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This Survey *is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.*

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The Secretariat's draft report was prepared for the Committee by Paul O'Brien, Oliver Denk, Romina Boarini and Ivan Faiella under the supervision of Patrick Lenain. Statistical assistance was provided by Josette Rabesona.

The previous Survey *of Italy was issued in June 2009.*

BASIC STATISTICS OF ITALY, 2010

THE LAND

Area (thousand sq. km)	301.3
Agriculture area (thousand sq. km, 1995)	165.2

Population of major cities (thousands, 01-01-2010)	
Rome	4 155
Milan	3 123
Naples	3 080
Turin	2 298

THE PEOPLE

Population, 2010 (in thousands)	60 051
Number of inhabitants per sq. km	199
Population growth rate (annual growth rate, %)	
in 2010	0.5
Fertility rate in 2008	1.4
Life expectancy in 2007	81.5

Labour force, 2010, thousands	24 975
Employment, 2010, thousands	22 872
In agriculture	981
In Industry	6 511
In services	15 471

THE PRODUCTION

Gross domestic product in 2010, billions €	1 549
GDP per head (2010, USD)	34 161
Gross fixed capital formation (% of GDP in 2010)	19.5

Origin of gross domestic product in 2010 at market prices, % of total	
Agriculture	1.7
Industry	17.3
Construction	5.3
Other	75.68

THE PUBLIC SECTOR

Current expenditure in 2010 (% of GDP)	49.1
Current revenue in 2010 (% of GDP)	45.6

Gross financial liablities in 2009 (% of GDP)	127.7
General government investment in 2003 (% of total investment)	14.9

THE FOREIGN TRADE

Exports of goods and services in 2010 (% of GDP)	26.8
Main export categories in 2010, as a % of total exports:	
Manufactured goods	39.8
Fabric and textile goods	11.0
Chemical products	6.7
Transport equipment	10.2
Mineral fuels	4.3

Imports of goods and services in 2010 (% of GDP)	28.5
Main import categories in 2010, as a % of total imports:	
Foodstuffs	6.0
Manufactured goods	24.4
Metal, ores and scraps	9.9
Chemical products	8.7

THE CURRENCY

Monetary unit: Euro (€)

Currency units per UDS($), average of daily figures	
2010	0.7550
2011 (March)	0.7136

Executive Summary

Italy's economy has passed the deep recession triggered by the global crisis and seems set for a gradual recovery. The strength of this recovery is uncertain: it would be wise to plan for no more than the rather sluggish growth seen in the decade prior to the crisis. Hence, the priority remains structural reforms to increase growth potential, while maintaining a stable fiscal framework oriented towards consolidation, as appropriately pursued during the crisis. Such a policy can sustain confidence in Italian public finances in the face of the large stock of government debt, in turn helping to support the financial system whose health is crucial for the recovery.

Fiscal policy *must achieve short-term consolidation and long-term sustainability. Italy now has a satisfactory framework for planning overall spending and revenues over three years; it will be subjected to practical testing over the years 2011-13. The government's objective is to reduce the overall deficit below 3% of GDP by 2012. Plans emphasise expenditure restraint, but the outcomes for some components – a public sector wage freeze, cuts in transfers to the regions and reduced tax evasion – are uncertain. If serious slippage occurs, further cuts in spending and possible action on taxation, starting with base-broadening measures, would need to be considered. Two decades of pension reforms have made a key contribution to long-term sustainability.*

Structural policy *should remain on the agenda. All the issues identified in the previous Survey remain important. Liberalisation that has begun in services should be completed and extended to other areas, for example transport and local services. Reform of the public administration has shown some initial success in improving transparency, but the deeper aspects of the plans to improve efficiency in public administration must be pursued too. The use of various audit mechanisms, such as regulatory impact analysis and public spending reviews, should become an integral part of public policy making.*

University sector *legislation has rightly concentrated on the governance of public universities. Universities, potential students and the government all suffer from a lack of clear information on university performance. Problems in individual institutions range from financial crisis to poor recruitment procedures, and overall links to the private sector in respect of both teaching and research are weak. With improved governance in place, tuition fees should be progressively increased to reflect a larger share of costs; this would increase university funding and provide better "price" signals to students and universities. A system of income-contingent-repayment loans would also be needed to support student access to university education. The new quality assurance agency will need to work to develop reliable indicators of performance to aid both students and universities in their planning. Further action to facilitate university-business research collaboration, especially through allowing contracts that permit an efficient share of costs and benefits between individual researchers, their institutions and the private sector, would help to improve university finances and would boost Italy's weak showing on many measures of R&D and innovation performance.*

Environmental policies *should be better focused on developing economically efficient ways to achieve environmental objectives. Much of this can be characterised as "getting the prices right", whether through more and better use of taxes and charges or with more use of cost-benefit analysis*

to select appropriate policies and assess existing ones. Economic incentives can be better used in water and waste management, but here reform of governance is also needed. Full privatisation of these local services together with the institution of strong national regulators would improve both outcomes and economic efficiency. Policies can be designed to encourage innovation in environmentally friendly technologies, increasing the economy's ability to deliver "green growth", though governments must encourage innovation focused on environmental outcomes, rather than specific technologies. The integration of environment and climate change concerns in other policies, like energy and transport, remains crucial.

Assessment and recommendations

Italy's economy has begun to recover from its worst post-war recession, following the global crisis, but the early signs are that growth may remain weak, as it has been for some years. This relatively poor past performance, with dismal productivity growth, underlines the importance of structural reforms that lead to more robust growth, as identified in past *Economic Surveys*. Another pressing challenge is to continue to improve fiscal sustainability. Although the budget deficit widened less than in many other countries, as a result of the government's responsible fiscal policies, due to the impact of the crisis the public debt-to-GDP ratio is nonetheless rising once again from one of the highest levels in the OECD, against a positive background of relatively low private debt. With bond markets having become more sensitive to sovereign risk, action to bring the budget toward balance remains crucial. Stronger growth would of course also help the debt-to-GDP ratio to decline and public finances to improve. Thus, policies to sustain economic growth and secure fiscal sustainability together would increase the chance of success.

Implementation of policy reforms is key to spurring economic growth

Although activity is recovering from the downturn of 2008-09, the negative effects of the recession on potential output may persist for some time. GDP will not return to its pre-crisis level before 2013-14, still well below the level that would have prevailed under the pre-crisis trend, even though this past trend was itself sluggish. A key priority is therefore to stimulate productivity growth and labour supply. The structural reform agenda should focus on measures to: reduce regulatory and administrative barriers to competition; improve the efficiency of secondary and tertiary education; increase the efficiency of the tax structure; lower public ownership; re-orient the economy towards environmentally sustainable growth and further improve the functioning of the labour market.

The government has already taken important actions in these directions. Recent reforms include, for example, changes to the bankruptcy law, continued implementation of European Union directives that liberalise the energy market and legislation that requires greater use of public tendering for local public-service contracts. In secondary education, changes include reforms of governance and incentives, which should be followed through. Meanwhile, promising reform of higher education is also underway, as discussed in this *Survey*. However, previous plans to liberalise professional services have been stalled for some time and should be speeded up. And high on the agenda should be: less rigid, more employment-oriented, labour market regulation; measures to encourage the return to work, steps to increase activity rates, including among women and youth; following up and completing reforms liberalising access to and competition in professional services; an improved framework for enterprise and innovation; and other competition-enhancing

measures. This *Survey* also discusses how policy can protect the environment as cost-efficiently as possible, improving the sustainability of growth.

Fiscal policy should put the debt to GDP ratio on a downward trend

Unlike most countries, Italy's response to the financial crisis and recession consisted of shifting expenditure towards social and some industrial support, rather than a deficit-increasing fiscal stimulus. The measures were designed to be budget-neutral, with some small stimulus from the redeployment of public spending towards categories considered to have higher multiplier effects. This stance was appropriate and was largely dictated by the high initial indebtedness and a history of high deficits. So far, this policy has bolstered Italy's position in the debt markets during an extended period of nervousness over bank and sovereign debt. To further bolster credibility, the government tightened policy in mid-2010, to keep the budget on track, in line with the requirements of the Excessive Deficit Procedure of the European Stability and Growth Pact. As a result, the 2010 general government deficit declined to 4.6% of GDP, 0.8 percentage point below the 2009 outcome.

Market nervousness about the global deterioration of public finances makes sustained reduction of public debt more than ever necessary. Fiscal policy in the Public Finance Decision for 2011-13 foresees further tightening to reduce the general government deficit to 2.2% of GDP by 2013. Under the authorities' scenario, public debt would peak in 2011 at just over 119% of GDP and then start to decline slowly to 115% in 2013. The necessity to pursue tightening, with most of the payoffs in terms of debt reduction yet to come, underlines the cost of past policies which had allowed debt to remain too high, though debt had been set to decline before the crisis hit. *Italy should continue to implement fiscal consolidation policies in the foreseeable future*. The government has taken an important step forward by laying out in some detail its spending plans for the period 2011-13 – *continued improvements in fiscal credibility depend on their implementation. As from 2013, further consolidation may be required*, as indeed presaged in the Stability Programme released in mid-April, subsequent to the finalisation of this *Survey*. Guidelines for debt reduction in the medium term are currently being discussed in the European Union.

Planned expenditure cuts may need to be supplemented by other measures

The government plans to achieve practically all of the 2011-13 consolidation by cutting spending as a share of GDP, as well as by reducing tax evasion. Important spending reductions are to come from a public sector pay freeze and reduced transfers to the regions. The pay freeze will expire in 2013, while the balance of regional spending and revenue may be difficult to fully control during the coming transition to extended fiscal federalism. If there is some slippage in these measures, *further spending cuts will be needed, if necessary supplemented by revenue-raising measures such as broadening tax bases by eliminating many tax breaks and reduced rates. Taxes on a number of environmentally-related externalities could also be introduced or raised*. Increasing real-estate taxation can raise revenue because it is difficult to avoid and the short-term distortions are small; there are limits, however, because high property taxation may reduce incentives to save and invest. *Plans to reduce tax evasion should be carried through. To maintain the credibility of these plans, tax amnesties, such as that in*

2009-10 on undeclared funds held overseas, should be avoided. The 2010 fiscal package indeed eschews recourse to such measures.

An enhanced fiscal framework

Since 2008, multi-year budgeting has wisely covered a three-year period. In 2009 the legal basis for the three-year plans was strengthened and budget documentation has become more transparent and provided better information about official projections. This includes analysis of deviations from previous plans and projections. Budget offices in the two chambers of parliament also publish analysis of the official projections. These changes represent a significant improvement in budgetary processes and monitoring. Some countries have also been experimenting by creating an independent fiscal council to monitor and assess official fiscal projections. The Italian authorities may like to consider further improving the system for monitoring fiscal policy by instituting such a council.

The pension reform has enhanced fiscal sustainability

Long-term sustainability requires dealing with future claims, notably pensions. Italy recognised relatively early the long-term fiscal implications of the pension system and took action to defuse it in reforms already in the 1990s. These earlier reforms were gradual, so that pension expenditure is still high but its path has been stabilised relative to GDP, apart from the increase in the ratio in 2008-09 which was entirely due to the fall in GDP. Average pensions relative to wages are higher than in most countries, and activity rates among the over-60s are low. Legislation in 2010 increased the retirement age for women in the public sector, raised the age of entitlement to pension payments beyond the retirement age (using the "exit window" mechanism) and linked changes in the retirement age to life expectancy. The 2010 changes, by raising the effective retirement age, have reduced the projected ratio of pension expenditure to GDP over the next 35 years significantly and, again because of the higher retirement age, raised average pension levels in the long run. Nevertheless, by 2060, the ratio of average pensions to average wages will fall by one quarter from its current level. This is substantial and may require further increases in private pension saving.

The pension reforms require higher activity rates among older age groups

Over the next 15 years the main impact of the pension reforms is projected to be through a steady increase in the effective retirement age, implying significantly higher employment rates among older workers. For workers in larger companies with secure jobs this is simply a question of staying on longer. But labour market turnover may be difficult for older people. Some wage flexibility will be required as productivity likely declines with age for at least some workers. The completion of the transition from a final salary pension scheme to a defined contribution scheme will remove one barrier to such flexibility near retirement age. There are other reasons for seeking greater flexibility in the labour market; youth unemployment is high and female participation still relatively low though increasing. The increased role for enterprise-level productivity in recent reforms to collective bargaining

arrangements should improve overall outcomes, but more progress on flexibility in other dimensions, including for older workers, is needed.

Social protection provision needs to be reviewed

The most significant expenditure items in the anti-crisis measures were *ad hoc* extensions to the employment-based income support schemes (*Cassa Integrazione*) combined with other targeted mechanisms to guarantee income support. The *Cassa Integrazione* (CIG) and its extensions can, like the short-time working subsidies in other countries, help to keep workers attached to the labour market. Following the extensions to the CIG, most firms and workers now have some access to a safety net, though its structure is rather fragmented. For those eligible for the CIG, nominal replacement rates are quite generous, especially for the low paid, though they are subject to quite low ceilings, and can be paid for up to three years. Despite the short-term benefits of keeping workers in firms to help maintain employability, in the longer term it gives insufficient incentive for workers to look for firms or sectors with better prospects. The extensions to the *Cassa Integrazione* were a sensible way to quickly expand social protection in the recession, but reforms – which must of course be within overall constraints on public finances – are needed: *shorter eligibility periods and lower replacement rates for the CIG should be gradually phased in and active labour market measures and job-search infrastructure developed. In the longer term, reforms should aim to develop a less fragmented "flex-security" safety net.*

Transparency can help improve public sector efficiency

Successive governments have recognised the need to increase public sector efficiency but change is slow. *Efforts in the "Brunetta" reform to make more use of output-based measures of performance must continue, choosing measures of performance with care to avoid distorting incentives.* This process can be supported by increased transparency, where some initial success in requiring ministries to publish information on rates of absenteeism and salaries at quite a detailed level has been achieved. However, it is too early to tell whether the programme as a whole will have significant effects on efficiency.

Another useful example of transparency was the publication in 2008 of *Public Expenditure Reviews*, by the Technical Committee on Public Finance. These covered four key spending departments and made specific recommendations for improving efficiency. In the case of compulsory education, for example, many of the recommendations parallel those made in the last *Economic Survey* and are also part of the government's current programme. The Technical Committee has been disbanded, but legislation in 2009 provided for the State General Accounting department to prepare analysis and evaluation of spending efficiency in each ministry. Further sectoral studies along the lines of those produced by the Technical Committee on Public Finance, which would benefit from using the data on indicators of performance that this process will provide, should be undertaken. As recommended by previous *Economic Surveys* and the OECD's *Review of Regulatory Reform* in 2009, *more systematic use should be made of Regulatory Impact Analysis, as well as of Cost Benefit Analysis and Strategic Environmental Assessment, when designing specific new policies*.

Tertiary education reform

Tertiary education is a specific case where public funding is already being cut and therefore ways will have to be found to increase efficiency to improve or even maintain performance. While there is currently a lack of internationally-comparable information on tertiary education learning outcomes and research outputs, it is recognised that Italian universities lag behind those in other countries, even though, measured by publications, Italian scientific production is quite substantial. The proportion of Italians with a tertiary degree is among the lowest in the OECD area – between Mexico and Portugal – although this reflects poor participation rates in the past rather than current trends. Indeed, current participation rates are among the highest in the OECD area. In addition, no Italian university is in the top 100 according to two world university ranking systems. The underperformance of tertiary education restricts the supply of skilled professionals.

Universities must satisfy some requirements for accreditation of degree courses, which have been gradually made more stringent. There is no compulsory outside auditing of examination results, nor is there a tradition of anonymous benchmarking through outside examiners. The new quality assurance agency, ANVUR, has, among its tasks, the definition of clear performance measures for universities and to design a matching assessment and reward system. The resulting information should focus on student outcomes and be suitable for benchmarking comparisons across universities. These assessments will be made publicly available, to enable universities to compare themselves with others and to enable students – and their potential employers – to make informed choices.

A controversial issue is the legal status of diplomas, the *valore legale del titolo di studio*. Until recently, in the public administration, simple possession of a tertiary diploma could largely determine promotion or salary decisions, irrespective of performance or responsibilities. While it makes sense to make recruitment conditional on the possession of an appropriate diploma, *reward systems that use the* valore legale *in place of performance assessment in the public sector should be completely abandoned*.

Giving universities effective autonomy and responsibility

Universities in Italy are already academically autonomous but their decision-making structure, dominated by departmental or faculty groups with insufficient incentive to coordinate a university-wide policy within a strategic framework, has not always led to efficient management in most universities. Greater efficiency should come from systems which decentralise decisions to universities, ensure appropriate autonomy and accountability in their management, and allocate resources according to the demand for their courses by well-informed students and allocate research funds on a competitive basis.

Legislation passed at the end of 2010 is designed to reform governance along the lines required. It would allow strategic and management decisions to be taken by a management board where incumbent academics are widely represented but not dominant; it would also be obligatory to have two or three outside members with relevant expertise. *University reform legislation should be implemented on these lines, providing clear responsibilities and transparency about decision-making. Rectors and management should be held to account for the*

results of their decisions, possibly with salaries or bonuses related to the institution's performance. This would need appropriately qualified rectors, as well as well-adapted funding arrangements.

Legislation in 2008 allowed public universities to convert to private foundations with more autonomy. No institutions have made the transformation, due to unclear financial consequences. Clarifying this, and setting clear accreditation conditions for setting up new private institutions, is necessary if private sector provision is to expand.

Boosting financing through raising tuition fees, implementing income-contingent loans

Currently, tuition fees are relatively low because a university's fee income is capped at 20% of its basic grant from central government, an arrangement which, paradoxically, implies that universities should lower their fees if their central grant is cut. While higher tuition fees would increase income in tight university budgets, benefit the better schools and thereby sharpen competition, and provide incentives for students to finish their courses on time, they can have some adverse effects. *Italy could consider gradually removing the cap on tuition fees, so that students would be responsible for a higher proportion of costs. Concerns about access should be addressed by a system of loans with income-contingent repayment, whereby students would be liable to repay the loans only once they start working and their income exceeds a certain threshold, supplemented if necessary by a system of grants or scholarships*. Evidence from other countries suggests that such a combination of fees and loans does not have the effect that might be feared of causing a significant drop in the number of students. A significant subsidy, whether through student grants or subsidies to universities, should be retained to reflect society's economic and other interests in educating students. The 2010 reform law creates a state-backed system of loans at competitive rates. However, it is not yet clear what level of funding will be made available for such a measure.

Strengthening links with the private sector

The private sector can help to provide both funds and direction to research efforts. The incentive system should allow universities and their researchers to benefit both financially and scientifically from research and innovation-led contracts with private sector companies. Some provisions of the 2010 University law go some way towards this. Increasing collaboration would both increase overall research output and improve its dissemination. Improving framework conditions for entrepreneurship and reducing barriers to entry for small innovative firms is a necessary condition to take full advantage of enhanced research capabilities.

Selection of students, vocational orientation

Lack of selection at entry and a lack of alternative types of tertiary education contribute to slow completion and high drop-out rates. With the exception of medical studies and a few others, universities are not generally allowed to select students at entry – possession of the high-school diploma (*maturità*) is sufficient. Increasingly, however, universities are taking advantage of loopholes that allow selection in other disciplines. *A selection process that*

weeds out weak students at entry (or very soon afterwards) should be generalised, alongside clear guidelines for access to degree courses matched with the type and structure of secondary education pursued. However, *maturità* results currently have a clear regional bias, so they could not easily be used on their own for selection. The 2010 University law introduces an incentive for students who complete their studies with top grades within the legal duration of the course by converting public loans into grants. *It could also be useful to expand the small number of vocationally-oriented tertiary courses.* The constitution of the first *Istituti Tecnici Superiori* in October 2010 represents a step in this direction if they can develop along the lines of the two-year courses, strongly integrated with commerce and industry, offered by the French *Instituts Universitaires Technologiques*.

Reforming staff recruitment and career structure

Until recently the recruitment procedures for academic personnel appeared to give a disproportionate advantage to local candidates and thus discourage applications from larger pools of qualified scholars from within Italy and abroad. The 2010 University Reform Act introduces a new two-step recruitment system which, if properly enacted, should guarantee substantial improvements; specific measures linking recruitment procedures and their outcome to levels of funding should also ensure that in the future universities will have strong incentives to recruit highly-qualified academics. It is crucially important, therefore, that the reform be implemented, both at the national and local levels, as rigorously as possible, and stringent merit-based evaluation criteria be applied. At the local level, reliance on outside assessors, including foreign ones, should be encouraged. The new recruitment system will only work effectively as part of the overall changes to governance and financing, geared towards increased autonomy and accountability, included in the 2010 legislation.

Until recently, salary progression for tenured university professors – as is traditionally the case in many European academic systems – has been largely independent of performance. Salary steps in Italy have now been made conditional on submitting reports of research and/or teaching activity. *Another aspect of university autonomy should be the ability to reward teachers and researchers based more closely on their performance.* The 2010 University reform makes this possible by instituting a Merit Fund (*Fondo per la premialita*) in each university.

