that this approach has not been adopted, the challenge is to ensure that the current system of supervisors and the measures proposed in the de Larosière report (European Commission, 2009) are implemented effectively. These increase the power of home country regulators, require the creation of supervisory colleges

Box 4.3. **Banking regulation and supervision in the European Union**

The second banking directive came into force in 1993 and introduced the "EU Banking Passport". This is based on minimal harmonisation, mutual recognition and the principle of home country control for the branches of European banking groups licensed in a member country. By contrast, subsidiaries remain entirely subject to the domestic supervisory rules of the host country. The host supervisory authority has jurisdiction over the branches only as far it relates to maintaining financial sector stability and providing assistance in case of a liquidity crisis.

The "Lamfalussy" process was set up in 2004 to improve institutional co-ordination for the supervision of international banking and insurance groups. At the first level, the Commission, the European Council and Parliament draw up proposed directives. At the second level, technical committees for implementing these directives are set up. At the third level, there are three European committees of supervisors which are responsible for co-ordination and for advising the national supervisory authorities in securities, banking and insurance. At the fourth level, the European Commission is responsible for overseeing the transposition of directives into national legislation.

Box 4.3. **Banking regulation and supervision in the European Union** *(cont.)*

The de Larosière report (European Commission, 2009) found the "embryonic" agreements developed by the third-level committees ineffective, citing a lack of frankness, mutual confidence and co-operation among national supervisors. New EU legislation is intended to strengthen the role of these institutions, upgraded to the status of authorities, and their powers over how colleges of cross-border supervisors are configured and operate. Under the auspices of the Financial Stability Forum, colleges of supervisors are being created for all, not just EU, systemically important international banking groups and 20 are now in place.

for large international banks, and strengthen the role of CEBS to co-ordinate and harmonise the operation of the supervisory colleges.

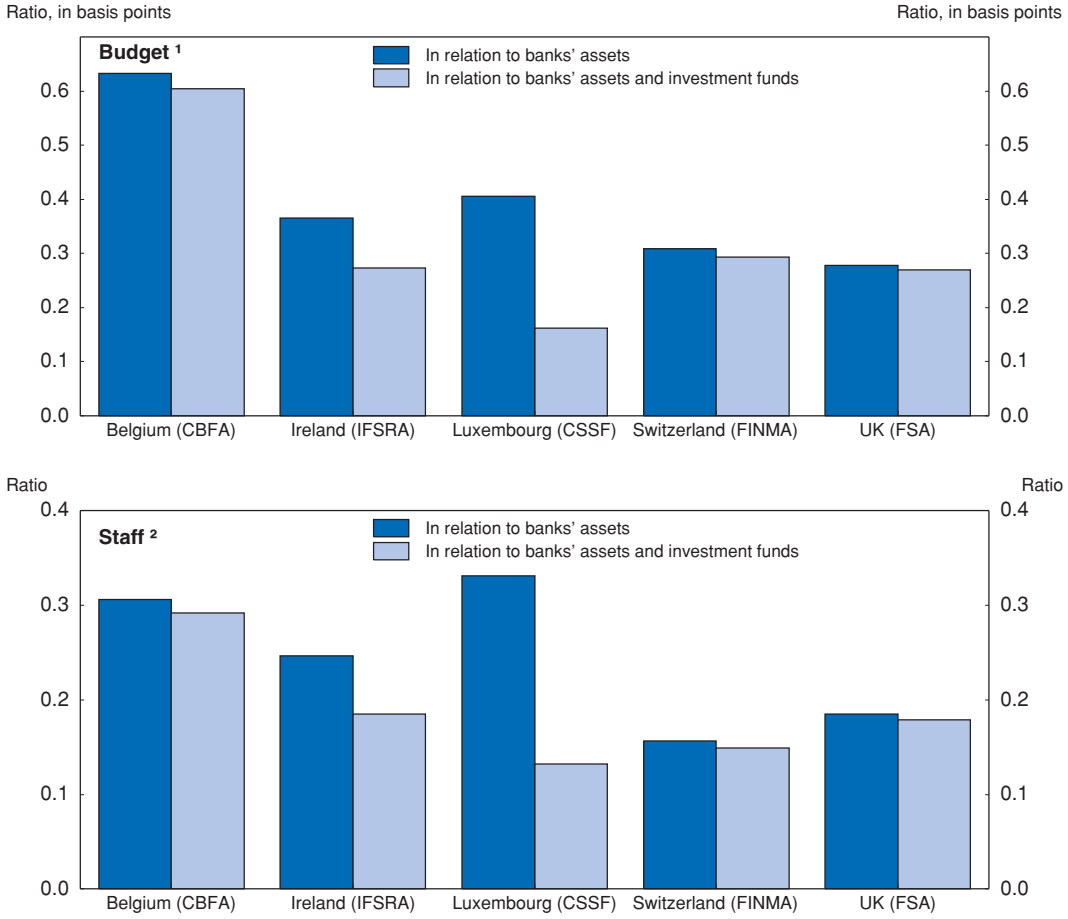
Cross-border supervision is of particular relevance to Luxembourg as the host of so many large international banks. As discussed, Luxembourg has already been involved with two significant cross-border banking crises (the rescue of Dexia and Fortis) as well as the failure of the local subsidiaries of the Icelandic banks. In the former, it appears that the Luxembourg authorities had insufficient information to assess the scale of the risks at the group level ahead of time, and therefore had an imperfect appreciation of the risks facing the resident entities. For the Icelandic banks, similar problems were compounded by the fact that most of the business of the Luxembourg subsidiaries was being carried out in third countries. The CSSF is already a member of a large number of colleges of supervisors and its staff attends a large number of related meetings. It will be important for Luxembourg to ensure that the CSSF is able to engage fully with the complicated process of international co-ordination and that the new model of EU cross-border supervision is made to work.

