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## IV. Structural reform for sustaining high growth

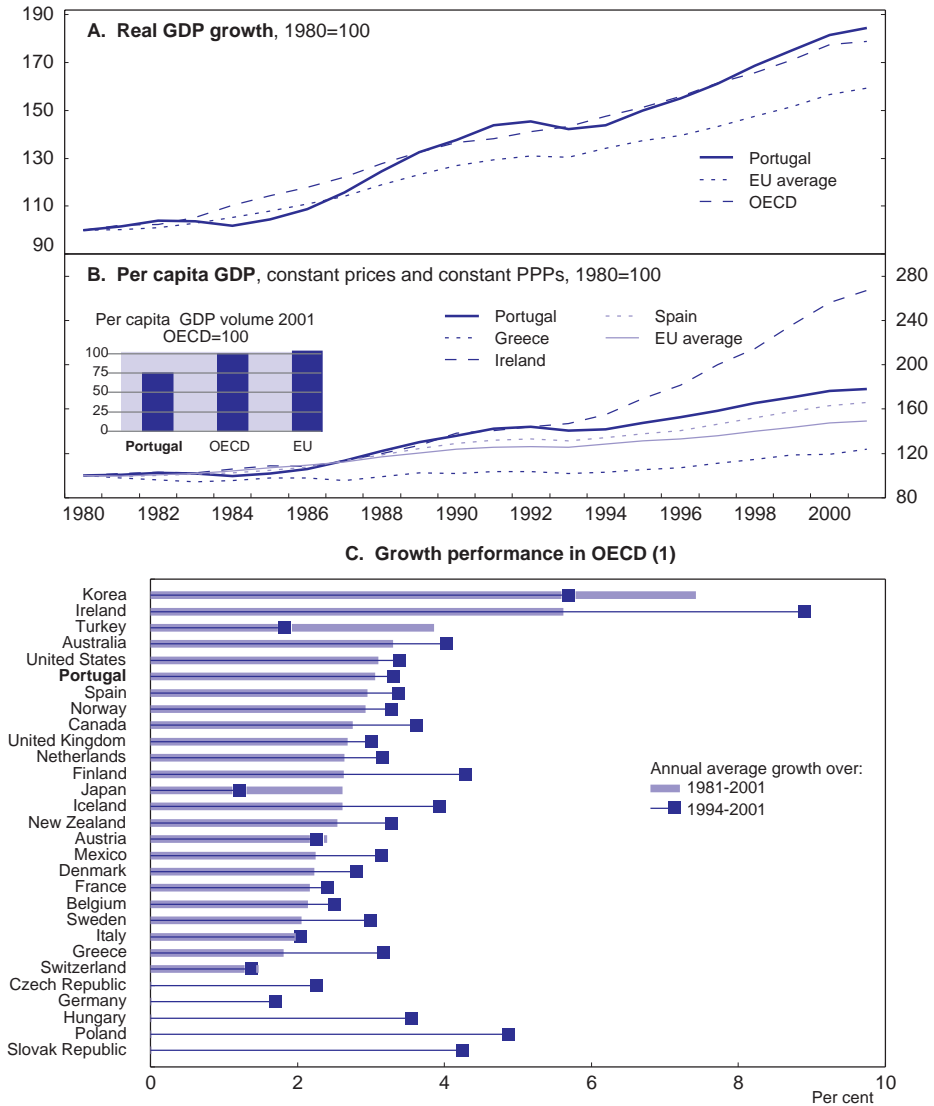
The weak macroeconomic conditions, the urgency of budgetary consolidation and the need for improving the effectiveness of public expenditure which are described in the previous chapters should not divert the attention of policy makers from moving forward in structural reform. The new government, in place since April 2002, has also emphasised the need to advance on a wide front in order to foster growth and productivity. This chapter starts by reviewing Portugal's economic performance. It then focuses on key areas of a comprehensive growth-oriented strategy for Portugal: enhancing human capital and improving labour market adaptability; putting in place conditions conducive to the adoption of new technologies and to the dynamism of entrepreneurial activity; and strengthening competition in product markets. A summary of the OECD's main recommendations for further structural reforms is included at the end (Box 11). The chapter concludes with the discussion of three environmental dimensions of sustainable development: air pollution, water pollution and the sustainable use of natural resources.

### Portugal's growth performance in comparison

The Portuguese economy has recorded rapid growth in the past 20 years, allowing some catching up in living standards with the European average.<sup>72</sup> Per capita GDP now stands at three-quarters of the EU average (2001, measured in PPP), about 20 percentage points more than at the time of accession to the EU in 1986. Nonetheless, with the second lowest per capita GDP in the EU, Portugal still has some way to go (Figure 24). The gap in income levels between Portugal and the EU average reflects only to a small extent lower utilisation of labour, as employment rates are relatively high in Portugal. The main cause of the income gap is the lower level of labour productivity.

This lower level of labour productivity raises the question of why productivity has not grown at a faster rate, and, what can policies do to raise it. In standard growth accounting analysis, growth of output is "explained" in terms of growth of inputs of labour and capital and a residual factor interpreted as technological progress, or multifactor productivity. Such analyses do not leave a role for

Figure 24. **Portugal's growth performance in comparison**  
Measured by the real GDP



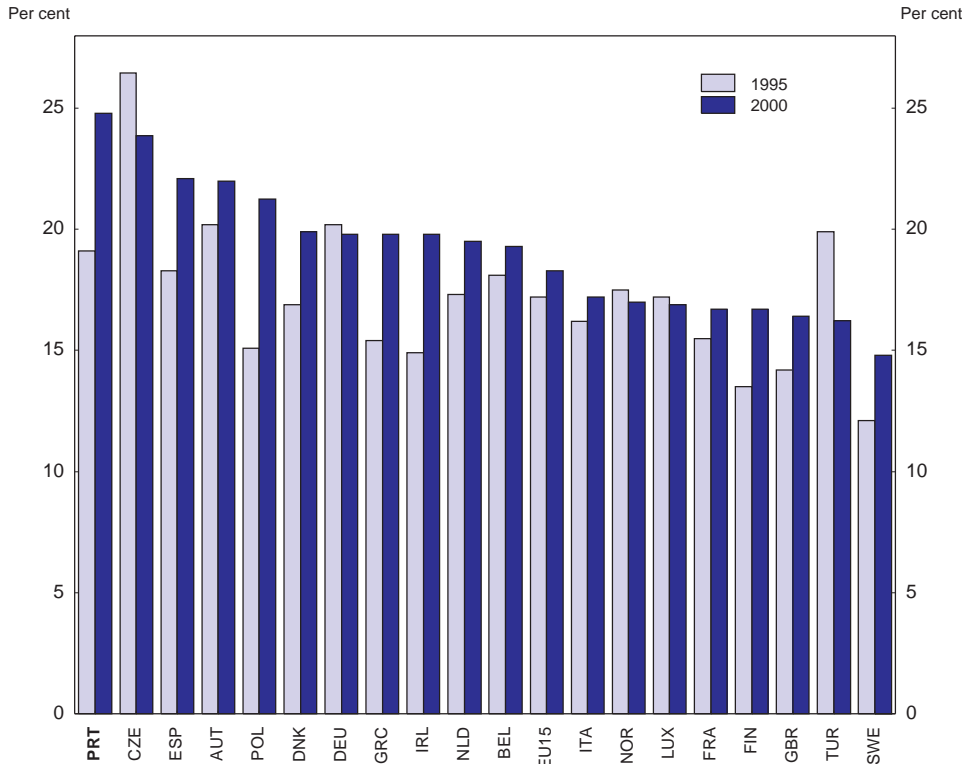
1. The series for the Czech Republic, Germany (due to unification), Hungary, Poland and Slovak Republic are incomplete before 1991. These countries are ranked according to alphabetical order.  
 Source: OECD, *Main Economic Indicators*; OECD, *National Accounts*.

policy in explaining growth, which by hypothesis depends on exogenous factors such as savings rates and population growth, and the unexplained residual term. An alternative approach is based on a (conditional) convergence model, in which growth of per capita GDP depends on initial conditions (levels of human and physical capital as well as of output) and policy-related variables, that help explain the convergence of per capita GDP growth to an equilibrium value over time. This approach was one adopted in the OECD “Growth Project” (2001), using panel data for 19 OECD countries between 1974 and 1997.<sup>73</sup>

In the particular case of Portugal, that analysis showed that during this period, i) actual Portuguese per capita growth was above the OECD average by more than half a percentage point (*i.e.* there was convergence of per capita incomes towards the OECD average); ii) the main reason for the fast growth was the low starting level, which boosted growth by 2½ points relative to the OECD average, *ceteris paribus*; iii) because the level of human capital was considerably lower than the OECD average, the growth rate was lowered by 1.2 percentage points, again *ceteris paribus*; iv) an above-average share of investment in GDP (Figure 25) raised growth by about a half-point; v) the separate effects of demographic factors, of trade opening and of the “size of government” were each comparatively small, but cumulatively more than offset the negative impact of macroeconomic instability; and vi) a “country-specific effect” lowered growth by 1½ points, *ceteris paribus* (Table 16). This estimated country-specific effect was the largest for all countries in the sample, and its interpretation is that Portuguese growth has been held back in the past by inefficiencies that have wasted resources of labour and capital and prevented them from being used optimally. In this sense, growth of labour productivity was “too slow”.

Indeed, during the 1990s, in particular, annual Portuguese labour productivity growth rate was below 2 per cent.<sup>74</sup> If the raw labour productivity data are corrected for increases in the quality of labour, as proxied by the educational attainment of the labour force, hourly labour productivity growth in Portugal, at 1 per cent annually in the 1990s, has lagged behind that in other OECD countries, on average (Figure 26). Although the levels of educational attainment in the Portuguese labour force have risen over past decades, they are still below the OECD average. In the early 1970s, compulsory schooling lasted only 4 years, helping to explain why only 10 per cent of older workers have at least upper secondary educational qualifications (see section below). Subsequent reforms have tripled this ratio for younger workers, and the “Growth Project” analysis estimated that without this progress, the acceleration in per capita income growth would have been less marked in the 1990s.<sup>75</sup> Nevertheless, there is ample room for substantial increases in output via reforms that remove inefficiencies in the way resources are used, allowing the economy to reach its true potential, as well as other reforms that increase the potential rate of growth itself.<sup>76</sup> Such reforms should be directed to making product markets function more efficiently *via* competition-oriented

Figure 25. **Private investment share**  
Per cent of GDP



Source: European Commission, Structural Indicators.

policies, and reducing the regulatory burden on enterprises which, though improved, compares poorly with other countries (Table 17), and discourages innovation. The results of Scarpetta and Tresselt (2002) suggest that an alignment of the Portuguese regulatory stance to “best practice” would narrow the technology gap and increase productivity levels.<sup>77</sup>

The effects of labour market reforms go beyond their direct impact on labour market outcomes because they also enhance innovative activity and hence output growth. The potential growth effects of labour market reforms (like easing employment protection, reducing the administrative extension of collective

Table 16. **Factors explaining differences in growth rates across OECD countries<sup>1</sup>**

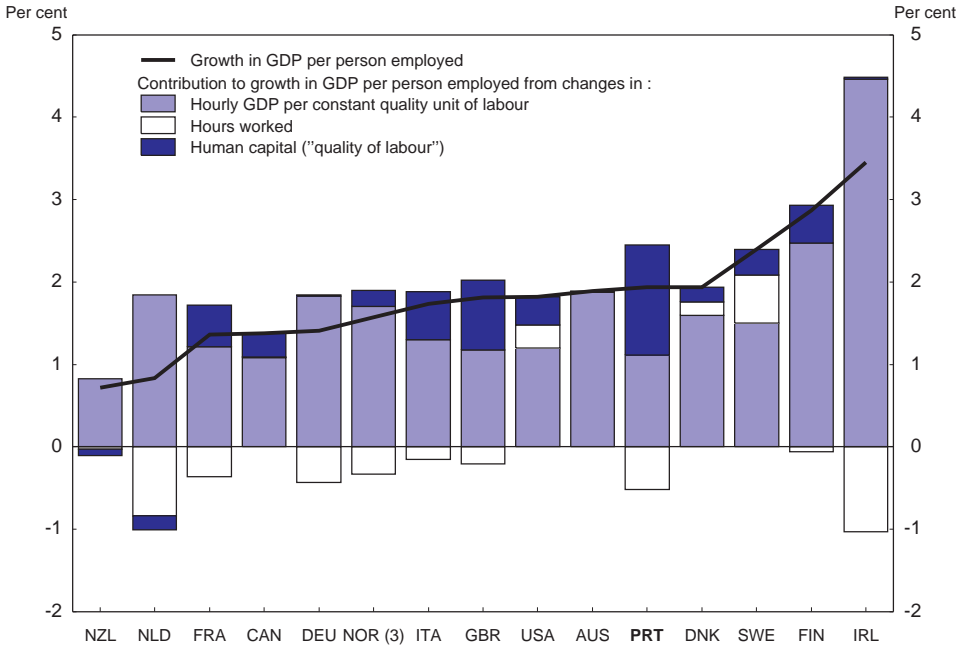
1970s-1990s, annual percentage point growth rates, per capita

	Annual average growth rate	Growth differential	Initial conditions (real GDP/pop)	Investment share	Human capital	Population growth	Variability of inflation (SDinfl)	Government consumption	Trade exposure (Trade exp <sup>adj</sup> )	Residual country specific effect
Ireland	3.02	<b>1.47</b>	1.54	-0.18	-0.32	-0.18	0.01	0.09	0.17	0.34
<b>Portugal</b>	<b>2.15</b>	<b>0.60</b>	<b>2.56</b>	<b>0.58</b>	<b>-1.20</b>	<b>0.07</b>	<b>-0.10</b>	<b>0.10</b>	<b>0.11</b>	<b>-1.52</b>
United States	1.93	<b>0.38</b>	-1.62	-0.34	0.63	-0.09	0.07	0.09	-0.25	1.89
Finland	1.82	<b>0.27</b>	0.51	0.05	0.02	0.15	0.00	-0.06	-0.26	-0.14
Italy	1.73	<b>0.18</b>	0.22	-0.13	-0.69	0.13	0.02	0.01	0.14	0.48
Norway	1.72	<b>0.17</b>	-0.12	-0.05	0.35	0.07	0.03	-0.06	-0.04	-0.01
Denmark	1.69	<b>0.14</b>	-0.57	0.28	0.21	0.12	0.02	-0.14	-0.05	0.27
Australia	1.68	<b>0.13</b>	-0.37	0.20	0.52	-0.25	0.03	0.01	-0.41	0.40
Belgium	1.66	<b>0.11</b>	-0.53	0.02	-0.15	0.20	0.03	-0.05	0.53	0.06
United Kingdom	1.63	<b>0.08</b>	0.05	-0.21	0.17	0.15	-0.03	-0.02	0.31	-0.34
Austria	1.57	<b>0.02</b>	-0.41	0.07	0.26	0.01	0.05	0.00	0.03	0.01
France	1.35	<b>-0.20</b>	-0.59	-0.09	-0.10	0.07	0.07	-0.08	0.05	0.48
Canada	1.32	<b>-0.23</b>	-0.90	-0.21	0.62	-0.18	0.04	-0.07	0.14	0.32
Spain	1.28	<b>-0.27</b>	0.73	0.04	-1.12	0.00	0.03	0.07	-0.14	0.11
Netherlands	1.26	<b>-0.29</b>	-0.47	-0.03	0.25	0.01	0.06	-0.13	0.52	-0.50
Sweden	1.20	<b>-0.35</b>	-0.60	-0.10	0.21	0.11	-0.10	-0.17	0.01	0.30
Greece	1.15	<b>-0.40</b>	2.00	0.19	-0.56	-0.07	-0.16	0.17	-0.51	-1.48
Switzerland	0.81	<b>-0.74</b>	-1.75	0.08	0.59	-0.04	0.00	0.15	0.02	0.21
New Zealand	0.53	<b>-1.02</b>	0.34	-0.17	0.31	-0.29	-0.07	0.10	-0.36	-0.87

1. Decomposition of cross-country differences in annualised growth rate (in %) from the average output per capita of 1974-77 to the average output per capita of 1994-97. See Bassanini A. and S. Scarpetta (2001) for details of the analytic approach behind these results.

Source: OECD.

Figure 26. **The role of skills and labour utilisation in labour productivity growth<sup>1</sup>**  
Average annual percentage change, 1990-2000<sup>2</sup>



1. This is based on a simple quantitative decomposition: growth in GDP per person employed = hourly GDP per constant quality unit of labour + growth in average hours worked + human capital adjustment.
  2. 1991-2000 for Germany, 1990-1999 for Ireland.
  3. Mainland only.
- Source: OECD.

agreements and lowering tax wedges) are likely to be reinforced since they increase specialisation in R&D intensive industries. In a rapidly changing environment, improvements in MFP are largely the result of innovation by best-practice firms, technological catch up by other firms and reallocation of resources across firms and industries. Bassanini and Scarpetta (2001) found evidence of a clear positive effect of innovation activity on output: a persistent 0.1 percentage point increase in the share of business-sector R&D spending in GDP was estimated to boost the level of GDP *per capita* by 1¼ per cent in the long term. It follows from the above that action on a wide front is required, with continuing efforts to strengthen competition pressures in product markets, to raise human capital, to ease labour

Table 17. **The regulatory environment: aggregate indicator<sup>1</sup>**  
Time series regulatory indicators<sup>2</sup> (scale 0-6 from the least to the most restrictive)

	1978	1982	1988	1993	1998	1998-1978	Percentage change
Greece	5.7	5.7	5.7	5.5	5.1	-0.6	-0.10
Italy	5.8	5.8	5.8	5.3	4.3	-1.5	-0.25
<b>Portugal</b>	<b>5.9</b>	<b>5.9</b>	<b>5.4</b>	<b>4.9</b>	<b>4.1</b>	<b>-1.8</b>	<b>-0.30</b>
Ireland	5.7	5.7	5.1	4.8	4.0	-1.7	-0.29
Switzerland	4.5	4.5	4.5	4.4	3.9	-0.6	-0.14
France	6.0	5.9	5.7	4.7	3.9	-2.1	-0.35
Spain	4.7	4.7	4.6	4.2	3.2	-1.5	-0.31
Austria	5.2	5.1	4.5	3.9	3.2	-2.0	-0.39
Belgium	5.5	5.5	5.0	4.3	3.1	-2.4	-0.43
Netherlands	5.3	5.5	5.5	4.1	3.0	-2.4	-0.44
Japan	5.2	5.2	3.9	3.2	2.9	-2.3	-0.44
Denmark	5.6	5.5	5.5	4.0	2.9	-2.7	-0.48
Finland	5.6	5.5	4.8	4.0	2.6	-3.0	-0.53
Norway	5.0	5.0	4.3	3.2	2.5	-2.5	-0.49
Canada	4.2	4.2	2.8	2.6	2.4	-1.9	-0.44
Germany	5.2	5.2	4.7	3.8	2.4	-2.8	-0.54
Sweden	4.5	4.4	4.2	3.5	2.2	-2.3	-0.51
Australia	4.5	4.5	4.2	3.3	1.6	-2.9	-0.65
United States	4.0	3.3	2.5	2.0	1.4	-2.7	-0.66
New Zealand	5.1	5.1	3.6	2.2	1.4	-3.7	-0.73
United Kingdom	4.3	4.2	3.5	1.9	1.0	-3.3	-0.76

1. Countries in descending order of their 1998 results.

2. Simple averages of indicators for 7 industries: gas, electricity, post, telecoms, air transport, railways, road freight. Depending on the industry the following dimensions have been included: barriers to entry, public ownership, market structure, vertical integration, price controls.

Source: Nicoletti *et al.* (2001).

market regulations, to facilitate the re-allocation of labour among firms and among sectors, and to foster innovation and technological progress.

### Upgrading skills and human capital

Despite considerable improvements in the last 10 to 15 years, one of the main remaining impediments to higher income levels is the large gap in terms of human capital. The ineffectiveness of the Portuguese education system in imparting relevant skills to all the relevant age groups, notwithstanding substantial allocation of resources, justifies strong policy attention. The upgrading of skills and human capital is key to increase productivity and competitiveness and ensure a successful response to the challenges ahead. At present, Portugal is one of the few OECD countries where job creation in low-skill jobs is still strong. As this is not likely to last, efforts must continue on a wide front to raise the quality of formal education and ensure that all students leaving school have a qualification. In

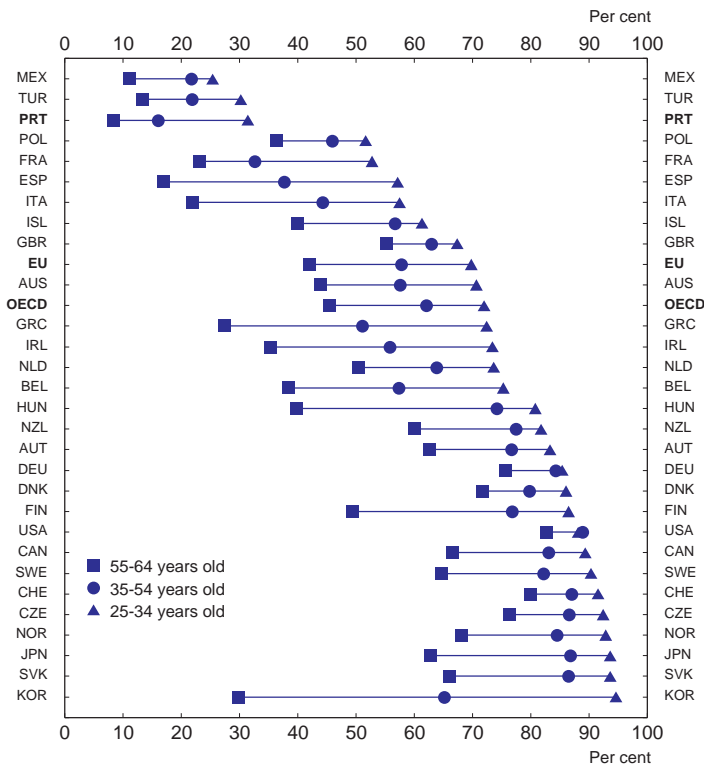


parallel, actions to make the workforce adaptable to new job opportunities will need to be sustained, stressing the importance of life long learning.

### Assessing the stock of human capital

Despite improvements in recent years, Portugal is still one of the worst performers in terms of education attainment of the working age population (Figure 27). In 2001, only one fifth of the population aged between 25 and 64 had completed upper secondary education or better (against more than three-fifths on average in the OECD).<sup>78</sup> Even for younger age groups, Portugal remains far below

Figure 27. **Educational attainment of the working-age population**  
Population with at least an upper-secondary qualification, 2000<sup>1</sup>



1. Per cent of each age group; 1999 for Austria, Finland, the Netherlands and Norway.  
Source: OECD, Labour Market Statistics database.

average: in 2001 about one third of people aged 25 to 34 had attained at least upper secondary education, compared with around three-quarters in the OECD. The results of the work-oriented tests of the International Adult Literacy Survey clearly show that adult literacy is an area for concern. Portugal is among the lowest ranking countries: more than 40 per cent of the population is at the lowest level in all literacy tests.<sup>79</sup> The Portuguese poor performance essentially reflects results obtained by those who have not benefited from upper secondary education.

#### *The poor performance of the educational system*

The share of resources (public and private) that Portugal devotes to education has increased sharply over the past twenty years (see Chapter III).<sup>80</sup> This has financed the increase in enrolment rates and expected duration of studies to the levels prevailing in more advanced countries. However, the Portuguese education system does not seem efficient, comparing the level of spending with education outcomes.<sup>81</sup> The percentage of students graduating from upper secondary school at 18 years is relatively low, because of high failure and dropout rates. In 2001, around 45 per cent of young people aged 14-18 left school with only basic qualifications, the highest proportion in the European Union.<sup>82</sup> In the past decade, the opening of the tertiary education system to the private sector led to an explosion in the number and diversity of courses provided. However, at that level as well there are problems of high failure/repetition and dropout rates.

Based on international comparisons, the performance of Portugal's education system rates poorly. The OECD Programme for International Student Assessment (PISA) shows that the ability of Portuguese youth (15-year olds about to finish compulsory schooling) to use their knowledge and skills in order to meet real-life challenges is significantly below the OECD average.<sup>83</sup> In reading literacy of students, Portugal, ranking 26th out of 32 countries, is below Spain or Ireland and close to Latvia and Russia, countries with significantly lower per capita incomes. Similar results were observed in mathematical and in scientific literacy tests (Portugal ranking 28th). Poor achievements by the cohorts that are currently going through school call for immediate policy attention, because they suggest that skill shortages might remain a problem in Portugal for a long time.

#### *The returns to education are high*

The low levels of human capital of the Portuguese workforce make skills particularly scarce and, hence, valuable. Portugal exhibits large economic returns to education<sup>84</sup> (see Box 9). The premium for attending university seems to have increased during the 1990s and is high by international comparison. In addition, recent applied research on wage formation in the Portuguese labour market found that years of education, experience and tenure have positive influence on the individual's wage, with education having the highest impact.<sup>85</sup> The high returns to

### Box 9. Rates of return to education in Portugal, 1999

To obtain information on returns to education in Portugal, the direct derivations of internal rates of return made in Blondal *et al.* (2002) for 10 OECD countries were reproduced for Portugal using data for 1999.\* The results confirm the existence of very high returns to education in Portugal, especially from upper secondary to tertiary education. Overall, the estimates indicate that there are strong incentives for the average student to continue studying beyond the compulsory schooling age.