Environmental policy should reduce pollution costs efficiently – notably by getting prices right

Italy's arsenal of tools used to mitigate the environmental impact of human activity incorporates the key principles – polluter pays, pricing of externalities, cost-benefit analysis and environment assessment studies. But in many of these areas Italy falls short of what is desirable. In the important area of greenhouse gas emissions, although emissions relative to GDP are relatively low, Italy is the third largest emitter in the European Union and emissions were rising steadily up to the crisis in 2008 but have fallen since then. While Italian passenger vehicles are relatively energy efficient, road freight vehicles are much less so and air pollution in several Italian cities remains critical, partly for local climatic reasons. The handling of waste disposal is a difficult problem, reflecting poor planning, as well as the presence of criminal activity in some cases.

Getting the "price" right is an essential element in a cost-efficient approach to reducing pollution because it provides the incentive to abate where costs are lowest. In the long run the right price on pollution stimulates innovation, because it raises the return from investment in environment-related research and development. The transport sector is a case in point. It is an important source of negative environmental externalities that can be priced. But with fuel taxation high by OECD standards, though only slightly above the EU average, and increasingly strict European emissions regulations, much has already been done to "get the price right" for pollution, while avoiding inappropriate penalties on a key sector. However, the real level of tax on fuel has been falling, reducing the incentive to economise, although tightening emission standards on new engines may have partly offset this. Tax rates set to deal with specific externalities – notably those related to CO_2 in sectors not covered by the EU trading scheme – should be set at the same level in all sectors. Furthermore, emissions performance in commercial transport has improved much less than that in private passenger transport; this seems to be linked with inconsistent or lax enforcement of standards rather than the relatively small rebate on commercial fuel taxation. Nevertheless, environmentally harmful rebates should be phased out, along with other rebates and exemptions such as for taxis, aviation, agriculture and shipping.

Pursuing environmental objectives: getting governance right

Responsibility for most aspects of environmental policy implementation and enforcement is decentralised to regional governments, which are, however, restricted in the extent to which they can pass independent legislation. The balance between central legislation and local implementation seems about right, although there have been occasional conflicts. There is some fragmentation of environmental reporting and environmental inspection agencies so that data may not be of uniform quality across the country, hindering improvement by benchmarking. Also, the analytical capacity of regional environmental agencies (ARPA) is variable, due to variation in size and wealth among the regions. Representatives of the ARPA meet several times a year under the aegis of the national agency ISPRA, but coordination does not extend to joint work at the technical level. Despite the logic of decentralisation, *there is a case for re-integrating the ARPA in a more formal national network if this would increase overall efficiency by reducing duplication of technical effort in some areas*.

An important aspect of environmental policy is to make systematic use of analytical tools to assess the environmental impact of policy. Procedures for Environmental Impact Assessment (EIA, used for specific projects, especially infrastructure) and Strategic Environmental Assessment (SEA, the term applied when looking at the consequences of plans and programmes, policies and strategies) exist and, on paper, seem adequate. Their influence is weak, however; assessments are often undertaken too late for alternative policies to be seriously considered. *These assessments should follow transparent, consistent and stable procedures and the role of these assessments in policy making should be reinforced*. One problem is that policy changes are frequently introduced by government decree, which do not require an SEA; once the decree is approved, the government usually has to produce parliamentary legislation within a relatively short period of time, which does not allow for meaningful discussion of alternatives. Unless the Environment Ministry or relevant parliamentary committees are powerful enough to challenge this approach, it will be difficult for EIA and SEA to do their job effectively.

Costs and benefits should be looked at more closely

The balance of costs and benefits in rail transport should be re-assessed. For example, there is some disagreement over the analysis of costs and benefits of Italy's high speed rail programme. Similar criticisms to those already mentioned for EIA and SEA apply to the use of Cost Benefit Analysis (CBA) in environmental and other areas. *CBA should be used more consistently, with common shadow prices applied to similar externalities across different projects. CBA reports, with their assumptions clearly stated, should be publicly available*. In the case of rail, the very high construction costs in Italy, along with the tendency for rail projects to have a considerable political content, adds weight to the need for another look at the rail programme. Cost-benefit evidence for road-charging in Milan is, on the other hand, encouraging, mainly due to reduced congestion. *The use of road charging elsewhere, at least experimentally and with provision for monitoring and assessing the results, should be encouraged*.

Green growth policies should be clear about ends and means, notably in energy policy

A key objective in energy policy is to reduce greenhouse gas emissions, for which a subsidiary objective, imposed at the European Union level, is to increase the share of renewables in gross final energy consumption. For this, Italy uses a system of "green certificates", in which electricity distributors have to acquire certificates to cover a certain share of their supply. They obtain them either when purchasing renewable electricity or by buying them from other distributors, so their price varies with supply and demand and falls as technology improves. Since, as with tradable emission rights, the same price applies to all kinds of renewable technology, this is a cost-minimising way of meeting the target.

However, Italy increases the short-term costs by differentiating between different kinds of wind power, and by using a feed-in tariff of guaranteed prices for solar power. A feed-in tariff reduces price uncertainty for investors and therefore may provide stronger incentives for innovation. Innovation in environmental technology and associated employment both benefit the environment directly and may have spin-offs in other areas. But care must be taken not to go too far. Innovation and skilled employment generated in pursuit of green policies may be thought of as benefits but this has to be weighed against the available supply of these factors, since they are also relevant as costs of green policies.

For example, feed-in tariffs, which provide a much higher level of subsidy for solar than for wind, may encourage R&D for solar power but, if set as fixed prices for too long, can generate very high rents for only small emission reductions. While partly a result of EU rather than national policies, some energy-related targets are being pursued at excessive cost. Even if the overall target for the share of renewables made sense for Italy, it is unlikely to be efficient to have different subsidy programmes for different sources. *Feed-in tariffs should be reduced. These and other tools intended to encourage particular technologies should be avoided. Measures such as undifferentiated green certificates, which take account of targets at less cost, should be used instead*. In view of the uncertainty and inefficiencies created by frequent changes in the framework, *the planned decree on replacing the green certificate system with a new mechanism for incentives to renewables should be tempered by allowing as much continuity*

with the existing system as possible. Transparency and consistency of rules on incentives should be ensured over time to improve their effectiveness.

Nuclear power may make an important long-term contribution to reducing carbon emissions and, through diversification, to energy security in Italy. The current approach, whereby not only decommissioning costs but all risks are to be taken on by operators may, without some guarantees from government, be unworkable given the long-term nature of the risks. On this sensitive topic, *the necessary work on CBA, and that of the agency to be set up to plan the strategy, should be undertaken with the maximum degree of transparency to ensure that public discussion is based on the best available information.*

Governance reform is needed in water supply

One basic governance issue in municipal waste and water supply is that many utilities are current or former publicly-owned companies or departments of municipal administrations. As emphasised in the previous *Economic Survey* and the *Regulatory Reform Review*, environmental and economic objectives will be difficult to achieve until conflicts of interest are dealt with. *Hence, strict "arm's length" rules are required, for which full privatisation of waste and water treatment entities may be necessary*; even privatisation would be no guarantee on its own. In turn, *private ownership of such local monopolies, which should be allocated by public tender for a fixed period, would require a strong, independent, national regulator* acting in cooperation with the Competition Authority.

With improved governance, getting the price right becomes easier. In the case of water supply, price setting that fully implements the full-cost recovery principle and gives an incentive to reduce losses in distribution should be encouraged. Currently some of the highest losses occur in the driest regions. A "right" to drinking water can, if desired, be implemented through a pricing scheme with a small quantity supplied free to households.

Waste policy has suffered from poor planning, but has some successes too

Waste frequently makes the headlines in Italy: media attention on waste in Italy is largely focused on the situation in the South. In some areas there has been a striking inability of local government to achieve a consensus on where and how to dispose of waste. Most notoriously, these two problems overlap in Campania, the region whose capital is Naples. The problems here have resulted from mismanagement exacerbated by illegal activity. The imposition of outside waste "commissioners" has not provided a durable solution, and may have weakened the incentive of local officials to resolve the underlying problems, even if in other regions the special power of national commissioners seems to have been beneficial. *It would be helpful to review local procedures (not just in Campania) for balancing conflicting interests in waste management and disposal to see if they need improving.*

Some aspects of waste handling in Italy seem to work well, using economic incentives quite effectively – notably the consortia responsible for recycling commercial packaging waste. *Upstream taxes on individual products themselves, identified in consumer pricing information and linked to likely costs of disposal, should play a greater supporting role, however. Use of landfill and incineration can also be discouraged through appropriate taxes.*

Chapter 1

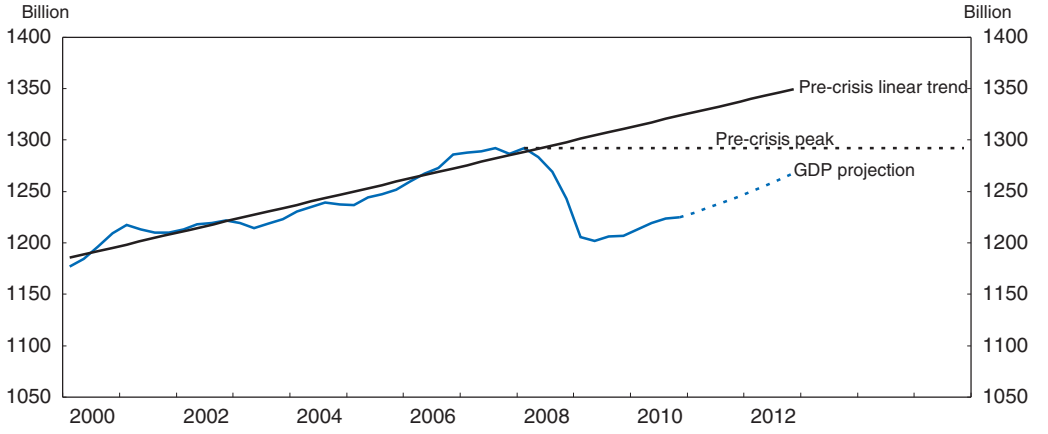
Strengthening the economic recovery and fiscal sustainability

Italy has been recovering only slowly from its worst post-war recession. Despite recent reform efforts, many structural problems that have in the past been a serious drag on labour productivity persist. The government has contained the budget deficit to some extent, but with public debt among the highest in the OECD fiscal consolidation needs to continue. The weak state of the public finances underlines the importance of past pension reforms and reforming the tax system.

After a decade of low growth, in 2008-09 Italy experienced its most severe recession of the last half century following the global economic and financial crisis. This represented a largely external shock from which the economy was not insulated. The recovery, which began late, is now under way (Figure 1.1). Under current OECD projections, GDP is expected to grow by an average of 1.4% over the three years 2010-12, and it will thus take until 2014 (or 7 years) for it to return to its 2007 peak level.[1] Moreover, if in 2014 average growth rates reverted to their pre-crisis linear trend, the implied permanent output loss from the crisis measured in today's GDP would be over 6 per cent.[2] These numbers are high relative to the majority of OECD countries; in Italy, the recession was deeper and the recovery so far has been weaker (Figure 1.2).

Figure 1.1. **The impact of the global crisis on real GDP in Italy**

Measured in euro in 2000 prices



Source: OECD, *OECD Economic Outlook 88 Database*.

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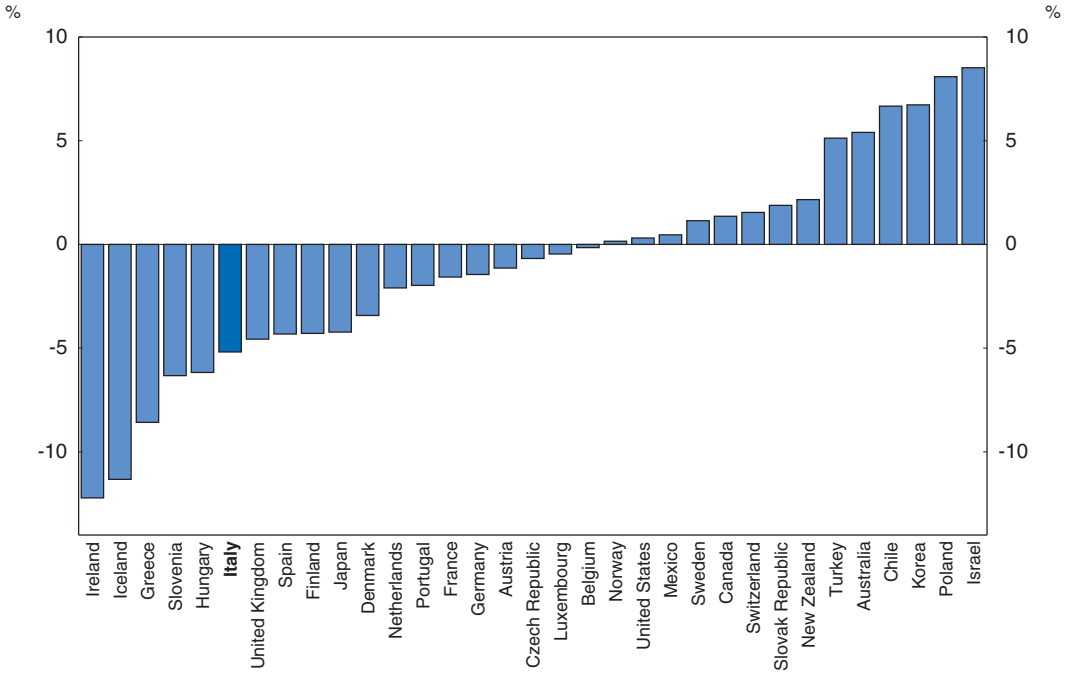
The recession and relatively weak GDP growth in the wake of the crisis have had repercussions on practically all parts of the economy, in line with other major exporting countries. In particular, the unemployment rate and public debt have now increased to the levels of the early 2000s, posing significant challenges to the government. On the positive side, the low level of private sector indebtedness means that the recovery is less likely to be weakened by interest rate increases or further financial market difficulties than in a number of other countries. This chapter discusses the situation of the economy in general and the labour market in particular. It then provides an assessment of the sustainability of public finances, including the pension programme and aspects of the tax system.

Previous *Economic Surveys* have outlined a broad range of recommendations on structural policy reforms which would support economic growth, and a number of initiatives have indeed been taken (Box 1.1 and Annex 1.A1). Examples are: The bankruptcy

Figure 1.2. **The impact of the global crisis on real GDP in international comparison**

Percentage change from Q1 2008 to Q4 2010



Source: OECD, *OECD Economic Outlook 88 Database*.

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laws have been modified to facilitate new finance to ailing firms. Liberalisation of the natural gas markets has continued. Tender requirements have been introduced for a number of local public services. Governance and incentives have been strengthened in secondary education as well as the wider public administration. Changes to the pension system imply longer working lives and have hence enhanced sustainability.

However, as pointed out in OECD (2010a) *Going for Growth*, actions have generally been limited. Severe structural barriers – chief among them restrictions to competition through excessive regulation, a high proportion of public ownership, and strict employment protection for permanent contract workers – continue to hold back capital investment, innovation processes and job creation. Decisive implementation of further reforms which would remove these barriers is all the more important now, as they would help to lift GDP back up to the path it had followed prior to the crisis. Chapter 2 and Chapter 3 of this *Survey* complement prior OECD work on structural policies by providing a detailed analysis of two of the areas where timely action is called for, tertiary education and environmental policies.

Box 1.1. **Growth and structural reform in Italy**

The economic growth record has been a recurring theme in OECD *Economic Surveys* of Italy. For much of the post-war period, per capita GDP in Italy had been growing faster than in many OECD countries, but as from some time in the 1990s this catch-up ceased, and Italy's relative position has been slipping. Many possible explanations for low productivity growth have been advanced and, while reaching no definitive conclusions as to its causes, the 2009 *Economic Survey* (Chapter 3) argued that the following issues were likely factors:

- The industrial and export structure.
- The nature of the Italian family firm.
- Low educational attainment and inadequacies in tertiary education.
- The lack of innovation and R&D activity.
- The integration of large numbers of immigrants, and
- Regulatory barriers to entrepreneurship.

Hence, a wide range of structural reforms have been advocated in recent *Surveys*. Many of these were taken up at the same time in the OECD *Regulatory Reform Review*. Recommendations related to these structural issues have included:

- Follow up and complete the reforms in areas such as the liberal professions, from lawyers to taxis, and in transport, retail and commercial distribution.
- Maintain and strengthen the basic rule that competition policy's key yardstick must be the interests of customers, not of producers, employees or the state.
- Improve efficiency in the administration of civil justice by permitting fee structures and procedures that encourage simplification of documentation and accelerated handling of cases.
- Pursue reform of public administration to increase the focus on improving output-based measures of performance.
- Reinforce the use of auditing mechanisms, whether *ex ante* such as Regulatory Impact Assessment or ex post such as Public Expenditure Reviews.
- Reduce the influence of government in managing public enterprises, especially in local services, preferably through reduced public ownership and at least through better use of arms-length rules and compulsory tendering.
- Improve human capital formation in the school education system through a combination of better performance information, more performance focused management and increased accountability of school teachers.

The level of GDP is a function not only of labour productivity but also of labour participation, an issue also discussed in chapter 3 of the 2009 *Economic Survey*. Except for prime age males, participation rates in Italy for all other groups are significantly lower than the OECD and EU averages, though female participation has been increasing. Recommendations in this area have included, raising labour force participation and employment through:

- Promoting greater wage differentiation.
- Reforming Employment Protection Legislation on permanent contracts.
- Reducing the tax wedge on labour income.

As can be seen in Annex 1.A1, there has been movement in some of these areas, but more is needed.

The economy has been recovering only slowly

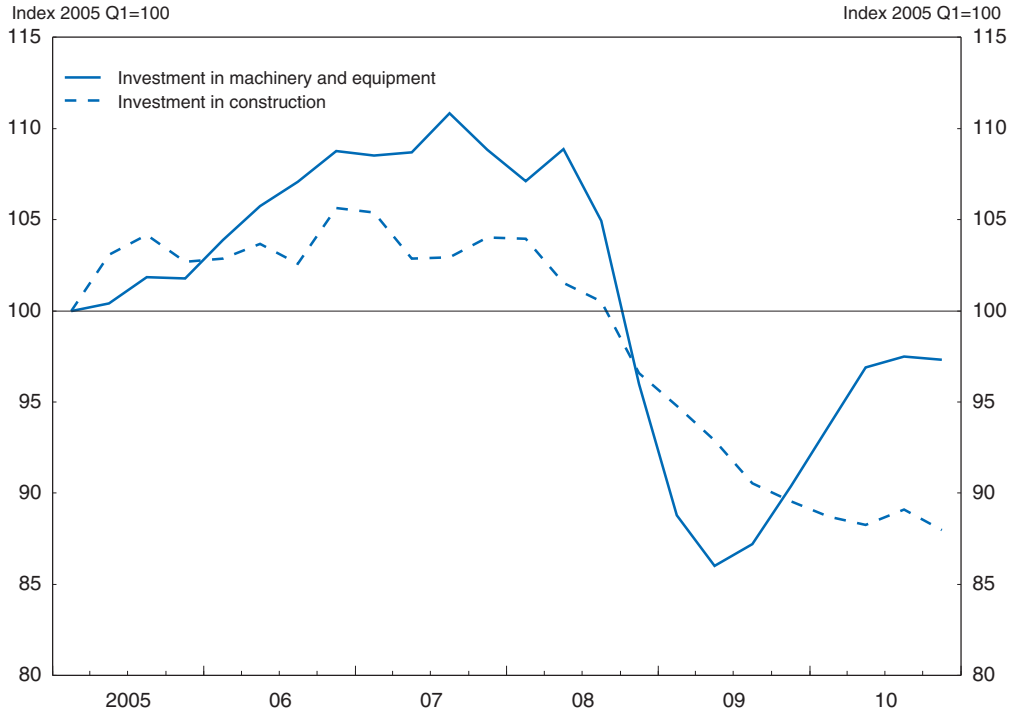
Private consumption has stayed relatively flat during and after the recession

During the recession, private consumption deteriorated comparatively less than the other GDP components. Given the steep falls in disposable incomes, household savings thus dropped to a historic low in 2009; the fall in savings is less significant when household businesses are excluded from the calculation, however. As in the downturn, with the economic recovery gaining traction, private consumption has been changing only very slowly. In the medium term, a mild acceleration is, however, to be expected on the back of a stabilising labour market and a consequent increase in individual earnings. This is also borne out by figures on consumer confidence which have reached a trough at the end of summer 2010 though fell back somewhat in early 2011. Consumer price inflation has generally been between 1% and 2% and is projected to remain so, with energy prices continuing to exert gentle upward pressure.

Business investment has started to trend upwards after having dropped very sharply

By contrast, business investment had dropped substantially during the recession. The government responded with a law providing firms with tax breaks for machinery and equipment investment. These appear to have had the desired effects as indicated by the rebound since mid-2009 in Figure 1.3; these tax breaks expired in June 2010 and, although investment continued to increase in the third quarter, it appears to have stalled in the fourth. A particular concern is the construction sector, where investment is very low and, according to the national institute of statistics, ISTAT, the confidence climate markedly less

Figure 1.3. **Investment levels**



Source: OECD, *OECD Economic Outlook 88 Database.*

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upbeat than among manufacturing and retail firms. Non-residential construction is still declining, whereas housing investment appears to have bottomed out during mid-2010. The housing market is still weak, though there had been no pre-crisis housing bubble; house purchases have been picking up since mid-2009 while prices were still falling slowly through much of 2010. Investment in machinery and equipment (despite the rebound) and investment in construction are still so depressed, that, even though they are projected to rise continuously through the coming years, by the end of 2012 they will be more than 6% below their pre-crisis levels.