Supervisory resources in Luxembourg have steadily increased and appear adequate. Although the banks themselves have the primary responsibility in managing risks, the crisis has underlined the importance of effective supervision. Compared with other European countries with big financial centres, the means available to the Luxembourg CSSF appear adequate, although exact comparison is difficult (Figure 4.11). Compared with banking assets, supervisory budgetary and human resources appear to be relatively high. However, if the asset management industry is included, supervisory resources are more limited, although fund management activities are in some sense less risky than banking. The CSSF's resources have been growing significantly in recent years and faster than the volume of assets. From 1999 when it was created in its current form to 2008, its staff increased by a factor of almost 2.5 while banks' assets increased by a factor of 1.5 and the number of investment funds by 2. Additional staff has been hired following the crisis, including significant numbers of experts from the private sector, and on-site inspections have increased. Statistical reporting has been upgraded with the implementation of new reporting forms. The main challenge now is for the supervisor to become more effective, and ensuring it has sufficient capacity to build up its own independent assessment of the key risks facing the institutions and their interaction in the market.

Overall responsibility for financial stability is split between the CSSF and the central bank with no institutional mechanisms to ensure a coherent approach to the financial market as a whole. While the CSSF is the main financial supervisor, the central bank (Banque Centrale du Luxembourg, BCL) has responsibility for macroprudential supervision

Figure 4.11. **Resources for financial supervision**

2008



1. Budget of the surveillance authorities (in EUR million) divided by the assets of the financial sector (in EUR billion).
2. Staff of the surveillance authorities divided by the assets of the financial sector (in EUR billion).

Source: Calculations based on data from the surveillance authorities.

StatLink http://dx.doi.org/10.1787/847857472577

and was given a new mandate to supervise liquidity in October 2008. Given the highly integrated way the financial centre in Luxembourg operates, this split of responsibilities for overlapping areas may make effective supervision more difficult. While the two institutions co-operate, there are no formal mechanisms linking them and there is no memorandum of understanding or related procedures. This creates the risk that relevant information is not fully shared between institutions, both statistical data and softer information picked up through on-site inspections and contacts with the market. Furthermore, it may be more difficult to build a picture of the overall functioning of the market in terms of both microprudential developments in individual institutions and macroprudential issues in the market and the economy more widely. It is important that supervisors can be held accountable for maintaining financial stability: this is more difficult when responsibility for related activities is shared between institutions. A number of OECD countries have sought to resolve these tensions by creating a single integrated regulator. This solution may be particularly relevant to small countries, where the absolute size of institutions is necessarily limited. A common objection to bringing together financial supervisors and central banking functions is the risk of weakening the focus of