The overall incentives to invest in human capital that are embedded in the labour market benefits, financing and tax arrangements can be summarised in estimates of private internal rates of return. The internal rate is equal to the discount rate that equalises the real costs of education during the period of study to the real gains from education thereafter. In Portugal, these net gains due to human capital investment in tertiary education are estimated to be above 20 per cent (see Table), which is much higher than for the other 10 countries included in the OECD study. The high private internal rates of return that are available to those who successfully complete upper-secondary and, especially, tertiary education programmes suggest that there are strong incentives for the average Portuguese student to engage in post-compulsory education.

#### Private rates of return<sup>1</sup> to education for men in selected OECD countries

Per cent

	Upper secondary	Tertiary
<b>Portugal (1999)</b>	<b>11.3</b>	<b>23.9</b>
United Kingdom (2000)	15.1	17.6
United States (1999)	16.4	17.5
France (2000)	13.5	14.1
Netherlands (1997)	7.9	9.7
Canada (2000)	13.6	9.2
Sweden (1999)	6.4	9.1
Japan (1999)	6.8	8.6
Italy (1998)	11.2	8.3
Denmark (1999)	11.3	6.8
Germany (1998)	10.8	6.7
Unweighted average	11.3	12.0

1. Rates of return based on after-tax earnings and the length of studies taking into account the unemployment risk.

\* See Annex II for a discussion of methodological issues.

education may reflect the scarcity of skilled labour supply relative to the demand for skilled workers. The demand for graduates is in any case boosted by the public administration, which employs more than half of the annual flow of university graduates.

### ***Enhancing the stock of human capital***

Ambitious targets for upgrading education and workers' skills were set out in the National Action Plan for Employment (NAPE) adopted in 1998 within the framework of the 1997 Luxembourg process in the EU. The NAPE update for 2002 followed closely the guidelines and recommendations drawn up by the European Commission. Among its main priorities, special attention is to be given to improving education and training systems.<sup>86</sup>

#### *How to improve educational achievements*

Recent research work suggests that the improvement of schools depends more on better use of resources than on providing additional funding. Indeed, the gap in Portugal's educational outcomes does not seem to reflect inadequate levels of spending. Hence, reforms in the administrative structure of education, and the combination of incentives and competition, are required.

The Portuguese authorities acknowledge the need for a stronger focus on the quality of education. This may involve an improvement in professional management of schools, namely by enhancing the accountability of teachers and school managers. Related guidelines include the provision of more information about results achieved through different initiatives to facilitate evaluation, with a view to strengthening or discontinuing some programmes. The setting of explicit targets on key quantitative measures of performance could also be useful. Since 2001, a yearly assessment of the performance of a sample of pre-primary to upper secondary schools is made and a detailed report is published on the Internet.<sup>87</sup> In July 2002, a new law for the creation of a comprehensive system of evaluation of all non-tertiary schools was approved; it emphasised the following requirements: auto-evaluation of schools as well as external evaluation based on quantitative measures; public disclosure and certification of results; and rewarding of best performers.

There is substantive evidence that participation in pre-school programmes is positively associated with later success in school. Efforts have been made in Portugal over recent years to improve early childhood education, and by 1999, the coverage of the pre-school education system (3-4 year-olds) had reached European averages. In the nine years of basic education, the range of courses offered has also been broadened and modernised, with the objective of reducing dropout rates.<sup>88</sup> The reunification of the basic education levels, instead of the current division in three cycles, could also contribute to the definition of a

uniform and more modern curriculum and improve student's achievements. Extending compulsory education to the upper-secondary level (12 years, in line with EU standards) should be an important near-term objective. As compulsory education is extended, vocational and technical education will also need to be further developed, as recognised in the 2002 NAPE, to give adequate skills to students entering the labour market.<sup>89</sup> In this context, the recent "nine plus one" years of schooling programme aims at ensuring that those who finish basic schooling with a view to entering the labour market have access to vocational training. Moreover, it is essential to strengthen the general upper-secondary education, making it more demanding to better prepare students to tertiary education programmes. However the need to achieve an appropriate balance between efficiency concerns and a higher enrolment rate in tertiary education requires that the minimum positive mark in upper-secondary graduation, introduced as a condition to access tertiary education institutions, is associated with a strong improvement in the quality of secondary level education.

Skills learned at the tertiary level are critical in providing the basis for technological development, good management and entrepreneurship. In Portugal, the number of universities and courses offered grew strongly in the last decade, as did tertiary enrolment rates. Since 2001, the number of places available is higher than the number of students applying to universities/polytechnics. This fact is explained by demographic factors, which will be reinforced in the future as ageing of the population continues. Currently, some courses already operate with very few students and there has been a progressive reduction of admission requirements, especially in private universities. Given also clear mismatches on the supply-side,<sup>90</sup> it seems essential to re-evaluate the operating and financing conditions of higher education institutions. The Ministry of Higher Education and Science seems committed to increase the quality of tertiary education, while maintaining an even-handed treatment of private and public institutions.<sup>91</sup> The creation of a systematic and independent system of evaluation and certification of universities and courses was one of the measures announced. It seems essential to modernise tertiary education curricula in ways that take into account labour market needs and to eventually close or merge courses with very few students. Additionally, government subsidies should be based on factors other than costs: greater funding should be given to priority areas, and courses/universities that do not meet a quality or desirability test should not be funded at all (see Chapter III for a discussion on the financing of tertiary education).

#### *Facilitating transition from school to work*

A characteristic at upper levels of education in Portugal has been the traditional bias in favour of general education programmes.<sup>92</sup> Maintaining a close relationship between schools and the business community is essential to ensure

that the skills and competencies provided match the needs of the labour market. Exchange of experiences and information among educational, social and economic partners can improve responsibility and understanding. In February 2001, the social partners signed a tripartite agreement with the government on “employment, the labour market, education and training policy”, that seeks to achieve changes regarding the training of employees, especially young people. In March 2002, new rules were introduced allowing companies to recruit young people, aged 16 years or above, who have not completed compulsory schooling or do not possess any vocational qualifications, on condition that they are provided with training opportunities.<sup>93</sup>

Significant advances have been made in boosting technical courses and giving greater emphasis to information and communication technology. Since the beginning of 2002, all schools are connected to the Internet. The challenge is now to increase the quality of the equipment and services available and to improve the ratio of pupils per Internet PC.<sup>94</sup> The Basic Skills Diploma in Information Technology, associated with the finishing of the basic education, was created in 2001 and made available to any citizen.<sup>95</sup>

#### *Supporting lifelong learning*

Increasing demand for workers who are good at using and interpreting knowledge flexibly can be only partially addressed through curriculum changes in schools and universities, because of the usual lags involved in education. Lifelong learning, outside formal education, provides an opportunity for individuals to repair and/or complement previously received education or training. Although survey data are of doubtful reliability for Portugal, they suggest that the proportion of people aged 25 to 64 participating in some continuing education and training is low by EU standards.<sup>96</sup> The Portuguese system for further education and vocational training is characterised by the dominant role of the state, a separation between government agencies responsible for education on the one hand and training on the other till recently and relatively little development of training within firms.<sup>97</sup> A new arrangement introduced in 2002 concentrates responsibilities for education and vocational training in the Ministry of Education.

Significant measures and reforms have been introduced in recent years to improve the adult learning system.<sup>98</sup> Portugal prepared a strategy for the development of adult education in 1998, focusing in particular on providing greater access to those with low education levels. The creation of a specialised national agency (ANEFA – *Agência Nacional de Educação e Formação de Adultos*) in 2000, now integrated in the Ministry of Education, responds partly to the need to co-ordinate all adult learning policies towards a common objective. Portugal is also in the process of defining a new national system of recognition, validation and certification of prior learning and experience. The social partners have a crucial role to play in this

area. They can contribute to the identification of educational requirements and to the development of relevant education and training programmes, providing qualifications that are useful and recognised. The 2001 tripartite agreement included measures to consolidate the adult education public system and set specific objectives for firms' provision of training.<sup>99</sup>

## **Labour market and social policies**

### ***Portugal's labour market performance has been impressive, despite strict regulations***

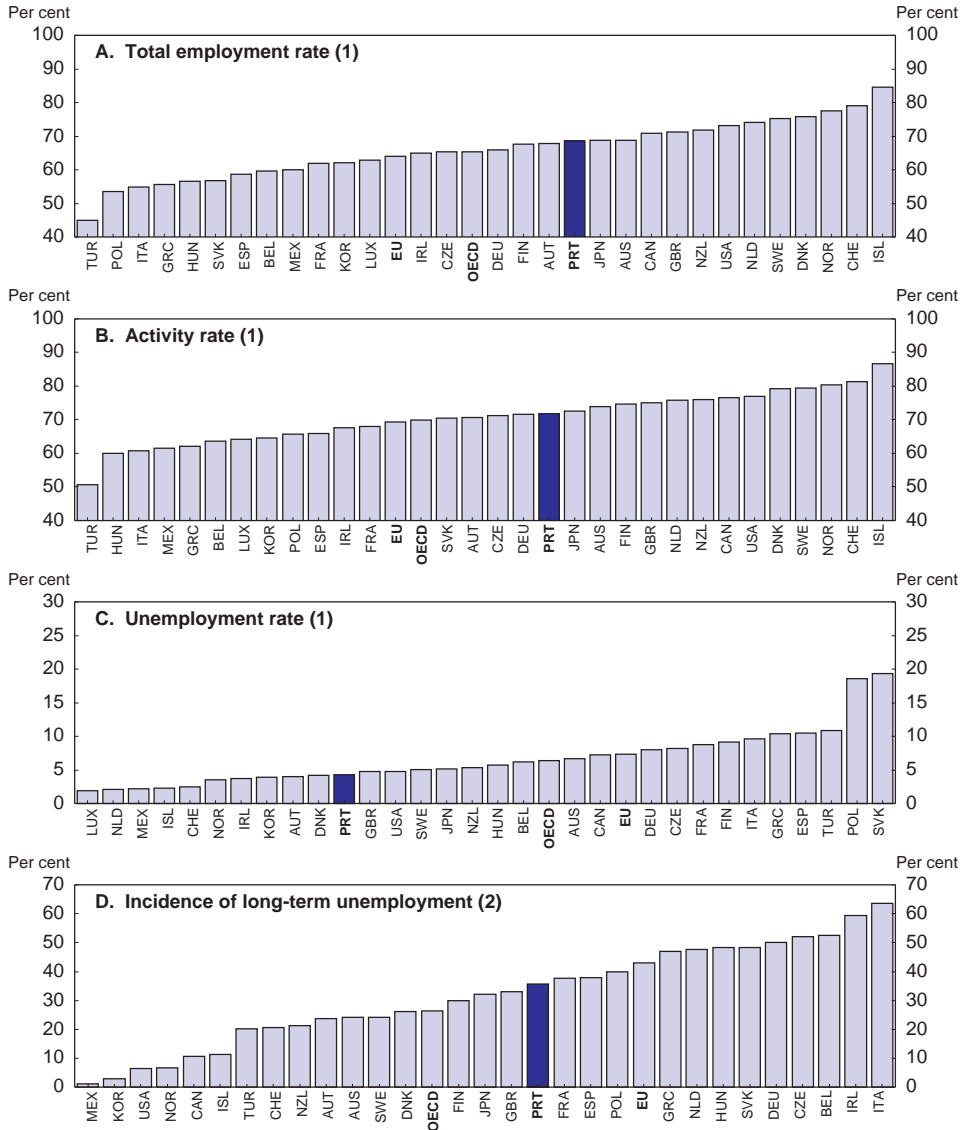
In recent years, the overall performance of the labour market in Portugal has been stronger than in its European counterparts (Figure 28). Labour force participation rates as well as employment rates have increased and in 2001 they stood above both the OECD average and those in most EU countries. Overall, unemployment declined to around 4 per cent in 2001. During the last decade, the unemployment rate in Portugal was four percentage points below the EU average and the employment rate around eight percentage points above.<sup>100</sup> Despite the recent deterioration following the economic downturn (with unemployment reaching 5.1 per cent in September 2002), the labour market situation still compares favorably with most other EU countries.

In recent years, youths and long-term unemployed, the categories most at risk, have also seen their situation improve. The rate of youth unemployment fell from over 16 per cent in 1996 to around 9 per cent in 2001. The share of long-term unemployment also declined in Portugal, though remaining above the OECD average.<sup>101</sup> Policy measures were taken in recent years to facilitate employment (or re-employment), in particular measures targeted at youths and long-term unemployed. However, the still-high proportion of long-term unemployment remains a concern, given its implications in terms of depreciation of a worker's human capital and the subsequent loss of motivation for job search.<sup>102</sup>

#### *High wage flexibility but low adaptability of the workforce*

The implications of labour demand changes on labour market outcomes depend on the specific institutions that regulate the market and the workforce characteristics, such as the degree of labour mobility and adaptability, the nature of contractual arrangements and wage flexibility.<sup>103</sup> Labour mobility and adaptability are low in Portugal compared with many other industrialised countries. The employment protection legislation (EPL) is rather restrictive, reducing the ability of firms to react quickly to shocks. Even after some easing during the 1990s, EPL in Portugal is among the strictest in the OECD but is under review (see below). In short, the legislation on collective dismissals imposes a long, complex, and costly process on employers.<sup>104</sup> High dismissal costs can lead to a continuation of unproductive employer-worker matches and reduce the scale of job-creation, while

Figure 28. **Labour market indicators: an international comparison, 2001**



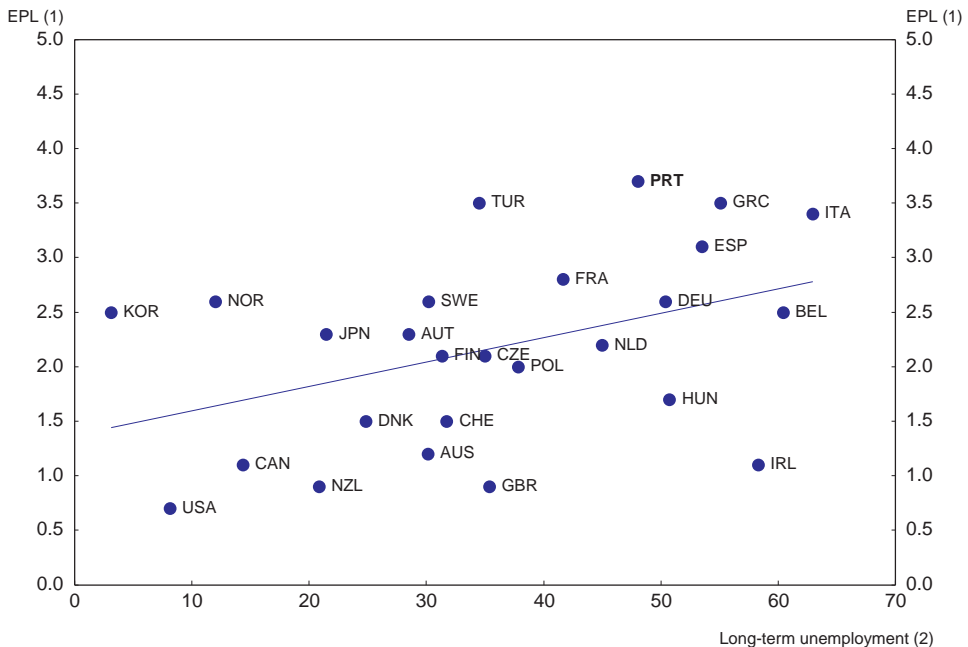
1. Ratios refer to persons aged 15 to 64 years who are in employment or in the labour force divided by the working age population, or in unemployment divided by the labour force.  
 2. Persons who are unemployed for 12 months and over as a percentage of total unemployment.  
 Source: OECD, *Employment Outlook*, July 2002.



increasing the duration of unemployment<sup>105</sup> (Figure 29). In addition, the low educational level of the labour force hinders its ability to adapt to new industries. Improving the efficacy of the public employment service in terms of job-brokerage would facilitate labour mobility. Furthermore, easing housing market restrictions would also enhance the mobility of workers.

By contrast, several forces have ensured a high degree of flexibility of Portuguese wages,<sup>106</sup> thus helping to offset some of the negative effects of low labour mobility. Wage formation in Portugal is characterised by sectoral wage bargaining with limited co-ordination between bargaining unions, which has tended to weaken their bargaining power.<sup>107</sup> Furthermore, the traditional adjustment of the wage drift to the economic cycle also helps to ensure the flexibility of Portuguese wages. Portuguese

Figure 29. **Employment protection legislation: selected OECD countries**

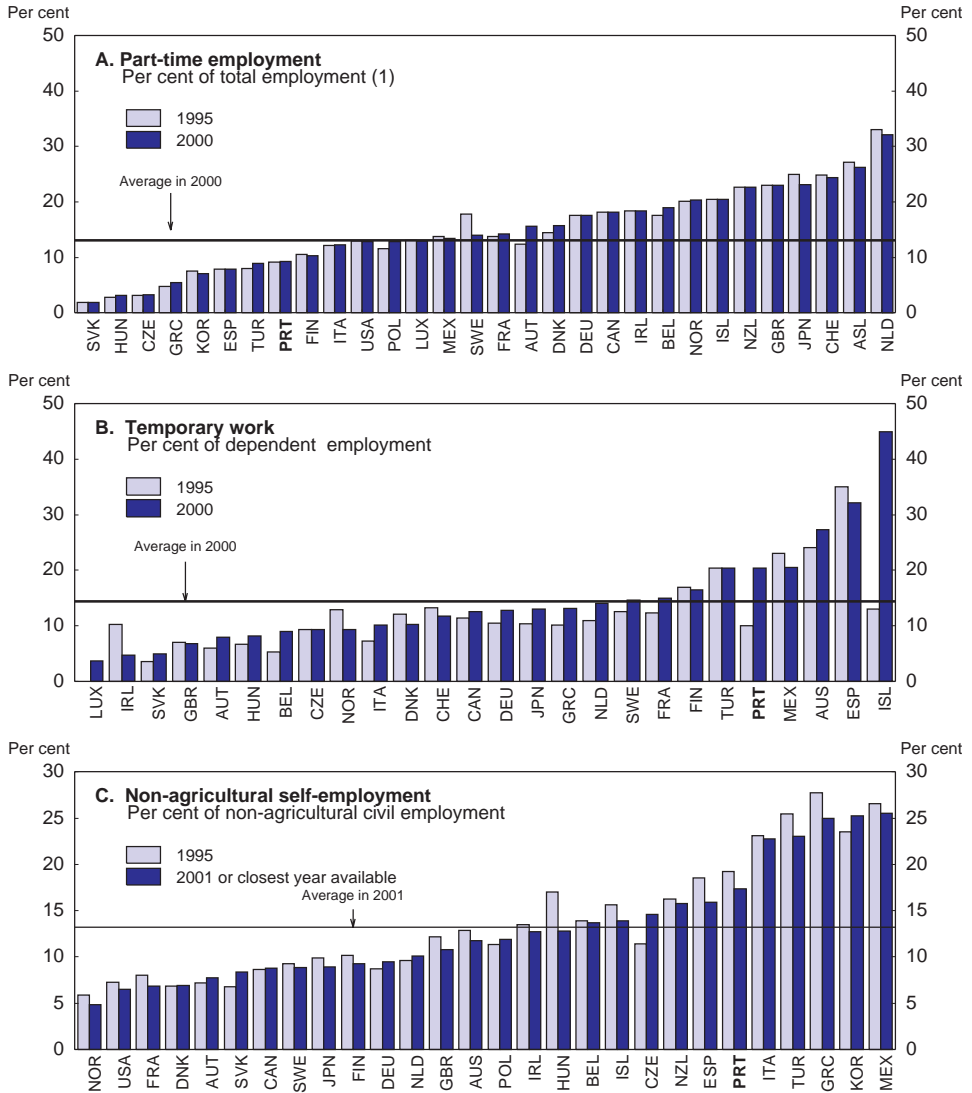


1. The overall indicator of the strictness of employment protection legislation (EPL) is a weighted average of EPL indicators for regular contracts, temporary contracts and collective dismissals. Each of these indicators can range from 0 to 6, with higher values representing stricter regulation. The calculation of these indicators as well as the weighting scheme are explained in OECD *Employment Outlook*, June 1999 Chapter 2.
2. Average incidence of long-term unemployment (12 months and over) as a percentage of total unemployment over the period 1995-2000.

Source: OECD *Employment Outlook*, June 1999; OECD Labour Market Statistics database.

Figure 30. **Types of employment: an international comparison**

Per cent



1. Part-time employment refers to persons who usually work less than 30 hours per week in their main job. Data are expressed as a proportion of total employment, apart from the case of the United States where the data refers to wage and salary workers.

Source: OECD, *Employment Outlook*, July 2002; OECD, *Annual Labour Force Statistics*.

nominal wages react significantly to changes in the unemployment rate and inflation compared with most other OECD countries.<sup>108</sup> In addition, Portugal has a high inter-industry wage dispersion compared with the European standard. In recent years, wage adjustment has acted as a “second-best” for adjustments in employment/unemployment, as large and flexible wage differentials supported job creation and helped to keep the unemployment rate low.

*The share of “atypical” employment contracts has increased*

As a consequence of high firing costs for regular workers, fixed-term contracts have gained increasing weight in Portugal, reaching more than 20 per cent of total employment in 2001 (Figure 30).

There is increasing evidence that Portuguese firms use this type of contracting as a device to select and test workers at an early stage of their work life, to ensure a good matching of the job characteristics with the worker's skills.<sup>109</sup> Such a mechanism would not significantly penalise workers' wage income. However, additional evidence also suggests that a substantial proportion of workers apparently does remain in a chronic situation of temporary contracting. In contrast, the Portuguese labour market is characterised by a relatively low incidence of part-time employment.

In Portugal, the level of self-employment accounts for almost 17 per cent of total non-agricultural civil employment, the third highest share in the EU (where the average share is around 12.5 per cent). A large proportion of self-employed work is in fact economically dependent on a single company, with workers drawing their income from a single employer for prolonged periods.<sup>110</sup> Portuguese firms have taken advantage of the possibilities of contracting out for services to individuals with independent worker contracts, which are subject to less rigid employment regulations.<sup>111</sup> Differences in social security contributions according to the form of contract tended to create a bias in favour of self-employment, but contribution rates have been aligned. Still it remains less costly for the employer to hire workers under such contracts, as there are no fringe benefits involved, *i.e.* holiday and Christmas bonuses, maternity leaves or insurance for accidents at work.

**Recent changes in employment legislation**

*Temporary work contracts have been subjected to new regulations...*

To adjust labour legislation to new forms of employment, the relevant legal framework has been under revision and updating since 1999. The aim is to facilitate the use of contracts adapted to these new forms and to ensure that workers involved in such arrangements are legally protected. In the recent Seville Council recommendation of 21 June 2002 on the Broad Guidelines of the Economic Policies, one of the main priorities for Portugal was to “modernise the labour market

institutions, *inter alia* by adapting employment contract regulations taking into account the need for a proper balance between flexibility and security”.

New legislation for fixed-term employment contracts came into effect in August 2001, tightening the rules of such contracts in the private sector. One of the objectives of the law was to ensure that workers who, *de facto*, were employed on permanent jobs would benefit from a standard permanent employment contract. As a result, temporary contracts are now covered by a set of strict rules governing their scope and termination conditions. In particular, they may be used only in special situations indicated in the law, corresponding to temporary labour force needs.<sup>112</sup> The maximum legal length of general fixed-term contracts in the private sector is 3 years.<sup>113</sup> Then the legal status of the fixed-term contract is automatically changed into a standard (open ended) contract. A proposal for a new Labour Code was approved by the Council of Ministers at the end of November 2002 and is currently open to public discussion. It includes a proposal to increase the legal maximum period of fixed-term contracts.

Supplementary legislation was adopted in March 2002 to encourage permanent employment by means of financial subsidies to small companies that convert a fixed-term contract, on expiry, into a permanent contract.<sup>114</sup> The impact of rules governing temporary employment should be carefully monitored. Offering incentives to permanent contracts and/or putting restrictions on temporary contracts may impede the response to downturns in activity. In addition, the need for such measures may be an indication that employment protection legislation is an obstacle to hiring on “regular” contracts. If job protection legislation is too restrictive and reduces the number of permanent contracts below what would be expected, it would be preferable to ease the general legal framework rather than to restrict the rules for fixed-term contracts.