Capitalisation of banks and lending to firms and households have remained relatively healthy

Lending by banks to non-financial firms and households continued to grow throughout the crisis period, although at diminishing rates, before these picked up again at the beginning of 2010. According to the Quarterly Bank Lending Survey for euro area countries, these developments are explained by changes on both the supply side (banks) and the demand side (firms, households). The banking system escaped the financial crisis comparatively unscathed, partly because of its conservative lending policies, themselves partly a result of tight supervision (see OECD *Economic Survey of Italy* 2009). The Bank of Italy Governor has declared that the economic fundamentals of the Italian banking system are sound, even though some banks needed to quickly strengthen their finances. The stress tests by the European Union in July 2010 showed that Italy's five largest banks all passed,

Table 1.1. **Summary of OECD projections from April 2011**

	2007	2008	2009	2010	2011	2012
	Current prices Billion euros	Percentage changes, volume (2000 prices)				
GDP	1546	–1.3	–5.2	1.2	1.2	1.6
Private consumption	908	–0.8	–1.8	1.0	1.0	1.2
Government consumption	304	0.5	1.0	–0.6	–0.1	–0.1
Gross fixed capital formation	328	–3.8	–12.0	2.3	1.2	2.5
Machinery and equipment	160	–4.6	–15.5	9.4	2.6	3.3
Construction	168	–3.0	–8.6	–3.7	–0.1	1.8
Residential	78	–1.4	–9.0	–2.4	0.6	1.8
Non-residential	89	–4.5	–8.3	–4.9	–0.8	1.8
Total domestic demand	1540	–1.2	–3.4	0.9	0.8	1.2
Exports of goods and services	448	–4.4	–18.4	8.9	6.9	6.9
Imports goods and services	452	–4.4	–13.8	10.3	8.0	4.9
Net exports[1]	–4	0.0	–1.2	–0.5	–0.5	0.4
GDP deflator		2.8	2.3	0.6	1.3	1.6
Memorandum items						
Consumer prices index[2]		3.5	0.8	1.6	2.4	1.7
Employment (millions, National Accounts)		25.3	24.8	24.7	24.9	25.1
Unemployment rate		6.8	7.8	8.4	8.4	8.1
Current account balance[3]		–2.9	–2.1	–3.5	–4.4	–4.0
Net lending by general government[3]		–2.7	–5.3	–4.5	–3.9	–2.6
Gross debt (Maastricht definition)[3]		106.3	116.1	119.1	121.1	120.5

1. Contribution to change in real GDP (percentage of real GDP in previous year).
2. Harmonised consumer prices index (Eurostat definition).
3. As a percentage of GDP.

Source: These are preliminary projections; a full revised set of projections will be published in *OECD Economic Outlook* No. 89 on the 25th May.

although their Tier 1 Capital Ratios (both before and after the stress tests) are below the European average. In line with other countries, the Ministry of Finance announced that government-backed bonds would be available up to the end of 2010 if required by banks to shore up their capital ratios, though none used this facility. In early 2011, a number of banking groups raised new equity in the markets, without government support. The behaviour of share prices has paralleled that of the major international financial markets, although the general index of the Italian stock exchange has been outperformed by those of the United States and the majority of euro area countries.

Exports collapsed during the crisis and have been recovering only mildly

Italian exports have traditionally been strongly pro-cyclical, and it has been no different over the most recent period (Figure 1.4). The economic development of the external environment has been the main driver of the economy into and out of the recession and is projected to continue to determine growth prospects. Exports and imports collapsed by 25% and 20% respectively from the first quarter of 2008 to the second quarter of 2009, with the current account moving from a small surplus to a moderate deficit over the same period. Since then, while exports have recovered sharply, imports have risen even more. This is in sharp contrast to other export-oriented economies, such as Germany, possibly indicating that the recovery in Italy may have been hampered by structural factors. Such factors include the relative deterioration of Italy's labour costs and less penetration of the major emerging markets than Germany. If world trade indeed continues to expand strongly however, the growth of exports is likely to outpace that of imports in the medium term, thereby narrowing the current account deficit.

Figure 1.4. **Real GDP and exports in volume**

Annualised growth rates

Source: OECD, *OECD Economic Outlook 88 Database*.

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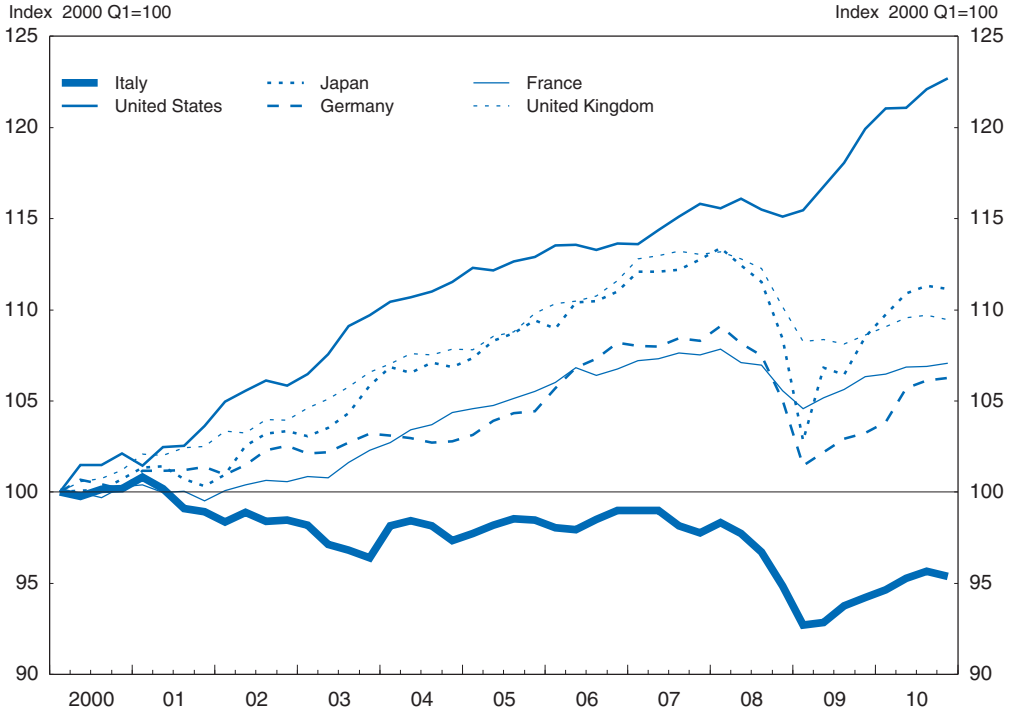
Labour productivity has been very poor for an entire decade

For more than a decade now, output per worker in Italy has stagnated (although this is partly due to falling average hours worked), in clear contrast to all the other G7 countries (Figure 1.5), and as a consequence the economy has continuously contributed less to the growth in world trade. The government acknowledges that raising labour productivity is one of the key challenges for the economy, but despite a number of reforms over the past ten years (see Box 1.1 and Annex 1.A1), many necessary structural reforms remain to be tackled. Despite the extraordinarily weak development of labour productivity, nominal contractual wages and salaries set by collective agreements have increased steadily. The social partners and government signed an agreement in January 2009 to ensure that wages and productivity are more closely linked. Aggregate earnings have since shown some sign of slowing, but contracts under the new arrangements would not in any case have had an impact on wage dynamics before the end of 2010. The government supported this agreement by introducing tax relief on productivity-related wage increases, with the aim of spreading a less centralised structure of collective bargaining and better linking productivity and wage developments. The OECD believes that if a wage increase is genuinely linked to a productivity gain, it should not need a tax subsidy to justify it. The difficulty in improving the link between wages and productivity where this implies changes in working conditions is illustrated by the example of the plants of Fiat, an Italian car manufacturer, in Pomigliano d'Arco near Naples and Turin, which for years have suffered from declines in output and capacity utilisation. The firm promised mainly major new investments in exchange for higher labour flexibility, signing an agreement with the

Figure 1.5. **Labour productivity per worker in the six largest G7 countries**



Source: OECD, *OECD Economic Outlook 88 Database.*

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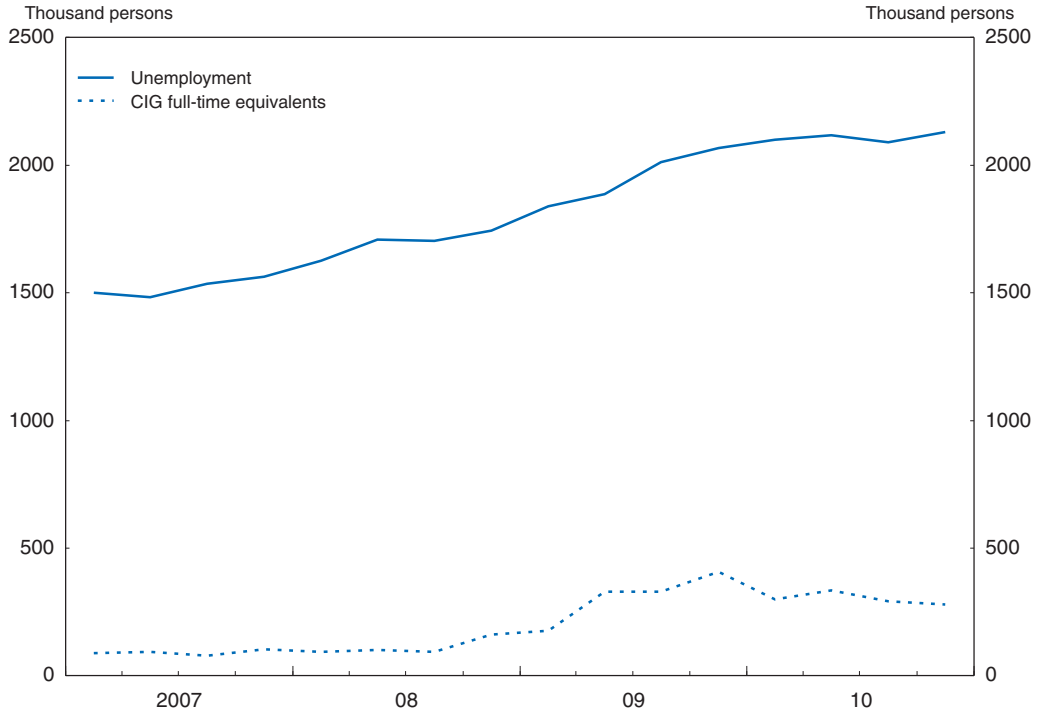
majority of unions but facing fierce opposition from one of them (FIOM-CGIL). The agreements were approved by referenda in which a majority of workers voted in favour, though 40% still voted against.

The labour market represents one of the key structural challenges

The Cassa Integrazione has supported workers' income and human capital, containing the increase in unemployment

Unemployment has increased since the beginning of the crisis, although less than expected. In the second quarter of 2010, 43% more people were registered unemployed compared with three years earlier (see Figure 1.6). This translates into a rise in the unemployment rate of 2.5 percentage points, to 8.5%, over the same period. However, the increase in labour market slack is probably greater than these numbers suggest. To prevent even more lay-offs and preserve human capital, the government substantially expanded the various forms of the *Cassa Integrazione Guadagni (CIG)* wage support schemes throughout the crisis. It should be recalled that all employees covered by CIG are officially classified as employed, independent of the number of hours they actually work. There are some indications that as many as half the workers under CIG do not work at all in any given week, although no sound information can be obtained on the distribution of hours across workers in the CIG scheme from the current administrative archives.

Figure 1.6. **Unemployment and the Cassa Integrazione**



Source: National Social Security Institute (INPS); OECD, *OECD Economic Outlook 88 Database* and OECD calculations.

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Total CIG hours authorised for all of Italy in the second quarter of 2010 reached 334 million, or seven times the number in the first quarter of 2007. They fell for the rest of the year, and in January 2011 authorised hours fell by 30% on the previous month, and were 26% below the level of a year earlier. This increase in the use of CIG has been uneven across its different forms. Whereas in 2008-09 there had been a large rise in *CIG Ordinaria*, which runs for up to one year, recent rises have been concentrated on *CIG Straordinaria*, which provides extensions for up to three years. Moreover, during the crisis, the system has, in a rather *ad hoc* fashion, been expanded (under the heading *CIG in Deroga*) to include sections of the labour market not previously covered, such as firms of smaller sizes, in certain industries and workers under non-standard contracts. One further aspect of the programme is that, if a firm is allocated a quota of CIG hours, it may or may not decide to make use of them. For example, for the first 10 months of 2010, the National Social Security Institute (INPS) indicates that out of all hours authorised firms actually used only 48.2%. Under each of the three schemes, one CIG hour is compensated with 80% of the last wage of the worker, subject to quite low ceilings so that such a replacement rate would apply only to low paid workers.

The huge expansion of CIG has led to current labour market figures painting only an incomplete picture of the underlying slack. Estimates of full-time equivalent CIG units can be used to obtain proxies for both employment and unemployment numbers that would have prevailed in the absence of CIG. Under some assumptions made by the OECD,[3] full-time equivalents covered by CIG reached 310 000 employees by October 2010, up from 90 000 in January 2007. Almost the entire rise took place in 2009. As Figure 1.6 shows, the increase in full-time equivalents under CIG over the last three years was about 250 000, compared with a rise of some 640 000 in the number of unemployed people over the same period.[4] That is, the rise in unemployment somewhat underestimates the increase in labour market slack, as in many other countries. The advantage of the CIG is that workers do retain a link with their employer and are therefore likely to be more easily taken back into work in an upturn than if they were unemployed. By the same token, the estimate of full time equivalents is nevertheless an indicator of how much an increase in demand for labour is required before the unemployment total begins to decline significantly.

Industrial wages have responded little to the recession

More than 70% of all CIG hours in 2010 (until September) have been authorised to industrial companies. But year-on-year nominal wage increases in this sector have accelerated since the first quarter of 2009 from 1.9% to 4.0% by the second quarter of 2010. Some of this acceleration may be a composition effect due to low-paid workers disproportionately losing their jobs. Nevertheless, the fact that wage increases continue, despite the crisis which particularly affected this sector, is suggestive of a lack of flexibility in the wage formation process as well as slow implementation of the wage agreement of 2009.

The Cassa Integrazione wage support schemes should be rolled back

After having peaked in March 2010, the number of CIG hours authorised declined fairly continuously for the rest of the year, and fell sharply in January 2011; the Labour Force Survey indicated broad stabilisation in the unemployment rate. Prior to the crisis, the CIG covered only workers in certain industries, excluding workers in some sectors, in small firms, and those on temporary contracts. The extensions introduced as part of the 2009

anti-crisis measures increased coverage substantially. With the unemployment benefit schemes not being universal, the social safety net remains somewhat fragmented. While raising CIG volumes protected incomes for some and may have helped prevent undesirable hysteresis effects (OECD, 2010c), at this point in the cycle there is the real danger that not reducing them may hinder the necessary re-allocation of workers across sectors, hence contributing to the structural mismatch in the economy. This is both because the replacement rates can be quite high (up to 80% for low paid workers) and because eligibility periods can be rather long (up to 3 years).

In the longer term, roll back the CIG and integrate activation policy in a more comprehensive unemployment insurance system

In the medium term Italy needs a more integrated set of policies to deal with the different issues of collective insurance by firms against temporary fluctuations, income protection for the vulnerable and assistance for workers in transition between firms or sectors. Ideally, the objective would be to work towards a "flex-security" system in which employers have flexibility to adjust their labour force while workers have both insurance against the consequences of losing their jobs and assistance in retraining for and finding new ones. In such a system the objective is to provide social protection to workers rather than preserve specific jobs, and to maintain workers' human capital through retraining and job placement services rather than subsidising them in their existing jobs. This would imply rolling back the CIG as soon as possible, limiting it to cases of exceptional and clearly temporary shocks to firms. On the other hand, the disparate unemployment benefit schemes should be made more compatible (eventually to be merged into a single system) with improved integration of active labour market policy, as in the Danish flex-security approach. But in Italy training and other active labour market policy is currently the responsibility of regions and provinces, whereas unemployment insurance and the CIG are run by the national insurance system. It can take time to integrate these systems, as experience in countries such as France and Norway, which have merged previous separate unemployment insurance and job-search systems, shows. Given the current public finance situation, it might be difficult to embark on a large scale reform of these institutions immediately. But incremental reforms should go in this direction: scaling back the CIG, especially long eligibility periods, ensuring that replacement rates are not excessive, and increasing job-search conditionality on income support measures, for example.

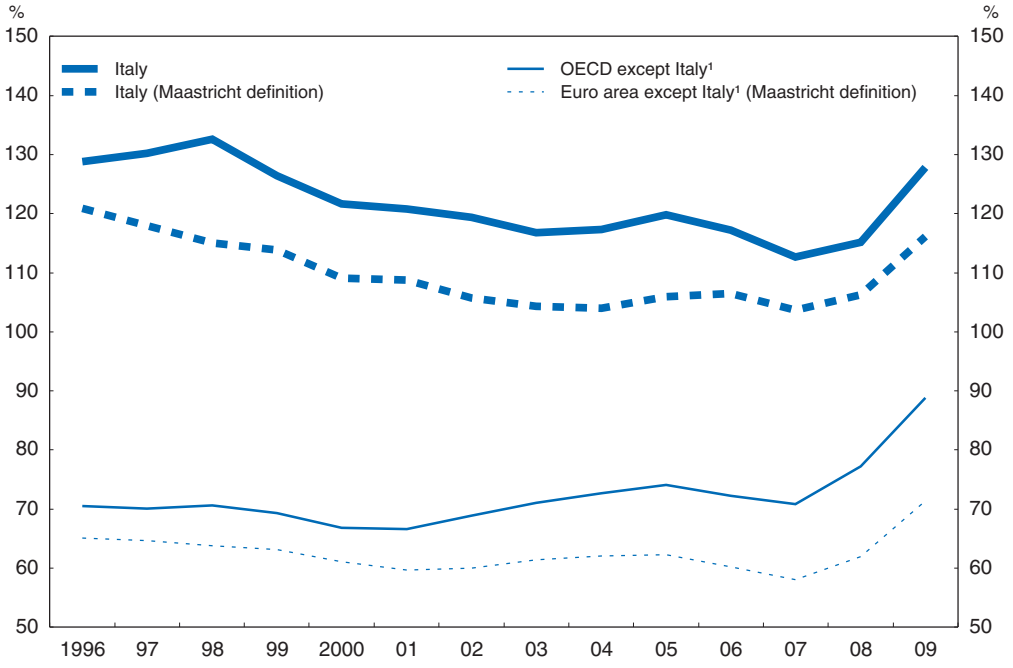
Consolidating the public finances is more than ever necessary

Italy has a long history of very high public debt. Gross government liabilities were equivalent to 133% of GDP (on national accounts definitions, 121% according to the Maastricht definition) at the end of the 1990s and, although they have declined since then they remain one of the highest in the OECD (Figure 1.7). Gross government financial liabilities follow standard national accounts conventions and differ from the Maastricht definition of public debt because they include trade credits and advances and also because bonds are valued at market value or issue price plus accrued interest, instead of at nominal values as under Maastricht definitions. Following the modest boom in 2006-07 the deficit was brought down to 1.5% of GDP (Figure 1.8). However, when the crisis hit, the government, faced with only little room for countercyclical fiscal policy given the large stock of existing debt, chose to allow the automatic stabilisers to work, but introduced no discretionary deficit-increasing measures. Measures such as the significant widening of

the CIG wage support schemes in early 2009 were designed as part of budget-neutral packages with offsetting expenditure cuts and incremental revenues elsewhere. As a consequence, while the budget deficit rose due to the operation of the automatic stabilisers and the fall in GDP, it has remained well below that of some other OECD and euro area countries. With a debt-GDP ratio of 128% (nearly 116% on Maastricht definitions) in 2009, ensuring that the public finances will follow the path to sustainability set out in government plans is clearly a key challenge, as in many other countries.

Figure 1.7. **General government gross financial liabilities**

As a percentage of GDP



1. Weighted average using 2008 GDP expressed in PPP.

Source: OECD, *OECD Economic Outlook 88 Database*.

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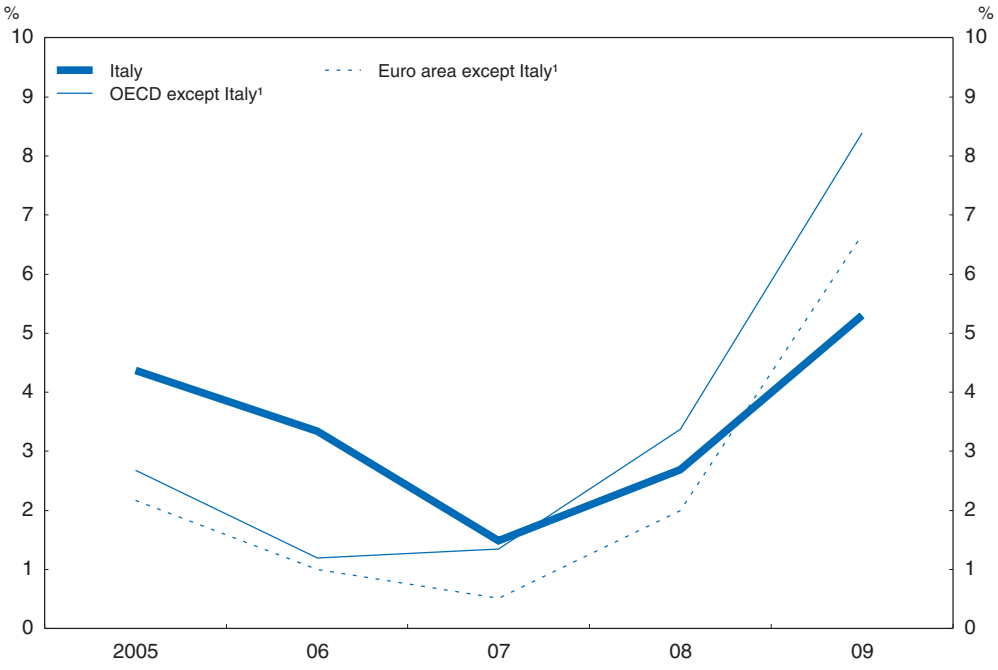
The current level of government spending in Italy is high in cross-country comparison. As of 2009, total public expenditure, excluding interest payments, stood at 47% of GDP (Figure 1.9), just below the mean in the euro area of 48%, but significantly above that in the OECD of 42%. Revenues are high as well, consistent with Figure 1.8 which indicated a below-average budget deficit. These numbers reveal that to tackle Italy's public debt burden there should be room for reducing public spending.