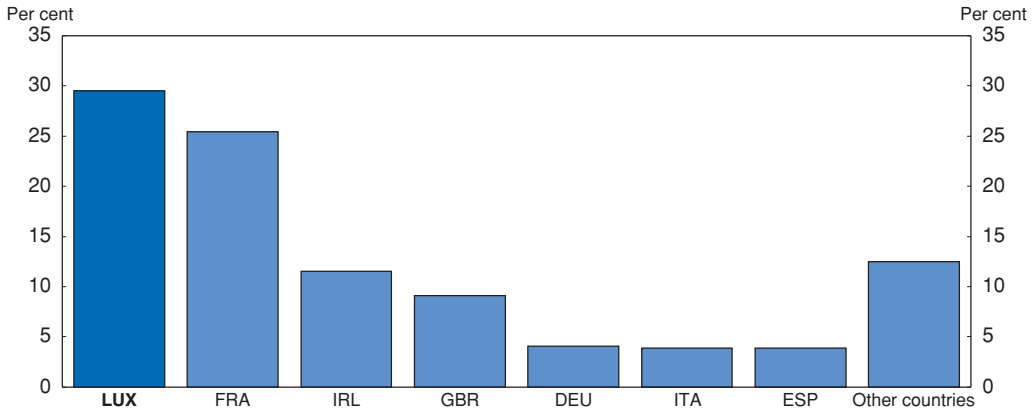
monetary policy on inflation, but this does not apply to euro area countries. There is, however, a cost of institutional change which must be taken into account. Nevertheless, other countries, such as Ireland, have moved increasingly towards integrated supervision. At the minimum, co-operation between the BCL and the CSSF should be institutionalised. While it is neither necessary nor sufficient condition for effective supervision, merging the two institutions into a single institution covering supervision of the entire financial sector could contribute to enhance effective supervision.

Asset and wealth management activities face new challenges

Luxembourg is the second most important international centre for investment funds, second only to the United States and just ahead of France. It has a share of almost 30% of assets under management in Europe (Figure 4.12). Together with that of Ireland, Luxembourg's fund industry centres on fund domiciliation and distribution of fund shares. Luxembourg has 75% of the European market for the cross-border distribution of funds according to the number of authorisations. In particular, its share of cross-border funds covered by the European passport is extremely high (Figure 4.13). This gives the centre a powerful first-mover advantage as these markets continue to develop. While funds are domiciled in Luxembourg, active management activities are very limited. Survey evidence suggests that the management of 70% of the funds is subcontracted, compared with an average of 55% for the European Union as a whole (ZEW, 2006).

Figure 4.12. **Market shares of European investment funds**

2009



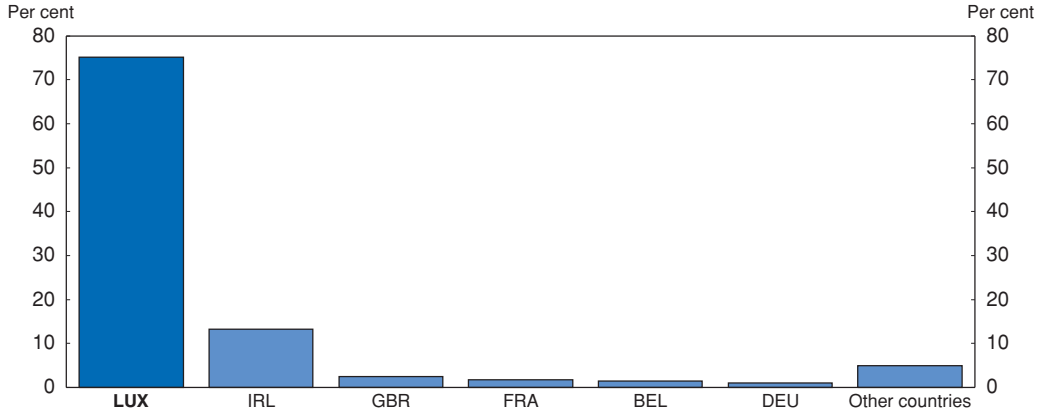
Source: European Fund and Asset Management Association.