*... while initiatives have proposed to ease employment protection legislation*

Portugal's economic performance would benefit from efforts to ease employment protection legislation (EPL). Low labour mobility, due in part to strong employment protection, may have hindered more efficient resource allocations in Portugal and negatively influenced productivity growth. Scarpetta and Tressel (2002) found that the negative impact of strict EPL on productivity is stronger in countries, like Portugal, where sectoral wage bargaining without co-ordination is predominant. In addition, cross-country estimates suggest that comparatively stringent EPL and benefit regulations may have reduced employment rates in Portugal by about 4.5 percentage points over the period 1982-98.<sup>115</sup> Efforts should be made to allow more flexibility to negotiate conditions of termination on an individual/firm basis, to reduce barriers to collective dismissals and to liberalise procedural barriers to dismissals.<sup>116</sup>

One of the priorities of the current government is the revision of labour legislation. A new Labour Code (*Código do Trabalho*) was proposed by mid 2002, encountering union opposition. Some of the key points are: an easing of the conditions required for fair dismissals,<sup>117</sup> new measures to fight against absenteeism and fraudulent sick leaves, increasing the geographical/functional mobility of labour and the flexibility of working hours and revising collective agreements procedures. The proposal, if approved by the Parliament, would be a useful step to ease the excessive rigidity of the Portuguese labour legislation.

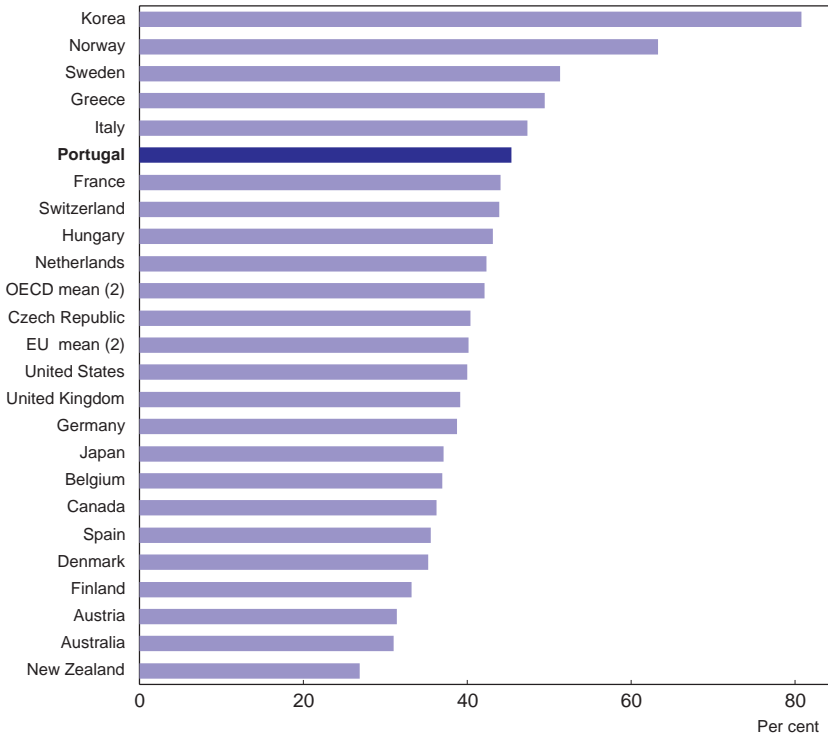
### **Active labour market policies**

Use of active labour market policies (ALMP) has increased dramatically in recent years, the objective being to get people into work by helping job search, lifting skill levels or assisting job mobility between sectors or regions. Programme spending appears to be relatively well balanced between active and passive support (Figure 31). A specific institute, the Institute for Employment and Vocational Training, which operates under the Ministry of Social Security and Labour, is responsible for implementing employment measures, vocational training and running public employment services. The integration of these various functions is appropriate, as is the fact that the Institute operates through a network of local public services, under the authority of regional offices.<sup>118</sup> It would nevertheless be desirable to carry out a systematic monitoring and evaluation of active labour market programmes in order to rationalise the numerous instruments in place.

Specific measures have been introduced over the years to improve employability of groups at risk, especially youths and the long-term unemployed. They have been relatively successful as shown by the rapid improvement in labour market outcomes (OECD 2001a). One of the latest such initiatives, the Job Offer Stimulus Programme, dating from April 2001 and in force until 2006, provides some subsidies with co-financing from European funds.<sup>119</sup> Maintenance of the level of jobs created over a period of at least four years is one of the main conditions of companies to benefit from financial support under this programme.

The effectiveness of the public employment service (PES) in Portugal is relatively low, mainly in terms of its job-brokerage function. The *Instituto de Emprego e Formação Profissional* (IEFP) placements as a share of total hirings in the economy are lower than in most OECD countries.<sup>120</sup> The pool of jobs reported to the agency by employers is typically small and contains mainly low-paying positions that are difficult to fill.<sup>121</sup> Measures have been taken to improve the effectiveness of PES, namely the recent creation of a self-service approach, through the use of electronically available services, as the IEFP started to publish some information on the Internet regarding job demand and supply, training actions

Figure 31. **Labour market policies in OECD countries**  
Share of active labour market policy spending in total spending<sup>1</sup>



1. Average over 1999 and 2000, except for Greece (1998) and the United Kingdom (1998-1999).

2. Country mean excluding Greece and the United Kingdom.

Source: OECD, *Employment Outlook*, July 2002.

and other employment-related matters. The improvement of relations with employers, especially regarding the way they are served at job centres, the promotion of the image of the PES and the early diagnosis of employers' needs in terms of qualifications and skills should be one of the priorities. It is also necessary to implement a rapid articulation of the vocational guidance and training programs offered with the qualification and skill demands of the companies, which should be closely monitored. Additionally, further efforts should be made to enhance the exposure of the PES to market forces and the systematic and continuous evaluation of IEFP programmes should be enforced.<sup>122</sup>

### ***Increasing social insertion while preserving incentives to work***

Increasingly, in OECD countries, welfare is seen as “a springboard rather than a hammock” and an objective of welfare is “making work pay”. This suggests a move away from a welfare system based on passive income support and towards a more active social policy. In Portugal, the coverage of the unemployment benefits is relatively low by European standards as the eligibility conditions are relatively strict.<sup>123</sup> Additionally, even the minimum guaranteed income introduced in 1997 presents a number of features that minimise the risk of creating work disincentives.

The minimum guaranteed income (RMG) aims at ensuring that all individuals have the resources required for satisfying minimum needs, whilst providing for their progressive social and professional integration.<sup>124</sup> One of the objectives is to integrate socially-excluded people into the measures already existing under the general employment policy, rather than creating specific measures. A recent study suggests that the RMG has been particularly effective in reducing the duration and acuteness of poverty. In 2001, additional efforts were made to offer jobs or training to beneficiaries of the RMG. Since then, the government has stressed the need to tighten the operating rules of the RMG. This concern has been addressed in June 2002 in the scope of changes made to the scheme, now called social insertion income (*Rendimento Social de Inserção*, RSI).

### ***The general social security system: the reform process has started***

Portugal's general social security system, which applies to the great majority of private sector workers, is (like the civil servants' scheme) a pay-as-you-go system. The general system's main component is the contributory scheme, which provides old age, survivor and invalidity pensions as well as unemployment, sickness, occupational disease, maternity and family benefits.<sup>125</sup> Social security outlays have increased steadily in the last decade to around 14 per cent of GDP in 2000 (from about 10 per cent of GDP ten years earlier), of which about half are old age and survivors' pensions. This component of social security expenditures will be affected by demographic changes, as the old age dependency ratio is expected to double in the next 50 years. Alongside the public pension system, people have begun to contribute to voluntary private pension funds, encouraged by a tax credit. These funds are managed by authorised life insurance and pension fund companies. The authorities are seeking convergence of the general and civil servant regimes.

#### *Pressures from ageing populations*

Portugal is facing much the same demographic evolution as most other OECD countries in Europe.<sup>126</sup> Currently, there are about four persons of working age (conventionally defined as 15-64 years) for every person over the age of

65 years. By 2050, the proportion will have fallen nearly to two-to-one.<sup>127</sup> This “old-age dependency ratio” has already been rising for some time because of rising life expectancy, but as from about the middle of this decade, it will start to rise much more quickly as the “baby-boom” cohort, which had comparatively few children, starts to move into retirement. The proportion of older people entitled to a public old-age pension will also rise, because of the increasing participation rates of women over the past 40 years. In the absence of further reforms,<sup>128</sup> expenditure on pensions for older people (old-age, survivor and disability pension) is projected to rise by about 4 percentage points of GDP between 2000 and 2040. It would subsequently fall back somewhat, on the assumptions that fertility rates rise (though not reaching levels that would stabilise the population in the long run). About half of the increase in pension spending is expected to be concentrated in this decade.<sup>129</sup> Since older people on average consume higher amounts of medical services than younger people, and the proportion of older people will rise, expenditure on health (and on long-term care) will also likely grow faster than GDP over future decades.<sup>130</sup> The Portuguese projections suggest an ageing-induced increase in health spending of 0.8 per cent of GDP by 2050, a figure at the low end of OECD country projections. No projections are available for increased expenditure on long-term care: most countries which have made such projections expect an increase of about one percentage point of GDP by 2050. In sum, age-related public expenditure in Portugal could rise by 6 percentage points of GDP over the next few decades, and after the middle of this decade, it can be expected that age-related spending will add about a quarter point of GDP to primary spending every year for 30 years or so.

To prevent such steady spending pressures being reflected in rising deficits and debt levels, deep and sustained reforms will be required, either to reduce spending on pensions, or to reduce spending in other areas, or both. The alternative of letting contribution rates to the public pension system (public and private) rise to finance the higher pension payments to retirees, can be only a small part of the solution. If this were to be the only response, contribution rates would have to rise by up to 40 per cent, driving an increasing wedge between labour costs and earnings, and lowering incentives to participate in the formal economy. It is also a solution that is undesirable on equity grounds: in effect, future generations of workers would have to pay higher contribution rates than did their parents, without acquiring rights to higher pensions. As regards reforms to non-pension spending, these have been addressed in Chapter III.

Containing the growth of pension spending will inevitably entail making pensions less generous for a given work history. Most OECD countries have already embarked on reforms of this type,<sup>131</sup> and Portugal has also introduced reforms (see below). The majority of countries now index pensions on prices only, or on net wages, but not gross wages. Several countries have raised, or will raise, the age at which retirement on a full pension is possible. Gradually increasing the



importance of privately funded pensions (especially of the defined contribution type) relative to that of public pay-as-you-go pensions is also becoming common. OECD analysis strongly supports the view that the most effective reforms are those which encourage people to work longer (or the very least, remove financial incentives for workers to retire early). As well as reducing the fiscal burden of having to pay pensions to those still of working age, this has the advantage of raising the level of total output, potentially raising living standards for both retirees and those still working. The average age at retirement in Portugal (for males) is well above the OECD average and recent reforms to the Portuguese system do reduce the incentives to retire early.

#### *Recent reforms of the social security system*

In the 1990s, several measures were taken to address the expected increase in the ratio between beneficiaries and employees and enhance the financial sustainability of the system. These included an increase in retirement age for women to bring it in line with men's, the extension of the minimum contribution period, the reduction of the benefit accrual rate and the revisions of rules allowing the accumulation of pensions with labour income.<sup>132</sup> Portability of pensions across some private sectors remains an issue.<sup>133</sup> A Basic Law on Social Security, approved in July 2000, set the principles of the reform of the private sector workers' scheme.<sup>134</sup> While a number of reforms were included, aimed at improving the system's operation and ensuring its future finances, the basic public-managed nature of social security was not changed.<sup>135</sup> In November 2001, following several months of negotiations, the social partners and the government signed a social security reform agreement, introducing changes to the calculation formula of pensions and a provision allowing employees to make pension contributions, above a very high threshold, into private schemes.

In July 2002, the general principles of a revised Basic Law on Social Security were approved in Parliament and discussions with social partners have started with a view to obtaining consensus on some specific points. This new Basic Law will be enforced from 2003 onwards. The main feature of the law is the introduction of a mixed public-private system, opening up the social security system to the private sector (see Box 10). The new model adopts different thresholds allowing the combination of public and supplementary social security schemes and introduces a more equal weighting between the pay-as-you-go and the capitalisation of future benefits. The law also confirms the calculation of retirement pensions based on the full contributory history of an individual.<sup>136</sup> According to official estimates, this new contributory scheme will lead to an initial reduction in receipts of around 0.6 per cent, but in the long run the establishment of ceilings will lead to a decreasing public expenditure on pensions.

**Box 10. The 2002 New Basic Law on Social Security and additional measures**

The new Basic Law on Social Security preserves the social functions of the state as a fundamental element of people's protection, but introduces some new features:

- The principle of social co-responsibility of the state, enterprises and families, trying to implement a progressive culture and practice of risk sharing.
- An increased balance between the pay-as-you-go and the capitalisation of future benefits, to strengthen the solidarity between the working population and pensioners.
- The principle of positive discrimination, increasing the provision of social benefits to the most disfavoured.

As regards the calculation of pensions, the law defines new rules for capping both contributions and benefits (three caps), with the objective of introducing a ceiling to public pensions (which are earnings-related) and promoting supplementary pension plans (fully funded). The thresholds would be fixed according to the beneficiaries' income, allowing them to combine the public and the supplementary social security systems, and the pay-as-you-go and capitalisation regimes. New secondary legislation will establish the caps, thresholds and contribution rates.

The supplementary (private) system is a funded one. Whatever option is chosen in the higher income groups, equality of treatment regarding taxes will be guaranteed.

Concerning the guarantee of beneficiaries' rights and the security of the assets allocated to pension plans, a pension guarantee fund will be created, functioning as a safety mechanism for insolvency situations. The introduction of certification measures and the reinforcement of mechanisms of supervision are also essential elements to guarantee the stability of the supplementary system. In order to increase mobility and competition, the portability of pension rights and financial reserves is assured.

Regarding positive discrimination, a family supplement to minimum pensions for people aged over 75 will be introduced and there will be benefit entitlement in the event of total, permanent disability for workers who have not paid the required level of contributions over their career. Some measures aimed at supporting family and maternity will also be introduced.

To facilitate the transition from work to retirement, a system of partial retirement, in combination with part-time work, will be implemented.

In the context of the new Basic Law of Social Security, the convergence of the minimum old age and disability pensions to the net minimum wage is to be achieved by 2007. The minimum pensions will be progressively increased during the next four years, in line with the contributions made, to the minimum wage level. The new pension levels will vary between 50 per cent of the minimum wage (for the social pension, *i.e.* for people who have never contributed to the system)

and 100 per cent (for persons who have contributed for more than 30 years). In the short-run, this pension increase will benefit around 1 million people (nearly 45 per cent of total beneficiaries) and will entail a substantial increase in pension spending (estimated at around 50 million euros each year to 2007). In the future, the increase in minimum pensions will be indexed to that of minimum wages.

### **Improving the climate for entrepreneurship**

The new government's strategy to strengthen competitiveness and efficiency in order to achieve higher long-term growth is set out in a broadly-based Productivity and Growth Programme, presented in June 2002 (see Annex IV). It aims at enhancing competition, promoting productive investment and exports, improving the business environment, including through easier access to financing, a reduction of red tape to shorten delays in starting up new enterprises, as well as developing innovation and applied R&D. The broad thrust of the programme closely follows the policies for growth identified in the OECD's *Growth Project*. Concrete policy measures have also been announced regarding selected economic areas, with detailed schedules of implementation. A number of targeted programmes, co-financed by large EU transfers, have already been put in place to create a more favourable climate for entrepreneurship.<sup>137</sup> Over the last decade, significant transfers received from the EU boosted infrastructure development, but the results of co-financed investments in the domain of innovation and R&D have not been wholly satisfactory. With a view to filling this gap, one of the strategic objectives of the third CSF (2000-2006) is to promote business competitiveness and stimulate innovation.<sup>138</sup> The timely and accurate achievement of the new objectives is key to enhancing potential growth over the medium-term.

### **Promoting a business friendly environment**

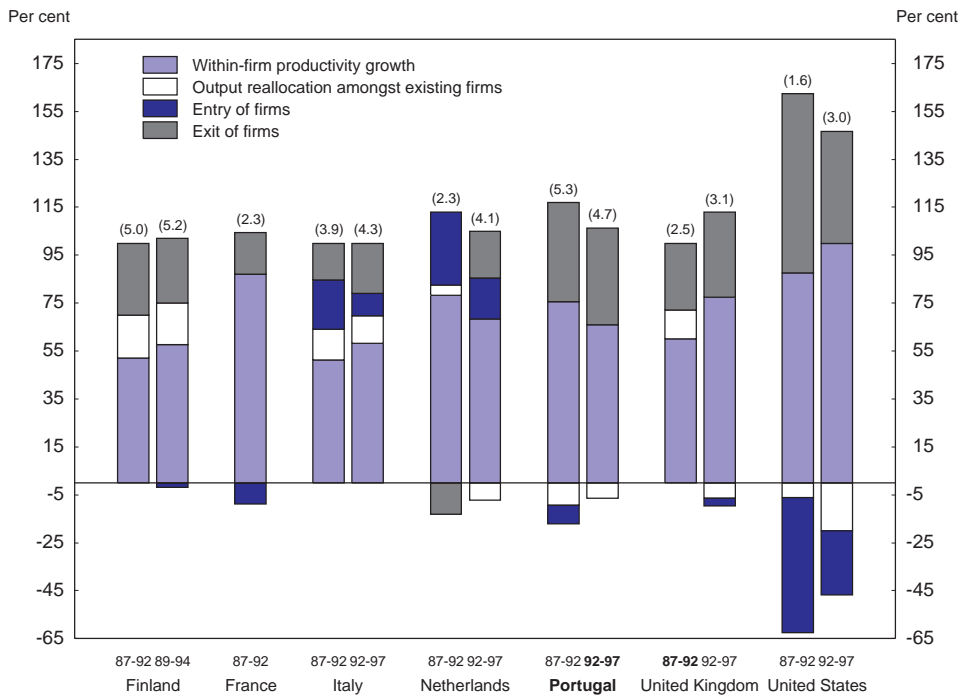
#### *Evidence on firm dynamics*

Recent developments of output growth and productivity (reviewed earlier in the chapter) highlight the need for Portugal to maintain higher growth on a sustained basis to allow catch-up with the European average. Growth of output and productivity takes place in individual firms. Because firms' behaviour and decisions are influenced not only by market forces but also by policy and institutions, understanding productivity dynamics at the firm level helps the identification of appropriate policies to foster growth. Evidence from firm level data available for ten OECD countries, including Portugal, provides useful insights on developments within individual firms as well as firm dynamics (entry and exit of these in markets).

In Portugal, as in other countries for which data are available, labour productivity growth in manufacturing appears to be largely explained by evolutions

within individual firms (Figure 32). The exit of lower productivity firms also makes a substantial positive contribution to overall productivity growth, especially in the early 1990s a period of slowing activity. This process of “creative destruction” takes place on a relatively high scale in Portugal, as in the United States. The entry of new firms has a much smaller effect (negative in the late 1980s, positive in the early 1990s).<sup>139</sup> In service sectors, the within-firm component of productivity growth is generally large, but entry and exit of firms have variable effects according to sector and sub period.<sup>140</sup>

Figure 32. **Breakdown of labour productivity growth in manufacturing**<sup>1</sup>  
Percentage share of total annual productivity growth of each component<sup>2</sup>



Note: Figures in brackets are overall productivity growth rates (annual percentage change).

1. For details on the method used see ECO/CPE/WP1(2002)3.

2. Components may not add up to 100 because of rounding.

Source: OECD, ECO/CPE/WP1(2002)3.

These results have some implications for policy making and institutions. Strategies to enhance productivity growth within firms (through technology innovation, applied research and development, human and physical capital development) need to be complemented by measures to remove restrictions that slow the “exiting” of low-productivity firms or hinder the entry of others. The turnover of firms is generally higher in Portugal than in many other OECD countries, suggesting that freed resources would not remain unemployed for long. Labour market policies that facilitate the process can be combined with social programmes to cushion the transition.

### *Stimulating firm creation*

Promoting a business friendly environment has been an important component of Portugal's strategy to strengthen competitiveness and efficiency for several years. In this context, various measures have been introduced since 1999 to cut red tape and reduce business compliance costs. Formalities for the creation of commercial business or participating in public procurement have been simplified and delays have been shortened, through the use of electronic means. The government's 2002 programme contains several measures to help companies deal with the still complex bureaucratic procedures and makes further advances in alleviating procedures, including administrative simplification and deregulation.<sup>141</sup> The purpose is to make it easier for firms to be created, to expand, to merge and to shut down. One important element is the planned reduction of the number of business contact points in the public administration and the increase of the effectiveness of registry and notary services, namely through privatisation of the latter while ensuring a reasonable degree of competition in the supply of notary services. The creation of a more effective bankruptcy system and the reduction of fees and fiscal burdens related to enterprise development and restructuring, merger and divestiture operations should help to improve operating conditions for companies.

The scheme to encourage investment in the tradable sector is being updated. An *Investment Code* will be created, encompassing all forms of investment incentives of a financial, fiscal or contractual nature, to simplify and systematise the legal framework of productive investment. The government is also proceeding to the elimination of multiple interlocutors needed for an investment operation that add to time delays and costs.<sup>142</sup> The procedures for investment support under the *Operational Programme for the Economy 2000-06* are being modified. There will be mixed financing from the public and banking sectors; the subsidy component (public lending) now becomes conditional on results of an *ex post* evaluation of the projects based on pre-defined quantitative objectives (convertible financing).<sup>143</sup>

### ***Fostering a knowledge-based economy remains a challenge***

Improvements in multi-factor productivity, which plays a crucial role in the process of economic growth, are closely related to innovation and science and technology progress. Expenditure on research and development (R&D) is an investment in knowledge that should translate into new technologies and more efficient ways of using existing resources of physical and human capital. The diffusion of information and communication technology (ICT) can also help to raise economic growth, particularly when combined with effective human resource strategies involving education and training and organisational change.

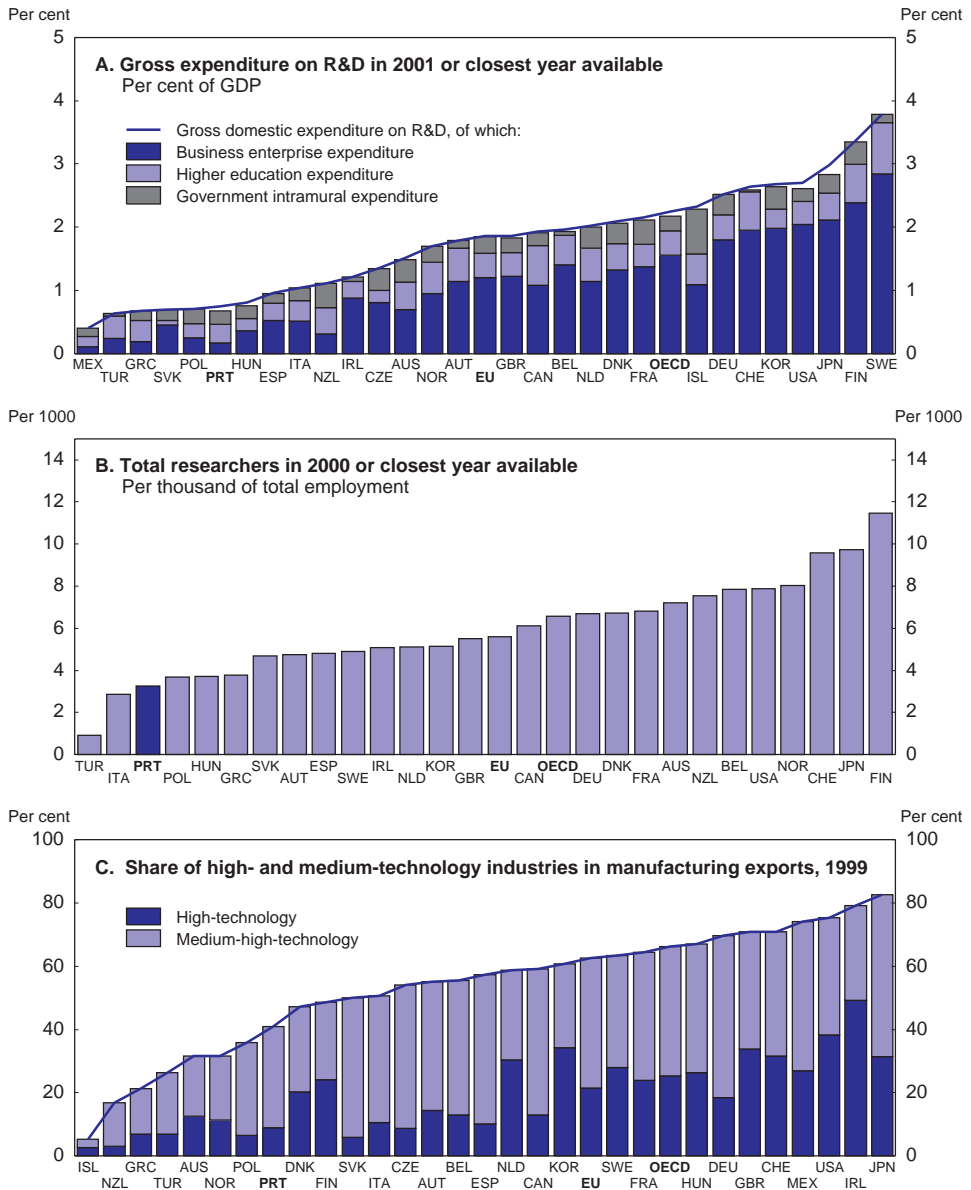
#### *Encouraging innovation and technological progress*

Despite the increases recorded in recent years, Portuguese spending on R&D as a percentage of GDP is less than half the OECD average, as is the proportion of researchers in the active population (Figure 33). As in other less advanced OECD countries, R&D activities are carried out not so much by the business sector, but rather by the higher education and government sectors, these sectors accounting for almost two-thirds of total R&D expenditure in Portugal, against less than 30 per cent on average in the OECD.<sup>144</sup> The shift of Portuguese industrial production and exports towards higher-technology goods is less advanced than in most other OECD countries although the rate of growth of this sector has increased substantially in the last years. The traditional sectors, which still account for the larger share of Portugal's exports, face a higher price elasticity than R&D-intensive sectors, and are exposed to intense competition from low-cost producers.