Government plans project the budget deficit to decline below 3% by 2012

Over the recent period, the government has been very cautious to avoid fiscal actions that may have threatened budget plans. The new accounting and public-finance law from 31 December 2009, which reformed public finance management to bring it in line with international best practices, is to be seen in this light. One central ingredient is the statutory requirement of detailed financial plans for the following three fiscal years, which serve as a useful commitment device. In May 2010, parliament adopted the "Combined Report on the

Figure 1.8. **Government net borrowing**

As a percentage of GDP



1. Weighted average using 2008 GDP expressed in PPP.

Source: OECD, *National Accounts* and *OECD Economic Outlook 88 Database*.

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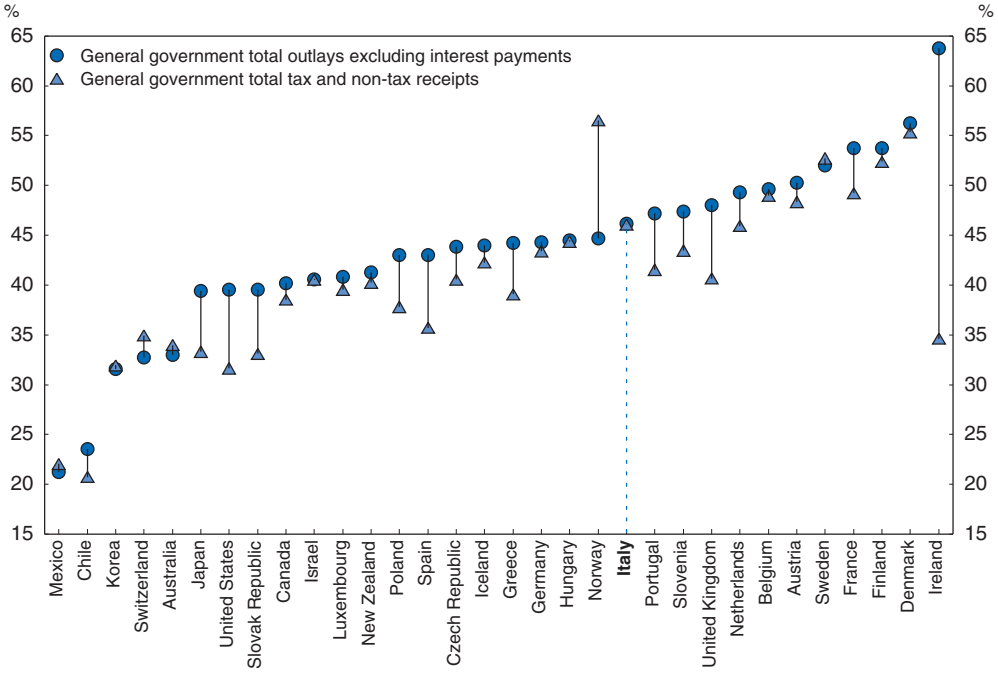
Figure 1.9. **Fiscal balances in 2009 or latest year available**

As a percentage of GDP



Source: OECD, *National Accounts* and *OECD Economic Outlook 88 Database*.

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Economy and Public Finance" (*RUEF*), projecting, in line with the Stability Programme, that the budget deficit be brought down from 5.3% of GDP in 2009 to 2.7% in 2012, and 2.2% in 2013. Measures to achieve these targets (rather than the expected 2012 deficit of 4.3% of GDP on unchanged policies) were announced in the same month and ratified by parliament in July. According to the latest "Public Finance Decision" (*Decisione di Finanza Pubblica*, DFP, as the 3-year budget programme is now known), the additional measures to meet these targets will again be mainly on the spending side.

Table 1.2 describes these plans for the public finances in some more detail. From 2010 to 2013, nearly all categories of current expenditure – employee compensation, intermediate consumption, social security benefits; the exception is interest expenditure – and capital expenditure are expected to grow at a lower rate than GDP. The specific July measures included a three-year freeze in public sector wages and cuts in transfers to local authorities, which are in charge of some key public services, such as health care. The central government also decreed that local authorities will not be allowed to compensate with their own tax rises, until the new arrangements for fiscal federalism are in place, planned for 2011. On the revenue side, the intentions are that direct and indirect taxes as well as social contributions will remain roughly constant in proportion to GDP, although significant gains are planned to come from reducing tax evasion. Assuming successful implementation of the *DFP*, the OECD projects the budget deficit to decline to just above 3% of GDP by 2012, with the debt-GDP ratio peaking at 133% (121% on Maastricht definitions). The small discrepancies between the fiscal forecasts of the government (Table 1.2) and the OECD (Table 1.1) are largely explained by the differences in predicted GDP growth.

In mid-April, after this *Survey* was finalised, the government released its revised Stability Programme, which aims for deficits of 1.5% and 0.3% of GDP in 2013 and 2014, respectively.

Table 1.2. **Government projections of general government expenditures and revenues (% of GDP)**

	2009	2010	2011	2012	2013
Total expenditures	52.5	51.9	50.5	49.3	48.6
Employee compensation	11.3	11.3	10.8	10.5	10.1
Intermediate consumption	9.0	9.0	8.7	8.5	8.4
Social security benefits	19.2	19.2	19.1	18.8	18.8
Other current expenditures	4.1	4.1	3.8	3.6	3.5
Interest expenditure	4.7	4.6	4.7	4.8	4.8
Total capital expenditures	4.3	3.8	3.4	3.1	3.0
Total revenues	47.2	47.0	46.5	46.7	46.4
Total tax revenues	29.1	28.8	28.5	28.8	28.8
Social contributions	14.4	14.0	13.9	13.8	13.6
Other current revenues	3.8	3.8	3.8	3.7	3.6
Non-tax capital account revenues	0.3	0.4	0.4	0.4	0.4
Net lending	–5.3	–5.0	–3.9	–2.7	–2.2
Public debt (Maastricht definition)	115.9	118.5	119.2	117.5	115.2

Source: Ministry of Economy and Finance, Public Finance Decision. Figures for 2010 are estimates from late 2010. Since the publication of the Public Finance decision, the outturn for net lending has been published as –5.4% of GDP in 2009, –4.6% in 2010.

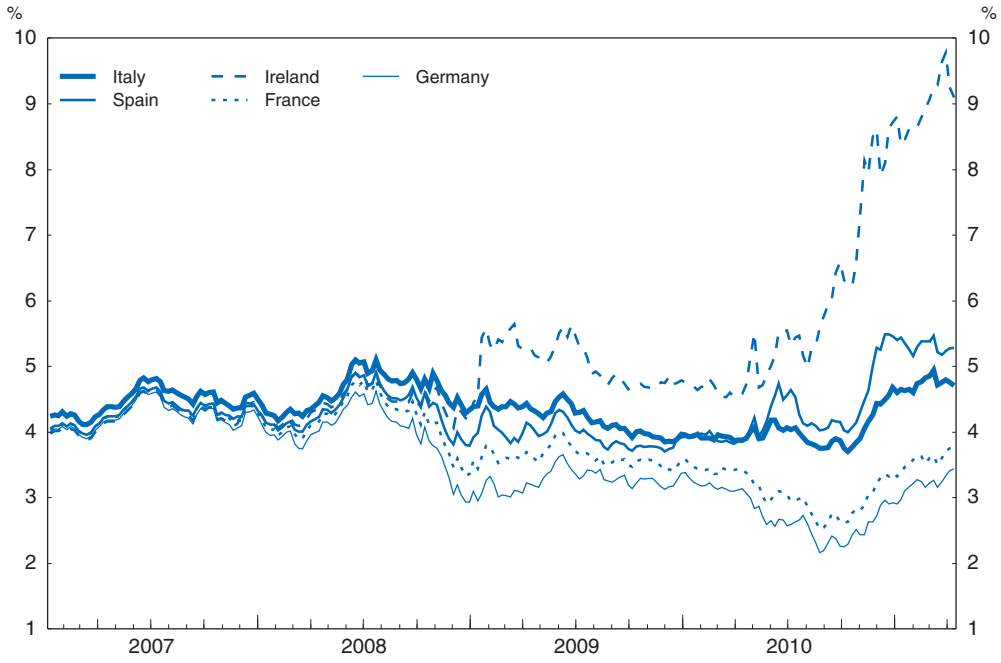
Sovereign risk has risen but changes in market prices of public debt have been contained

Government actions have to a large degree been successful in bolstering credibility among investors that fiscal consolidation is indeed under way. Although the spread to the German *bunds* has increased, long-term interest rates on government bonds have stayed

relatively constant since early 2007 (Figure 1.10). However, with the European sovereign debt crisis heightening in late 2010, Italian long-term yields were pushed up markedly, renewing some fears of contagion from the European periphery (Greece, Ireland, Portugal, Spain). The significant deterioration in the perceived bond quality of euro area countries, including that of Italy, over the last three years is also reflected in the surge in the premium on their credit default swaps (Figure 1.11).

Figure 1.10. **Long-term interest rates on government bonds**[1]

Last observation: week ending 15 April 2011



1. 10-year benchmark government bond yields, weekly average.

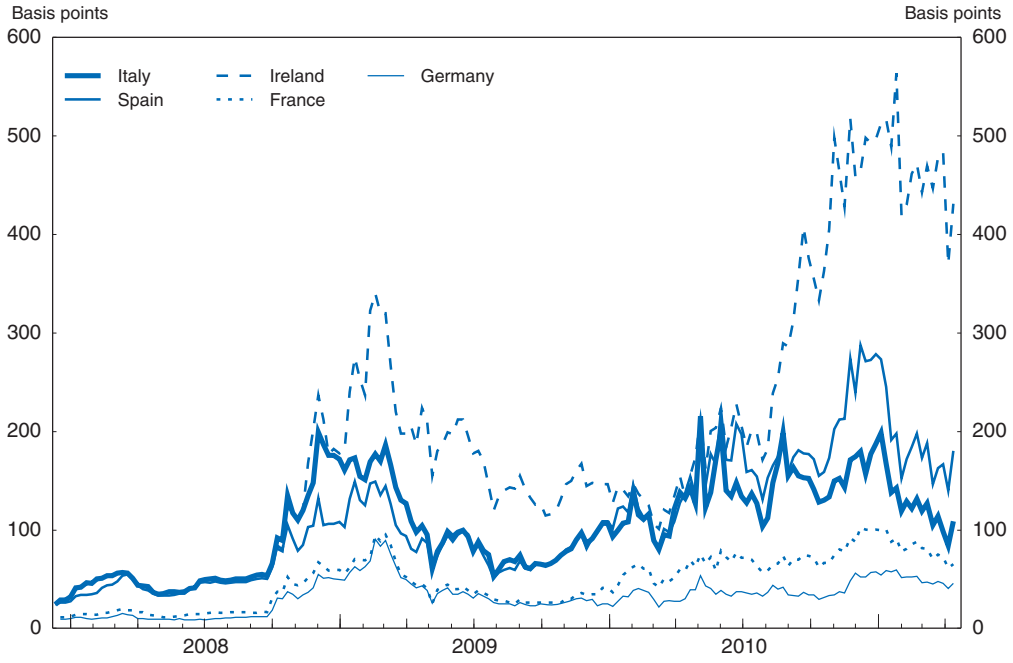
Source: Datastream.

StatLink http://dx.doi.org/10.1787/888932385541

With the possibility of spreads on Italian debt remaining high for some time to come, a multitude of factors will play a vital role for maintaining fiscal sustainability. In particular, as highlighted by the latest developments in the European sovereign debt crisis, sovereign risk represents not only a long-term but also a short-term issue. It is essential that, even in volatile markets where investor sentiment may be driven more by rumour than a careful assessment of the underlying fundamentals, governments stay immune to liquidity and solvency problems. Two key short-term vulnerabilities in the debt portfolio of a country are a disproportionate dependence on foreign capital and short-term borrowing (Blommestein, Guzzo, Holland, and Mu, 2010): The absence of a broad base of domestic buyers for government debt introduces heavy reliance on foreign demand, which is naturally more attuned to sovereign risk than are local sources. Government bonds of long maturity, while typically requiring an interest rate premium, have the advantage of requiring less frequent recourse to the market. The following two paragraphs analyse how well Italy fares on these points.

Figure 1.11. **Credit default swap premium on government bonds**[1]

Last observation: week ending 15 April 2011



1. Senior 10-year government bonds, weekly average.

Source: Datastream.

StatLink http://dx.doi.org/10.1787/888932385560

External public debt is high in international comparison

60% of all Italian public debt is held by residents, around the international average and above the average in the European Union. However, given the high level of total public debt, external public debt as a percentage of GDP is 54% (Figure 1.12), the fifth highest among all OECD countries. The non-bank private sector is estimated to have net external assets of around 25% of GDP.

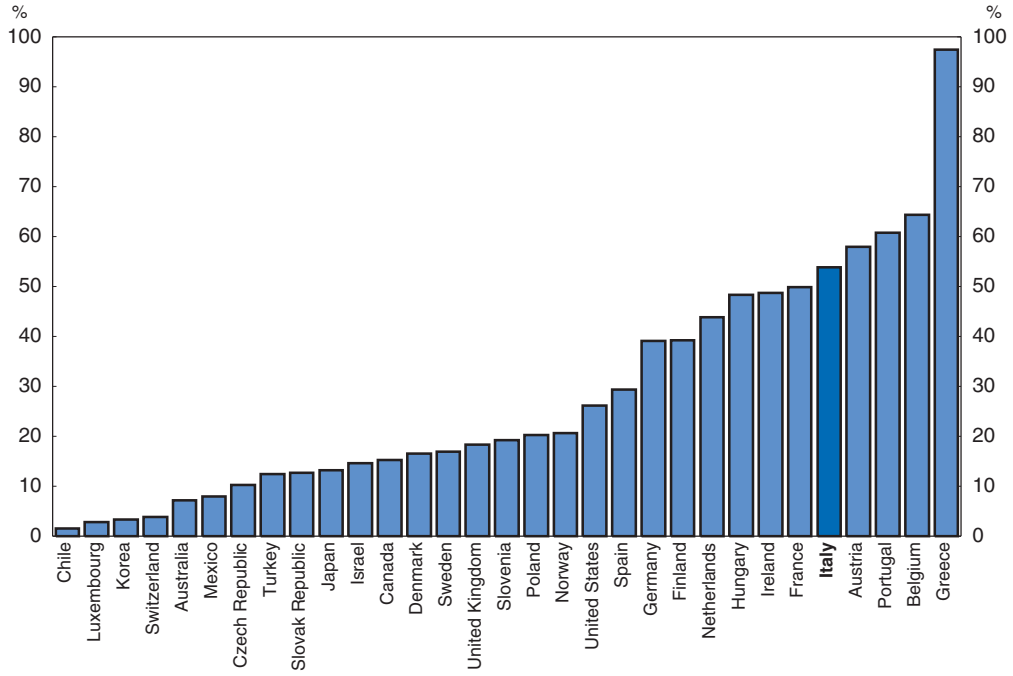
The maturity of government debt has been lengthened

In Italy, debt management has since 2000 successfully lengthened the average maturity of public debt from 5.7 to 7.1 years (Figure 1.13). This trend has continued through the crisis, at a time when other governments reduced their issuance of long-term debt (OECD, 2010b, Box 1.8). However, the very high stock of public debt means that in Italy an unusually large amount of government bonds falls due every year: in recent years, Italy has accounted for more than 30% of all euro-denominated public debt that needs to be rolled over annually, compared with its share of the area's GDP of less than 20%, though regular debt auctions have never been interrupted. Moreover, in 2011 there will be a sharp fall in roll-over requirements.

Public debt, private debt, and macroeconomic stability

One key argument that has been put forward increasingly forcefully by the national authorities as a factor in financial stability is that, while public debt is very high relative to other countries, private debt is relatively low. Italian households and firms borrow very little in international comparison (see the vertical axis in Figure 1.14). The recent financial

Figure 1.12. **External public debt as a percentage of GDP,[1] 2009**

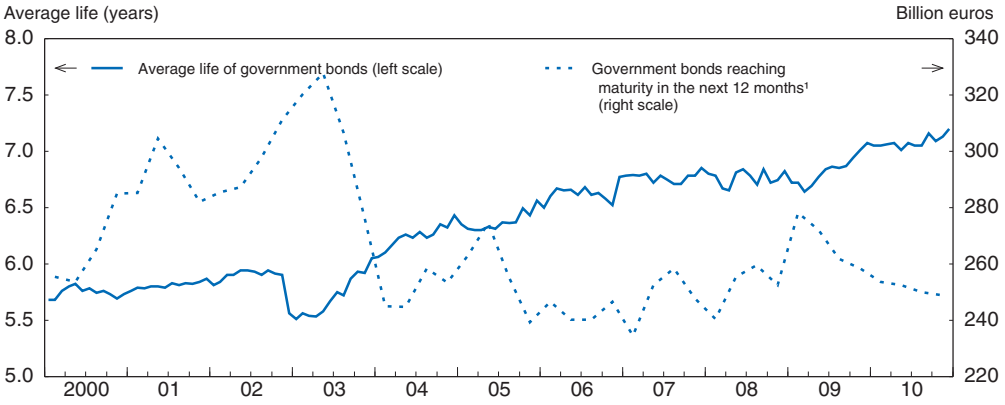


1. Nominal GDP in USD using current exchange rates.

Source: OECD, *Quarterly external Database* and *OECD Economic Outlook 88 Database*.

StatLink http://dx.doi.org/10.1787/888932385579

Figure 1.13. **Average life of government bonds and government bonds reaching maturity in the next 12 months**



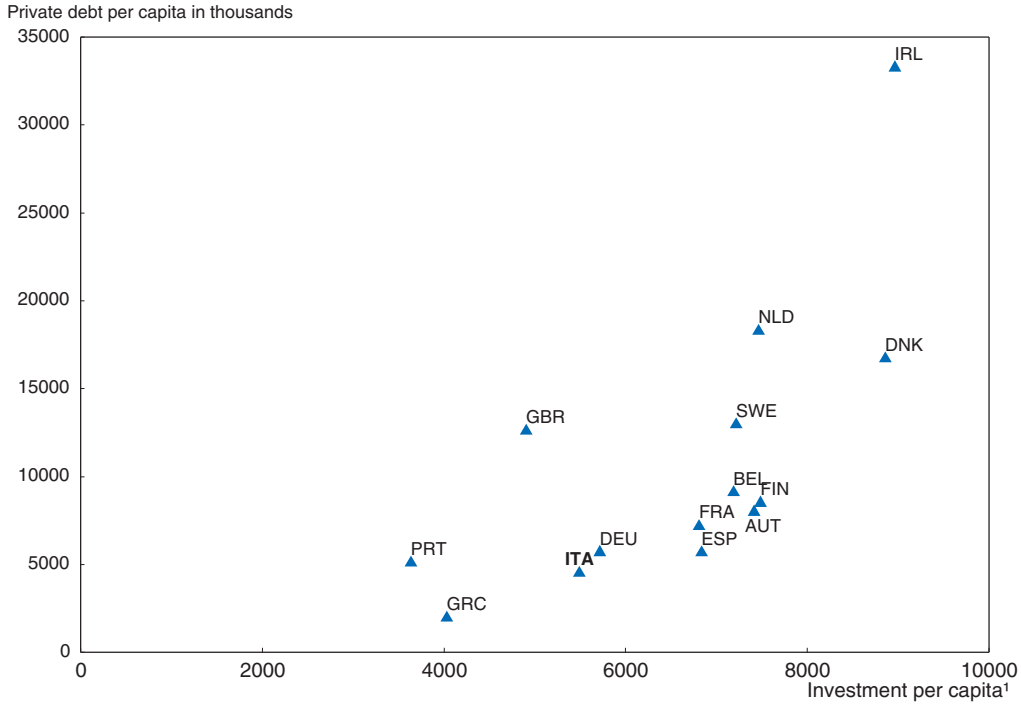
1. Adjusted by GDP deflator.

Source: Ministry of Economy and Finance.

StatLink http://dx.doi.org/10.1787/888932385598

crisis originated with lending whose quality was too low rather than the volume too high, but may nevertheless have been exacerbated by high levels of debt. To the extent that this is true, low private debt in Italy may make for better financial stability in times of crisis. Indeed no Italian banks needed sizable government support, although they suffered like many other European banks in the recent crisis and tightened their credit conditions in a

Figure 1.14. **Investment and private debt in euro, 2008**



1. Gross fixed capital formation.

Source: Ministry of Economy and Finance; *OECD Factbook*, 2009 Edition and *OECD Economic Outlook 88 Database*.