StatLink http://dx.doi.org/10.1787/847862086055

Changes in the legal environment and financial developments during the crisis and in the coming years will have a significant impact on Luxembourg. It is not clear whether the net impact of the changes will be positive or negative. In terms of prudential regulation, asset management activities are inherently less risky than banking, because there is not the same leverage or mismatch in positions. Nevertheless, effective regulation is an important part of maintaining the integrity of the market and Luxembourg's competitive position. The UCITS IV directive, published in November 2009, will have a major effect on the investment funds industry in Luxembourg (Box 4.4). This could be comparable in scale to the UCITS I directive in 1985, which sparked the growth of the funds sector in Luxembourg (OECD, 2008a).

Figure 4.13. **Market shares of European cross-border investment funds**

2008



Source: PricewaterhouseCoopers, 2009.

StatLink http://dx.doi.org/10.1787/848001315162

Box 4.4. **The UCITS IV Directive**

The UCITS IV Directive makes far-reaching amendments to the first directive on investment funds. In particular, it introduces six significant changes:

1. It institutes a "European Management Company Passport" (MCP), which will allow fund management companies to conduct in other member states the activities for which they are licensed at home. Funds domiciled in one country will not have to be monitored by a local management company but can rely instead on a depositary bank. This measure broadens the choice of geographic location for investment fund services.
2. The "master-feeder" structure is authorised throughout the European Union. The feeder funds can be adapted to meet different demands and can invest the bulk of their assets in a master fund.
3. A harmonised legal regime is instituted for cross-border mergers of investment funds and their components. This will encourage the merger of small funds to create big cross-border funds.
4. A new disclosure document for investors, "Key Investor Information", replaces the current simplified prospectus. This document will summarise investment objectives, performance history, costs borne by the investor, and the risk profile.
5. The notification procedure that must be followed before units of a fund can be distributed in another European country will be simplified and streamlined. The home country regulator will have ten days to transmit the registration file to the host country regulator. This measure will improve the functioning of the "common passport".
6. There will be better cross-border co-operation among European regulators.

Regulatory changes will increase competition in the industry

The new directive is expected to foster consolidation and rationalisation of the funds industry in Europe. Notwithstanding earlier directives, the European funds market remains segmented. Contrary to many other economic sectors which are dominated by a few big firms, the asset management industry is still rather fragmented with a great many relatively small funds. Indeed, the average size of European funds of all types is less than

one-sixth that of American funds. Among the obstacles to integration of the European market, the key constraints include lengthy procedures for registering funds in another country, discriminatory taxation, national regulatory differences, and the characteristics of existing distribution channels (Heinemann, 2002). UCITS IV will help reduce these barriers and permit significant economies of scale and scope in the industry (Latzko, 1999; Ang and Wuh Lin, 2001). Studies have detailed the costs in the funds' production chain by analysing the fees charged for asset management, administration, transfer, custody, audit and distribution (CRA, 2006; Lipper-Fitzrovia, 2006). In general, costs (measured by total expenses as a percentage of the value of assets under management) appear to be inversely related to the size of the fund. Fund service providers suggest that average accounting costs for a large fund (more than EUR 250 million) are proportionately less than a quarter of those for a medium-sized fund (EUR 70 million), although the high costs of small funds could also be linked to performance (Chen *et al.,* 2004).

Luxembourg is likely to benefit from the expected shift to more cross-border master funds. The Luxembourg investment funds industry is highly specialised in funds that are distributed throughout Europe and would be directly concerned by rationalisation and concentration as a result of UCITS IV. The fall-off in revenues from funds management during the 2007-09 financial crisis is an additional factor in favour of rationalisation. Moreover, the UCITS IV directive calls for the creation of a "master-feeder" cross-border funds structure. The "feeder" fund is generally domiciled in the investor's country to accommodate local market characteristics or taxation differences, and invests most of its assets in "master" funds that can centralise their management and administration. The Luxembourg market, which accounts for the vast majority of existing cross-border funds, would seem to be well positioned in terms of the structures and capabilities to serve as the domicile for "master" funds. The tax aspect of "master-feeder" funds has not been clearly established and would seem to be a crucial element in the strategy of fund managers (KPMG and RBC-Dexia, 2009). Rationalisation in the industry that would lower costs for investors may have some negative impact on the volume of activities in Luxembourg.