The science and technology policy agenda considers two related challenges. *First*, overcoming the Portuguese structural gap by sustaining basic research in all R&D domains. *Second*, promoting knowledge absorption and innovative procedures, in order to generate spillovers into the productive sector. The *Operational Programme for Science, Technology and Innovation 2000-06*, prepared under the aegis of the EC, addresses these two issues in a complementary way. The goal is to develop the general science and technology base through funding programmes for advanced training in R&D and to support R&D institutions and research projects subject to quality evaluation by international peer review. In addition, a national agency (*Ciência Viva*) conducts programmes to promote science and technology culture and public understanding of science.

In 2001, measures were taken to spur innovation in enterprises and R&D activities, including the introduction of a more favourable R&D tax regime.<sup>145</sup> The fiscal framework for venture capital was recently revised and a legal framework concerning venture capital has been implemented since 1998, creating a more favourable background to the development of this financial instrument. However, most of venture capital funds in Portugal have been used to finance expansion

Figure 33. Science and technology indicators

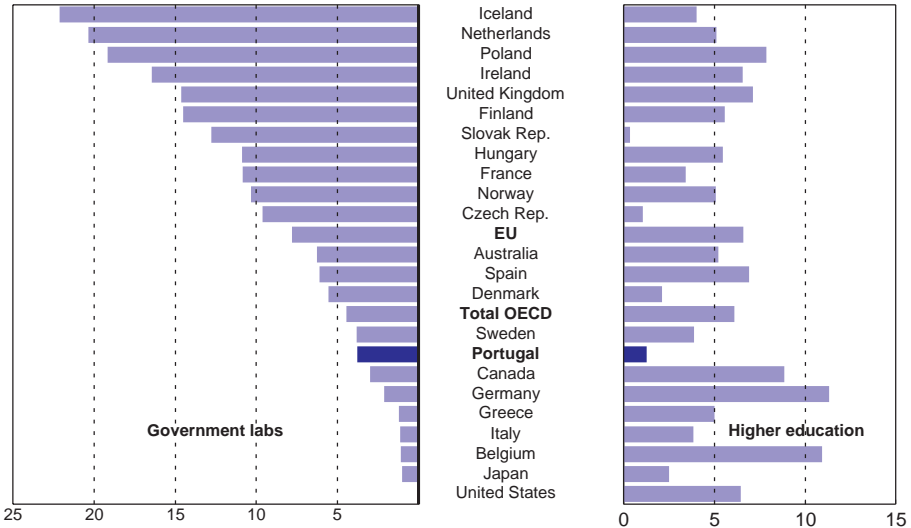


Source: OECD, *Main Science and Technology Indicators* (2002/1); OECD, *Science, Technology and Industry: Scoreboard of Indicators* (2001).

Figure 33. Science and technology indicators (cont.)

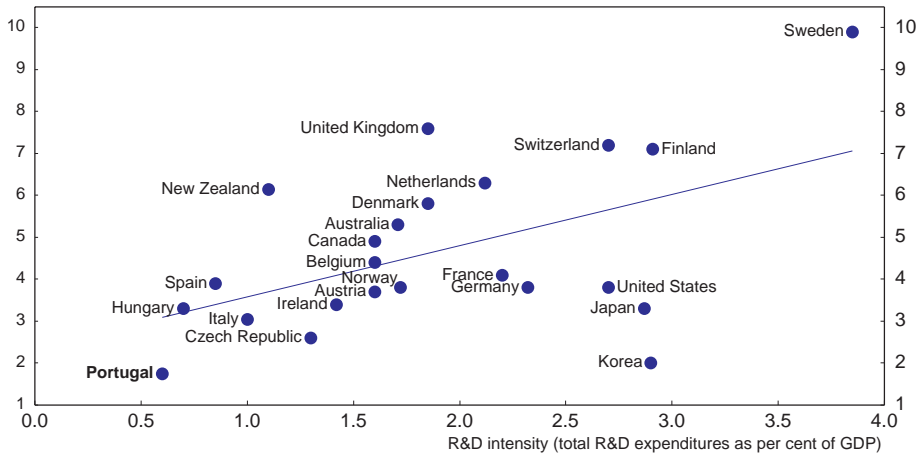
**D. Few links between firms and government labs**

Government and university research funded by business, per cent (1)



**E. Low research productivity**

Publications in the 19 most industry-relevant scientific disciplines (2)



1. 1999 or 2000 for most countries; 1999 for Portugal, 2001 for Germany and Canada.

2. World share of publications divided by GDP in US\$. 1998 or latest year available.

Source: OECD, *Main Science and Technology Indicators* (2002/1); OECD, *Science, Technology and Industry Outlook* (2001).



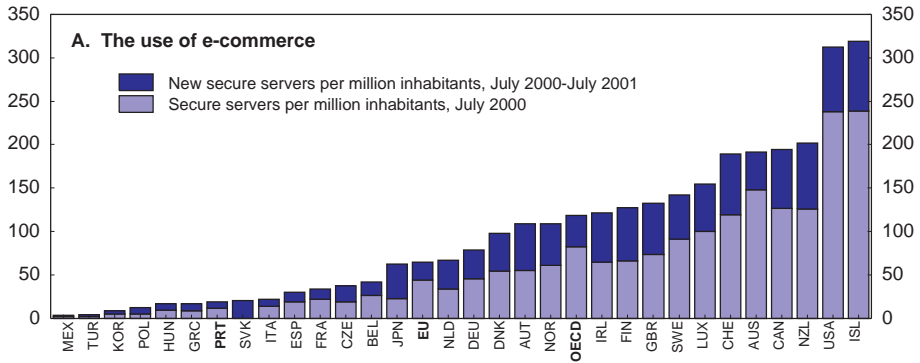
projects instead of start-ups. The creation of a public venture capital syndication fund should help the development of R&D activities.

### *Seizing the benefits of ICT diffusion*

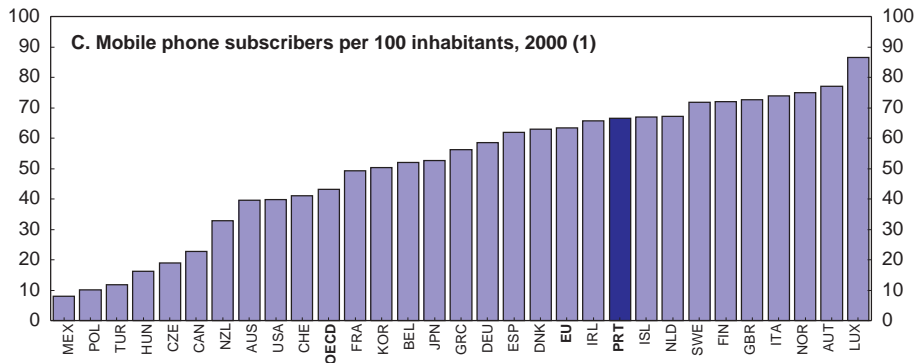
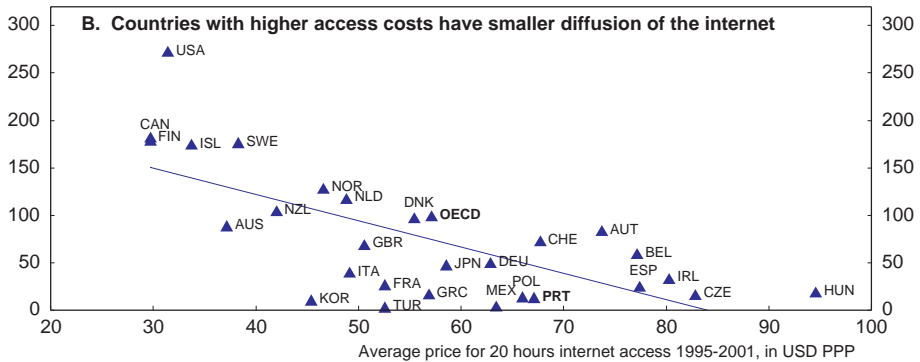
ICT contributed significantly to aggregate growth in several OECD countries in the past decade or so. Capturing the benefits of ICT cannot be treated as given but will depend on complementary investments and actions by private and public actors. In spite of steady progress, businesses, government and citizens have not yet embraced new technologies, the Internet and electronic commerce as readily as in other European countries. In recent years, Portugal has registered a rapid growth in the usage of the Internet, but it is still lagging behind the EU in the most common indicators, such as the use of electronic mail or the number of Internet hosts and secure servers (Figure 34). In 2001, Internet access by Portuguese enterprises was still the lowest in the EU and the share of Portuguese households with Internet access at home was far below the EU average. By contrast, a case of success in the ICT sector is the widespread use of mobile telephones in Portugal. The number of mobile phone users more than doubled during the 1990s, as deregulation and increased competition in the sector drove prices down. By 2000, Portugal had moved to just above the EU average, with about two thirds of the population using a mobile phone.

In line with EC orientations, incentives have been introduced, in the scope of the *Operational Programme for Information Society 2000-2006* to spread ICT use among households and companies, schools and other public areas.<sup>146</sup> The "Internet Initiative" sets out a number of quantitative targets to be achieved in different sectors.<sup>147</sup> Special attention has been paid to promote the general use of ICT within the public administration, especially for procurement purposes. All new public information and invoices now have to be published on the Internet. Concerning the use of ICT in public services, Portugal ranks 5th in the benchmarking of the European Commission eEurope Programme, after Ireland, Finland, Sweden, and Denmark. In addition, the current strategy for human capital development has an explicit focus on developing competencies in ICT at various levels (see above). In order to acclimatise citizens with the Internet, public access points started to be placed in municipalities in 2001, and a tax incentive has been provided to households since 1998 for the acquisition of IT equipment.<sup>148</sup> The costs of Internet access for consumers, along with factors such as quality and availability, are among the key factors influencing the rate of Internet development. In the OECD area, the level of prices differs considerably from country to country, and countries with lower access costs typically have a greater number of Internet hosts. In Portugal, Internet access tariffs have been steadily declining and additional cuts are expected, given the increased liberalisation of the telecommunications market.

Figure 34. ICT diffusion indicators



Internet hosts per 1000 inhabitants (July 2001)



1. Or closest year available.

Source: OECD, Telecommunication database; EUROSTAT.

## **EU funds supported the upgrading of physical infrastructures**

Portugal has received sizeable transfers from the EU, in the context of successive Community Support Frameworks (CSF), including both structural funding and cohesion funding.<sup>149</sup> The CSF funds have played an important role in the modernisation and restructuring of the Portuguese economy. According to estimates of the (now extinct) Ministry for Planning, which take into account only the demand-side effects, EU funds helped to raise the level of GDP by 3.3 per cent over the period 1994-2000, with positive effects on employment, disposable income and private consumption. Their cumulative impact on the level of investment was almost 12 per cent, and was especially strong in construction.

EU transfers also played a notable role in growth through the supply-side effects of transfers used to finance (human and capital) investment. They have allowed major improvements in transport infrastructures. Thousands of miles of new roads and motorways, major bridges, the electrification of railways, the expansion of metro lines, and the modernisation of Portuguese ports and airports were co-financed by EU structural funds. Because of Portugal's geographical position on the periphery of the EU, interconnection with the Trans-European networks remains an important objective and arrangements combining the public and private sectors are expected to continue. As EU transfers are set to decline over the longer term, the convergence process must progress further by then so that investment needs become more comparable with those of the more advanced EU countries.

## **Competition policy and regulatory reform**

Efforts to liberalise the economy have followed two main lines of action: i) reducing the role of government through a broad privatisation programme, to improve efficiency and contribute to debt reduction; and ii) opening up network industries and developing the regulatory framework needed to strengthen competition. The institutional arrangements for a competition policy were in dire need of updating, and an independent body, the Competition Authority, has recently been created.

### ***The institutional design***

#### *The Competition Authority*

The past institutional arrangements for competition, which split responsibilities and decision making between a Directorate General in the Ministry of Economy and a Competition Council, with members directly appointed by the prime minister, were not adequate to achieve a sufficient degree of transparency and to take and implement decisions efficiently (OECD, 2001a). The newly created

competition policy authority interacts with existing regulatory bodies. It has an independent status, and concentrates powers to ensure fair competition, including the approval of mergers and the prevention and sanction of predatory and anti-competitive practices. A new competition Law will shortly be submitted to Parliament for approval. These changes, which anticipate the modernisation and decentralisation foreseen in recently approved EC rules are appropriate. They should contribute to improving policy credibility and promoting a better diffusion of the competition culture.

Experience in other OECD countries points to some desirable requirements: the Competition Authority should be technically and operationally autonomous and free to issue its decisions. The independence would be reinforced, for instance, if the president of the Commission and its members were assigned for a fixed term, longer than the government term. The enforcement of competition is also related to the resources that are committed to it. It is thus essential that an adequate number of qualified staff and financial resources be devoted to competition enforcement. Procedures of competition policy should contain adequate provisions for transparency, predictability, non-discrimination, accountability and speediness. The Authority should be subject to strict time constraints to issue its decisions. For transparency, an annual report is appropriate, including summaries of illustrative cases reviewed under the Competition Law. Decisions taken to enforce the law should be published periodically.

#### *Independence of regulators*

Portugal, like many OECD countries, has sought to make the regulators' status independent of political power, to limit the influence of private lobbies on regulatory decisions. In practice, this independence is very difficult to establish.<sup>150</sup> Some of the requirements are that regulators: *i*) should be separate and autonomous from the government, their appointment being made preferably through a multi-party process, involving executive and legislative bodies; *ii*) should be protected from arbitrary removal, for instance through the use of fixed term appointments; *iii*) should have adequate and reliable source of funding, such as industry fees, rather than budget allocation. The case of Portugal's telecommunications regulator, the National Authority of Communications (ANACOM), is illustrative in this context. The head of the Authority is appointed by the Council of Ministers, and it reports to the Ministry of Economy. After a recent change, the appointment is now for 5 years (as in many other OECD countries, including the United States, the United Kingdom and Spain). It is financed through industry fees, as in several other countries, which is appropriate.

The general pattern is to have several sector-specific regulators, as is the case in most European countries, including Portugal, and in the United States at the Federal level. This pattern can increase the total amount of sector-specific

information available by reducing the control span of the regulator. It can also provide the elements needed for establishing a yardstick of competition through comparison of the various regulators behaviour. One important drawback, however, is that sector-specific regulators can be more easily captured by the regulated industries. The new government in Portugal has announced that the independence of regulatory authorities at the sectoral level would be strengthened.<sup>151</sup> The decision was taken to create a single regulatory body for the energy sector and in early 2002 responsibilities of the electricity regulator (ERSE) were already extended to cover natural gas.

### ***Progress in privatisation and sectoral reform***

Portugal has advanced rapidly in the past decade in privatising the large number of state-owned companies. There has also been some opening up of network industries but the results are patchy. The bulk of the privatisation programme was achieved by 1999, covering the financial sector (banking, insurance), industrial firms (cement, brewery) and network industries (electricity, telecommunications). Since then the process slowed, because of changes in the government priorities, adverse market conditions (in air transport for instance) and time required for the restructuring of some companies for privatisation. In 2000-01, no new enterprise of significant size was added to the privatisation list, the main operations consisting of further rounds of share sales in Portugal Telecom, EDP (electricity), Brisa (motorways) and GALP (oil and gas). Privatisation proceeds amounted to nearly 3 billion euro over the past two years, to be added to the 15 billion euro raised over the previous decade. As the privatisation programmes mature, public and private partnerships should grow in importance, as a means of improving efficiency and as an alternative approach to privatisation.<sup>152</sup>

Companies on the privatisation agenda of the new government include the national airways (TAP) and airport management (ANA), as well as paper companies (Portucel) (Table 18). In addition, the final rounds of privatisation operations already engaged are to be completed by 2004. Although recognising the need for competitive solutions in privatised sectors, the authorities seek to maintain Portuguese ownership in "strategic" sectors, and revenue raising appears to be a major objective of privatisation. The sectors that are considered as strategic are energy, transportation, natural resources (pulp and paper) water companies and radio-TV. In several enterprises in these sectors (Portugal Telecom, EDP and GALP), the state has retained, or intends to retain, special voting rights (golden shares) within the ambit permitted by the EU.<sup>153</sup> In addition, the Portuguese privatisation framework law prohibits the acquisition by foreign investors of more than a given number of shares in Portuguese undertakings, according to the activity sector, and it requires prior authorisation for the acquisition of more than 10 per cent in companies being privatised. This legislation is considered as a restriction on free movements of capital within the EU and should be modified

Table 18. **The current phase of privatisation**  
1999-2004

Company	Sector	% capital privatised	Proceeds (million euros)
<b>1999</b>			
Tabaqueira (2nd phase)	Tobacco	25	70.0
Portugal Telecom (4th phase)	Telecommunications	13	947.7
BRISA (3rd phase)	Motorways	19	498.1
Fapajal	Paper	99	4.1
Papel do Prado	Paper	95	30.7
Carbolis	Chemical (industrial gas)	100	3.0
Soporcel	Paper	10	55.0
<b>TOTAL</b>			<b>1 608.6</b>
<b>2000</b>			
Dragapor	Construction (dredging)	100	3.1
Tabaqueira (3rd phase)	Tobacco	10	27.7
GALP (2nd phase)	Gas	15	433.6
EDP (4th phase)	Electricity	19	1 779.0
Portugal Telecom (5th phase)	Telecommunications	9	960.8
<b>TOTAL</b>			<b>3 204.2</b>
<b>2001</b>			
BRISA (4th phase)	Motorways	5	137.1
CIMPOR (4th phase)	Cement	10	410.1
<b>TOTAL</b>			<b>547.2</b>
<b>2002-2004<sup>1</sup></b>			
ANA	Airport management		
BRISA (5th phase)	Motorways		
EDP	Electricity		
GALP (3rd phase)	Gas		
Portucel (2nd phase)	Paper		
Telecom infrastructure	Fixed network		
REN	Electric Network		
TAP	Air transportation		

1. According to official estimates, privatisation proceeds are expected to reach about 5 billion euros, total, over the 2002-2004 period.

Source: Ministry of Finance.

(June 2002 European Court of Justice decision). In the financial sector, the State's position (it owns the *Caixa Geral de Depósitos* group) remains unchanged. Nevertheless, the privatisation of the public banking group should not be ruled out.

Although indicators of regulatory reform on product markets point to a gradual easing during the 1980s and 1990s, the process was slower than in most other OECD countries and the degree of stringency of product market regulations still prevailing in 1998 was relatively high.<sup>154</sup> Portugal has been making good progress in implementing the EU 2001 product market recommendations and the transposition of internal market directives into national legislation improved markedly.<sup>155</sup> The

transposition rate stood at 96.1 per cent in November 2002, below the 98.5 per cent threshold established in the European Council of Stockholm and the 97.9 per cent EU average. For instance, in the road transportation sector, the EC directive for the opening of road transportation to competition was translated into national legislation in two steps, in 1999 for merchandise freight, in 2001 for passengers. In Portugal, as in other EU countries, attention is now shifting from transposition to effective implementation. Liberalisation of network industries such as electricity and telecommunications has also advanced, but it is essential to increase competition, as incumbents have retained strong market positions and some prices still remain above EU averages.

*Opening up the electricity sector: Portugal remains a laggard in the implementation of EC directives*

The liberalisation of the electricity sector has evolved differently across countries. Portugal has been one of the countries where the process has lagged. By 1996, having undergone no major liberalisation and no privatisation, it was in the same group as France, Italy, the Netherlands, Belgium, Ireland, Spain, Greece, and Canada, while other OECD countries were more advanced in the process. As the very first step in the liberalisation process, the state-owned electricity company (EDP) was restructured in 1994 and the regulatory agency ERSE became operational in 1997.<sup>156</sup> This is also when the first phase of the EDP privatisation was undertaken. Privatisation has been carried out over several years, with the last phase planned to be completed by 2006. Since 2002, 45 per cent of the market has been open to competition for all consumers in medium and high voltage, with full liberalisation envisaged in 2004.

By 1998, accounting separation between electricity generation and transmission had been achieved. Then, following EC directives, the legal separation was finally achieved at the end of 2000, with the detachment of the transmission grid manager from the EDP group.<sup>157</sup> Legal and accounting separation increased transparency. But to prevent the occurrence of discriminatory practices and enhance competition, further market opening is needed. Following the separation, the contractual relations between the company responsible for the grid and the EDP Group companies (*i.e.* power purchase agreements with EDP generation companies and supply contracts with EDP distribution) were not significantly affected.

According to the EC Directive (1996), member states are required to introduce third-party access, *i.e.* have the legal obligation to provide access to the grid under non-discriminatory conditions. This is essential to allow effective entry of new generators, hence to provide real choice to consumers; it also allows large consumers to contract directly with independent generators, by-passing distribution services. EU countries must also offer choice of supplier to consumers, starting with the "large" ones and moving in several steps to smaller ones. The EC is discussing proposals to carry out further separation in the energy sector, by imposing

as a minimum requirement functional separation of the transmission system operator and legal separation of the distribution operators.<sup>158</sup>

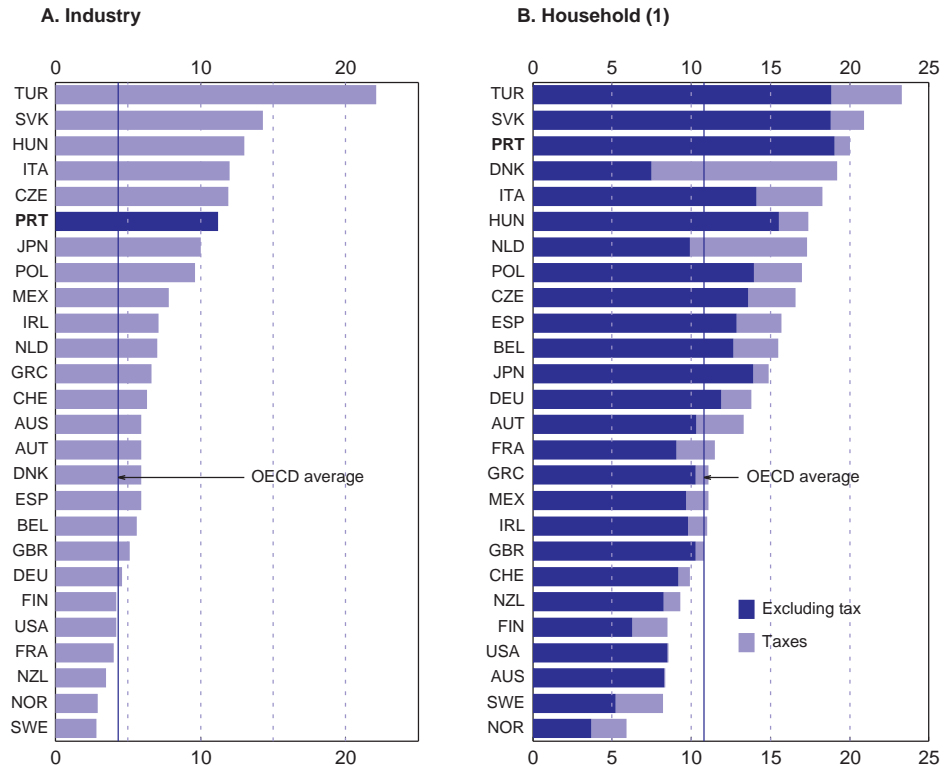
Currently, the national electricity system is made of a Public Electricity System co-existing with an Independent Electricity System.<sup>159</sup> Although large customers can purchase electricity outside the public system,<sup>160</sup> several factors still hinder competition among electricity suppliers in either the public or the independent electricity markets. Purchasing power agreements (PPA) in the public electric system provide a guarantee on the remuneration of the investments, as they foresee a payment based on a fixed return on net asset plus depreciation. Cost fluctuations, reflecting the behaviour of fuel costs and the monetary variables relevant to PPA's, are paid according to market values. It was recently announced that PPA's will soon be renegotiated or extinguished as a move to enhance competition within the market. Since generators still benefit from such protection in the public system, there is little incentive to produce electricity in the independent system.<sup>161</sup> As generators are allowed to partly pass along their costs, end-user electricity prices are still rather high. There has been a rapid decline in prices over recent years, in line with the regulator's plan to bring them down to the EU average. By now industrial users prices are close to EU levels. But Portuguese electricity prices rank among the highest in the OECD for household consumers (Figure 35) Following a decision to create an Iberian electricity market, Portugal and Spain decided to strengthen the two national grids, between 2003 and 2006. The Portuguese government has further committed itself to abolish a significant number of the existing purchase power agreements with EDP generation companies, by the second half of 2003. REN will be confined to operating the national transmission grid which will be open to other players. The provision of retail services, will be left to the market, either through the negotiation of supply contracts in an "energy stock exchange" or through free bilateral contracts. The legal status of retail operators will be created and their operation liberalised, thereby allowing for a legal and functional separation of the transmission system, distribution operators and the retail operators. Several issues will need to be addressed however before the project can be carried out, to preserve competition because of differences between the two countries regarding the set of regulations prevailing.