StatLink http://dx.doi.org/10.1787/888932385617

similar way. Low private debt can also be an advantage, in a crisis, from the fiscal point of view. Since private debt represents a major part of the assets of the banking system, there is a lower stock of potential "bad debt" that the government may be called upon to guarantee or refinance in times of crisis – there is a potential contingent liability in private debt (whose size depends on the effectiveness of the regulatory system). Some – uncertain – fraction of private debt could end up on the government's balance sheet, as happened in some countries as a consequence of the crisis, although the final impact on public debt would depend on the amount of the private debt that was eventually recoverable.

The potential advantages of low private debt in times of crisis should not be over-emphasised, nor should it be treated as equivalent to public sector debt from the fiscal point of view. In more normal times, low levels of credit in the economy may equally be an indicator of some weakness in the allocation of capital – there is a positive correlation between private debt and investment (see Figure 1.14), which might mean that too-low private debt damages economic growth; low economic growth itself makes any given level of public debt less sustainable. Thus, the level and character of private debt in an economy should clearly be monitored as potential contributors to, or symptoms of, macroeconomic imbalances. However, very different criteria apply to the analysis of private debt on the one hand and public debt on the other, so the use of total debt (*i.e.* the simple sum of public and private debt, where Greece would show lower debt than Italy while Spain is at a similar level) should be avoided.

Fiscal consolidation must continue for the foreseeable future

In the short- to medium-term, the very high burden of public debt may leave Italy subject to fiscal vulnerabilities. Current fiscal plans up until 2013, as detailed in Table 1.2, are prudent and must be implemented. In the case of slippages and/or heightened risks of contagion, the first priority would be to tighten enforcement of existing spending plans, with further cuts if necessary. Revenue-raising measures should not be totally ruled out if needed to maintain consolidation, however, and measures such as broadening tax bases could then be contemplated. After the planning horizon of 2013, Italy must continue to undertake fiscal consolidation measures, with the objective of successively reducing the budget deficit at least until a balanced budget is obtained. (This is indeed foreseen in the revised Stability Programme, released after this *Survey* was finalised.) As a general rule, measures should rely on significant expenditure reductions and, if inevitable, tax increases which should be implemented in areas that would be least damaging for the sources of economic growth. A binding European-wide debt target and spending rules that are potential outcomes of current negotiations among euro area countries should be followed through to anchor market expectations and eventually provide some fiscal room for manoeuvre. As any such requirements are expected to merely lay out the minimum necessary, there may be room, given the size of Italian debt, for adopting on a voluntary basis a more challenging national target and rules; such a framework should be kept as simple as possible. All this would contribute to putting debt on a clear downward trend over the medium term. Importantly, favourable side-effects on fiscal sustainability could be achieved by moving forward with structural reforms in a number of key areas, which would help raise the denominator in the debt-GDP ratio.

The fiscal framework has been strengthened, an independent fiscal council could further improve it

Since 2008, multi-year budgeting has covered a three-year period. In 2009 the legal basis for the three-year plans was strengthened and budget documentation has become more transparent and provided better information about official projections. This includes analysis of deviations from previous plans and projections. Budget offices in the two chambers of parliament also publish analysis of the official projections. These changes represent a significant improvement in budgetary processes and monitoring. Some countries have also been experimenting by creating an independent fiscal council to monitor and assess official fiscal projections.

As outlined in Hagemann (2010), such a fiscal council should be designed as a politically neutral expert body and, at a minimum, be mandated to assess and comment on the short- to long-term budgetary stance of the government and the degree of implementation of spending and revenue plans. Such a body could be thought of as an auditing body for macroeconomic and fiscal projections made by the Ministry of Economy and Finance. This would enrich the public debate about fiscal policy. The risk of public censure would serve as a force on the government to act in a more fiscally responsible manner, complementing the set of checks and balances that are already in place. The new Office for Budget Responsibility in the United Kingdom has been allocated the task of producing the macroeconomic projections to be used in the budget, but it would not be necessary to go this far to achieve useful results. Shifting this responsibility away from the government would then make it necessary to ensure that the members of such a council be suitably held accountable. However, the fiscal council should definitely not have any power to make decisions on fiscal instruments, which need to remain a government responsibility. The Italian authorities

could consider further improving the current system by instituting a council-like institution with the purpose of monitoring fiscal policy.

Efforts to raise efficiency in the public administration need to continue

Increasing the efficiency of public spending, *i.e.* achieving a given outcome with fewer resources or better outcomes with given resources, would obviously have positive effects on the government budget, but in many contexts it has been found very hard to achieve. One way to raise the efficiency of government expenditure is by reducing the waste that is present in the public administration. Inefficiencies in the public sector may take a variety of forms, *e.g.* low ability or training, low work incentives and, occasionally, corruption. Inefficiency may or may not convey direct benefits to public officials. Empirical research has documented that in public procurement in Italy inefficiencies are indeed abundant, though corruption is much less important than the other considerations (Bandiera, Prat, and Valletti, 2009). Successive governments have recognised inefficiencies in the public sector more generally as a major concern, but the majority of their measures have proved only of limited success. The latest efforts, however, as part of the "Brunetta" reform, seem more promising. These aim to improve efficiency through, for instance, performance-related pay as well as the disclosure of tender decisions, remuneration figures and absentee records.

Most of the transparency requirements the law prescribes are commendable, but significant problems with implementation and compliance need to be eliminated. The planned performance measures should, despite their crudeness (25% of staff is classified as high and low performing respectively), help to increase efficiency. They have been put on hold as a result of the pending wage freeze in the public sector, but they should be resumed. The performance measures need to be designed with care so that individuals are effectively rewarded for their contribution in delivering output. They must be used with particular care when the output is the product of a team, or when output quality is difficult to evaluate.

A separate form of public sector inefficiency is over- or under-qualified personnel. This, as has been shown for the United Kingdom by Propper and Van Reenen, 2010, is likely one implication of the centralised pay setting which is in place in Italy. The high level of public sector wages (relative to private sector wages) in the south means that a lot of public sector jobs are very attractive to workers; this may be one reason why businesses find it so difficult to thrive in this region. Public sector wages should be freed up, at least to some extent, to reflect local labour market conditions. This would imply that for certain, typically high-skilled, jobs, the government may have to pay a premium to attract individuals to work in those regions, where labour supply would otherwise be low.

In 2007, a Technical Committee on Public Expenditure was set up with a brief to look at the programmes of key spending departments and suggest ways to achieve policy aims with fewer resources. In its first report, it presented analyses of policies in the Ministries of Justice, Infrastructure and Transport, the Interior, and (School) Education (Ministry of Economy and Finance, 2008). These reports made many good suggestions for improvements in efficiency; the recommendations in the report on school education were similar to those made in the last *Economic Survey* (Boarini, 2009), and many are being implemented in the current programme of school reform; recommendations made to improve the speed with which civil justice is enforced would help to remedy a weakness of the regulatory system highlighted in the 2009 OECD *Review of Regulatory Reform* (OECD, 2009). This Technical Committee itself has since been disbanded, while legislation in 2009 provided for the State General Accounting department to prepare analysis and evaluation of spending efficiency in each ministry.

Further sectoral studies along the lines of those produced by the Technical Committee on Public Expenditure, which would benefit from using the data on indicators of performance that this process will provide, should be undertaken.

The effects of past pension reforms on older age groups are beginning to come through

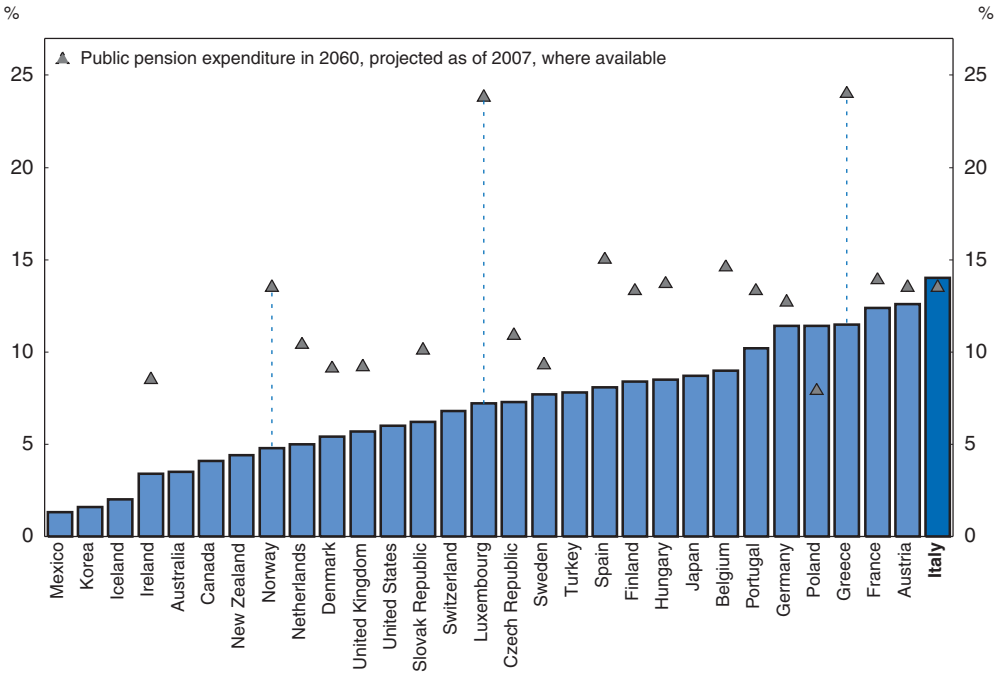
Like many countries, Italy's population structure is ageing. Through 2060, the fertility rate is projected to remain well below replacement levels and life expectancy to rise by something like 7% compared with 2010. In countries where action is insufficient, such developments will put pressure on spending for pension, health and long-term care. Projected increases in public health and long-term care expenditure over the coming decades will need to be dealt with using a combination of measures to raise spending efficiency and manage demand. As far as pensions are concerned, over the past two decades, Italian governments have enacted a series of reforms whose effects have stabilised the share of pension expenditure in GDP in recent years, apart from an upward jump in 2008-09 entirely due to the fall in GDP in the recession.

As a result, future generations of retirees will have a rather different experience from their parents' and grandparents' generations. The difference between future and current retirees' experience can be measured along two dimensions: the effective retirement age (which is reflected in the pensioner-worker ratio, the number of people receiving a pension at any one time compared with the number of people working) and the amount of pension they actually receive relative to the length of their working life. Broadly speaking the effects of two decades of pension reforms has been to raise the age of retirement (thus keeping the average number of years actually spent in retirement roughly constant, notwithstanding the continuing rise in life expectancy) and reduce the level of pensions (measured relative to average earnings in the economy) compared with what the pre-reform system would have delivered. The following paragraphs describe the projected evolution of pension spending in Italy and document the relative importance of the two drivers (pensioner-worker ratio, pension-earnings ratio) over time. The details are more complicated than this simple breakdown might imply. For one thing, under the new defined-contribution scheme, there is a closer link for any individual between the level of pension paid and the length of their working life. Also, the calculations below in practice look at the number of pensions paid, not at the number of individuals receiving them. In addition, some change in the ratio of pensioners to workers can be expected independently of the consequences of pension reforms, such as for demographic reasons and due to changes in female participation and unemployment.

Expenditure on public pensions is high in Italy, though its path has stabilised relative to GDP

Public pension expenditure in Italy was 14% of GDP in 2005 surpassing that of all other OECD countries, but unlike Italy many of those countries face significant increases in the years to come (Figure 1.15). The ratio of expenditure to GDP increased to 15% by 2010, but this was entirely due to the fall in GDP in the recession. Government projections show that, under the current legislation, pension expenditure is expected to remain almost stable in terms of GDP in the future. This is because the expected increase in the pension-worker ratio (Figure 1.16), where population ageing effects are partly contained by the rising effective retirement age, is offset by a decrease in the pension-earnings ratio due to the

Figure 1.15. **Public pension expenditure in all OECD countries**
As a percentage of GDP, 2005



Source: Ageing Report for the EU, 2009 and OECD, *Pensions at a Glance*, 2009.

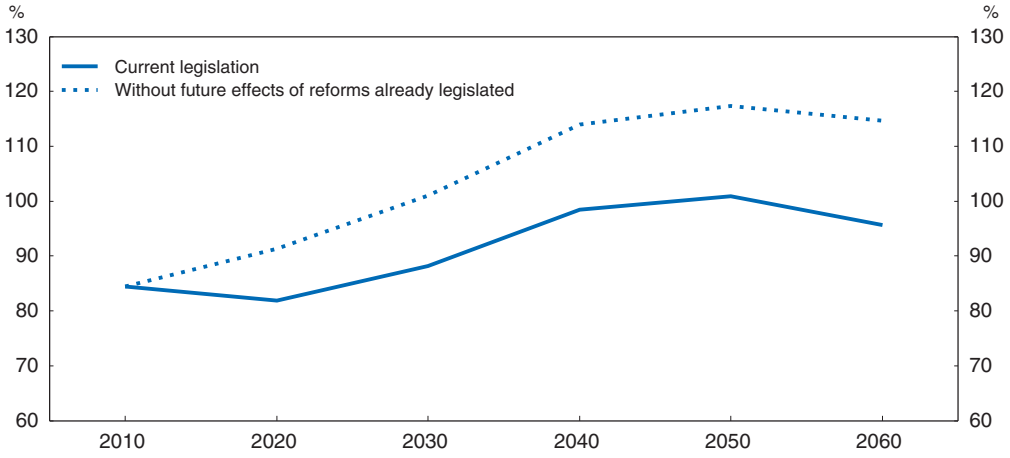
StatLink http://dx.doi.org/10.1787/888932385636

gradual introduction of the contribution-based system (Figure 1.17). In international comparison, in 2007 the pension-earnings ratio in Italy was the second largest in the euro area, behind only Greece and well above the average of 51%. This, together with the low current effective retirement age, reflects the relative generosity of the Italian pension system before the reforms began in the 1990s. Without the changes in the effective retirement age and the pension-earnings ratio due to occur as the legislated reforms come into effect, the impending demographic shift – an increase of nearly 40% in the pension-worker ratio over the next four decades (Figure 1.16) – would cause the pension expenditure-GDP ratio rise to 21% (Figure 1.18).[5]

Successive governments have pushed through ambitious pension reforms

It has therefore been important that successive governments, in a series of reforms beginning in 1992, have worked towards avoiding a cost explosion in the long term. Box 1.1 provides some details of these reforms. The most recent adjustments from summer 2010 raised the retirement age for women in the public sector, made the retirement age conditional on life expectancy, and postponed entitlement to early and old age retirement, through use of the so-called "exit window", equivalent to an increase in the retirement age. Taking all the reforms from 1992-2010 together, the main changes have been a move from a defined-benefit system to a defined-contribution system with notional accounts, including a mechanism linking pension payments to life expectancy, and a higher retirement age, indexed to life expectancy as from 2015. The majority of measures, while legislated, have yet to have an impact on people actually receiving pensions. As they come

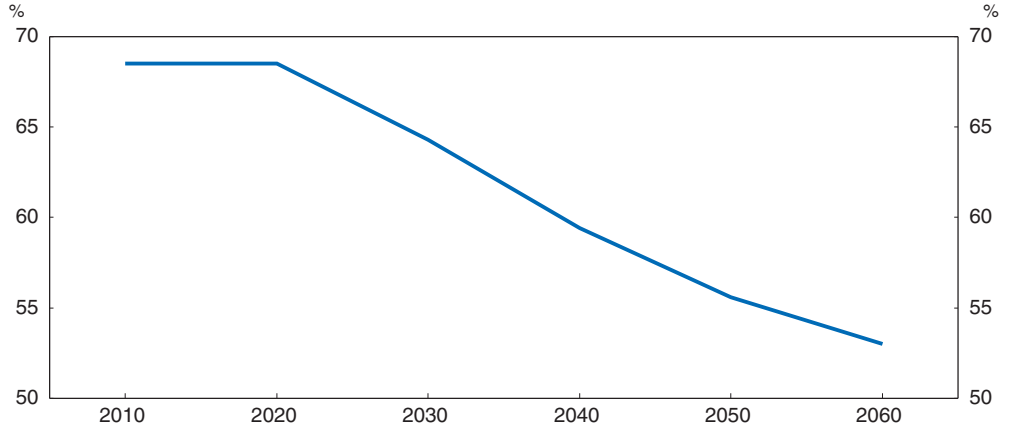
Figure 1.16. **Pension-worker ratio**



Source: Ministry of Economy and Finance.

StatLink http://dx.doi.org/10.1787/888932385655

Figure 1.17. **Pension-earnings ratio under current legislation**[1]



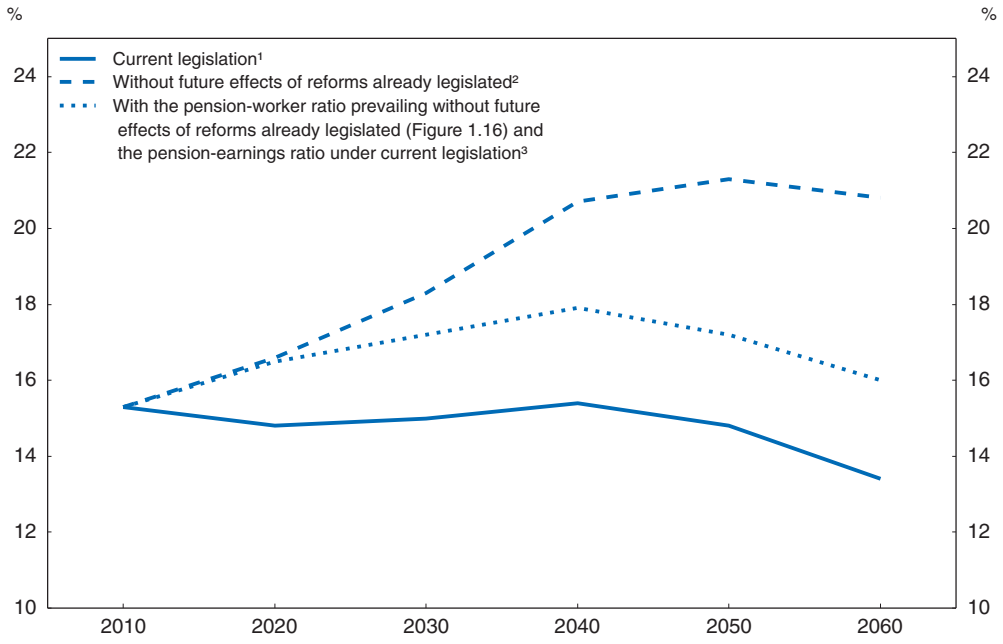
1. The pension-earnings ratio in 2010 is assumed to be unchanged from 2007 which is the closest year for which data are available.

Source: Ministry of Economy and Finance and *Ageing Report* for the EU, 2009.

StatLink http://dx.doi.org/10.1787/888932385674

into effect on future retirees, the current pension legislation must be maintained for the effects to materialise. So far, the signs are good – the measures adopted in 2010, which accelerate the changes, will have an immediate effect. Under current legislation, pension expenditure is projected to remain remarkably stable at today's 15% of GDP (Figure 1.18). Figures 1.16 and 1.17 illustrate the changes over time, comparing the projected number of pensioners and the level of their pensions (relative to average wages) with what might have been expected in the absence of the future effects of the reforms. This is under some simplifying assumptions – the pre-reforms counterfactual is not easily defined and the outcome is sensitive to assumptions on retirement age requirements: if people retired according to the eligibility requirements in 2010 (*i.e.* without the future effects of reforms already legislated), they would get a lower annual pension relative to wages than that

Figure 1.18. **Pension expenditure-GDP ratio**



1. Current legislation projections are from the Public Finance Decision 2011-13.
2. *I.e.* using the pension-worker ratio from Figure 1.16, upper line (no change in retirement age after 2010), and a pension-earnings ratio constant at the 2010 level.
3. If there were in reality no change in the retirement age after 2010, then, under the new system, the pension-earnings ratio would decline much more than shown in Figure 1.17, so that total expenditure would remain similar to that shown here for current legislation towards the end of the forecasting period.

Source: Ministry of Economy and Finance.

StatLink http://dx.doi.org/10.1787/888932385693

under the current legislation (the line in Figure 1.17 would be lower, but the pension-worker ratio would be correspondingly higher as shown by the dotted line in Figure 1.16).

Over the next two decades, the main savings come from a higher retirement age

The decomposition shown in Figure 1.18, though indicative rather than precise, shows that over the next couple of decades, the main adjustment is going to be in terms of a lower number of old-age pensions being paid than under the pre-reform system, whereas later on the effect of the relative decline in pension levels compared with wages starts to take effect. The fall in the average pension relative to wages is in fact moderated by the higher retirement age, which itself means workers accumulate more in their notional accounts.

The eventual fall in relative pension levels is nevertheless quite substantial, with pensions being almost one quarter lower, relative to average wages, by 2060 than today, even though people will be working longer. It can be expected that the currently young generations will increasingly build up private pension saving as the implications of the effects of the past reforms become clearer. For the moment, specific private pension plans are relatively underdeveloped. Improving information by communicating the longer-term impact of the notional account system to current generations of workers in a more transparent way would help to redress this balance.