The efforts to adapt to the new investor protection rules, as well as the specialisation in the management and distribution of UCITS funds, could help to attract more of these activities to Luxembourg. The new provisions governing investor information pursuant to the MIFID directives, which have been applicable to banks since 2007, are being introduced to cover areas such as internal controls, investor information, and transparency in the fees charged by the management companies. These requirements will significantly increase entry costs for new fund managers. This should foster centralisation of these functions. Like some other European countries, Luxembourg already requires domiciled management companies to observe MIFID or comparable provisions.[4]

The UCITS IV directive may also change the outsourcing strategy followed by management companies. For companies that have adopted significant "delegation" of their activities to service providers, the new requirements for publishing fees and retrocessions may reduce the multiplication of service providers and intermediaries. Survey evidence suggests that taxation (including VAT, taxes on management fees and transfer price for cross-border groups) is the most important factor in locational decisions, followed by supervisory conditions, and the presence of an existing infrastructure and expertise (KPMG and RBC-Dexia, 2009). It is unclear whether possible changes in the pattern of outsourcing and its location will increase the share of value-added of activities carried out in Luxembourg.

The role of depositary banks need clarification

The crisis revealed deficiencies in the legal framework governing depositary banks. Depositary banks play a crucial role in support of fund management, assuring "safekeeping" for securities and supporting the sound management of the funds. Regulation of these institutions is not covered by the European passport under the UCITS IV directive and will remain a responsibility of the state where an investment fund is registered. Given the size of assets under management, this is a sizeable activity for the Luxembourg financial sector. Issues concerning depositary banks have arisen during the current crisis in relation to the collapse of the Madoff scheme and of the Lehman Brothers investment bank. These involve the clarification of the legal liability of funds depositaries and some features of the current Luxembourg legislation (Bon and Vilret-Huot, 2009). Luxembourg law makes it clear that the depositary is responsible for safekeeping of the assets and for overseeing certain transactions conducted by funds. The deposit contract assumes that the depositary keeps the securities, oversees them and returns them at the request of the depositor. Observance of these obligations could well be compromised, in particular with respect to oversight, in those very frequent cases where assets circulate among sub-depositaries (Riassetto, 2009).

Luxembourg should consider measures to clarify the legal framework in this field, even if legal separation would impose administrative costs, in order to keep the market functioning properly and to minimise the risks to Luxembourg's reputation as a financial centre. The EU directives have always called for "organic" separation between the fund management functions and the depositary bank function (safekeeping and control over the functioning of the fund) to prevent conflicts of interest. Some other countries prohibit any ownership link between the manager and the depositary.

New specialised funds are being created

In recent years, Luxembourg has tried to develop alternative and specialised funds, alongside the more established investment vehicles. Following the earlier pattern of creating an attractive legal framework for certain activities, two instruments have been put in place. The *Société d'Investissement en Capital à Risque* (SICAR) functions as an investment fund, but with no restrictions on its portfolio or its investment policy. This allows private equity investments within a regulated framework. This is intended to compete with London's strong position in this market. More recently, a framework for Specialised Investment Funds (*fonds d'investissement spécialisés*) was established, anticipating the forthcoming European directive on alternative funds management.[5] These funds are aimed at professional managers and have fewer restrictions than conventional investment funds. However, both of these types of investment are regulated and so can take investments from standard funds. They may also offer legal and tax advantages. Since 2007 and despite the financial crisis, around 700 special investment funds have been set up under these provisions. Luxembourg's ability to attract these activities may be strengthened by the crisis as poorly-regulated offshore financial centres now seem less attractive. However, it is unlikely that the higher value-added parts of these activities will be carried out in Luxembourg, given the past experience with more conventional funds, and service providers will need to adapt to this new potential source of demand. A draft EU directive on Alternative Investment Fund Managers could have important implications for how these special fund management activities develop in Luxembourg in the future.

Wealth management is being challenged by international tax and regulatory changes

Wealth management and private banking are significant features of the Luxembourg financial sector. Some estimates suggest that Luxembourg could be the third largest international centre for wealth management, behind Switzerland and the Caribbean, and ahead of the Channel Islands,[6] although there is no official definition of these activities. They developed since the early 1980s, supported by banking secrecy, and tax policies in the neighbouring countries (OECD, 2008a). The industry is supported by laws allowing the establishment of specialised companies, and structures that are highly attractive to financial companies. This industry employs somewhere between 6 000 and 7 000 people directly.