*Telecommunications: the incumbent has retained a strong market position*

At the end of the 1990s, state control through share ownership was still important in many OECD countries. Incumbent public operators were still dominant in many segments and price structures were heavily distorted. Countries that were the first movers in a genuine liberalisation process were the first ones to witness changes in the market structure (number of license holders, market share of the incumbent and of the second largest operator...). By 1998, entry conditions in trunk (domestic long-distance fixed), international and mobile services had been relaxed in many OECD countries. In Portugal, mobile services were liberalised starting



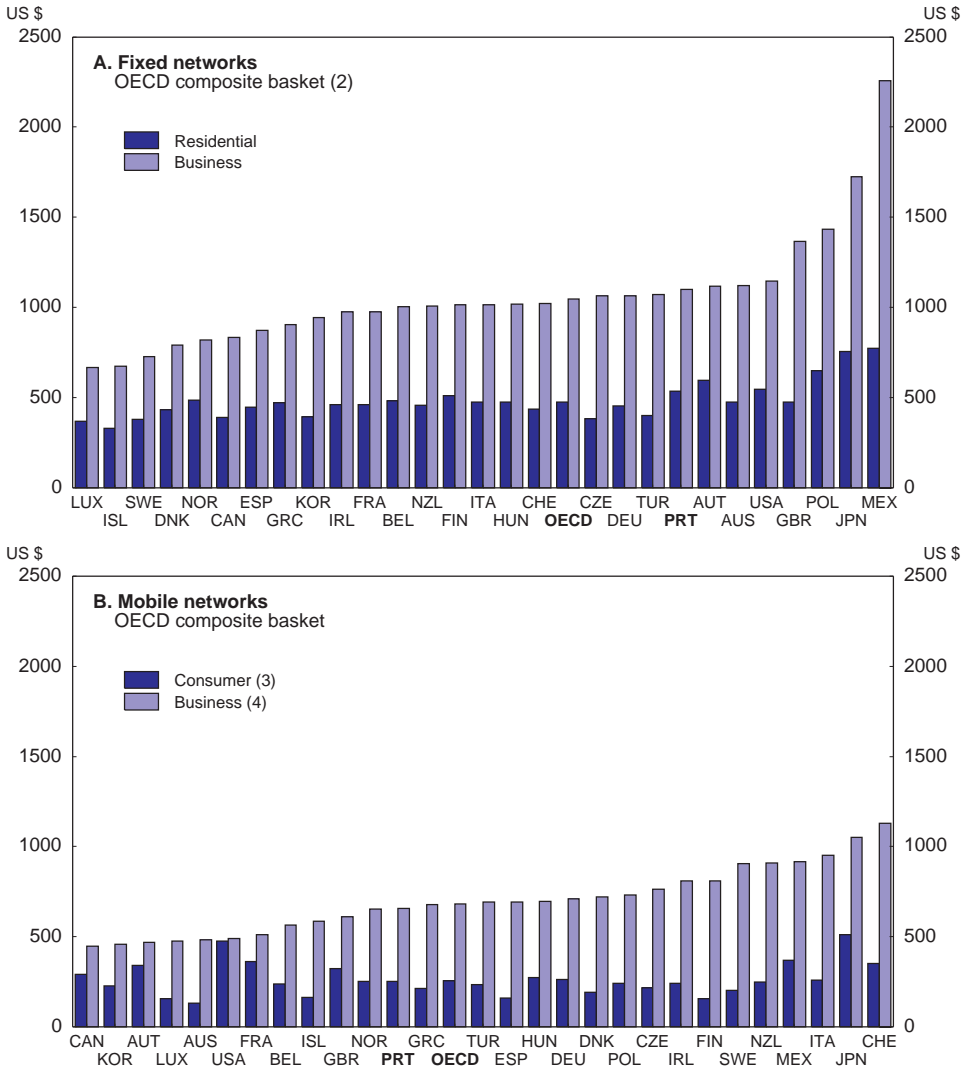
Figure 35. **Electricity prices in selected OECD countries**  
In US dollars per 100 kWh (using PPPs) in 2001 or closest year available



1. Price excluding tax for Australia and the United States.  
Source: IEA, *Energy Prices and Taxes*, Third Quarter 2002.

in 1991, and by 1998, as in about half OECD countries, three or more competitors were operating in this segment. However, in trunk and international services, Portugal maintained monopoly conditions. As of 1998, only five other OECD countries (Greece, Turkey and 3 Central European countries) were in that situation.<sup>162</sup> In 2000, competition began for all types of fixed telephone services through direct access. Indirect access was applicable on national and international calls and soon after, in January 2001, local and regional calls became eligible. Prices started falling towards the OECD average (according to ANACOM, prices of fixed telephone calls decreased by 26.1 per cent in real terms, between January 1998 and December 2001), but they were still above the OECD average (Figure 36). The privatised incumbent operates

Figure 36. Telephone charges in selected OECD countries<sup>1</sup>  
May 2002, in US\$



1. Fixed and usage charges.  
 2. Domestic and international services plus calls from fixed to mobile communication networks.  
 3. The basket includes 50 minutes per month and excludes international calls.  
 4. The basket includes 300 minutes of which 60 are international.  
 Source: OECD, Communications database.

local loops in the framework of a concession contract, until 2025. Although PT has a privileged knowledge of costs and demand patterns, the new operators are also starting to have those competencies.<sup>163</sup> The incumbent also owns the major cable TV network, but operates it through an independent company. In this context, it should be noted that PT Comunicações was declared, for two consecutive years, as an entity with significant market power (SMP) in the fixed telephony networks and/or fixed telephony services and therefore was obliged to present a reference offer for the access to the local loop as from January 2001. As a consequence, as from September 2002, that offer was available on a large scale.<sup>164</sup>

### Concluding remarks

To sum up, the structure of the Portuguese economy has several features that should aid convergence towards EU-average productivity and living standards. Despite strict EPL, the labour market is comparatively flexible, as wages reflect more closely sectoral and skill realities than they do in most European countries. As a result, unemployment is low and employment rates are high. But the workforce is lacking in education and training, and closing the productivity gap will require sustained efforts to remedy this, including making the public education system more effective. Product markets in the private sector appear to function relatively well, with competition from and with other EU countries playing a major role. Recent reforms to encourage the creation of new firms and facilitate the exit of failing firms are a further step forward. But Portugal's comparative advantage in the production and export of low technology goods made by low-skilled and low-paid labour is not a lasting strength, as competition from developing countries becomes stronger all the time. Policies to encourage the diffusion and implementation of new technologies and production processes are required. The privatisation programme has recorded steady if unspectacular progress, and it is of paramount importance that the European Court of Justice (ECJ) ruling on Portuguese control in privatised companies be addressed and high priority be given to ensuring a competitive environment. The obligation to also maximise revenue, as set in the Portuguese legal framework, should not be allowed to conflict with this objective. Implementation of competition policy needs to be strengthened, as more competitive markets, especially in network industries, are essential to increase productivity and put downward pressure on prices. Several other OECD countries, and in particular some of Portugal's main trading partners, are moving ahead in structural reform at a rapid pace. Finally, the enlargement of the EU to new entrants will probably lead to a phasing out of transfers received, while intensifying competitive pressures. These factors make it all the more important to push ahead in policy reform.

Box 11. **Implementing structural reform: an overview**

Proposal*	Action taken	OECD Assessment/recommendations
<b>I. Improve labour force skills and competencies</b>		
<ul style="list-style-type: none"> <li>Raise the quality of formal education, enhancing vocational and technical programmes</li> </ul>	<p>Broader access to pre-school education. Revision and modernisation of compulsory education curriculum</p> <p>Some progress towards the development of ICT in schooling</p>	<p>Continue with implementation. Promote the reunification of the three basic education cycles. Extend compulsory education to 12 years of schooling</p> <p>Increased vocational and technical orientation at upper secondary level needed to reduce dropout rates</p> <p>Increase the quality and quantity of computer equipment and services</p>
<ul style="list-style-type: none"> <li>Improve the incentives faced by teachers and school managers, as well as their accountability</li> </ul>	<p>Legislation to carry out comprehensive evaluation of all schools</p>	<p>Implement legislation and monitor the results, rewarding best performers</p>
<ul style="list-style-type: none"> <li>Facilitate transition from school to work and support lifelong learning</li> </ul>	<p>Legislation to ensure that minors aged 16 and above are provided with training when employed</p> <p>Strategy for the development of adult education. Consolidation of national certification system. Specific objectives set for firms' supply of training</p>	<p>Continue to encourage training and re-training of those already in the labour force</p> <p>Continue with implementation. Consolidate the strategy of lifelong learning. Step up progress towards combating "digital illiteracy"</p>
<ul style="list-style-type: none"> <li>Improve quality of tertiary education, maintaining a even-handed treatment of public and private institutions</li> </ul>	<p>Legislation for the quality of tertiary education, including the creation of a systematic and independent system of evaluation and certification of courses/ universities</p>	<p>Implement legislation. Close or merge courses with very few students</p> <p>Establish a minimum positive mark in upper-secondary graduation to access to tertiary education</p> <p>Re-evaluate the operating and financing conditions of tertiary education institutions</p>
<b>II. Promote labour-market adaptability and mobility</b>		
<ul style="list-style-type: none"> <li>Ease employment protection legislation</li> </ul>	<p>New <i>Labour Code</i> proposal includes some easing of the conditions required for fair dismissals</p>	<p>Continue and broaden labour market reforms. Ensure that employment protection is not an obstacle to hiring</p>

Box 11. **Implementing structural reform: an overview (cont.)**

Proposal*	Action taken	OECD Assessment/recommendations
<ul style="list-style-type: none"> <li>• Reduce obstacles to “atypical” work contracts</li> <li>• Phase out housing market restrictions</li> </ul>	Rules governing temporary employment were tightened	Review the rules. Promote easier access to temporary contracts and part-time work Design global plan to develop an efficient house-renting market
<b>III. Make active labour-market policies more efficient</b>		
<ul style="list-style-type: none"> <li>• Improve the job-matching efficiency of the PES</li> <li>• Rationalise the numerous instruments in place</li> </ul>	Early intervention of public employment services, through a network of local public services. Creation of a self-service approach, through the use of electronically available services	Continue with implementation. Improve the relations with employers, monitoring closely their needs. Promote a rapid articulation of the training programs offered with the qualification and skill demands of companies. Enhance the exposure of the PES to market forces Carry out a systematic monitoring and evaluation of all active labour market programmes
<b>IV. Promote a business friendly environment</b>		
<ul style="list-style-type: none"> <li>• Reduce red tape and administrative burden on business</li> <li>• Stimulate firm creation and encourage productive investment</li> </ul>	<p><i>Productivity and Growth Programme</i> makes further advances in alleviating procedures, including administrative simplification and deregulation</p> <p>Reduction of the number of business contact points in the public administration. Reform of the bankruptcy law</p> <p>Simplification of administrative procedures of investment projects. Revision of the legal framework for venture capital</p>	<p>Promote the timely implementation of all measures included in the <i>Productivity and Growth Programme</i></p> <p>Implement legislation. Further increase the efficiency of registry and notary services and related judiciary processes</p> <p>Implement legislation and complete the <i>Investment Code</i>. Apply the rules of convertible financing to co-funded projects. Foster venture capital market</p>
<b>V. Promote technology and innovation</b>		
<ul style="list-style-type: none"> <li>• Increase R&amp;D spending and rebalance toward business</li> </ul>	Steps taken to promote science and technology culture and public understanding of science. EU-funded programmes for advanced training in R&D and for R&D research projects. Introduction of a more favourable R&D tax regime	Increase R&D spending. Continue to encourage research collaboration between universities and enterprises. Timely implementation of the <i>Operational Programme for Science, Technology and Innovation</i>

Box 11. **Implementing structural reform: an overview** (*cont.*)

Proposal*	Action taken	OECD Assessment/recommendations
<ul style="list-style-type: none"> <li>Seize the benefits of ICT diffusion</li> </ul>	Steps taken to spread out ICT among households and companies, schools and other public areas	Speed up the implementation of the <i>Internet Initiative</i> . Push Internet access tariffs down by increasing liberalisation of the telecommunications market
<b>VI. Increase product-market competition</b>		
<ul style="list-style-type: none"> <li>Reform institutional arrangements for competition policy</li> </ul>	Creation of a independent Competition Authority and a new Competition Law	Implement legislation. Clarify the Competition Authority's interactions with sectoral regulators
	Progress in the transposition of EC directives to national legislation	Promote the effective implementation of EC directives
<ul style="list-style-type: none"> <li>Remove entry barriers and increase competition in network industries</li> </ul>	Liberalisation process of the electricity sector has lagged. Decision to create an Iberian electric market	Apply rigorously EC directives concerning the energy market. Proceed with the implementation of the Iberian electric market
	Despite some liberalisation in telecommunications, incumbent has retained a strong market position	Enhance competition, in particular in the fixed line sub-sector. Implement the unbundling of the local loop
<ul style="list-style-type: none"> <li>Continue privatisation process</li> </ul>	High priority was given to preserve Portuguese control and to maximise revenue for the government	High priority should be given to ensure competitive bidding and coherence of the privatisation process with competition policy. Abolish privatisation limits for all public enterprises

\* Proposals are based on detailed analysis provided in previous and current *Economic Surveys*.

Source: OECD Secretariat.

The broad policy framework, articulated around three main pillars – first, macro stabilisation and budgetary reform; second, social policy and labour market reforms; and third, microeconomic policies aimed at improving the business environment – is in accordance with OECD policy recommendations. Continued investments in human capital development and advances in the employment strategy, including the labour market reform proposed and the new framework law on social security, are welcome. The 2002 Productivity and Growth Programme is appropriately aimed at fostering innovation and facilitating business, with a renewed focus on stepping up product market competition. Timely implementation of the government's reform plans is key to raising Portugal's growth potential. An overview of the main OECD recommendations for structural reform is presented in Box 11 above. Reform of budgetary processes and public administration

are discussed in the previous Chapter and issues relating to environmental dimensions of sustainable development are examined in the next section.

### Issues relating to sustainable development

There is growing concern over the problems that the pursuit of development may pose in the longer term, if appropriate measures are not taken to ensure a proper balance between economic, social and environmental performance. This section focuses on three issues relating to the interface between the economic, environmental and, to some extent, social dimensions of sustainable development that are of particular importance in Portugal. For each of them, indicators are used to examine performance and to identify any worrisome trends, and the corresponding public policies are evaluated. This section also looks at institutional mechanisms that could be used to integrate different policies affecting sustainable development (Box 12). This section deals first with air pollution. It goes on to examine policies for reducing water pollution, as well as the efforts that have

#### Box 12. **Integrating policies relating to the different dimensions of sustainable development**

A national strategy for sustainable development has been prepared in Portugal. This initiative that involved all the public institutions concerned in a forward planning exercise aimed at contributing to better policy integration. The subject has been the topic of broad public debate at several regional conferences. The strategy represents a tool for mobilising public opinion and for guidance of decision makers in formulating and implementing policies. The strategy is to result in a programme that will set target dates for the various activities listed. The measures will first need to be scoped in terms of their cost, so that the necessary trade-offs can be made among the different priorities.

In terms of evaluating public decisions concerning investment, environmental impact assessment (EIA) are prepared for most public works projects which have a significant impact on environment, and for those that are financed by Community funds, including the projects under the Operational Programme for the Economy. These EIA will have to be extended by 2004 to cover all public policies, pursuant to Community directives on plans and programmes. Cost-effectiveness analyses are done for certain major policies such as the national action plan to combat climate change, the national emission ceilings programme and the strategic plan for water supply and waste water treatment. There is still no cost-benefit analysis performed in the preparation of environmental policies. However, cost-effectiveness analyses are done for certain major policies, such as the national action plan to combat climate change. With the growing importance of environmental policies, it would be highly desirable to give more emphasis to cost-benefit analysis, as an essential tool for ensuring consistency among the efforts undertaken in different areas and, to focus on cost-effective solutions to achieve a given target.

been made to manage natural resources on a sustainable basis, particularly with respect to fisheries and water supply.

## **Air pollution**

### *Principal issues*

The release of pollutants into the air raises problems of public health that, in the case of Portugal, relate primarily to the presence of suspended fine particles in the major cities. On the other hand, given its geographic situation, Portugal has one of the highest atmospheric pollutant “net exports”, relative to emission levels, of any country in continental Europe, both for sulphur dioxide (65 per cent) and for nitrogen dioxide (50 per cent). About half of these net exports are deposited in the sea, with no great environmental damage. The other half is transported inland. The main challenge is to correct local pollution problems and to meet the emission targets set forth in European legislation, without imposing excessive costs on the economy.

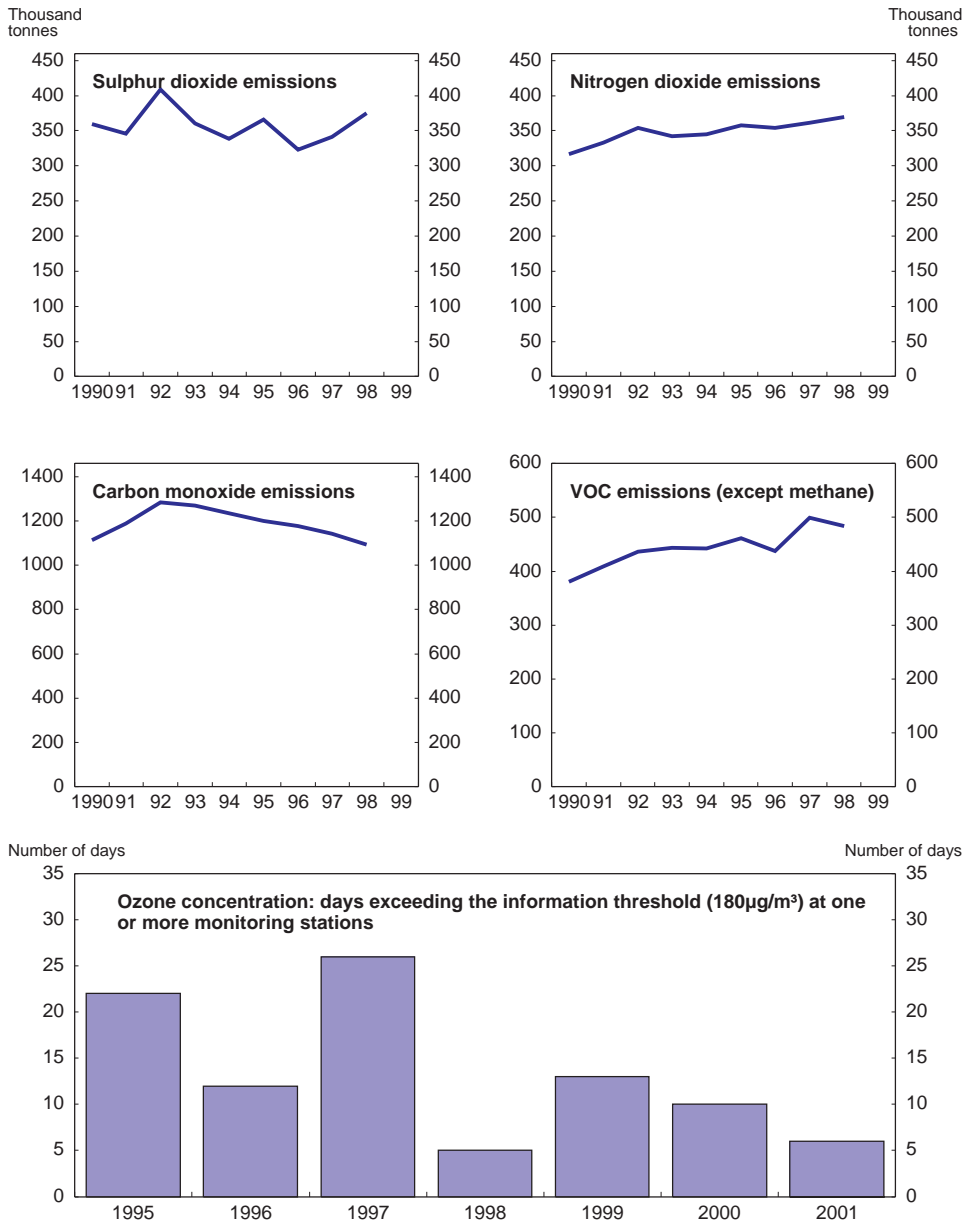
### *Performance*

Portugal has been one of the slowest among OECD countries in reducing the pollution intensity of its economic activity, and indeed that intensity has worsened in the case of volatile organic compounds (VOCs), with pollution intensities well above the average for the OECD area. The increase in emissions has, nonetheless, been modest. Only in the case of carbon monoxide emissions has there been any clear downward trend, and this only after substantial increases in the early 1990s (Figure 37). The growth in Portugal's electric generating capacity has not been accompanied by as marked a reduction in emissions per unit of output as in most other OECD countries (Table 19). On the other hand, transportation-generated SO<sub>2</sub> emissions have declined by one-third.

Such air quality problems as exist relate less to traditional pollutants than to particulate matter. As most conventional pollution emissions are transported, they have only a limited impact on air quality in Portuguese cities, with SO<sub>2</sub> concentrations that are among the lowest in the OECD (Figure 38). In addition, the ozone alert threshold has not been exceeded in any of Portugal's major cities since 1995. The public information threshold, which is lower, has however been briefly exceeded on occasion<sup>165</sup> (Figure 37). On the other hand, there is concern over the levels of fine particulate concentrations, which are carcinogenic and are harmful to the respiratory system. Concentrations of particulates with a diameter of less than ten micrometers (PM10) currently exceed the limits, on an annual average, at each of the 14 measurement stations in Lisbon and Porto. In terms of daily peaks, values were exceeded at ten of these 14 stations. The sources of particulate pollution have yet to be properly documented, but it would seem that combustion facilities and vehicles are the main culprits.<sup>166</sup>



Figure 37. Performance indicators: air pollution



Source: EMEP; Ministry for Towns, Territorial Planning and Environment.

Table 19. Atmospheric pollution performance indicators

	Change in emissions per unit of GDP, 1990-99 <sup>1</sup>			Level of emissions, 1999 <sup>2</sup>			Improvement in productive efficiency, 1990-1999	
	Sulphur dioxide	Nitrogen dioxide	VOC	Sulphur dioxide	Nitrogen dioxide	VOC	Sulphur dioxide per unit of electricity output	Nitrogen dioxide per vehicle
	Per cent per year			Grams per dollar of GDP (1995 US\$ PPP)				
Australia	3.1	-1.9	-2.9	3.9	5.5	4.1	n.a.	n.a.
Austria	-10.2	-3.5	-6.5	0.2	0.9	1.2	-77.2	-32.5
Belgium	-9.2	-3.6	-4.8	0.8	1.2	1.1	-64.4	-22.6
Canada	-5.3	-2.8	-2.9	3.2	2.6	3.5	n.a.	n.a.
Czech Republic	-19.1	-6.6	-5.7	2.1	3.0	1.9	n.a.	n.a.
Denmark	-14.2	-4.9	-5.2	0.4	1.6	1.0	-79.8	-38.9
Finland	-13.0	-3.8	-4.1	0.7	2.1	1.4	-65.3	-28.7
France	-8.3	-3.8	-5.1	0.5	1.2	1.4	-52.0	-37.8
Germany	-20.1	-7.1	-8.8	0.4	0.9	0.9	-85.2	-43.7
Greece	-1.4	-0.3	-0.2	3.6	2.5	2.6	-4.6	-22.3
Hungary	-6.1	-1.1	-3.8	5.5	2.1	1.4	n.a.	n.a.
Iceland	-1.1	-1.7	-4.9	3.7	3.9	1.4	n.a.	n.a.
Ireland	-8.1	-6.3	-7.9	1.7	1.3	1.0	-35.8	-19.0
Italy	-7.6	-4.3	-4.4	0.8	1.2	1.4	-52.8	-31.3
Japan	-1.7	-1.3	-2.4	0.3	0.5	0.6	n.a.	n.a.
Korea	-8.9	-3.0	n.a.	2.1	2.0	n.a.	n.a.	n.a.
Luxembourg	-18.7	-9.1	-7.9	0.2	0.9	0.9	n.a.	n.a.
Mexico	-0.4	-0.9	-9.3	1.6	1.6	1.4	n.a.	n.a.
Netherlands	-10.1	-6.5	-8.8	0.3	1.1	0.7	-50.2	
New Zealand	-0.4	-0.5	-1.6	0.7	3.0	2.6	n.a.	n.a.
Norway	-9.7	-2.8	-1.8	0.2	2.0	3.0	n.a.	n.a.
Poland	-10.0	-6.6	-4.8	5.1	2.8	2.2	n.a.	n.a.
<b>Portugal</b>	<b>-2.1</b>	<b>-0.9</b>	<b>0.1</b>	<b>2.4</b>	<b>2.3</b>	<b>3.1</b>	<b>-17.7</b>	<b>-18.3<sup>3</sup></b>
Slovakia	-13.7	-7.4	-5.6	3.3	2.4	2.0	n.a.	n.a.
Spain	-5.8	-2.1	-3.5	2.2	1.7	3.6	-39.4	-14.4
Sweden	-8.3	-4.3	-3.9	0.3	1.3	2.1	-26.0	
Switzerland	-6.0	-5.4	-6.3	0.1	0.5	0.9	n.a.	n.a.
Turkey	3.2	1.0	0.0	3.4	2.3	1.6	n.a.	n.a.
United Kingdom	-13.9	-7.9	-6.6	1.0	1.3	1.4	-72.8	-51.0
United States	-5.5	-2.5	-4.7	2.0	2.7	1.9	n.a.	n.a.