Box 1.2. **The current pension system and the associated reforms**

The current pension system:

The Italian public pension system is based on notional accounts. Contributions earn a rate of return related to GDP growth. At retirement, the accumulated notional capital is converted into an annuity taking account of average life expectancy at retirement.

Key features of earlier pension reforms:

1992: The indexation of pension benefits to real wages was abolished in favour of full indexation to prices.

1995: The gradual phase-in of shifting towards a defined contribution system began, and minimum eligibility requirements were tightened for both old age and early retirement pensions.

1997: The contribution requirement for early retirement in the public sector was set equal to that foreseen in the private sector.

2004: Eligibility requirements were significantly further tightened for all pension regimes (earnings-related, contribution-based and mixed), and it was decided that the retirement age be raised swiftly effective 2008 (the so-called "scalone").

2007: The swift increase in the retirement age that was approved in the 2004 reform was gradually implemented, without altering the phased-in targets previously foreseen, and an automatic three-year review of the transformation coefficients, which link the level of pension benefits to life expectancy, was introduced.

Key features of the latest pension reform in 2010:

Effective 2011, pension entitlement under early and old age retirement will be postponed by 12 months for employees and 18 months for the self-employed (the so-called "windows mechanism"), *de facto* increasing the retirement age.

Effective 2012, the retirement age of women working in the public sector will be raised to 65 (from currently 60) to bring it in line with that of men.

Effective 2015, the statutory retirement age will be subject to automatic and periodic revision (every three years from 2019 onwards) to reflect changes in life expectancy at the retirement age.

In the medium term, labour market flexibility will be important for the pension reforms

As shown in Figure 1.18, the stabilisation of the pension expenditure-GDP ratio over the coming two decades at about 15%, despite the baby boom generation nearing retirement, is planned to be achieved essentially by preventing any increase in the pension-worker ratio, *i.e.* an increase in the retirement age and, correspondingly, in employment rates for older people. Hence, pension reforms may exert some pressure on the labour market; according to the government's pension projections, employment is assumed to rise by 11% in the period up to 2025 (about one third of this is due to changes in the retirement age after 2010). Reliable information on age-productivity profiles is scarce, but the productivity of many older workers is likely to be declining in the years before retirement. It may be that better education and lifelong learning can offset this tendency, but this remains to be seen. To the extent that productivity does decline with age for some, firms will willingly keep such people employed only if their earnings also fall somewhat. In the aggregate, real wages in Italy have shown some rigidity in recent years,

so there is room to doubt whether labour market behaviour is, as yet, sufficiently flexible. Without wage flexibility, some older workers, in spite of their lower productivity, may nevertheless be able to keep their job thanks to seniority and employment protection legislation, causing profitability problems for their employers. This may have various consequences but, one way or another, the scheduled changes in the retirement age may require some wage flexibility, as productivity likely declines with age for at least some workers. The completion of the transition from a final salary pension scheme to a defined contribution scheme will remove one barrier to such flexibility near retirement age.

One other aspect of the pension system may need action. The statutory retirement age of 60 for women in the private sector will need to be increased, since it is now below that for women in the public sector, where, following a ruling on gender equality from the European Court, it is 65.

Current plans on reforming the tax system are subject to important caveats

The gradual reduction of government debt will require, in addition to substantial expenditure cuts, large and stable flows of public revenues in the years ahead. To not imperil growth prospects, it will be imperative that revenues be raised in ways that are the least harmful for the economy. To this end, the government is considering a comprehensive tax reform, whose central aspects include a shift in taxation: first, from personal income to consumption and property; second, from the centre to the periphery; and third, from complexity to simplicity. Concrete details on tax reform for regions and local bodies are due to be delivered in the draft legislative decrees during 2011. The following paragraphs offer a brief discussion of the three aspects of the policy proposal.

Potential gains from more indirect and property taxes are conditional on less equity and less investment

Recent empirical work by the OECD suggests that a revenue-neutral move from the taxation of personal income to the taxation of consumption and property will tend to increase economic efficiency at a given point in time (Johansson, Heady, Arnold, Brys, and Vartia, 2008; Arnold, 2008). In theoretical terms, this can be explained by two arguments. First, a shift from an income tax to a consumption tax tends to reduce the progressivity of the tax system, which is likely to have positive effects on aggregate output, at the expense of a lower degree of redistribution: indeed, in Italy a high number of people have declared incomes below the income tax threshold. Second, in the short-run, in contrast to taxes on personal income, taxes on property, especially on immovable property, have only a small negative impact on labour supply and hence aggregate output. This is because variations in labour supply will not change the amount of property taxes due. In the longer-run, however, increased property taxes can affect the incentives to save and invest, and this may imply severe negative consequences for capital accumulation (see *e.g.* Mankiw, Weinzierl and Yagan, 2009 for an overview). It is therefore important to recognise that the potential gains of a shift away from the taxation of personal income towards the taxation of consumption and property would be likely conditional on somewhat less redistribution through the tax system and possible changes in the incentives to save and invest. Revenue from real estate taxation in Italy is already above the OECD average, while the share of individual wealth that is invested in houses is among the highest.

Increasing revenue powers at the local level may exacerbate regional disparities

The proportion of the revenue from taxes linked to local activities in the total tax revenue of local authorities and regions has increased threefold to 50% over the past 10 years, and the government is to continue this trend. Although this should improve the alignment of local incentives to spend with the costs of taxation, it could exacerbate regional inequalities, if net transfers to poorer regions are reduced. Legislation on fiscal federalism foresees an equalisation mechanism to offset this. In any case, however, it is important that the plans for fiscal federalism will ensure that the taxation powers of local governments will encourage them to use more efficient taxes, such as general indirect taxes, rather than the two main local taxes which are currently in place, the property tax ICI and the "regional tax on productive activities", IRAP. Since ICI and IRAP do not tax labour supply directly and rely on tax bases which are relatively immobile in the short run, they cause only limited short-run distortions; but, if raised significantly, they could reduce the incentives to save and invest in the long run. Some local property and corporate taxation may nevertheless be justified on the grounds that property values and company profits are related to the demands they make on locally-financed public services, like for example waste or cleaning. However, to the extent possible, such services should be financed by specific charges. In fact, the already existing household waste tax is largely a tax on property, as a proxy for waste production (see Chapter 3 of this *Economic Survey*).

Legislation under discussion in parliament in early 2011 provides for the transfer of some existing national taxes on property to municipalities, as well as a new flat rate (19%) tax on rental income (with severe penalties for non-compliance) replacing the taxation of such income (with a 15% deduction) under the personal income tax. In a second phase, as from 2014, a new property based local tax would be introduced. The 2009 legislation on fiscal federalism already provided for an equalisation fund, but its introduction would be delayed for five years, while an "experimental" fund would be operated.

There is much room for simplifying the tax system

The government is generally right in its endeavour to simplify the tax system. In particular, broadening the bases of a number of taxes, as the government has announced it wishes to do, would tend to improve efficiency by allowing for revenue-neutral reductions in the tax rates. The exception should be subsidies to individuals with low labour incomes which have the objective of offsetting their fixed costs of working (time and money required to travel to work, cost of purchasing work clothes, childcare costs, etc.). These are vital to minimise the distortions on the extensive margin (the participation decision) of labour supply and thus contain unemployment. Reducing or getting rid of 240 different tax expenditures (over 100 apply to the personal income tax) that currently exist could prove difficult however, since they have generally been put there for a reason. Two notes on specific taxes are worth making. In the context of the income tax, the administration apparently perceives the large gap between the marginal tax rate in the second bracket (27%) and the marginal tax rate in the third bracket (38%) as a problem. However, merely lowering this gap, by *e.g.* raising the marginal tax rate in the second bracket and reducing the marginal tax rate in the third bracket, with no other changes to the tax system, would not necessarily yield economically significant efficiency gains (Saez, 2010). In the context of the value added tax (IVA), the government could, as a first pass, eliminate all reduced rates on specified categories, such as food products. Applying differential tax rates on the consumption of goods and services has been shown to be

inefficient and an ineffective way of targeting the weaker parts of society (Atkinson and Stiglitz, 1976). However, eliminating reduced rates can be politically difficult.

The government should continue and strengthen its efforts to reduce tax evasion

In recent years, the government has stepped up its efforts to combat tax evasion, and these measures may have enjoyed some success. Government income from the fight against tax evasion rose from EUR 4.1 billion in 2008 to EUR 5.3 billion in 2009. It is important to note that these figures represent purely the direct increase in tax revenue as a consequence of people found evading. However, a higher detection probability reduces also the overall amount of tax evasion in the economy due to the stronger incentives to report true income. Hence, the total increase in tax revenue, including these indirect gains, may have been significantly larger. Both direct and indirect effects need to be taken into account when assessing the impact of the fight against tax evasion.

A decrease in tax evasion, if genuinely achieved, would also yield wider economic benefits. First, higher compliance would be particularly useful from the perspective of fiscal sustainability, since it would raise the tax capacity of the economy for the long term. Second, there is compelling evidence that at the firm-level tax evasion is easier and hence more common in small and medium-sized enterprises (Kleven, Knudsen, Kreiner, Pedersen, and Saez, 2010). This may be one reason why some SMEs in Italy do not grow past a certain threshold. At the same time, the government's plans to simplify the tax system and aim for cooperation between taxpayers and the tax collecting agency could both increase tax collection and reduce costs in SMEs. This would in turn likely result in an improvement in labour productivity.

Some of the current tax compliance policies are unlikely to be effective means to reduce tax evasion

A measure that is meant to reduce tax evasion is the so-called *Redditometro* (or, officially, *accertamento sintetico*). The *Redditometro* is a method of assessing tax evasion on personal income by evaluating the consistency of the expenses of individuals to their income. The methodology is to be renewed at the end of 2010, expanding the range of expenditure items examined from the current 9 to more than 100, based on a large survey of households to establish links between expenditure on (mostly durable) consumer goods and associated household income. While potentially distorting behaviour (households will attempt to adjust their consumption patterns based on what they know about the different tax implications of their expenditure) this programme may be justified on second-best grounds if it is very costly to reduce evasion of income tax. However, an alternative option would be to shift more taxes away from personal income to consumption, provided checks on VAT evasion, one of the main sources of revenue losses, could be improved. This would also be consistent with the reform priorities of the government.

Serious threats to improvements in tax compliance are posed by the use of tax amnesties, such as the most recent one in 2009-10 on undeclared funds held overseas. While these may be successful in raising tax revenue in the short-term, their fundamental drawback is that they may undermine incentives to declare income and therefore reduce revenue in the long term, especially when regularly offered. Tax amnesties and similar one-off measures more generally should thus be rigorously eschewed, even if spending slippages call for corrective action to maintain fiscal consolidation.

Taxes on environmental externalities could be expanded

Finally, the expansion of taxes on a number of environmentally-related externalities could be considered. Although such taxes are not typically large revenue raisers in any country, Italy currently has relatively high revenues, due to its high energy taxes, including local taxes on electricity and gas, although revenues as a share of GDP have declined over the last 15 years. In the area of energy taxation, removing unjustified variations in tax rates on different energy sources could increase revenue (provided the average rate were increased), as could steps such as removing grandfathering provisions from the greenhouse gas trading system as fast as possible (this will occur eventually in the third phase of the European emission trading system). More fully implementing the polluter pays principle could also justify wider use of environmentally-related taxation.

Box 1.3. **Summary of recommendations to strengthen the economic recovery and fiscal sustainability**

Labour market:

- Over time, replacement rates and eligibility periods for the *CIG* wage support schemes should be reduced.
- In the longer term, seek to move towards a social protection system based on flex-security principles, with unemployment and social security benefits complemented by and coordinated with active labour market policy.
- Promote the development of wage differentiation to account for productivity differences across individuals.
- In the public sector, implement planned measures on performance pay as soon as possible.

Fiscal policy:

- Continue fiscal consolidation for the foreseeable future, potentially combined with national fiscal targets and rules.
- In the case of spending slippages and/or market turbulence, priority should be given to maintaining fiscal consolidation through spending reductions; if necessary, revenue-raising measures should be considered, with priority going to base-broadening measures.
- Consider establishing an independent expert body to assess and comment on fiscal projections and fiscal policy.

Pension system:

- Later retirement in the next 15 years may need greater flexibility in wages for older workers.
- Raise the retirement age for women in the private sector to 65.

Taxation:

- Broaden tax bases, in particular by cutting the number of tax expenditures.
- Continue the fight against tax evasion, and rigorously eschew tax amnesties, as envisaged in the latest Public Finance Decision.
- Expand taxes on environmental externalities.

Notes

1. This statement holds if the yearly growth rates in real GDP beyond 2012 lie between 1% and 2%.
2. The linear trend in Figure 1.1 is fitted through a quarterly series of real GDP from the first quarter of 2000 to the first quarter of 2008. In 2013 and 2014, GDP is assumed to grow at an annualised rate of 1.5%.
3. The two assumptions are as follows. First, the average number of CIG hours (based on those which were actually used by firms) that correspond to one full-time equivalent unit was the same in October 2010 as Istat gives for the entire year 2009. Second, the proportion of all CIG hours authorised that were actually used by firms was the same in October 2010 as for the entire period from January to October 2010.
4. Note that the number of full-time equivalents in the second quarter of 2010 was 340 000 and that 90 000 full-time equivalents were covered by CIG already in the first quarter of 2007.
5. The computations are based on the national baseline scenario presented in the 2011-13 budget (Public Finance Decision). Calculations of the counterfactual ratio of the number of pensions paid to the number of workers, and of the pension-earnings ratio are provided by the Ministry of Economy and Finance, Department of General Accounts.

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ANNEX 1.A1

Taking stock of structural reforms

This table summarises recommendations from previous *Economic Surveys* and notes significant measures that have been taken since the previous *Economic Survey* (June 2009).

Recommendations	Action taken since the previous *Survey* (June 2009)
	A. LABOUR MARKETS
Raise labour force participation.	Widening of some actions for increasing participation of youth and women. Also, several measures in the pension reform of 2010 should increase the participation of older workers, especially women. For details, see Part D of this annex.
Promote greater wage differentiation.	In January 2009, social partners in the private sector signed a new labour contract agreement to promote wage differentiation. The government introduced tax rebates for wage increases linked to productivity.
Reform employment protection legislation on permanent contracts.	No action on the labour code itself, but in 2010 the government introduced provisions for resolving individual labour disputes through extra-judicial arbitration (law 183/2010). The government has presented a scheme to reform the labour code (*Statuto dei Lavoratori*) to the social partners.
Reduce tax wedge on labour income.	Temporary tax breaks on overtime and productivity-related wage increases were introduced in 2008. That on productivity has been retained into 2011. A 2007 law (DL 247/2007) had foreseen an increase in social contributions of 0.09 percentage points in 2011 unless savings were made in the social insurance system. The 2011-13 budget abrogated this increase.
	B. EDUCATION
Improve accountability and autonomy in compulsory school education.	In the current academic year, INVALSI, the quality control agency, will start to use standardised tests for assessing achievements of students in 10th grade. No action on autonomy.
Strengthen teaching quality and pupil performance and reduce their large regional differences.	Performance bonuses for teachers have been introduced experimentally in 4 districts, partially based on INVALSI criteria.
Reduce the drop-out rate from schools.	No policy action. A monitoring task force has been set up.
Increase the performance of vocational schools.	Schools are required to certify the competencies of their students, taking into account their results on the INVALSI test in 10th grade. New guidelines for schools, effective from September 2010, increase monitoring of school performance.
Raise quantity and quality of tertiary level degrees.	10% of university funding is allocated on performance criteria, currently rather limited but to be refined. Significant legislation on improving university governance was approved by parliament in early 2011. For details, see Chapter 2 of this *Survey*.
Improve business-academic research links.	The 2011-13 budget introduced a tax credit on investments made in 2011 by firms commissioning research activities to universities or public research centres. For details, see Chapter 2 of this *Survey*.

Recommendations	Action taken since the previous *Survey* (June 2009)
C. FINANCIAL MARKETS	
Ensure competition in the banking sector.	No legislative action.
Encourage mergers, including international mergers, in the financial sector.	No action.
Enhance corporate governance and transparency of financial instruments.	Dir 2007/36/EC of January 2010 removed the main obstacles to the participation of shareholders in general meetings. A new regulation of March 2010 provides for more stringent disclosure requirements and disinterested approval of transactions between related parties. A comprehensive reform of the secondary legislation on transparency was introduced in July 2010.
Strengthen financial market supervision.	No new legislation; enhanced supervision began following new rules introduced in 2008.
Ensure equal treatment of all shareholders, in both private and partially publicly-owned companies.	No action.
Reform bankruptcy legislation.	Legislative decree No. 78/2010 removed possible disincentives for creditors to lend new finance. Credit granted during restructuring has now priority in the event a bankruptcy proceeding is opened; creditors are not subject to the risk of being accused of criminal offences.
Make the capital requirements of banks less pro-cyclical.	The new "Basel 3" accord rules, and the recommendations of the Financial Stability Board, in which Italy actively participated, are going to be made operational.
Establish the regular publication of a financial stability report.	The Bank of Italy published the first issue of its Financial Stability Review in December 2010.
D. QUALITY OF PUBLIC FINANCE	
Reduce debt on a sustained basis.	In August 2008, parliament approved the first three-year (2009-11) budget meant to achieve the targets set by the government over the entire planning horizon. As from 2010, three-year budgets include detailed spending and revenue plans consistent with these targets. See Chapter 1 of this *Survey*.
Introduce expenditure caps to prevent any growth in overall public spending in real terms.	The 2011-13 budget set spending levels for 2011-13, including caps on departmental level spending. Transfers to the regions and local governments are cut.
Reform the pension system and consistently implement all measures from previous reforms.	The female retirement age in the public sector has been raised on gender-equality grounds (in 2012 it will be 65); the delay between pension entitlement and first payment has been extended (*de facto* raising the actual retirement age); the procedure (introduced in 2009) for automatically updating the retirement age on the basis of developments in life expectancy has been detailed and made operational.
Contain public employment and wage growth.	The 2011-13 budget included a three-year public sector wage and recruitment freeze.
On fiscal federalism: Increase flexibility among tenured employees. Impose hard budget constraints rather than controls on detailed spending items. Define clear regional and local tax assignments. Define a clear redistribution mechanism based on objective structural indicators and tax capacity. Impose transparent and uniform budget accounting methods, externally audited.	Legislation implementing the 2009 enabling law on fiscal federalism, which includes many of the suggested features, is currently in parliament. According to the 2009 law, pending issues have to be resolved by May 2011.
E. SUPPORT COMPETITION AND REDUCE STATE AID	
Increase regulatory power of competition authorities.	The enforcement tools of the Antitrust Authority have been strengthened and now include a leniency program, and the power to order interim relief and to accept commitments concerning future conduct.
Reduce state ownership, especially in TV media, transport and energy utilities.	No action.
Improve state-owned activities governance.	No action.

Recommendations	Action taken since the previous *Survey* (June 2009)
Continue liberalisation and privatisation in electricity and gas.	In early 2010, a natural gas spot market was launched.
Reduce rents, increase competition and reduce barriers to entry, notably: Remove unnecessary licensing in all professions. Reduce influence of professional associations. Remove quantitative restrictions on supply in areas from pharmacies to taxis.	Action has gone backward. Parliament is considering a major reform for lawyers which restricts conduct regulation (restoring minimum fees and forbidding contingency fees), introduces additional entry barriers (entry exams are made more difficult, training costs to be paid by trainees are increased), and restricts legal consulting to lawyers.
Introduce bodies for enforcement of national competition standards in areas of regional regulatory competence (notably retail trade, land-use planning).	No action.
Speed up liberalisation in transport.	No new legislative action but some progress: the first private train operator is due to open high speed services by the end of 2011.
Keep up competition in telecommunications.	No action.
F. INCREASE PUBLIC SECTOR EFFICIENCY	
Ensure competition for the provision of public services.	D.P.R. No. 168 of September 2010 requires compulsory tendering for local public services. However, the absence of an independent authority, the large number of exceptions, and the conflicts of interest of local authorities still limit effective competition.
Widen the use of performance measures in the public administration.	The main innovations provided by the "Brunetta" reform are: 1. the institution of an independent commission for the evaluation, transparency, and integrity of public administrations; 2. the introduction of performance-related pay and career advancement and accountability of administrators for results; 3. the possibility to file class action lawsuits against public sector inefficiencies. Progress on all three points is rather slow. The commission has been appointed. The recent three-year freeze on public sector wages significantly limits the possibility of performance-related pay. The class action is working only for some types of infringements; so far no action has been brought.
Reinforce auditing mechanisms for regulatory and spending decisions.	No action, Regulatory Impact Assessment remains under-utilised.
Improve efficiency in the administration of civil justice.	Some minor actions have been taken, *e.g.* the production of statistics by judiciary offices and the degree of digitisation of courts have recently been increased. The "Consiglio superiore della Magistratura" is currently working on the definition of productivity standards of judges. Compulsory pre-trial mediation in some subjects has been introduced (and will come into force in March 2011); however, the law is under scrutiny by Administrative Courts.