The wealth management industry is facing challenging times in the face of changes in its customer base and the international regulatory and tax environment. In 2009, Luxembourg withdrew its long-standing reservations on the exchange of information "foreseeably relevant for tax purposes" under the OECD Model Tax Convention and has since concluded and ratified 22 amendments to bilateral taxation treaties (Box 4.5). This marks a prompt and serious implementation of the new information exchange regime. It is uncertain to what extent banking secrecy has influenced the decision to make deposits in Luxembourg in the past, and the impact on the industry is therefore difficult to evaluate. For the moment, it seems that the effects have been limited. However, there is persistent European and international pressure to reform the international tax system further. The impact of the EU withholding tax, which will increase to 35% in July 2011, should be carefully evaluated against the alternative regime of automatic exchange information for tax purposes.

Box 4.5. **Luxembourg and information exchange for tax purposes**

Co-operation in international taxation is important to avoid double taxation and tax evasion.

Article 26 of the 2004 OECD Model Tax Convention with respect to Taxes on Income and on Capital requires contracting states to "exchange such information as is foreseeably relevant, including bank and fiduciary information" for the assessment and administration of the taxes of the other Party. Four OECD countries, Austria, Belgium, Luxembourg and Switzerland, entered reservations to this Article and had not included it in their tax treaties.

On 13 March 2009, Luxembourg and the three other OECD countries withdrew their reservations to Article 26. Luxembourg has since concluded 22 agreements (new treaties or Protocols to existing treaties) to include information sharing on request as set out by the Article. As a result, Luxembourg has been moved up in the category of jurisdictions which have substantially implemented the OECD standard, as reflected in the progress report issued by the OECD Secretary General. Luxembourg is also a member of the Global Forum on Transparency and Exchange of information for Tax Purposes which will assess the implementation of the standard by member jurisdictions.

At the EU level, the Savings Directive of 2000 that was implemented from July 2005 sets out automatic exchange of information for tax purposes as an ultimate objective. This would require that tax authorities automatically exchange files with the tax details of each other's residents. Austria, Belgium and Luxembourg have opted during a transitional period to apply an alternative withholding tax option. Tax is withheld at source unless the payee proves that tax should not be withheld. The rate of the withholding tax started at 15% but increased to 20% from July 2008 and will rise to 35% in July 2011. Belgium will move to automatic information exchange when the withholding tax reaches 35%.

Box 4.6. **Summary recommendations on the stability and development of the financial sector**

The main policy actions to strengthen financial regulation need to be taken at European and international level, notably through the implementation of such initiatives as the ECOFIN Financial Turmoil and Financial Stability Roadmaps. As a major international financial centre, Luxembourg can play a constructive role in these developments. In addition, some measures should be taken at a national level to safeguard against risks and ensure the sustainability of the sector:

- Implement the CSSF circular and BCL regulations on liquidity risk with the emphasis on stand-alone liquidity and introduce new quantitative regulations in line with international best practice.
- Ensure that supervisory practice and information gathering evolve in line with international best practice and requirements. The recruitment of additional specialist staff should continue.
- Participate fully in the development of cross-border supervisory colleges, from which Luxembourg has a great to deal to gain in terms of understanding the risks of local institutions.
- Strengthen co-operation between the CSSF and the BCL through the creation of institutional arrangements clearly setting out the responsibilities and requirements for the two institutions. Consideration would be given to creating a single integrated financial supervisor by merging the CSSF and the central bank.
- Clarify the requirements on custodian banks. Custodial institutions should be under separate ownership from asset management activities.
- Reduce the pay-out time of the deposit insurance scheme to a few days. Proposals to fund the scheme on an ex ante basis using risk-based premia should be implemented.
- The OECD welcomes Luxembourg's withdrawal of its objections to Article 26 on information sharing for tax purposes and encourages it to continue to implement this decision rapidly.
- Ensure that competitive conditions favour the continued development of the financial system through framework conditions, such as improved transport links and housing supply, greater competition to reduce costs in the local economy and improved educational outcomes to provide a local workforce better equipped to participate in financial sector activities.