Table 19. **Atmospheric pollution performance indicators** (cont.)

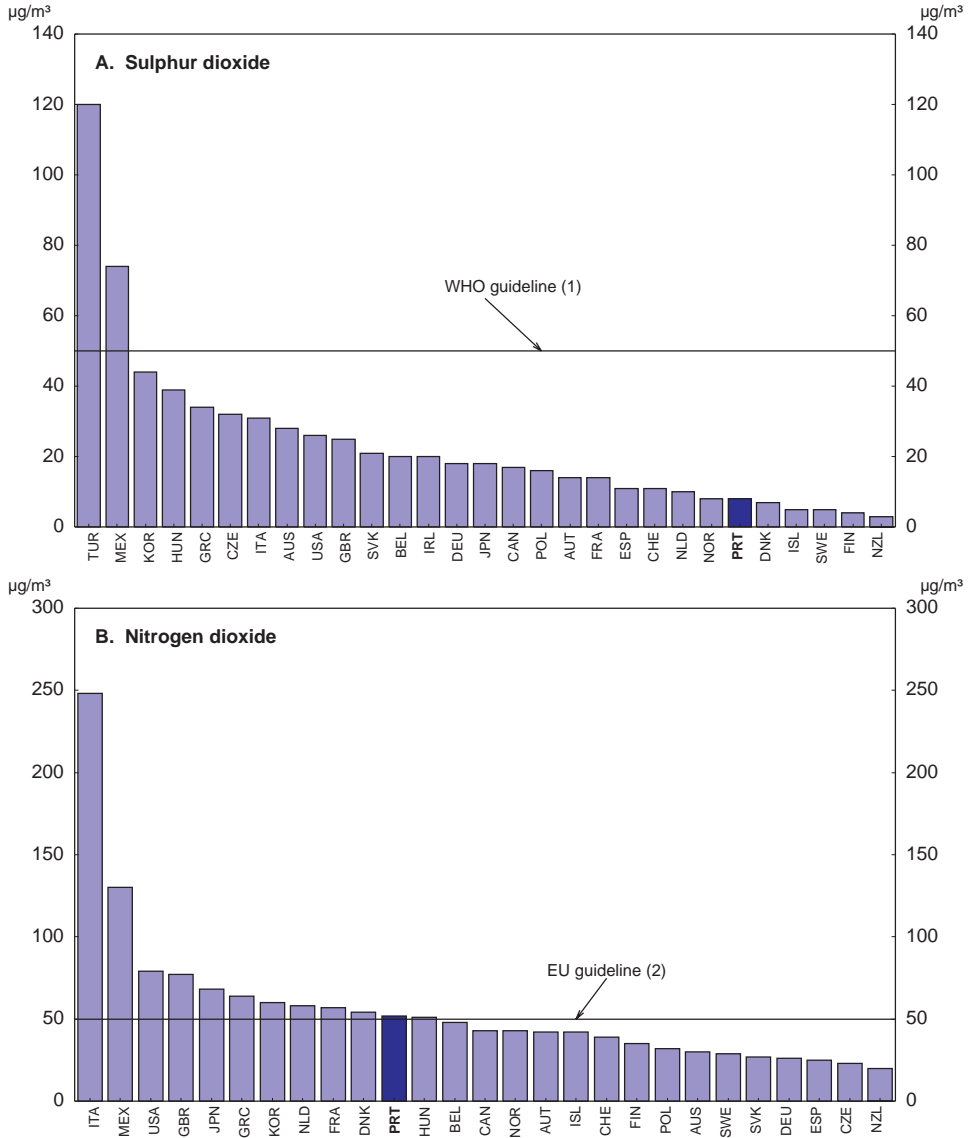
	Change in emissions per unit of GDP, 1990-99 <sup>1</sup>			Level of emissions , 1999 <sup>2</sup>			Improvement in productive efficiency, 1990-1999	
	Sulphur dioxide	Nitrogen dioxide	VOC	Sulphur dioxide	Nitrogen dioxide	VOC	Sulphur dioxide per unit of electricity output	Nitrogen dioxide per vehicle
	Per cent per year			Grams per dollar of GDP (1995 US\$ PPP)				
European Union	-11.1	-5.0	-5.3	0.8	1.2	1.5		
OECD Europe	-10.1	-4.8	-5.0	1.2	1.4	1.5		
OECD	-6.7	-2.9	-4.4	1.5	1.9	1.6		

Note: For the OECD average data for countries with missing data for either 1990 or 1999, data for the latest year has been substituted. Estimated data for 1999 represents about 5 per cent of the area total.

1. Australia: 1995-99 for sulphur dioxide; Korea and New Zealand: 1990-98; Mexico: 1994-98 for sulphur dioxide and VOC and 1990-98 for nitrogen dioxide; Slovakia: 1990-98 for sulphur dioxide and nitrogen dioxide and 1990-97 for VOC.
2. 1998 for Korea, Mexico, New Zealand and sulphur dioxide and nitrogen dioxide in Slovakia; 1997 for VOC in Slovakia.
3. Between 1990 and 1997 for Portugal.

Source: Cooperative Programme for Monitoring and Evaluating of Long-Range Transmission of Air Pollutants in Europe (EMEP); World Health Organisation; OECD (2002a).

Figure 38. Urban concentrations of atmospheric pollutants in OECD countries 1995



1. Mean value for one year.  
 2. Median of annual data of one hour values for concentrations.  
 Source: World Bank.

### Policies

Following accession to the EU, Portugal adopted strict internationally-based targets for limiting emissions, in compliance with air pollution policies which are determined primarily by Community legislation.<sup>167</sup> Consistent with the long-standing approach in community environmental law, Portugal currently uses regulation as its main air policy instrument (OECD, 2001j). In 2000, Portuguese firms spent nearly € 130 million, or about 0.1 per cent of GDP, to reduce their emissions of atmospheric pollutants (INE, 2002).

If it is to fulfil its international commitments under the EU, Portugal will have not only to end the steady but slow rise in emissions but to make considerable reductions (Table 20). This is particularly the case for SO<sub>2</sub>, NO<sub>x</sub> and VOCs, where current emissions are more than twice the ceilings set for 2010. If they continue to be

Table 20. **Selected commitments to air quality**  
Concentrations

Pollutant	Measuring period	Limit value	Date
SO <sub>2</sub>	1 hour	350 µg/m <sup>3</sup> : not to be exceeded more than 24 times each year	01/01/2005
	24 hours	125 µg/m <sup>3</sup> : maximum three times each year	01/01/2005
	Calendar year	20 µg/m <sup>3</sup>	19/07/2001
NO <sub>2</sub>	1 hour	200 µg/m <sup>3</sup> : maximum 18 times each year	01/01/2010
	Calendar year	40 µg/m <sup>3</sup>	01/01/2010
NO <sub>x</sub>	Calendar year	30 µg/m <sup>3</sup>	19/07/2001
PM <sub>10</sub>	<b>Phase 1</b>		
	24 hours	50 µg/m <sup>3</sup> : maximum 35 times each year	01/01/2005
	Calendar year	40 µg/m <sup>3</sup>	01/01/2005
	<b>Phase 2</b>		
	24 hours	50 µg/m <sup>3</sup> : maximum 7 times each year	01/01/2010
	Calendar year	20 µg/m <sup>3</sup>	01/01/2010
Lead	Calendar year	0.5 µg/m <sup>3</sup>	01/01/2005
CO	8 hours	10 mg/m <sup>3</sup>	01/01/2005
Benzene	Calendar year	5 µg/m <sup>3</sup>	01/01/2010
Emissions			
Pollutant	Emission ceiling to be met in 2010 (kilotonnes)	Emissions 1990	Emissions 1999
SO <sub>2</sub>	160	338	380
NO <sub>2</sub>	250	282	385
VOC	180	381	494

Source: EU Directives 1999/30/EC, 2000/69/EC and 2001/81/EC; National inventory greenhouse gases, Submission 2002.

based on the conventional regulatory approach, measures to ensure compliance with emission ceilings could cost Portugal close to € 1.5 billion a year, or 1.3 per cent of its GDP (European Commission, 1999). The current market price of fuels, nevertheless, should help to reduce emissions as older generating plants are replaced resulting in a switch to the least-cost solution, natural gas, which is less polluting than coal or fuel oil.<sup>168</sup> Yet this impact will not be sufficient, and the potential size of costs is such that it will be important to seek the most economical reduction strategies possible.

Meeting national emission ceilings will require efforts on the part of industry. The action plan now in preparation includes a wide and public consultations phase, at the end of which the government will decide how the burden of the depollution effort is to be distributed. The authorities could develop plans to award emission permits as a function not only of the cost to each sector, but also in light of feasibility and equity criteria, as in the case of the allowance trading regime currently in preparation at EU level. With a regulatory device of this nature, the introduction of criteria other than marginal cost equalisation may make the overall cost of depollution greater. Sectoral targets are unlikely to result in abatement cost equalisation. Even if marginal cost equalisation were the only criterion for the initial allocation, perhaps unlikely, granting businesses emission permits that are fixed once for all could increase costs, for two reasons. *First*, the authorities distributing the permits cannot know the exact values of the marginal depollution costs borne by the businesses. *Secondly*, costs evolve over time, as levels of activity vary and new technologies appear. Allowing businesses to trade these quotas among themselves would, on the other hand, make it possible to equalise marginal costs and minimise the overall cost, especially if international trading were allowed to offset the narrowness of local markets.<sup>169</sup>

Because it is growing so strongly, the transportation sector has aroused concern over its impact on air quality mostly because of its emissions of fine particulates, concentrations of which are particularly high in the country's major cities. Diesel vehicles are today responsible for most of these emissions, and despite the reductions expected from the current timetable for stiffening standards, they will continue to emit greater volumes of particulates than gasoline-powered vehicles (Table 21). In this regard, fuel taxation provides a perverse incentive: the excise tax on a litre of diesel is 15 per cent less than that on a litre of gasoline, whereas if the harmful effects of diesel combustion were taken into account, the tax on diesel should be higher than that on gasoline (Proost *et al.*, 2001). A supplementary approach, which could be pursued only on a Europe-wide basis and over the longer term, would be to strengthen fine-particulate emission standards for diesel vehicles.<sup>170</sup> Ideally, sources of mobile pollution should be integrated with non-mobile sources in a pollution trading system. Such an approach might be possible for fleet operators of diesel vehicles, when emission limits are fixed for fine particle emissions. In other areas, total emissions from road transport eventually

should decline drastically, as a result of stiffer standards for fuels and vehicles despite the expected increase in the length of road trips in coming decades (Table 21). In practice, however, very high vehicle license fees (about 40 per cent of the price of a 2000 cc vehicle) could undermine the pace at which the positive impact expected from stiffening vehicle standards occurs, by providing an incentive

Table 21. **Road transport: emission standards and emissions**

**A. Emission standards for vehicles registered at different dates in EU countries**

By fuel and emission standard on an urban test cycle, per vehicle-kilometre  
Index Pre-Euro I gasoline car = 100, except for particulates<sup>1</sup>

Type of vehicle	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Percentage change
	1990	1993	1997	2001	2006	
<b>Petrol car</b>						
Carbon monoxide	100	15	10	7	4	-96
Hydrocarbons	100	9	4	3	2	-98
Oxides of nitrogen	100	19	9	6	3	-97
Particulates	5	2	2	2	2	-55
<b>Diesel car</b>						
Carbon monoxide	7	4	3	2	2	-71
Hydrocarbons	10	4	3	2	1	-90
Oxides of nitrogen	43	29	21	13	7	-84
Particulates	100	55	31	20	10	-90
<b>Semi-trailer truck</b>						
Carbon monoxide	44	22	18	9	7	-84
Hydrocarbons	183	87	78	47	33	-82
Oxides of nitrogen	1 704	893	650	461	325	-81
Particulates	700	482	185	124	24	-97
<b>Bus</b>						
Carbon monoxide	63	28	22	11	8	-87
Hydrocarbons	83	90	84	50	35	-58
Oxides of nitrogen	795	859	614	436	307	-61
Particulates	458	304	187	125	24	-95

**B. Total road transport emissions in Portugal**

	Thousand tonnes, 1995	Index, 1995 = 100 per cent					
		1995	2000	2005	2010	2015	2020
CO	499	100	79	54	38	28	23
NO <sub>x</sub>	104	100	79	55	33	24	21
VOC	101	100	70	40	18	13	12
Benzene	4	100	52	29	14	10	8
PM-diesel	3	100	79	56	32	20	16

1. No legal standard exists for gasoline cars. The base for particulates is pre-1993 diesel car emissions.

Source: Panel A: UK Department for Transport, Local Government and the Regions, *Transport Statistics Great Britain 2001*.

Panel B: European Commission, Standard and Poor's DRI, KULeuven, August 1999, Draft Final Report.

to keep older, more polluting vehicles in operation.<sup>171</sup> That incentive is exacerbated by the considerable reductions in municipal road user fees (from 65 to 80 per cent) that are allowed for vehicles more than six years old.

### *Conclusions*

In order to moderate the costs inherent in the command and control regulatory approach, a free trading market mechanism could be set on the basis of the initial allocation of emission permits to point sources, as it is currently in preparation for in-house greenhouse gases emissions at the EU level. The tradable permits market should cover not only industrial polluters but other major point sources of emissions as well, such as electric power plants, in order to reduce costs further. Vehicle taxation should be revised to encourage fleet renewal. This could be done by eliminating vehicle license fees. At the same time, the annual road-use tax could be increased and should vary in the light of a vehicle's pollution characteristics.<sup>172</sup> At a minimum, older vehicles, which are also the most polluting ones, should no longer benefit from tax reductions. The effort to combat particulate pollution in the cities could start with an increase in diesel taxes, to bring them up to par with gasoline taxes. If the impact of such taxation proved to be regressive, it could be offset by an appropriate change in the overall social distribution mechanism. Over the longer term, it would be desirable to strengthen Europe-wide rules on fine particulate emissions by diesel vehicles.

## **Reducing water pollution**

### *Principal issues*

Drinking water is an essential good, the supply of which depends in large part on the quality of both surface and ground waters. The availability of high-quality water has additional advantages as the basis for many economic activities, particularly of the leisure kind, and also contributes to the value of the landscape. The main challenge here is to consolidate the progress made in recent years, and to maintain and improve water quality at the lowest possible cost, recognising that the hitherto generous European investment subsidies, that often cover 60 per cent of capital costs, are likely to end.

### *Performance*

Portugal has had a poor record for water quality but this situation has evolved rapidly. A start was made in reducing the pollution of watercourses during the 1990s, through the construction of purification plants that reduced the biochemical demand for oxygen (Table 22).<sup>173</sup> During the past 15 years, the population connected to waste water purification plants has risen from 21 per cent of all households to 55 per cent. From 1990 to 2000, a total of € 1.3 billion was spent on



Table 22. **Performance indicators: water pollution**  
Selected rivers

	Biochemical oxygen demand	Nitrates	Total phosphorus	Nitrogen balance on agricultural land
	Percentage changes, 1980-85 to last three years			1985-87 to 1995-97, annual average change
Australia				0.8
Austria	..	20.1	-42.8	-2.4
Belgium	-51.8	2.7	55.9	-0.5
Canada	..	-2.1	-19.3	8.4
Czech Republic	-45.2	-20.9	..	-5.8
Denmark	-46.9	-33.1	-49.0	-2.7
Finland	..	37.3	-27.6	-1.9
France	-38.0	10.3	-3.0	-0.9
Germany	-19.3	2.4	-64.2	-3.6
Greece	..	..	..	-5.3
Hungary	-32.2	-25.0	-27.5	n.a.
Iceland				-0.2
Ireland	..	..	..	2.5
Italy	..	30.3	-33.3	-3.7
Japan	-7.4	..	..	-0.7
Korea	..	..	..	3.9
Luxembourg	-8.9	-5.0	-2.6	
Mexico	74.1	-73.0	28.9	-2.3
Netherlands	-23.2	-13.9	-54.9	-1.8
New Zealand				3.3
Norway	..	-1.0	-21.6	0.1
Poland	-12.5	4.8	-26.1	-4.9
<b>Portugal</b>	<b>-20.4</b>	<b>19.2</b>	<b>87.3</b>	<b>3.8</b>
Spain	104.7	10.4	-13.1	1.0
Sweden	..	6.1	-31.6	-3.2
Switzerland	..	16.0	-27.5	-2.7
Turkey	122.0	-8.4	8.5	-3.4
United Kingdom	-16.5	7.8	16.9	-2.1
United States	-3.7	-3.1	6.4	2.2

Source: OECD, *Environmental Data*, Compendium 1999.

sewer systems and purification plants serving municipalities and industries. The percentage of public bathing sites that meet quality standards has risen considerably (Table 23). Yet despite this progress, water quality problems remain widespread: nearly two-thirds of watercourses are still polluted to a degree considered critical, serious or excessive according to national norms. The national ceilings set for concentrations of toxic substances are exceeded for nine pollutants.<sup>174</sup>

Table 23. **Water quality in Portugal**

Quality of surface waters, <sup>1</sup> nationally (percentage of measuring stations) <sup>2</sup>				
Quality category <sup>3</sup>	1990	1993	1996	1999
No pollution	0	0	0	0
Moderate pollution	20	23	22	35
Critical pollution	26	29	42	38
Severe pollution	44	40	33	25
Excessive pollution	10	8	3	2
Total	100	200	100	100

Bathing water quality (portion of bathing areas where water quality meets the limit values of Directive 76/160) <sup>4</sup>						
	1993		1997		2001	
	Per cent	Number	Per cent	Number	Per cent	Number
Coastal waters	58	(312)	90	(336)	97	(366)
Inland waters	17	(24)	25	(24)	84	(38)

1. Based on mandatory limit values for all water uses (human consumption, aquatic life, irrigation, recreational activities).

2. Year-over-year figures for 60 identical measuring in pollution-prone areas.

3. Quality categories using 16 chemical parameters (organic matter, suspended matter, micro-organisms, nutrient elements, heavy metals).

4. Parentheses indicate the total number of bathing places on which the percentage is calculated.

Source: OECD; European Commission.

The major causes of pollution currently are untreated municipal effluents, industrial discharges and agricultural wastes. Only five of the 27 cities located in sensitive zones have purification plants that meet existing standards (European Commission, 2002b). More than two-thirds (68 per cent) of industrial effluents are discharged without treatment. The toxic substances now polluting the water come primarily from the leather and textile industries. Agricultural nitrate runoff is growing steadily, and is the highest among the European OECD countries (Table 22).

### *Policies*

Expanding waste water purification is the major focus of efforts to counter water pollution in Portugal, and has accounted for substantial investment during the last 15 years. Additional investments will be required, however. Portugal has set itself the objective of connecting 90 per cent of the population to purification plants by 2006. Only a small fraction of waste water collection and treatment costs is recovered from the polluters concerned – households and businesses – through a specific municipal tax. Cost-recovery rates stand at 20 per cent for households and businesses, and these are enough to cover operating expenses, but the eventual replacement of the plants is being neglected. Without metering, consumers

are under no incentive to restrain their use of water. Metering should be introduced in order to relate the municipal tax to water consumption, so as to ensure correct appreciation of marginal costs by users and so help stabilise the use of natural resources (see below).

Industry has been very slow in treating its effluents. A 1994 decree-law called for imposing taxes on polluting industrial effluents. That legislation has never been enforced, however, and industrial wastes are still governed by an administrative penalties system that is largely ineffective, because the levels of fines are not sufficiently dissuasive. The only effective way to improve water quality is to make sure that a similar level of effort is imposed on all industrial polluters. Monitoring of industrial effluents is possible and so, in contrast to the household sector, a policy based on the taxation of pollution is possible.

Farming activities exert significant pressure on water quality. Crops account for 89 per cent of agricultural emissions of nitrates and 79 per cent of those of phosphates, with the remainder attributable to swine operations. This pressure could even intensify with the rapid growth of irrigation, which encourages a shift to more intensive and more polluting modes of agricultural production. The major problem lies in the lack of any effective incentives for reducing pollution. The best solution to this problem would be the taxation of nutrient balances, provided that reasonable estimates are available of the economic benefits that would flow from lower nitrate run-offs. A code of good agricultural practices has been introduced, and failure to observe it makes farmers liable, in principle, for financial penalties in areas identified as vulnerable to nitrate pollution. Yet not a single fine of this kind has been levied to date. Moreover, the common agricultural policy encourages excessive resort to fertilisers and pesticides, through price supports for agricultural products, and in this way contributes further to pollution. Making assistance conditional on sound environmental practices would reduce the scale of this damaging incentive.

### *Conclusions*

Considerable investments have been made to collect and process urban waste water. The sustainability of these efforts could be enhanced by strengthening their economic and financial underpinnings, through charging more realistic prices for water and allowing municipalities to recover their costs. For households the current municipal tax could be replaced by a sewage charge based on households' gross water consumption, as a second-best solution to charging households for their actual waste production. For industrial enterprises connected to the municipal sewage networks their output of pollutants to the municipal sewer system should be monitored and taxed.<sup>175</sup> Untreated industrial wastes dumped into watercourses should be taxed at the cost of the pollution, as stipulated in 1994 decree-law. Since farming activities are increasingly responsible for water pollution,

it would be desirable to change the current situation, where farmers are under no real incentive to control pollution. The penalties now on the books should be enforced. Reducing farm-sourced pollution will also require reforms to the support provided under the common agricultural policy. If water protection policy is to be as effective as possible, there should be a shift toward a common mechanism that embraces all sectors and that is based on market forces. The most efficient approach would involve trading permits between industrial, agricultural and municipal sources of nutrient pollution, within the same river basin or around principal lakes and reservoirs.

### ***Working towards the sustainable use of natural resources***

#### *Principal issues*

The sustainable use of natural resources is an issue that arises in particular for fisheries, water supply and soil erosion. For fisheries, the difficulties lie in the overall size and allocation of quotas. For water supply, the main issue is the lack of adequate user prices. When it comes to soil erosion, the problem lies primarily with the failure of owners to take proper thought for the future.

#### *Performance*

Fish stocks in the exclusive economic zone, as in the rest of the world's oceans, continue to decline (Table 24), under the impact of overfishing. The dwindling resource is reflected in catches by Portuguese vessels that are 40 per cent below what they were in 1990. On the other hand, fish consumption has more than doubled since 1980; as a result imports increased.

The rapid spread of irrigated farming constitutes the principal threat to water resources (Table 25). The amount of water used for irrigation rose by 72 per cent between 1990 and 1998 even though the surface irrigated fell by 10 per cent, a trend that is expected to continue, given the many projects now underway (Alqueva, Odeleite-Beliche and Odelouca-Funcho). This quantitative growth is of particular concern since irrigation is shifting from the areas that are best endowed with water to those that are least so (Table 25).

#### *Policies*

Fishing activity is limited by the application of the European common fishing policy. In order to take full advantage of these quotas, there are significant financial transfers to the industry that amount to more than 20 per cent of the value of the catch. The sardine catch, which represents half of the total, provide an indication of the policies adopted in response to overexploitation. In this case, the principal measures are a prohibition on fishing during the spawning months,

Table 24. Key indicators of sustainable use of natural resources

	Fish catch	Fishing fleet	Water withdrawals	Transfers to the fishing industry
	Per cent change	Per cent change (tonnage)	Per cent of available resources	Per cent of landed value
	1990-2000	1985-1997		1997
Australia	1	78.1	4.3	9
Austria	61	..	2.7	..
Belgium	-28	1.6	42.5	5
Canada	-39	..	1.7L	25
Czech Republic	..	..	15.6	..
Denmark	4	-29.9	15.7	16
Finland	15	140.4	2.2	90
France	-4	4.2	23.9	18
Germany	-37	-86.0	24.4	32
Greece	-25	-38.7	12.1	13
Hungary	-56	..	5	..
Iceland	32	62.7	0.1	4
Ireland	27	..	2.6	47
Italy	-19	-12.3	32.2	5
Japan	-48	-42.1	20.8	21
Korea	-26	15.6	35.6	7
Luxembourg	..	..	3.4	..
Mexico	-3	..	17.4	1
New-Zealand	63	..	0.6	4
Norway	69	-3.8	0.7	12
Netherlands	22	20.0	4.9	8
Poland	-51	..	18.7	4
<b>Portugal</b>	<b>-41</b>	<b>-39.3</b>	<b>15</b>	<b>21</b>
Slovak Republic	..	..	1.4	..
Sweden	35	..	1.5	42
Switzerland	-47	..	4.9	..
Turkey	33	..	15.2	13
United Kingdom	-2	..	14.6	13
United States	-15	..	19.9	24

Source: FAO; OECD and World Bank.

and an annual ceiling set as a share of the allowable Europe-wide catch. This quota has been divided among the seven organisations representing the ship owners. It is left to the ship owners themselves to distribute licenses within their organisation: no domestic market for these quotas has appeared, and the authorities are not inclined to introduce one. These measures do appear to have achieved their objective of stabilising the stock of sardines and the Iberian fish stocks. The only case of individual quotas involves fishing on the high seas,

Table 25. **Irrigation: scope and trend**

<b>A. Withdrawals of freshwater by major use</b>				
	Public supply	Irrigation	Industry	Cooling of thermal power plants
	Percentage			
1991 breakdown	5	59	13	23
1998 breakdown	7	79	3	11
1991-1998 change	+86	+72	-65	-62

<b>B. Irrigated area</b>				
Region (from north to south)		Number of hectares		Change (percentage)
		1989	1999	
North	Between Douro and Minho	225 510	148 300	-34
	Trás-os-Montes	87 750	93 100	6
	Beira Interior	112 730	92 710	-18
	Beira Litoral	155 930	104 620	-33
South	Ribatejo and Oeste	144 700	154 520	7
	Alentejo	110 750	163 990	48
	Algarve	34 220	30 010	-12
Total		871 590	787 250	-10

Source: OECD; Instituto da Agua.

beyond Portugal's exclusive economic zone. Yet the government sees to it that these quotas cannot be commercially traded among holders. The introduction of transferable individual quotas would constitute an effective means of rationalising fisheries to enable the activity to take place at lower cost and has indeed led to such results where they have been introduced (OECD, 2001j). Such a policy would tend to lead to concentration of the fishing industry. Fishermen that held saleable quota rights would be compensated. Employees, however, would have to bear adjustment costs that could be met through normal labour-market and social policies.