Chapter 2

Enhancing the contribution of universities to economic growth

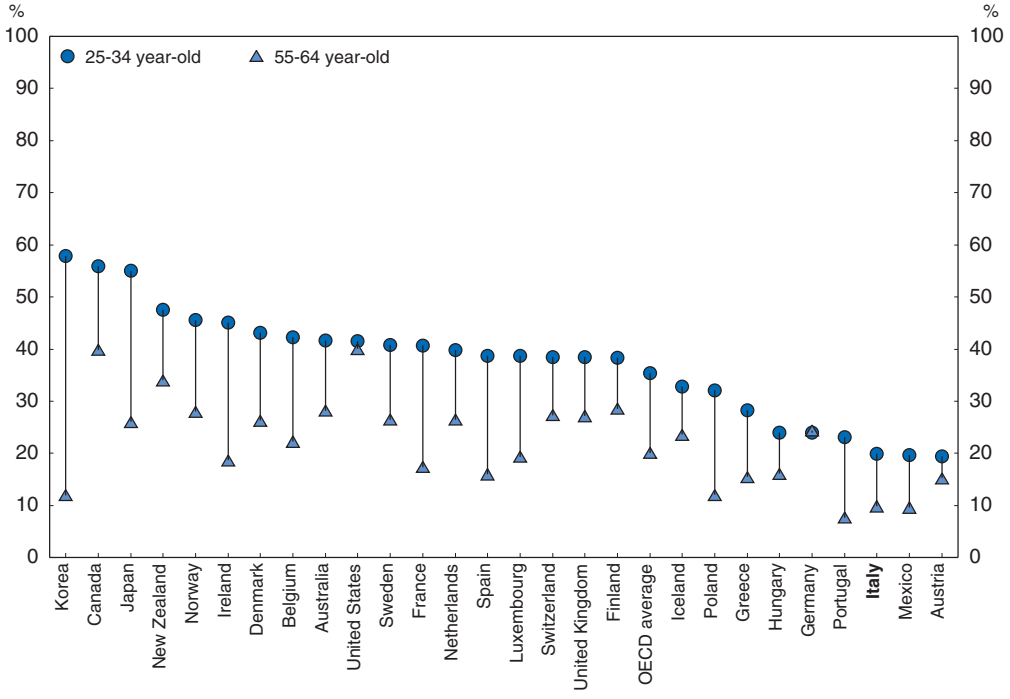
Tertiary education systems promote growth and well-being by providing the high level of skills and research output required in modern economies. Available evidence suggests, however, that Italian higher education learning outcomes lag behind international standards and that the benefits of university scientific output are not spread widely to society. This chapter argues that key reforms, in particular of university governance and funding, would contribute to a better performance of the higher education system. Making universities both more autonomous and more accountable would stimulate their performance. Better management of human resources, including performance-based careers and remuneration and improved recruitment processes, would also help. The new University Reform Act builds on principles which are in line with some of these recommendations. It will be important that the forthcoming secondary legislation translate these principles in effective operational rules and that regulation is then effectively implemented.

Greater participation of private-sector funding could increase efficiency, both by expanding financing and providing clearer signals on the quality of education and research. The last section examines how universities could better contribute to advancing scientific knowledge and spreading new technologies throughout the economy.

The Italian higher education system could perform better

How well a country's universities perform is an essential piece of information in today's globalised world but, for the time being, the concept of higher education learning outcomes does not lend itself to precise measurement.[1] If assessed by the proportion of the working-age population with a tertiary degree, Italian universities do not appear to perform very effectively: the share of tertiary graduates is 14% in Italy, only half the OECD average (Figure 2.1). However the gap has been closing in the last few decades, as shown by the growth of tertiary graduates in the period 1997-2007 (5.5% per year versus 3.4% for the OECD area), second only to Poland among OECD countries.[2] This catch-up can be traced to a massive increase in the number of children completing upper-secondary school and an almost equally high increase in university enrolment and higher completion rates. Nevertheless, the share of second-cycle (research) degrees remains significantly lower in Italy than in other countries.

Figure 2.1. **Italy is gradually catching up on the share of the population with tertiary education**



Note: Ranked in descending order of attainment by 25-34 year-old age group.
Source: OECD, *Education Database*.

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Available information also suggests that the *quality* of Italian higher education learning outcomes is low by international standards. According to the only available survey (ALL, Adult Literacy and Lifeskills Survey) – which was carried out in 2003 and covers only very few OECD countries – the levels of literacy and numeracy of Italian tertiary graduates are low. Some other, much more indirect, evidence on the quality of Italian higher education can be found in the international rankings of universities, as for instance the Shanghai ranking and the THES ranking. While the methodology behind these rankings is controversial (Billaut *et al.*, 2009), they nevertheless suggest that, on several important dimensions, even the best Italian universities lag behind the world leaders[3] (Table 2.1).

Table 2.1. **No Italian universities are placed in the top 100 according to two world university ranking systems**

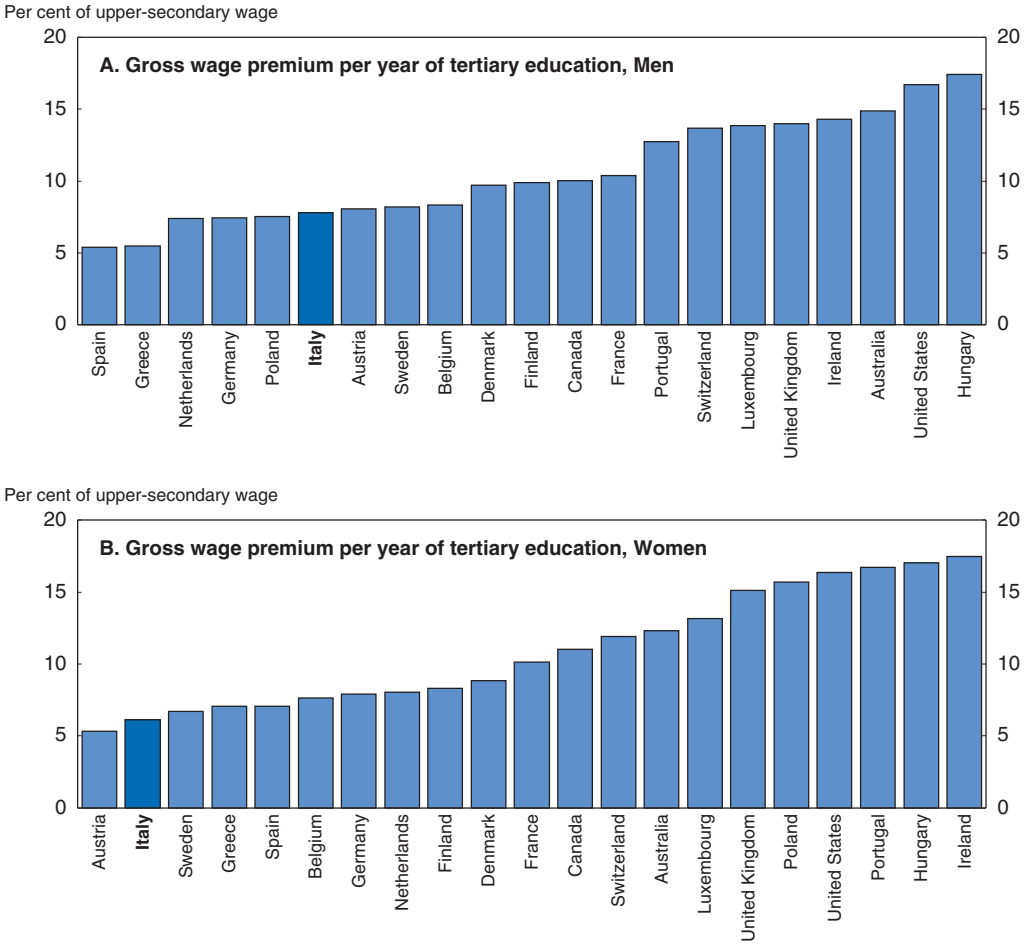
	Country performance according to Times Higher Education University Rankings				Country performance according to Shanghai ranking (US = 100)			
	Average ranking of all universities among the top 500	No. of universities represented	Most highly ranked university	No. of universities in the top 100	Top 50	Top 100	Top 200	Top 500
United States	263	128	1 (Harvard University)	32	100	100	100	100
United Kingdom	194	52	2 (Cambridge University)	18	72	86	98	124
Australia	218	25	17 (Australian National University)	8	0	0	0	53
Japan	304	35	22 (University of Tokyo)	6	0	0	11	34
Canada	195	20	18 (McGill University)	4	39	54	63	104
Germany	288	42	55 (Technical University of Munich)	4	0	17	37	67
Netherlands	153	13	49 (University of Amsterdam)	4	20	51	76	131
France	378	36	28 (École normale supérieur, Paris)	2	3	15	29	45
Belgium	173	7	65 (Catholic University of Leuven)	1	0	0	61	122
Greece	397	6	177 (University of Athens)	0	0	0	0	12
Italy	**409**	**21**	**174 (University of Bologna)**	**0**	**0**	**0**	**11**	**34**
Spain	390	14	171 (University of Barcelona)	0	0	0	0	14

Note: The Shanghai ranking focuses on the quality of universities' research output. The THES ranking puts together measures of employability of graduates, internationalisation of universities, didactic conditions and quality of research.
Source: THE and Shanghai rankings.

The underperformance of tertiary education hampers the labour market

Labour market indicators also provide indirect information on the performance of universities. One indication is given by wage premia of graduates, which in Italy are lower than those of Continental Europe, although there are significant gender differences (Figure 2.2). Wage premia fell between 1993 and 2004, essentially as a result of the increasing supply of graduates (Naticchioni *et al.*, 2007). According to survey data the relative advantage of continuing education beyond upper-secondary level is particularly small in subjects like humanities, law and social sciences (ISTAT, 2008; ALMA LAUREA, 2007). What is more, graduates appear to have difficulties in entering the labour market, as illustrated by unemployment rates of tertiary degree holders in the age group 25-29 as high as 11%, compared with 5% in the OECD area.[4] Admittedly, the quality of tertiary degrees is not the only determinant of wage and employability premia. These premia also depend on labour market factors such as wage compression, institutional and regulatory features (including the role of trade unions and employment protection legislation), the structure of production (large amount of small-medium enterprises and specialisation on low

Figure 2.2. **Italian wage premia due to tertiary education are low, 2001**[1]



Note: The total wage premium associated with a tertiary education level is converted to an annual basis by dividing by the duration of tertiary studies.

1. Except Hungary (1997) and Poland and Switzerland (2000).

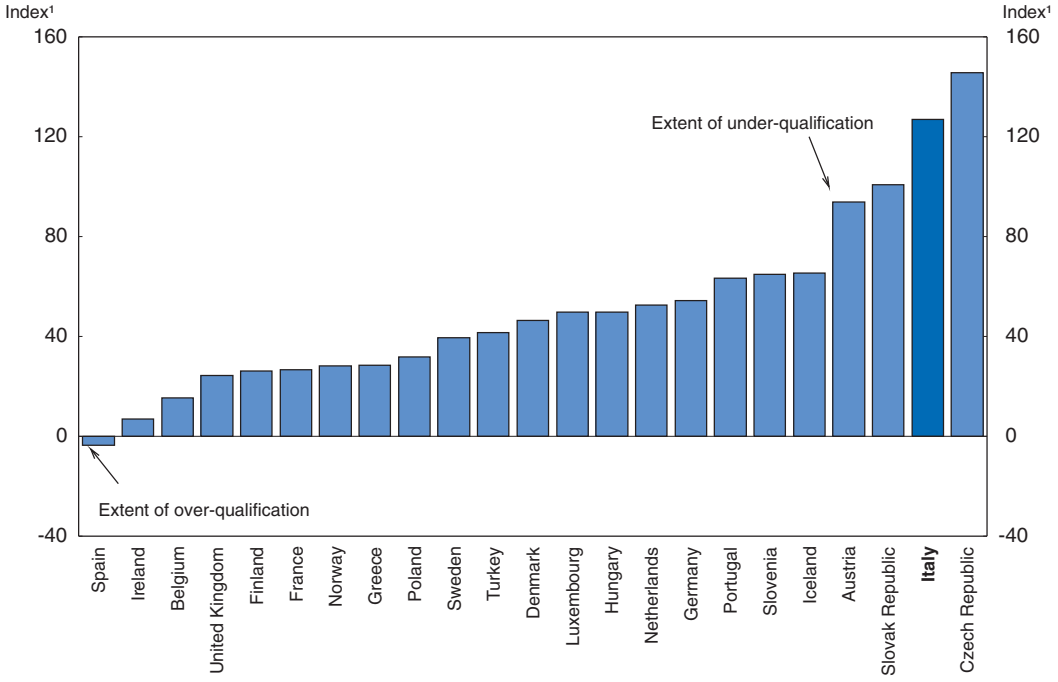
Source: Strauss and de la Maisonneuve, 2007.

StatLink http://dx.doi.org/10.1787/888932385731

value-added products) and the relative exposure to foreign competition (Colonna, 2007). However, Italian skill premia are a bit lower than those of other European countries with broadly similar labour-market institutions, such as France.

The underperformance of universities appears to contribute to various types of skill mismatch. First, the demand for highly-skilled workers is not completely satisfied, as illustrated by the high ratio of high-skills jobs to the number of tertiary graduates (Figure 2.3) – although generational effects may partly account for observed under-qualification. In addition, a significant number of firms tend to find the qualification of new graduates insufficient, with three in four saying they need to provide initial training to make up for the initial lack of competencies (Excelsior and Union Camere, 2010). At the same time, the business sector's hiring demand is highly concentrated towards low educational levels (ISTAT, 2009; Excelsior and Union Camere, 2010), resulting in an excess supply of tertiary graduates.[5] The problem is compounded by both limited regional mobility and insufficient development of technical tertiary education programmes which

Figure 2.3. **Italian human capital does not meet the economy's demand**



1. This index compares the number of jobs requiring a tertiary degree to the number of employees with tertiary education. A positive index means that some of the high-skills jobs are performed by employees with less than tertiary education. A negative index means that some tertiary graduates work in jobs requiring skills lower than those provided by tertiary education.

Source: OECD, *ANSKILL Database*, December 2009.

StatLink http://dx.doi.org/10.1787/888932385750

may better fit business demand. Indeed Italy has begun to develop technical tertiary institutions only recently. In addition, the relative abundance of low-skilled human capital may have resulted in excessively large labour intensive productions in Italy (*e.g.* agriculture, part of the service industry and traditional manufacturing sectors).

Skill mismatch contributes to lower productivity in two ways: first, education is not efficient in supplying firms' current needs and, second, graduates are lacking in fields that drive productivity growth. Hence, firms are unable to adjust the skill composition of their labour force as much as they would like, thus constraining efficiency-driven changes and innovation. For example, the unchanged proportion of scientists and engineers educated in Italian universities in the past fifty years presumably hindered the ability of Italian firms to shift the structure of their output towards more innovative activities. This is also consistent with the slow growth of productivity despite a strong increase in the number of university graduates in the population. Thus, policies to improve the quality of higher education and the information transmitted to labour markets are paramount to spread the benefits of education to the economy at large.

Italian higher education does not appear internationally competitive

Foreign students do not find the Italian higher education system very attractive: less than 2% of world students studying outside their home country come to Italy (as compared with 20% to the United States, 12% to the United Kingdom, and above 8% to France and

Germany). In addition, the number of foreign students coming to Italy has been declining in the past decade, compared with the OECD average. Among the main factors accounting for the low success of Italian higher education, language plays a prominent role: very few programmes are offered in English, in contrast to many other non-Anglophone European countries (EAG, 2009); in fact many universities require foreign students to speak Italian. On the other hand tuition fees are not particularly high in Italy, yet there is a severe lack of students' facilities and living costs are not any lower than in other European countries (Usher, 2005; Oliveira *et al.*, 2007), especially in the North of Italy. Immigration policies may also in part explain why Italy does not enrol many foreign students as the access to university is unrestricted for EU students but constrained for non-EU students[6] through fixed quotas (Avveduto and Brandi, 2004). The latter is unusual among EU countries. In general, there are no policies to attract foreign students, with the exception of a few universities which are part of international university networks. All Italian universities are part of the EU Erasmus programme, but while Italy is the largest sender of Erasmus students abroad it is only the fourth most demanded country by students enrolling in this programme.

The Italian higher education system also does not perform very well in retaining Italian students (Becker *et al.*, 2004; Monteleone and Torrisi, 2010). Emigration of Italian students has increased significantly since 1990, notably among those with a first degree; this is true for all age groups and regions of Italy. Net emigration of high skilled individuals is large, whereas most other European countries are characterised by "brain exchange" where emigration of high-skilled nationals is at least partly offset by immigration of high-skilled people from other (including from non-OECD) countries as well as to some extent by return migration (Becker *et al.*, 2004, Causa *et al.*, 2007). Key reasons for leaving Italy include employment opportunities and prestige, enhancement of skills, the possibility of joining a stimulating research and technology-rich environment and to move to a fully functional bureaucratic system (Monteleone and Torrisi, 2010). There is also evidence that around 70% of college emigrants have a low or no propensity to return to Italy, suggesting that most of the Italian brain drain is permanent.[7]

Some measures have been taken in recent years to encourage "drained brains" to come back to Italy to work in the university or research sectors, including tax credits and special channels of temporary recruitment. They seem to have little if any long-term impact. Success in reversing the brain drain is unlikely without a radical change of the recruitment system and working conditions, although unfavourable comparisons expatriates may make with civil society, public services and public administration may also be important (Brandi and Cerbara, 2004). Therefore in December 2010 the Parliament approved a law (Law 238/2010, "Incentivi fiscali per il rientro dei lavoratori in Italia") to extend fiscal incentives to a wider range of skilled workers who return to work in Italy.

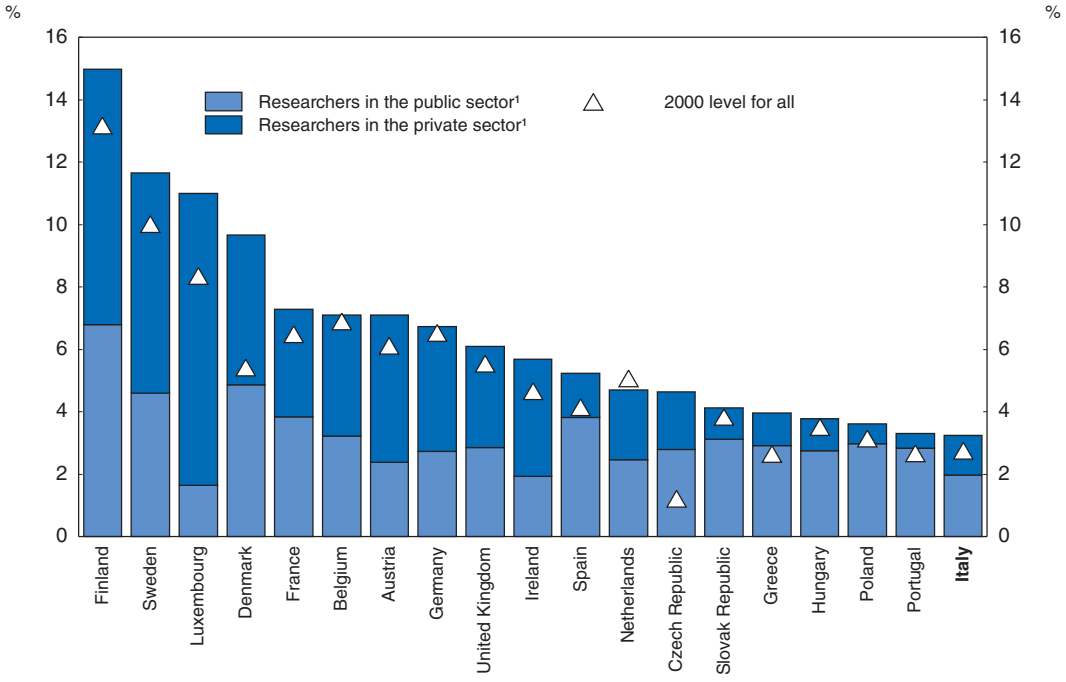
The Italian higher education and research system is not attractive to non-Italian researchers, whether for visits or on a more permanent basis. Though strong linkages with some European and non-European universities exist, the number of exchanges or hires remains small. This appears to reflect such factors as low scientific prestige of Italian institutions, the lack of high-level scientific facilities the underdeveloped level of international scientific networks (Brandi and Cerbara, 2004) and the existence of cumbersome administrative procedures for admission. The extent of international collaboration between Italian and foreign scientists is also modest (OST, 2008); most seems to originate from personal connections through study or previous visits, rather than from institutional collaboration set up by the universities or the education authorities. To

enhance the attractiveness of Italian universities, the new University Reform Act (Law 240/2010) makes it compulsory for universities to advertise all academic positions at least at the European level and allows qualified foreign scholars to apply for these positions without requiring them first to obtain the national accreditation ("abilitazione scientific nazionale") required of Italian nationals (see later sections for details on the new recruitment system).

Scientific output is not spread widely to society

As in many other OECD countries, the so-called third mission of universities (to spread research benefits more widely to the society) has gained strategic importance in the last twenty years. However, the accomplishment of this mission is constrained by the low number of researchers (public and private) which, as a share of the active population, remains below the European average, with the majority of them concentrated in the public sector (Figure 2.4).