Private banking is a mature industry in Luxembourg and the growth perspectives of this sector may be limited, even if the market around the world has strong growth potential. This is due to changes in the international regulatory environment and the nature of the local industry. One constraint is that Luxembourg has been oriented towards relatively mature European markets rather than emerging economies. In 2009, half of private banking assets were in cash or fixed-income products, where activities have lower value-added and management margins are relatively thin. However, private banks in Luxembourg have sought to develop a broader range of products for family office and wealth management and efforts are under way to diversify the client base by attracting high net worth individuals from emerging markets, in particular from the Middle East, the Far East and Latin America.

Luxembourg relies on two types of entities to attract more sophisticated wealth management activities. There are 76 000 of these entities domiciled: 50 000 are structured as *Société de participations financières* (SOPARFI) and the remainder as *Société de gestion de patrimoine familial* (SPF). The annual volume of funds flowing through these specialised financial entities may exceed EUR 100 million. The SPF entities replace the widely-used "Holding 29" entities and offer a favourable tax regime,[7] with their activities limited to holding equity interests in other companies and reserved to individuals. The SOPARFI is a fully taxable resident corporation that can take advantage of double-taxation treaties and of the European Union parent-subsidiary directive.[8] In addition, the proposed EU Directive on Alternative Investment Fund Managers (AIFMs) could create new opportunities for Luxembourg's financial centre in terms of wealth management and investment vehicles.

Notes

1. The insurance share in tax revenues was up strongly in 2008, primarily due to the reinsurance sector, which accounts for 81% of taxes paid by the sector. One large reinsurance concern transferred all its European activities to Luxembourg, boosting taxes from EUR 38 million in 2007 to EUR 269 million in 2008.
2. Pierre, G. (2008), "Pourquoi une révision de la Capital Requirement Directive ?", *Le Mensuel AGEFI*, Luxembourg, October.
3. Circulaire CSSF 09/403 May 2009, "Saine gestion du risque de liquidité – Modification de la circulaire CSSF 07/301" and Banque Centrale du Luxembourg, "Règlement de la Banque centrale du Luxembourg 2009/N°4 du 29 avril 2009 relatif à la surveillance de la liquidité".
4. Luxembourg: law of 13 July 2007.
5. The law of February 2007 on "specialised investment funds" replaces the law of 19 July 1991 on institutional UCIs.
6. Boston Consulting Group.
7. No taxation of dividends paid to non-residents, no municipal business tax, and annual wealth tax and subscription tax of 0.25%. As a counterbalance to this favourable tax regime FSPs are excluded from the scope of double-taxation treaties and are ineligible for the common tax regime between parent corporations and their subsidiaries in the European Union.
8. As a fully taxable corporation, it can take advantage of double-taxation treaties and the parent-daughter directive, provided it confines its activities to the holding and disposal of shares. This common tax regime between the parent company and its subsidiary means that dividends paid by a corporation, resident or not, are under certain conditions tax-free in Luxembourg, where the parent corporation (the SOPARFI) is domiciled. Provided these conditions are met, there is no withholding of tax on the income distributed by the SOPARFI, and this structure is widely used as a tax optimisation strategy for international groups and wealth managers. The capital of the SOPARFI may be represented by nominal or bearer shares.

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Glossary

ADEM	Public Employment Service
ALMPs	Active labour market programmes
APW	Average production worker wage
AW	Average wage
BCEE	Banque et Caisse d'épargne de l'État
BGL	Banque Générale du Luxembourg
BIL	Banque Internationale à Luxembourg
CEBS-BCBS	European Committee on Banking Supervisors
CSSF	Financial Sector Supervisory Commission
DRG	Diagnosis-related group
ECB	European Central Bank
ETS	European Union Emission Trading System
EPL	Employment Protection Legislation
FISIM	Financial intermediation services indirectly measured
FWA	Fair Work Australia
GDP	Gross domestic product
ICT	Information and communication technology
IWBs	In-work benefits
MCP	EU management company passport
METR	Marginal effective tax rates
MFI	Monetary and financial institutions
MMF	Money market fund
NEEAP	National Energy and Efficiency Action Plan
PAGs	General planning programmes
PMR	Product market regulations
PTR	Participation tax rates
PST	Transport Sector Plan
R&D	Research and development
RMG	Revenu minimum garanti
SICAR	Société d'investissement en capital à risque
SOPARFI	Société de participations financières
SPF	Société de gestion de patrimoine familial
UCITS-IV	EU Directive on Undertakings for Collective Investments in Transferable Securities IV

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