Water management suffers from an inadequate institutional structure that prevents the scarcity of the resource from being reflected in its price. In particular, users are not required to pay the opportunity cost of that scarcity. The 1994 decree-law imposing taxes on water use has never come into force. In any case, it provided an exemption for irrigation until 2009. That exemption would have led to even greater inefficiency, since irrigation consumes more than three-quarters of water withdrawals. The extraction and use of water is already subject to the grant as permits by the government. Either these permits should become the property

of the current users and be transferable or they should be auctioned. In either case such a procedure should ensure that water is used in the area where it has the highest value.

Moreover, while households and industries pay a portion of the cost of treating and distributing water, this is not true in the case of agriculture. Beneficiary farmers will not be charged for any portion of the government's capital expenditures under the current programme, which runs to 2006, and they cover only a small portion of maintenance costs. In total, farmers are billed for € 8.5 million a year, while annual expenditure on supplying them with water amounts to € 310 million (Instituto da Agua, 2001) or nearly three times as much as the operating costs of sanitation systems. A clear policy of charging for irrigation water needs to be introduced, by establishing marketable rights and not underpricing government projects. As well, the common agricultural policy exacerbates these incentives for the overuse of water in two ways, first through the specific subsidies that are reserved for irrigated farming, and secondly through general farm price supports. These community subsidies have also favoured the erosion of farmlands in the southern part of the country, by making it profitable to apply intensive cultivation methods to many erosion-prone lands that were formerly devoted to livestock grazing, an activity that is much less damaging to the soil.

### *Conclusions*

In order to move towards sustainable use of natural resources, there will have to be an end to situations where open access and subsidisation leads to depletion of natural resources. The use of water merits particular attention. Households are charged for their use of water but not at the levels that adequately reflect costs. Farmers continue to benefit from irrigation projects that have been subsidised nationally and supranationally. The trading of water extraction permits should be allowed in order to ensure that scarce water is used in its most productive use, though, from an economic point of view market prices in agriculture will not necessarily give such signals due to trade restrictions. In the area of fishing, access to stocks has been limited by the EU Common Fisheries Policy. However, the existing structure of the industry has been protected by not allowing market-based transfer of fishing rights. A more efficient industry, best able to provide a sustainable base for regional economies, would emerge from allowing a market in these quotas and through the high level of subsidies to the industry. Such a change in direction would need to be backed by policies designed to ensure the integration of people affected by restructuring into the overall labour force.

## Notes

1. The deceleration of private consumption in 2001 was amplified by the change of the automobile tax. The automobile tax on off-the-road vehicles was increased in early 2001 to equalise the tax applicable on other light passenger cars. Sales of this type of vehicle thus increased by approximately 30 per cent in 2000 – partly reflecting anticipated purchases – but then fell by nearly 80 per cent in 2001. The reduction of purchases of passenger cars accounted for around half of the slowdown in private consumption in 2001.
2. In 2001, the deceleration of real disposable income was largely due the unexpected rise of inflation, while in 2002 it reflected mainly the lower growth of effective wages.
3. The consumer's confidence indicator calculated by the European Commission showed an unusual large decline in mid-2002, perhaps related to the restrictive fiscal measures announced, and reached in October its lowest level since the series exist (June 1986).
4. In particular, with the ageing of the population, the share of the young cohort, with a traditionally low participation rate, in the total working age population diminishes. According to some estimates, the change in the age structure of the population should continue to have positive effects in the participation rate until 2006. See Banco de Portugal, "Implications of developments in the age structure of the Portuguese population for the participation and unemployment rates", *Annual Report 2001*, pages 131-134.
5. January-October 2002 average.
6. October 2002, year-on-year rate of change.
7. The standard VAT rate was raised from 17 to 19 per cent from June 2002 onwards. The mechanical impact on the HICP was distributed between June and August, due to the fact that some of the prices are collected on a quarterly basis. At the end of this 3-month period, estimates point to around ½ percentage point direct effect on year-on-year inflation. Some impact on HICP inflation also came from the increase of the *ad valorem* component of the tobacco tax (from 23 to 32 per cent in 2002).
8. October 2002 year-on-year rate of change of the overall index excluding energy, food, alcohol and tobacco.
9. Inflation differentials may develop during periods of transition, when a less-advanced economy, like Portugal, is catching up with more advanced economies. The Balassa-Samuelson model suggests that countries which are experiencing higher productivity growth in the tradables sector than in the non-tradables sector will have higher inflation rates for non-traded goods and services. This is based on the assumption that wages set in the tradables sector will be followed by wages in the non-tradables sector, raising the latter above productivity growth. This will result in an increase in price inflation in the sheltered sector relative to the exposed sector. With overall inflation



- being the average of inflation in the two sectors, the average price level relative to other countries will increase in such a scenario. Most studies for Portugal suggest that this effect accounts for 0.5 to 1 percentage points of the inflation differential with the euro area. See Costa (2000), Swagel (2000) and Brito and Correia (2000).
10. The sharp deceleration of import volumes resulted from the slowdown of some domestic demand components with higher import content, such as the consumption of durable goods and investment in equipment.
  11. In average terms, the real effective exchange rate index for Portugal based on unit labour costs in manufacturing, appreciated by 2.6 per cent in 2001 and 1.8 per cent in the first nine months of 2002 compared with the first nine months of 2001.
  12. The last change of monetary policy by the European Central Bank (ECB) was on the 5th December of 2002, when it cut its key-refinancing rate by 50 basis points to 2.75 per cent more than one year after the previous cut.
  13. In December 2001, credit to the non-financial private sector grew 12.6 per cent (23.1 per cent in December 2000). In September 2002, the year-on-year rate of change of this aggregate stood at 8.8 per cent.
  14. According to estimates of the Banco de Portugal, the indebtedness of households stood at around 95 per cent of disposable income in 2001 (5 percentage points up from the previous year). The indebtedness of non-financial corporations reached 89 per cent of GDP at the end of 2001 (almost 10 percentage points up from 2000). As a comparison, according to ECB estimates, the average indebtedness of households was 81.3 per cent of disposable income in the euro area in 2000 and, the average indebtedness of non-financial corporations 70.8 per cent of GDP.
  15. The cyclically adjusted net borrowing of general government remained almost stable from 1997 to 1999 at around 3.2 per cent of GDP and increased markedly to 4.3 per cent and 4.6 per cent of GDP in 2000 and 2001, respectively. In 2002, the fiscal policy was considerably tightened and the cyclically adjusted public deficit should decrease to around 2.9 per cent of GDP.
  16. The price-setting regime of consumer fuel prices was changed in March 2002. Domestic fuel prices are now set in a monthly basis in order to reflect the evolution of oil price in international markets.
  17. This measure, the object of which was to cope with the worsening government balances observed during the year, resulted in investment expenditure being cut by 10 per cent compared to the initial budget (see OECD, *Economic Survey of Portugal*, 2001a).
  18. This was partly a catch-up, following the freeze on investment in 2000.
  19. Data based on the old methodology.
  20. Such regularisation is not systematic in the EU countries.
  21. Concerning tax revenues, European regulations stipulate that receipts in respect of unpaid or bad tax and social insurance contributions should not be posted as revenue in the general government accounts. Portugal enjoyed a dispensation in this respect up until June 2002.
  22. According to the authorities' estimates, the wage bill overrun was probably equivalent to 0.5 per cent of GDP, *i.e.* about half of the overshoot on current expenditure. The latter is thought to derive above all from the higher than forecast salaries paid to civil servants in the Education, Defence, Justice and Finance Ministries and the continued post regardings.

23. By December 2001, the Stability Programme referred only to the bottom end of the growth band and forecasted a deficit of 1.8 per cent of GDP.
24. Investment spending has been frozen at the previous year's level and the new rules defined in the Framework Law are in force: each Ministry has at its disposal 85 per cent of the ceiling set for 2002, the remaining 15 per cent being released only for projects that are positively assessed. These rules, which are permanent in nature, relate only to investment that is not co-financed by the European Union.
25. The object of this Law is to deal with the control difficulties observed in the past, in 2001 in particular. The government is now able to set the ceilings on new borrowing by local authorities or by enterprises they own. If the ceilings are not complied with, transfers to these authorities will be reduced. Hitherto, local authorities did in fact have limits applying to their debt service, but there no were mechanisms for making them respect these limits.
26. The OECD projections were prepared in November for the OECD *Economic Outlook*, released on 21 November 2002 (OECD, 2002a).
27. The revision of the 2002 deficit carried out for the supplementary budget (on a public accounts cash basis) included the regularisation of debts incurred in 2001 and earlier which came amounted to the equivalent of 1.6 per cent of GDP.
28. The reduction in the structural deficit would amount to 1 percentage point of GDP, according to government estimates, which are based slightly on different growth assumptions for 2002 and 2003 and different elasticities of taxes to growth.
29. The Stability Programme lists a series of measures to be adopted in these areas by 2006.
30. In recent years there has regularly been a difference between the general government borrowing requirement and changes in the public debt with the latter often larger than the borrowing requirement. This difference, reflecting off-budget operations, privatisation, or the absorption of unexpected debts, varies from year to year between 1 and 2 GDP points and is estimated to have reached 3.4 points of GDP in 2002.
31. Equivalent to 14.9 per cent of the nominal value of the government debt existing on the same date. Most of these operations were interest rate swaps carried out with the objective of adjusting the refixing profile and the duration of the debt portfolio *versus* the benchmark portfolio.
32. Reduction in tax on non-residents' interest earnings; application of Community directives and OECD recommendations on tax competition; introduction of mechanisms to prevent operations designed to minimise tax on interest income. On this last point, the object is to restrict residents' sales of securities to non-residents not liable to tax prior to payment of the coupons or dividends, the former then being bought back at a price below the sale price.
33. The ratio of public outlays to GDP is the most commonly used indicator for expressing public sector size in an international and historical context. Such comparisons should, however, be made with care. If tax expenditures for social and economic purposes and taxes on social transfers were taken into consideration for all countries, the international picture would be quite different (Adema, 2001). Unlike many OECD countries, Portugal does not tax social transfers, and provides social and economic assistance *via* tax expenditure. When taking into account tax expenditure, Portugal total public spending is even higher.

34. The pension benefits of workers joining before 1993 are based on the last salary, as well as on permanent remuneration granted in the last two years of service. Public employees hired after September 1993 are now subject to the same provisions as those applicable to the private sector (see Chapter IV). However, with around two thirds of public employees hired before 1993, pension expenditure is set to rise rapidly relative to GDP in the medium-run.
35. According to the European Commission, EU Structural Funds contributed about ½ per cent per year to growth between 1989 and 1999. The cumulative effect added about 10 per cent to GDP in Portugal as well as Greece and Ireland. Estimating an annual series covering investment in transportation infrastructure on GDP from 1976 to 1998, Pereira and Andraz (2002) find a similar result for Portugal.
36. According to the Ministry of Planning, the CSF III, funds are expected to raise the GDP level by 2.1 per cent and to create 81 000 jobs (1.6 per cent of the labour force), over the period to 2006.
37. For example, the proportion of electrified railway lines is still well below the EU average of 48 per cent.
38. Budget estimates of payroll costs are generally prepared a few months before wage negotiations with public sector unions are concluded, explaining the existence of discrepancies between budget and actual figures. Also, a special (contingent) budgetary endowment is available to the government in order to meet “unforeseen” spending needs. This endowment has in the recent past been largely used to finance the increase in the payroll.
39. The clauses can be invoked when unexpected circumstances threaten the achievement of the budget deficit target. The contingent measures are specified *ex ante* in the budget and are the maximum amount that can be frozen by the Executive without parliamentary approval. There are no specific trigger mechanisms governing the imposition of a budget freeze.
40. Prior to 2000, budget freezes were used as a response to the overshooting of spending by some Ministries (especially health). They often affected less than the maximum authorised amount and were then partly (or mostly) reversed closer to the year-end, as revenue windfalls often offset overspending. In this way a tendency developed for the budget deficit to turn out better than targeted during most of the 1990s, in spite of spending overruns. The freezing foreseen in the 2003 budget is meant to provide a true “margin of safety”, in as much as the evolution of revenues is uncertain. It is the Government’s intention to unfreeze some of the amount if the macroeconomic environment turns out to be better than expected.
41. Although, the migration to the ESA95 system is in progress, the annual budget and general accounts of the State, autonomous funds and services, as well as the social security fund, are still recorded entirely on a cash basis, implying delays in recognising on-going financial commitments.
42. In the context of the Stability and Growth Pact, national governments make budgetary commitments to the EU on behalf of the general government, so that compliance concerns all levels of public administration. Some Euroarea Member States have put in place a “Domestic Stability Pact” in order to promote fiscal discipline at subnational levels (*inter alia* Germany, Italy and Spain). In 1999 the Italian financial law, for example, ushered in the so-called *Internal Stability Pact*, setting some rules on the deficit and the debt of sub-central governments (see OECD, 2002b).
43. Portugal and Centeno (2001) using the European Union Household Panel data.

44. Although the gap is substantially reduced when differences in education levels between the public and private sectors are taken into account, it remains much larger in Portugal than in most other EU countries
45. Local government staff is insufficiently qualified with respect to increasing technical needs including experience with contracting out of tasks to the private sector. The training quality of Staff working in local government is also poor.
46. Public sector employees made redundant as a consequence of the on-going restructuring of the public administration will be placed in an employment “pool” or “bourse”, in view of their reassignment. The employment “pool”, which is under the responsibility of the Ministry of Finance, will centralise information on civil servants available and on job opportunities. Employees in the pool will see their salary reduced by one sixth after three months. This reduction is expected to give them an incentive to search for a new job.
47. The system does however allow for incentives to individual or team productivity of a non-pecuniary nature (*e.g.* sabbatical periods, scholarships, promotions *in situ*).
48. See the reform proposal number 16 of the aforementioned report of the ECORDEP for further details.
49. The Portuguese private sector also uses fewer external support services (20 per cent of value added) than is the case in other OECD countries (first column in Figure 21).
50. The often-cited and controversial study by Arthur Andersen (2000) concludes that in the UK, for example, public-private partnerships projects can reduce costs by 17 per cent.
51. Using public-private partnerships projects as an opportunity for shifting public investment and borrowing off-balance sheet ignores the fact that possible macroeconomic crowding-out of market activities in principle is the same for public investment and private investment *via* public-private partnerships (Van den Noord, 2002), the more so since in both cases taxes need to be levied in order to meet future capital and operating costs.
52. However these limits do not apply to medium and long-term loans contracted for carrying out projects co-financed by European structural funds, within the scope of the Community Support Framework, loans used for the repayment of other loans, loans to meet extraordinary expenditure resulting from public calamity situations, and loans for the acquisition, construction or repair of real estate for social housing purposes.
53. Based on the recent OECD Programme for International Student Assessment (PISA) the average reading, science and mathematics performance of Portuguese 15-year olds, who are approaching the end of compulsory schooling, is significantly inferior to their counterparts abroad.
54. According to recent estimates by the Ministry of Education, over the period 1990-2000, each year 13 per cent of pupils leave before completion of primary schoolings, and more than 40 per cent of those who graduate from upper secondary education have taken at least one to two additional years before successfully graduating.
55. In 2000 the Ministry of Education planned to slightly reduce the number of public schools for primary and secondary education from 14 137 in 2000-2001 to 13 671 in 2002-2003. It also planned to merge a number of schools under one administration. This is expected to improve school management, while not necessarily to reduce the number of schools. In academic year 1999-2000 30 per cent of individual schools were assembled into 400 groups including on average 10 schools each. As restructuring continues, the number of groups is expected to rise to 1 382 in 2005-2006. [www.dapp.min-edu.pt/est\\_plan/pdf/mudar.pdf](http://www.dapp.min-edu.pt/est_plan/pdf/mudar.pdf)

56. According to the OECD (2001b) PISA report, in Portugal the variation of in student performance on the PISA reading literacy scale between schools is high and above the OECD average.
57. Using the micro-data of the Portuguese Labour Force Survey of 126 233 individuals between the first quarter of 1998 and the fourth quarter of 2000, Portugal and Centeno (2001) find that a college graduate woman (man) earns 92 per cent (88 per cent) more of what a woman (man) with full secondary education earns. In most European countries the wage premium associated with college education varies from a maximum of 60 per cent for women in the UK to a minimum of 40 per cent for women in Italy (Blondal *et al.*, 2002).
58. Pereira and Martins (1999) estimate the economic returns to education in Portugal in the 1982-1995 period. They find that the return was increasingly above 9 per cent for both men and women over the entire period.
59. Blondal *et al.* (2002).
60. Health is the only sector where hiring is still permitted after the 2002 budget freeze, in services that are understaffed. However, the new hiring will be based on regular civil servant contracts because the hiring freeze on fixed term and individual contracts applies also to the health sector.
61. See St. Aubyn (2002) for a survey.
62. A voluntary experimental remuneration model for general practitioners (GPs) involving 500 doctors at the national level has been recently implemented. This project requires participating doctors to organise themselves in groups, so as to enhance peer pressure within the new remuneration model. As far as hospitals are concerned, the cardiology division of the hospital of Coimbra has recently become a pilot case, where a share of doctors' pay, as well as managers' pay, has been related to workload and performance, while a new-performance related pay system for hospital doctors and other health care professionals is under study.
63. Private fees are in principle regulated by the government, but in practice the range of minimum and maximum reference prices is set by the Medical Association (*Ordem dos Médicos*) at very high levels by international comparison.
64. Central government transfers (*i.e.* the tax system) finance 90 per cent of the National Health System (NHS) budget. The remaining 10 per cent is financed by the NHS own receipts, mostly generated by hospitals charging fees for services. The annual general budget establishes a cash limit for total National Health System (NHS) spending. However, this initial allocation is perceived to a large extent as indicative, and the need for supplementary budgets has been the norm in recent years.
65. Generics are not widely used, accounting for 1 and 2 per cent of the market. They are subject to a government-established price ceiling. This is equivalent to 80 per cent of the lowest-priced similar product. Only products with market share equal or above 10 per cent are considered for comparison purposes.
66. The concept "per adult equivalent" is based on household income, not on the income of each member of the household taken separately. For the methodology see Marlier and Cohen-Solal (2000). Marlier and Cohen-Solal (2000) analyse social benefits in the European Union. Their analysis is based on the 1996 European Community Household Panel (ECHP).
67. Tax expenditures, which are not counted in income transfer expenditures, are estimated to represent a high cost in terms of revenue foregone. In 1998, the last year for which data are available, it was estimated that only 60 per cent of the gross income

- declared by households was taxable and a large share of tax expenditure went to the highest income categories (see Bronchi and Gomes Santos, 2001).
68. The Netherlands, for example, allow to carry 1 per cent of a year's budget over the following financial year (Blondal and Kronmann Kristensen, 2002).
  69. In Spain, for example, local authorities may lose a share of the EU structural funds if they do not meet the spending ceilings set by law.
  70. Crude estimates by the Ministry of Finance based on 1999 data, show that income distribution could be slightly improved by removing tax credits for health and education spending (Reis, 2003).
  71. For guidelines on contracting out and public-private partnerships, see OECD *Economic Survey of Mexico* (2000a) and OECD *Economic Survey of the United Kingdom* (2001c).
  72. Per capita income increased by close to 3 per cent in 1980-2000, about 1 percentage point higher than the EU average. Comparative indicators are from OECD (forthcoming, 2002e).
  73. Specifically, the per capita growth rates that were "explained" by the regression analysis were the annual average growth rates between the average level of output in the 1974-77 period and that in the 1994-97 period. Note also that Portuguese per capita GDP rose faster than that of labour productivity, as the employment rate increased over the period, with the increasing rate of participation of women offsetting rising periods spent in compulsory and non-compulsory education, and falling participation rates of older males.
  74. The recent productivity gains in many OECD countries were associated with stable or falling employment, often related with keeping low skill/low paid workers out of the job market. In Portugal, they were associated with rising employment, including for the low skill/low paid workers. The Portugal's pattern – also observed in the Netherlands – could partly explain the slow productivity gains observed in the recent upturn. See Scarpetta *et al.* (2000).
  75. See Bassanini, Scarpetta and Hemmings (2001).
  76. Ministry of Finance estimates, based on the revised national accounts, put potential growth at 3 per cent in the 1978-2001 period (Cf. Pina, 2002). Banco de Portugal estimates that potential GDP growth was close to 3 per cent in the 1973-98 period (Banco de Portugal, 1998).
  77. According to Scarpetta and Tressel (2002) estimates, Portugal's technology gap would be reduced by as much as one quarter and productivity levels increased by more than 10 per cent. In Portugal, the strong increase in the levels of total factor productivity reflects comparatively strict regulations in product markets and relatively low productivity levels *vis-à-vis* the leaders. See also OECD 2002g.
  78. In 2001, more than two-thirds of the population aged 25 to 64 had attained only 6 years of schooling (against an OECD average of 15 per cent) and only 9 per cent had achieved tertiary education, the lowest proportion in the OECD.
  79. See the International Adult Literacy Survey (IALS), OECD (2000b). Tests refer to prose, document and quantitative literacy. Other countries ranking as low as Portugal's are Chile, Poland and Slovenia. At the lowest level (level 1) of literacy the individual tested may, for example, be unable to determine the correct amount of medicine to give a child from information printed on the package.
  80. The vast majority of children are educated at public schools, although the private sector maintains an important presence in tertiary education. For a review of the evolution of the Portuguese education system until 1995, see Pereira and Martins (1999).

81. See Clements (1999) and St. Aubyn (2002). These aspects are discussed in more detail below.
82. See European Commission – *Structural Indicators* 2002 (Share of the population aged 18-24 with only lower secondary education and not in education or training).
83. See OECD (2001e), which covers 32 countries, including 4 non-member countries (Brazil, Latvia, Liechtenstein and Russia). These results are consistent with those of the Third International Mathematics and Science Study (TIMSS), conducted in 1994-95. The TIMSS included mathematics and science tests, but not literacy ones. Portuguese students were also among the worst performers in every dimension and grade considered.
84. See Pereira and Martins (2002) for detailed evidence on the economic returns to education in Portugal in the 1982-1998 period.
85. See survey by Pereira and Lima (1999).
86. In the scope of Broad Economic Policy Guidelines (BEPG) for 2002, adopted by the EU Council, the main priorities for Portugal concerning the labour market were identified as: improving education and training systems in the framework of a better articulated lifelong learning strategy; promoting wage developments that are consistent with the maintenance of competitiveness and price stability; and modernising labour market institutions. See a brief summary of the 2002 National Action Plan for Employment in Annex III.
87. See *Inspecção-Geral da Educação* (2002).
88. Following the curricular revisions of the 1st and 2nd cycles already in place, the 3rd cycle revision is starting in the school year 2002/3. Among the main measures: the same disciplines are taught in the 3 years; a second foreign language and a new discipline of “Technological Education” become compulsory; classes are organised in 90 minutes periods; a new compulsory discipline of “Introduction to ICT”, and national final exams of Mathematics and Portuguese language will be introduced in the 9th grade in 2004/5.
89. Measures listed here are those which would be the most promising to enhance the qualification of human resources. Specific measures aimed at improving the efficiency of education expenditure are listed in Chapter III. See also Clements (1999), Carneiro (2000) and St. Aubyn (2002).
90. The supply of law and teaching graduates by Portuguese universities continues to rise, despite the fact that most students face increasing difficulties to get a job afterwards. By contrast, in all health-related courses, the number of places is still not sufficient to cover increasing demand for higher skills in the Portuguese health sector.
91. The Ministry of Higher Education and Science was created by the new government, merging responsibilities for science and technology (previously in the now-extinct Ministry for Science and Technology) and tertiary education (formerly in the Ministry of Education). A new law for the quality and development of tertiary education was approved in July 2002 (“*Regime Jurídico do Desenvolvimento e Qualidade do Ensino Superior*”). A proposal for changes in the financing and autonomy status of universities is under preparation.
92. In 1999, 75 per cent of students were enrolled in general upper secondary programmes, compared with less than half on average in the OECD.
93. This legislation comes within the context of the tripartite agreement signed by the government and social partners in February 2001. The new legislation establishes a



- minimum period of 40 per cent of working time to be used for training. Public financial support is provided to companies to compensate for the training costs of minors.
94. The Operational Programme for Education (PRODEP III – *Programa de Desenvolvimento Educativo para Portugal*) includes two sets of measures directed to the use of information technologies in schools. The first measure establishes goals regarding the equipment of schools (one computer per 20 students by 2003 and one computer per 10 students by 2006). The second set of measures refers to promoting the production and acquisition of multimedia contents. Also through the PRODEP III, teachers are receiving ICT training.
  95. The authorities expect that around 2 million citizens will be certified with this basic skills diploma by 2006. The accreditation of the institutions that will provide the Basic Skills Diploma, and further requisites related to the diploma have already been regulated.
  96. See European Commission – *Structural Indicators 2002* (Percentage of population aged 25-64 participating in education or training in the four weeks preceding the EC labour force survey).
  97. Only 20 per cent of all enterprises provided continuing vocational training in 1999, the lowest percentage in the EU. Cf. “Continuing vocational training in enterprises in the European Union and Norway”, Eurostat, *Statistics in Focus*, Theme 3 – 03/2002.
  98. For more information on adult learning in Portugal, see (OECD, 2003) or visit the OECD adult learning website ([www.oecd.org/els/education/adultlearning](http://www.oecd.org/els/education/adultlearning)).
  99. The strategic objectives regarding adult learning of this tripartite agreement include the promotion of quality training, the consolidation of the national certification system, the creation of a system of adult education with key competencies and different modes of education, and the development of enterprise training. In this context, it was determined that at least 10 per cent of the workers of each enterprise must participate in continuous training actions from 2002 onwards. All workers must have a minimum of 20 hours of certified training by 2003 and of 35 hours by 2006.
  100. The average level of the unemployment rate in Portugal over the 1990s was much closer to that of the flexible US labour market than of other EU countries. See Blanchard and Portugal (2001). Employment rates for Portugal and other EU countries are calculated in proportion of working-age population, defined as 15 to 64 years.
  101. Following the economic downturn, the rate of youth unemployment increased to 12 per cent in the third quarter of 2002, while the share of long-term unemployment stood at 38 per cent.
  102. For a detailed analysis of long-term unemployment in OECD countries, see OECD (2002f), Chapter IV.
  103. Adaptability captures the ability of workers and their employers to adjust to a shock by moving to another job. Flexibility refers to the sensitivity wages and prices in adjusting to shocks. It encompasses also the facility to adjust working hours and shifts. For a discussion of these notions applied to the Portuguese labour market see Traça (2002).
  104. Dismissal restrictions include various notification requirements and reinstallation with full back pay if the dismissals are considered unjustified. Mandatory severance pay is one-month pay per year of tenure, subject to a minimum of three months. More importantly, firms have to follow a sequence of time-consuming and potentially production-disruptive administrative procedures (advance notice, report on the financial and technical reasons, negotiations with the representatives of the employees...).



105. Blanchard and Portugal (1998), looking at Portuguese and US labour markets, show how similar unemployment rates can hide extremely different labour markets. The unemployment in Portugal reflects much lower flows and much higher duration than in the US. They argue that these differences may come from high employment protection in Portugal.
106. Bover *et al.* (2000) put in evidence that different collective wage bargaining systems in Portugal and Spain have an important role in explaining different labour market outcomes.
107. In Portugal, the trade unions structure is characterised by a large number of unions acting in an uncoordinated fashion. The representation of trade unions and their ability to negotiate depends on union membership. The ambiguity in the representation of each trade union undermines the potential for co-ordination among unions, often creating a situation of competition that ensures wage flexibility. Employers' associations are able to reach agreements with the least demanding unions, while waiting for the government to extend them nation-wide. See Bover *et al.* (1998).
108. Gaspar and Luz (1997) concluded that Portuguese real wage elasticity *vis-à-vis* the unemployment rate was high, according to international standards.
109. Varejão (2002) found evidence that firms tend to train temporary workers in order to be able to select the most competent for permanent jobs. See also Portugal (1999).
110. See European industrial relations observatory on-line (2002) "Economically dependent workers", *employment law and industrial relations* in [www.eiro.eurofound.eu.int/2002/05/study/TN0205101S.html](http://www.eiro.eurofound.eu.int/2002/05/study/TN0205101S.html)
111. See Centeno (2000). The contracting out or outsourcing of services to "independent" workers is known as "green receipts", because the workers who are being employed fill a green-coloured receipt and submit it to the enterprises to which they provide services.
112. Other features of the law include: i) the termination by the employer of a contract in force over 12 months, will imply that that job position cannot be filled by another employee for the next 6 months; and ii) employees with a fixed-term contract have the right to receive 6 months' basic pay if they are replaced by a new recruit who is given a standard contract to perform the same functions.
113. Either consecutive or interrupted (*i.e.* in the cases where the employee is asked to take breaks between contracts).
114. The measure follows on the Job Offer Stimulus Programme introduced in early 2001 (see below).
115. See OECD (2001d).
116. The Broad Economic Policy Guidelines for 2001, adopted by the EU Council, identified reducing the rigidities of employment protection legislation as one of the main priorities for Portugal concerning the labour market.
117. The Labour Code proposal extends the circumstances considered as just cause for dismissal. It adds absence through fraudulent sick leave and more than twelve unjustified late arrivals of over 30 minutes during one year. In addition, it reduces the number of unjustified absences considered as giving just cause for dismissal from six to four.
118. The regional network includes job centres, vocational training centres, business creation support centres and vocational rehabilitation centres. Charana and Rodrigues (2001) provide a detailed description of the activities of the *Instituto de Emprego e Formação Profissional* (IEFP).
119. This programme (*Programa de Estímulo à Oferta de Emprego*) aims at co-ordinating measures for stimulating job offers and to facilitate labour market entry for disadvantaged

- groups by providing financial support to companies. It provides non-refundable subsidies for hiring young people looking for their first job, long-term unemployed persons aged over 45, beneficiaries of the minimum guaranteed income and people with disabilities. The IEFP is in charge of supervising the implementation of the projects. It will also promote their co-financing by the European Social Fund and European Regional Development Fund.
120. See OECD (1998a), and OECD (2001f).
  121. Addison and Portugal (2002) conclude that despite its frequency as a search vehicle, the state employment agency has a low hit rate and generally leads to lower-paying, shorter-lasting jobs.
  122. For examples of best practices in OECD countries, see Martin (2000).
  123. The payment of unemployment benefits is subject to prior registration with the IEFP and continued benefit receipt requires the recipient to confirm his subsequent unemployment status with the agency. There is strong evidence that the current unemployment benefit system increases unemployment duration, especially for old workers (Addison and Portugal, 2003). Access to benefits can be denied following a refusal to undertake suitable work or training.
  124. Beneficiaries of the *Rendimento Mínimo Garantido* (RMG) must follow a programme of social integration designed to provide access to vocational training, or to find a “normal” job or be employed in some form of community work. The different integration programmes are drawn up at the local level, to ensure greater proximity to the beneficiaries. Rodrigues (2001) did a simulation study on the impact of the RMG.
  125. There is also a voluntary social insurance scheme – for persons capable of work who are not covered compulsorily by any social protection scheme, as well as for national citizens who pursue their occupational activity abroad and who are not covered by an international agreement concluded by Portugal – and a non-contributory scheme that provides a minimum pension and several other allowances.
  126. Ireland is the major exception, with an unusually “young” population, though one that is projected to age gradually in future decades.
  127. OECD, *Economic Outlook* 69, June 2001; EPL/ECFIN/655/01-EN final 2001.
  128. The formula to calculating public pensions for private-sector workers was modified in 2001 to take into account the full contribution history.
  129. These projections are taken from estimates submitted to the Ageing Working Group of the EU Economic Policy Committee, and are based on a comparable set of cross-country assumptions regarding productivity growth, demographic evolution and labour-market developments (See the table on page 22 of that report for the relevant data for Portugal). Portugal also submitted projections of age-related spending to a parallel exercise carried out in the OECD. However, the Portuguese assumptions concerning productivity growth in that exercise were significantly more optimistic, leading to implausibly low projections of the growth of spending on old-age pension relative to GDP.
  130. This will also depend on whether prices of medical technology rise faster or move slowly than the general price level. In practice, there is a long-established trend for them to rise faster.
  131. See, for example, “Maintaining prosperity in an ageing society” (OECD 1998b), “Reforms for an ageing society” (OECD 2000c) and “Ageing and Income” (OECD 2001g).
  132. See Pereira and Rodrigues (2001).

133. Bank employees, amounting to around 55 000, remain the most important exception to the general system. Bank employees, in general, contribute to a privately run, fully-funded scheme and the portability of pension rights outside the banking sector is not assured. The fact that bank employees have a separate and non-transferable pension system represents an additional impediment to the movement of labour between sectors.
134. The 1998 White Paper on Social Security found that the social security system falls short in guaranteeing the wellbeing that society would like to see, and that there is a trend towards the development of serious financial problems in the system within the next 15 years.
135. The most relevant measures included a new financing model, the creation of a new reserve fund as well as a revision of the pension formula. The new law also introduced measures to stimulate social dialogue. In particular, it created a Social Security Council (*Conselho da Segurança Social*), on which both trade unions and employers' organisations are represented.
136. At present, only the best ten out of the last fifteen years enter the pension formula.
137. The *Operational Programme for the Economy, 2000-06*, designed under the guidance of the EC, aims at providing financial and technical support for the development of an entrepreneurial culture by supporting investment projects in ICT sectors, facilitating access to finance and to foreign markets and facilitating technology transfers, with special attention given to small and medium-size enterprises (SMEs).
138. Among the priority areas for policy action defined for the 2000-2006 period: raising the qualification level of human resources, while promoting employment and social cohesion; facilitating the adjustment of the productive structure to the challenges of the information society; favouring a more sustainable development of the country; and promoting more balanced growth across regions.
139. The fact that entry of new firms makes a negative contribution to average productivity growth in several OECD countries may reflect the time horizon over which productivity growth is measured. If new entrants undergo a process of learning and selection, a five-year period as used in the OECD study is probably too short to show a high positive impact on aggregate productivity. For details on the methodology and evidence on firm dynamics, see Scarpetta *et al.* (2002) as well as Chapters III and V in *The sources of economic growth* (OECD, forthcoming).
140. In wholesale and retail trade, restaurants and hotels services, as in manufacturing, exits involve low productivity units. Entry of new firms also makes a small positive contribution.
141. Currently, the processes of creation, obtaining a licence to operate, developing a company and even terminating a firm are still rather complex and very time-consuming. The new system of registry, transformation and licensing of societies is expected to reduce the time frame from 153 to 68 days.
142. All administrative procedures of small investment projects will be concentrated in a single institution (IAPMEI). For larger investments (national and foreign), the recently created Portuguese Investment Agency (API) has one-stop-shop status. It is responsible for detecting big investment opportunities in Portugal, for full administrative assessment of such investments (including potential applications to financial incentives), for establishment and licensing procedures, and for the negotiation of special contractual regimes.
143. The big difference with the previous arrangement is that the possibility to capitalise the loan is now conditional, whereas before subsidies were granted *ex ante*, after the

- selection process. Also, the financial evaluation of projects to be selected will be made by banks. According to its new orientations, the *Operational Programme for the Economy 2000-06* (POE), which channels the structural funds, should prioritise support based on venture capital, seed capital or development capital and rewards granted to high value added projects, through objective measures, computed throughout the project's life (and not *ex ante*, as today). Another priority is to simplify application procedures, fully reforming the systems management institutional framework, and to establish partnerships with private financial and venture capital institutions, pre-qualified and subject to contractual obligations and service supply levels.
144. See OECD (2001h) *Science, Technology and Industry Scoreboard – Towards a knowledge-based economy*.
  145. Under the new tax incentive system firms can deduct 20 per cent of eligible R&D expenditures (net from direct state funding) from their taxable income and an additional 50 per cent (up to € 500 000) on incremental expenditures above the average of the previous two years. For more information on Portugal's policy for science and technology and recent efforts to spur innovation, see "Observatório das Ciências e das Tecnologias", [www.oces.mces.pt/documentos/index.jsp](http://www.oces.mces.pt/documentos/index.jsp).
  146. In June 2002, the Seville European Council approved the *e-Europe 2005* action plan, to follow *the e-Europe 2002*. The new plan follows two types of actions: *i*) it aims at stimulating services, applications and content, covering both online public services and e-business; *ii*) it addresses the underlying broadband infrastructure and security concerns. According to this plan, by 2005, all EU countries should have modern online public services (e-government, e-learning and e-health services) and a dynamic e-business environment. Additionally the widespread availability of broadband access at competitive prices and a secure information infrastructure will have to be ensured.
  147. Examples of targets of the "Internet Initiative" are: to reach a penetration rate of 50 per cent of the population by 2003 and to quadruplicate the number of home computers connected to the Internet. Regarding public administration, the following general targets were set: to have all official forms available on the internet in 2002; to enable widespread electronic submission of income tax declarations in 2003; and all public services to be online on the internet by 2005.
  148. Around 100 public Internet access points (PIAPs) were approved in the summer of 2001. By 2003, there should be a PIAP in each local government board (around 4 500). At present there are around 800 PIAPs in town halls, as well as in public libraries, post offices and museums. The tax incentive amounts to the deduction of 25 per cent of the purchase value of the equipment from tax liability of households (under a certain ceiling). The number of households benefiting from the incentive rose from 90 000 in 1998 and 1999 to 116 420 in 2000.
  149. Structural funds have been in place since the creation of the European Community to reduce the gaps between more and less advanced regions. The Cohesion Fund was introduced in 1993 to support specifically the least prosperous member countries (Greece, Ireland, Portugal and Spain) by funding investment projects for environment and transport infrastructure.
  150. Details in this section and examples of best practices are based on Gonenc, Maher, Nicoletti (2001).
  151. The need to strengthen the independence of the regulators is particularly acute in water and railway transportation, while in energy and telecommunications regulators are already formally independent.

152. Typically public and private partnerships involve the retention of state ownership of some key assets while ensuring that these assets become more productive through the use of private sector inputs. Through these partnerships, the design, planning, financing, construction and management of infrastructure projects or services are privatised. See Mahboodi (2002).
153. Golden shares allowed by the EU give veto power to the governments on some decisions, such as those related to public security requirements, for instance in the supply of energy, as illustrated by the recent European court cases.
154. The only countries with a worse ranking than Portugal are Greece and Italy. See Nicoletti *et al.* (2001).
155. See EC report on the implementation of broad economic guidelines, February 2002.
156. Since April 2002 ERSE competencies have been extended to include natural gas and the electricity of the Autonomous Regions of Madeira and the Azores where the uniformization of national tariffs is a major objective.
157. *Rede Eléctrica Nacional* (REN) is the concessionaire operating the national transmission grid. Since November 2000, the Portuguese State became the major shareholder in REN, with 70 percent, while EDP owned the remaining 30 per cent. In December 2001, *Caixa Geral de Depósitos*, the public financial holding, acquired 20 per cent of REN's equity from the State.
158. Vertically-integrated firms, such as electricity companies, have undergone some form of separation. The various separation models that exist, even when they do not go as far as ownership separation, are still useful in that they can provide information that helps detect bad practices on the part of the regulated firm, and thereby can complement access regulation. For details, see OECD (2001i).
159. The Public Electricity System is characterised by capacity planning and purchasing power agreements between generators and the grid operator. The Independent Electricity System consists of the Non-Binding System (characterised by free contracts between generators and eligible consumers) and the generators in the Special Regime, which includes co-generators and generators from renewable sources.
160. Since the beginning of 2002 ERSE has extended the eligibility criteria to the Non-Binding System to all medium, high or very high voltage consumers. A time schedule for the accession of the remaining consumers to the Non-Binding System has already been set: as from January 2004 for special low voltage consumers and as from mid 2004 for household consumers.
161. The only important generators in the independent system are the co-generators and generators from renewable sources (including those that belong to the EDP Group) which sell their electricity to the grid operator at a premium. These generators have no incentives to sell to eligible consumers.
162. In Portugal, however, by 1998, there were no longer restrictions on FDI in the telecommunications sector, while in several other countries there were some. Cf. O. Boylaud and G. Nicoletti (2001).
163. ANACOM has been consistently developing competencies regarding the knowledge of demand patterns, as result of its statistical data collection through the analysis of the cost accounting system results of the incumbent operator, which has been audited annually since 1996, by independent entities. ANACOM is also developing an engineering based bottom-up model, which allows to estimate the costs of an efficient network operation.

164. 100 Main Distribution Frames were offered for local loop unbundling (corresponding to 1 647 000 lines). 14 sites were ready for co-location (corresponding to 375 000 lines) and 4 operators were asking for co-location.
165. Ozone concentrations generally do not exceed the information threshold for more than a few hours, thanks to the brisk sea breezes that sweep away pollution towards the end of the day.
166. Fine sand carried by the winds from North Africa also contributes to particulate pollution, but generally involves larger particles that are less harmful when inhaled.
167. So finally bringing Portugal into line with the targets of the Convention on Long-Range Transport of Pollutants.
168. The trend to higher emissions from electricity generation should be contained in the course of the next decade, thanks to the growing use of natural gas. Current forecasts show that the share of natural gas in electricity production will rise from 5 per cent in 1998 to 42 per cent in 2010, while that for petroleum will drop from 59 per cent to 33 per cent (IEA, 2000). Assuming a 58 per cent increase in electricity output over that period, the volume of petroleum used in power stations will decline by around 10 per cent. These developments should translate into lower emissions, since in modern power stations the burning of natural gas releases only very low quantities of local pollutants.
169. In Europe, the United Kingdom and the Netherlands are introducing such markets.
170. Such a measure should be technically feasible, given progress in filter technology. Stiffer standards would be more effective than diesel taxation alone in reducing the particulate emissions of diesel vehicles offered for sale. The regulatory tool in this case is targeted directly at emissions, something that will not be possible through taxation until such time as European registration fees are harmonised as a function of pollution characteristics.
171. Although people may be encouraged to buy less polluting vehicles because the tax rate varies with engine displacement and because clean vehicles are exempt, these taxes tend to slow renewal of the fleet. Consequently, vehicle registration fees hold back the process of reducing emissions through new standards.
172. To prevent such a change from shifting the balance of revenues among different levels of government, the annual road tax surcharge could be shared between the central government and municipalities.
173. This conclusion must be accepted with caution, in the absence of satisfactory time series for evaluating water quality trends. Although an exhaustive monitoring network is now in place, this was not the case in the early 1990s, when monitoring was restricted to the most seriously affected watercourses.
174. Those pollutants are the following: 2,4-D (dichlorophenoxyacetic); anthracene; amine salt; simazine; tributyltin; trichlorophenol; ammonia; phosphorous compounds and nitrites.
175. Waste water volumes are in fact closely related to gross water consumption, making this an ideal basis for calculating sewage and water purification rates for households, given that the nature of pollution differs little from one household to the next.

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## Glossary of acronyms

<b>ABC</b>	Activity-based costing
<b>ALMP</b>	Active labour market policies
<b>ANA</b>	Aerportos e Navegação Aérea
<b>ANACOM</b>	National Authority of Communications
<b>ANEFA</b>	Agência Nacional de Educação e Formação de Adultos
<b>API</b>	Portuguese Investment Agency
<b>BEPG</b>	Broad Economic Policy Guidelines
<b>BOOT</b>	Build, own, operate and transfer
<b>CA</b>	Contribuição Autárquica
<b>CGA</b>	Caixa Geral de Aposentações
<b>CSF</b>	Community Support Framework
<b>DRG</b>	Diagnostic related groups
<b>EC</b>	European Commission
<b>ECB</b>	European Central Bank
<b>ECHP</b>	European Community Household Panel
<b>ECJ</b>	European Court of Justice
<b>ECORDEP</b>	Estrutura de Coordenação da Reforma da Despesa Pública
<b>EDP</b>	Electricidade de Portugal
<b>EES</b>	European Employment Strategy
<b>EIA</b>	Environmental impact assessment
<b>EPL</b>	Employment protection legislation
<b>ERSE</b>	Entidade Reguladora dos Serviços Energéticos
<b>EU</b>	European Union
<b>FDI</b>	Foreign direct investment
<b>FEDER</b>	European Regional Development Fund
<b>GALP</b>	Petróleos e Gás de Portugal
<b>GDP</b>	Gross domestic product
<b>GFCF</b>	Gross fixed capital formation
<b>HICP</b>	Harmonised Index of Consumer Prices
<b>IA</b>	Imposto Automóvel
<b>IALS</b>	International Adult Literacy Survey
<b>IAPMEI</b>	Instituto de Apoio às Pequenas e Médias Empresas e ao Investimento
<b>ICT</b>	Information and Communication Technology
<b>IEFP</b>	Instituto de Emprego e Formação Profissional
<b>INA</b>	Instituto Nacional de Administração
<b>IRC</b>	Corporate income tax
<b>IRS</b>	Personal income tax
<b>IT</b>	Information Technology
<b>MFP</b>	Multi-factor productivity

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<b>NAPE</b>	National Action Plan for Employment
<b>NHS</b>	National Health System
<b>NSR</b>	Nossa Senhora do Rosário
<b>PC</b>	Personal Computer
<b>PES</b>	Public employment service
<b>PGP</b>	Productivity and Growth Programme
<b>PIAPs</b>	Public Internet access points
<b>PISA</b>	Programme for International Student Assessment
<b>PPA</b>	Purchasing power agreements
<b>PPP</b>	Purchasing power parity
<b>PRODEP</b>	Programa de Desenvolvimento Educativo para Portugal
<b>PROINOV</b>	Programa Integrado de Apoio à Inovação
<b>REN</b>	Rede Eléctrica Nacional
<b>R&amp;D</b>	Research and development
<b>RMG</b>	Rendimento Mínimo Garantido
<b>SMEs</b>	Small and medium enterprises
<b>SGP</b>	Stability and Growth Programme
<b>SGPS</b>	Sociedade Gestora de Participações Sociais
<b>SCUT</b>	Sem cobrança aos utilizadores
<b>TAP</b>	Transportes Aéreos Portugueses
<b>TIMSS</b>	Third International Mathematics and Science Study
<b>UMTS</b>	Universal mobile telecommunications system (third generation mobile telephone systems)
<b>VAT</b>	Value added tax

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## BASIC STATISTICS OF PORTUGAL

### THE LAND

Area (thousand sq. km)	91.9	Major cities, resident population in thousands (2001)	
		Greater Lisbon	1 893
		Greater Porto	1 261

### THE PEOPLE

Population (average in 2001)	10 299	Civilian labour force (2001, thousands)	5 167
Number of inhabitants per sq. km	112	Civilian employment (2001, thousands)	4 989
Net natural increase 2000-2001 (thousands)	8	As a percentage of total	
Net increase 2000-2001 (thousands)	65	Agriculture	12.6
		Industry (including construction)	34.4
		Services	52.3

### PRODUCTION

Gross domestic product, 2001 (million of euros)	122 978	Gross domestic product at factor cost by origin (2001, per cent of total)	
Gross domestic product per head, 2001 (euros)	11 941	Agriculture	3.6
Gross fixed capital formation, 2001		Industry (including construction)	28.5
Per cent of GDP	28.1	Services	67.9

### THE GOVERNMENT

Public consumption, 2001, per cent of GDP	20.7	Composition of Parliament, 17 March 2002	
Public investment, 2001, per cent of GDP	4.1	(Number of seats)	
(Per cent of total investment)	14.5	Popular Democrat/Social Democrat (PPD/PSD)	105
General government current revenue 2001, per cent of GDP	37.8	Socialist (PS)	96
		Social Center Democrat-Popular party (CDS-PP)	14
		Communist	10
		Left Block (BE)	3
		Ecologist	2
		Total	230

### FOREIGN TRADE

Exports of goods and services 2001, per cent of GDP	31.0	Imports of goods and services 2001, per cent of GDP	40.7
Main exports as a percentage of commodities exports, 2001 (SITC)		Main imports as a percentage of commodities imports, 2001 (SITC)	
Machinery and equipment	19.1	Chemical and energetic products	22.2
Clothing and shoes	17.4	Machinery and equipment	21.9
Basic and semi-finished materials	17.3	Road vehicles and transport equipment	14.8
Road vehicles and transport equipment	16.9	Food, beverages and tobacco	12.2
Mineral and metal products	9.2	Basic and semi-finished materials	10.8
Other manufactured products	20.1	Other manufactured products	18.1

### THE CURRENCY

Monetary unit : Euro		Currency unit per \$, average of daily figures:	
		Year 2002	1.0611
		December 2002	0.9817

Note: An international comparison of certain basic statistics is given in an annex table.

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