Figure 2.4. **Few researchers, with a majority of them working in the public sector**



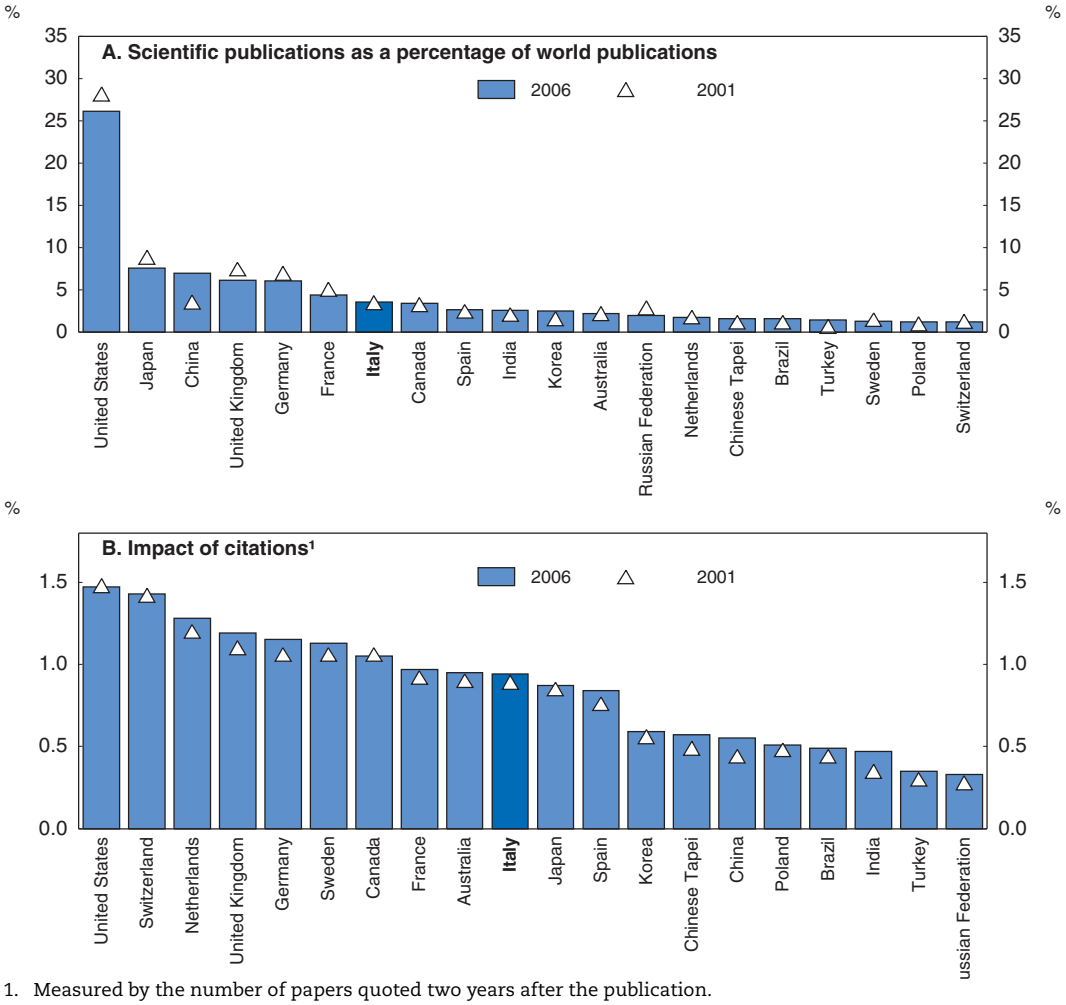
1. As a percentage of the working-age population, 2007.

Source: Observatoire des Sciences et Techniques (OST), *Report* 2008.

StatLink http://dx.doi.org/10.1787/888932385769

Measured by publications, Italian scientific production is far from negligible. Italy is the seventh largest world producer of scientific publications (its share of worldwide publication is 3.6% versus 26% for the United States, 7.6% for Japan, 7% for China, around 6% for the United Kingdom and Germany) and its performance improved between 2001 and 2006. In terms of immediate impact (as measured by the number of quotes in the two years following the publication) Italian research output is among the top ten in the world (Figure 2.5). Italy is particularly good at publishing in physics and chemistry.

Figure 2.5. **Italian scientific publication is substantial**



1. Measured by the number of papers quoted two years after the publication.

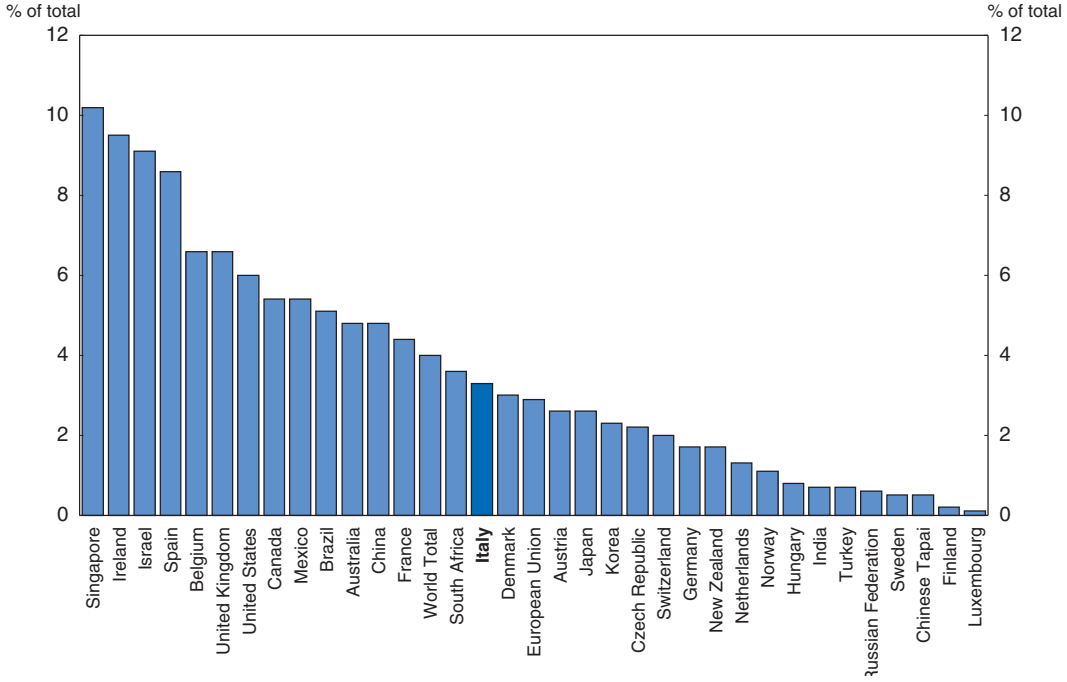
Source: Thomson Reuters and Observatoire des Sciences et Techniques (OST), *Report* 2008.

StatLink http://dx.doi.org/10.1787/888932385788

Nevertheless, universities (not including public research institutions) provide only a modest contribution to innovation. Italian universities' share of patenting activity is around the European average (Figure 2.6). But key countries with a lower share for their universities have a very high level of patenting activity outside universities, whereas in Italy this is almost non-existent. Thus Germany (with 18% of all applications to the European Patent Office in 2008) and Japan (17%) have an overall level of patenting which is several times higher than Italy's (under 4%). Conversely, industry funding of universities is modest (Bonaccorsi and Daraio, 2007) and collaboration between universities and the private sector is limited and lacks continuity (OECD 2008). As a result, Italy's overall innovation performance is well below the international average (European Innovation Scoreboard, 2009; OECD, 2010b, Figure 2.7). According to the European Innovation Scoreboard, using an innovation performance index (IPI), not only Italy is a moderate innovator, but is also a "slow grower", *i.e.* it is converging to the European average slower than many other countries. Of the seven dimensions used in calculating the IPI, Italy performs especially badly in "human resources"[8] and is consistently below the EU average

Figure 2.6. **Italian universities' share of patenting activity**

Share of European Patent Office (EPO) patent applications[1] owned by universities, 2003-05



1. Patent counts are based on the priority date, the inventor's country of residence and fractional counts. Patent applications are attributed to institutional sectors using an algorithm developed by EUROSTAT. Only countries/economies with more than 300 patents over the period are included.

Source: OECD Compendium of Patent Statistics, 2008.

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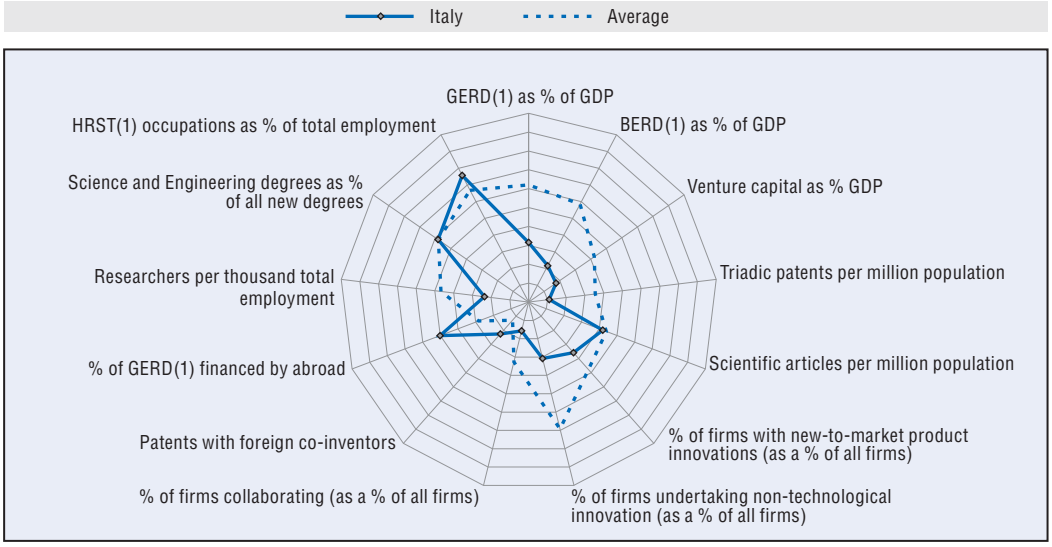
Figure 2.7. **In some respects, Italy's innovation performance lags by international comparison**



1. BERD: Business enterprise Expenditure on R&D, GERD: Gross Domestic Expenditure on R&D and HRST: Human Resources in Science and Technology.

Source: OECD, *Science, Technology and Industry (STI) Outlook* 2010.

StatLink http://dx.doi.org/10.1787/888932385826

in all the other six dimensions. Although the situation looks slightly better when using alternative summary measures of innovation, some of which include a broader range of institutional features (*e.g.* the Innovation Capacity Index), the scope and the effectiveness of Italian innovation still appear to be among the weakest in the OECD area.

Making the best of limited financial resources

Italy devotes fewer financial resources to tertiary education than other countries, whether in terms of annual expenditure per student (44% less than the OECD average), as a share of GDP (0.9% versus an OECD average of 1.9%) or as a share of public expenditure (1.7% and 3.1%, respectively). In addition, various studies find that these limited resources are spent inefficiently (St. Aubyn *et al.*, 2008; Joumady and Ris, 2005; Agasisti, 2009; Agasisti and Johnes, 2008; Agasisti and Johnes, 2009). The government is seeking to improve higher education learning outcomes with efficiency-enhancing measures, as increased spending is off the agenda in an environment of fiscal consolidation.

Rationalising the programme of courses offered by universities

The Italian tertiary education system offers a number of courses and programmes which is high by international standards and has increased in the last two decades. Between 2001 and 2005, coinciding with the introduction of the two-level system agreed under the Bologna process, the number of new tertiary programmes increased by 40%, and the number of courses activated went up by 55%. Slightly above 10% of tertiary education programmes have been opened for less than ten students. The median class size in tertiary programmes is less than 50 students (75 when excluding *numerus clausus* programmes). Most of this spectacular increase is explained by the geographical fragmentation of the university system, one objective of policy having been to expand the supply of tertiary education to reach areas of the country where universities were absent or barely present.

A rationalisation of the supply of academic courses could help make better use of limited resources. Not every institution needs to supply the full range; they may instead specialise by type of tertiary programme (academic *versus* vocational) or place more emphasis on teaching (or research) to exploit the different comparative advantages of each institution. A specific effort should be made to build up professional/vocational tertiary education institutions, which have been set up only recently in Italy ("Istituti Tecnici Superiori – ITS"). Some of the existing programmes offered by local branches of universities may be usefully reconverted in professional/vocational degrees jointly run by universities, enterprises, local governments and relevant secondary schools. In France such institutions (*Instituts universitaires de technologie*) were set up within existing universities, select their students on entry (unlike the universities proper) and, through close connections with business and industry, are successful in attracting students and placing them on the labour market (O'Brien, 2008).

In addition, programmes should be closed where there is duplication, low enrolment, insufficient labour-market needs, little link with innovative activities or active research and no clear local need. The ministerial decree (23 December 2010) setting universities' programming guidelines goes in this direction, by making more stringent the criteria for opening new courses or maintaining existing ones. More generally steps to rationalise the supply of academic courses would be taken by autonomous institutions acting within guidelines and incentives to improve performance and efficiency. Policies to achieve this

are discussed further below; in their absence some central direction is probably necessary in the short term.

Enhancing performance through individual incentives

As in other countries which have moved toward more performance-based careers and salary progression, Italian universities are abandoning seniority-based systems. While until now entry-level researchers earned significantly less than in other countries, the Law 240/2010 raises entry-level salary for tenure-track faculty by 50%. Under the old system wages increased very quickly with seniority and – until the most recent changes – independently of any criteria of academic and scientific performance, with the result that average and maximum wages for older staff are higher than in other countries (Perotti, 2008). There is evidence that Italian tenured professors at the end of their career may earn as much as 95% of the salary of an American peer with a higher productivity (Gagliarducci *et al*., 2005), though this may concern a limited share of faculty. Much of the growth in university budgets in recent years has gone to finance the consequences of earlier waves of promotion of senior staff (from *associati* to *ordinari*). The biggest increase of academic faculty was recorded in 1980. The effects of this large hiring are evident in the ageing distribution of academic personnel: in 2008 the most frequent age was 61, while in 1998 it was 50. To contain this trend, a decree was adopted in 2008 to rebalance the composition of junior *versus* senior staff and researchers. The effects of this decree have been positive so far and the Law 240/2010 extends its effects.

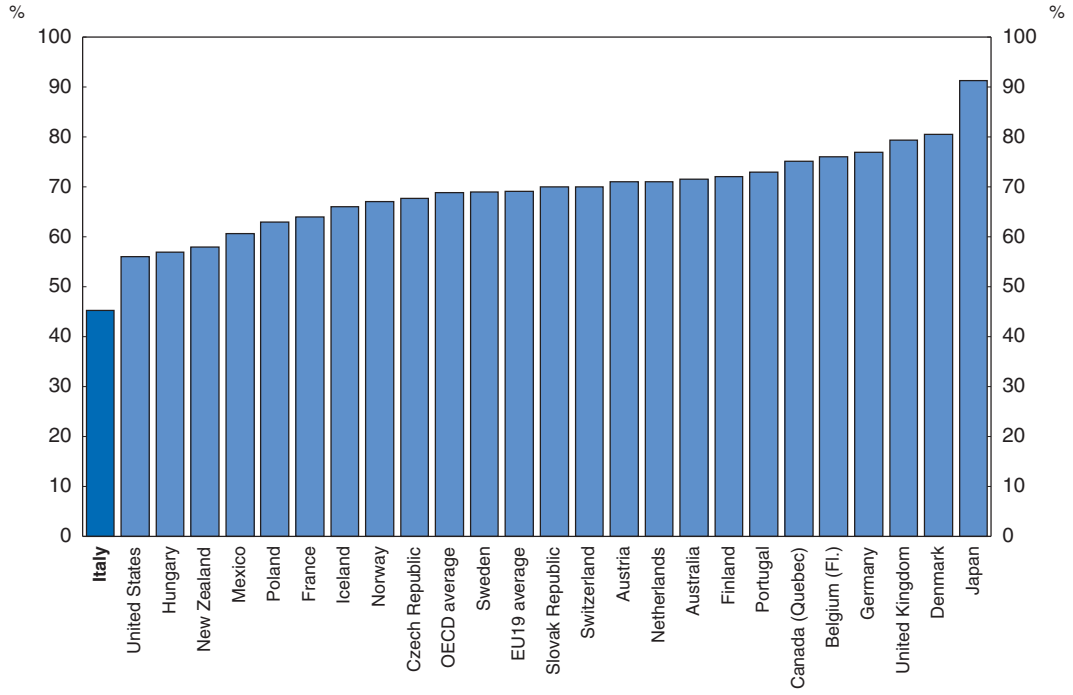
Many Italian professors will be retiring in the next ten years (the modal age is 61). As a significant share of older staff will be replaced by young researchers and assistant professors, this provides a good opportunity to introduce reforms of the academic career structure. In particular career advancement (and salary progression) should be linked to performance (in teaching, research and patenting) and to responsibility, rather than to length of service. To attract prospective teachers (in particular from abroad), some minimum amount of job security (and predictability over time) is required. Contracts could be for a fixed (and limited) number of years on initial appointments, followed by a tenure conditional on a strong record of published research, teaching and administrative service. To the extent possible, "wave-shaped" recruitment should be avoided, since it tends to be detrimental to the quality of the faculty hired; this implies greater, but variable, use of fixed-term contracts, however. As well, tertiary institutions should be free, within some broad limits, to design staff contracts, for instance setting the criteria for performance assessment and working conditions. Finally, contracts need no longer to be regulated in detail by national law.

The Law 240/2010 takes on board some of these recommendations, by abolishing seniority-based pay increases and by introducing a merit fund ("Fondo per la premialita") that universities can use to reward distinguished performance of their faculties. The size of this fund is not known at the moment.

Increasing timely completion of graduate studies

Two other symptoms of inefficiency are the low completion rate (Figure 2.8) and late graduation. Italy displays the lowest completion rates in the OECD area and its tertiary graduates are among the oldest (the average duration of tertiary studies in Italy is one year longer than in the OECD area, EAG 2009). While the average graduation age has declined, the number of people aged over 35 at graduation has increased to some 10% of all

Figure 2.8. **Italian completion rates[1] are very low**



1. Completion rates represent the proportion of those who enter a tertiary-type A program and who go on to graduate from at least a first tertiary-type A program. These programs (ISCED 5A) are largely theory-based and are designed to provide sufficient qualifications for entry to advanced research programs and professions with high skill requirements, such as medicine, dentistry or architecture. Usually programs have a minimum cumulative theoretical duration (at tertiary level) of three years' full-time equivalent, although they typically last four or more years.

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

StatLink http://dx.doi.org/10.1787/888932385845

graduates (CNVSU, 2009). Most Italian graduates achieve their degree one year after the theoretical end of studies and the tail of the graduation distribution by age is still long (Table 2.2). The move to a two-tier system implied by the Bologna process has resulted in higher graduation rates, yet the graduation rates of those finishing their studies on time has barely moved.

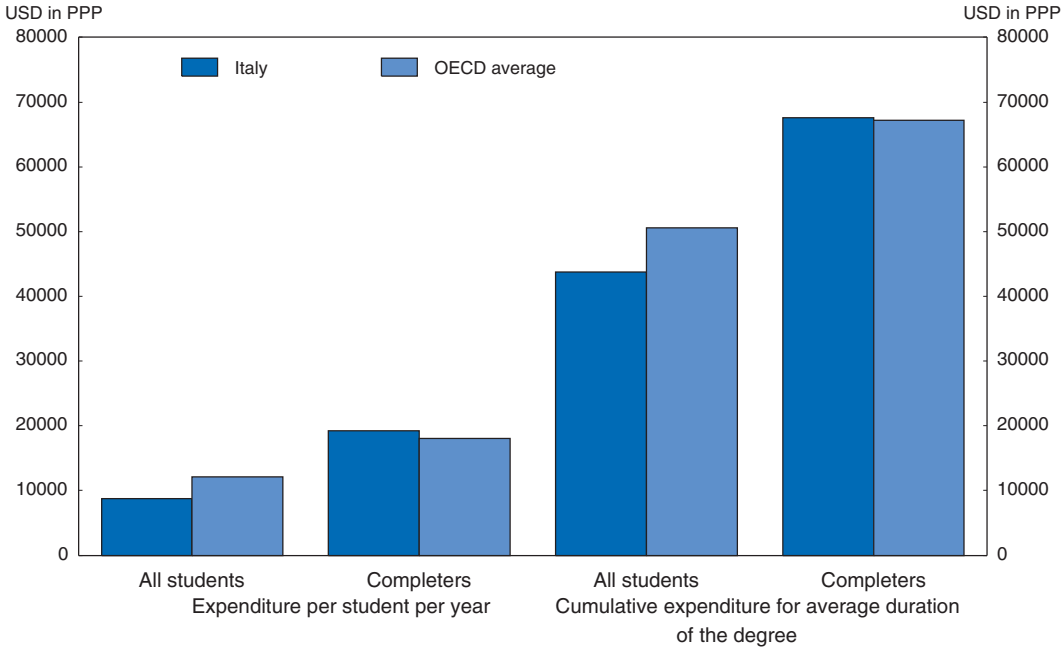
Similarly, while the number of "regular" students (*i.e.* students who are on track with their studies) has slightly increased in the last ten years, it still accounts for only 60% of the overall number of enrolled students. In addition, the number of inactive students over the whole tertiary education cycle has risen to 20% of the student population. There are significant costs associated with a large number of students remaining inactive and dropping out. For instance, education cost per student increases from about 25% below the OECD average to 5% above when total spending is divided by the number of students who actually complete their studies (Figure 2.9). Similarly, when one takes into account late graduation, the cost of Italian tertiary education goes up significantly. Such estimates only partially capture the negative effects of drop-out and late completion. Other consequences include the congestion of universities (Agasisti and Johnes, 2008) and the tarnishing of the reputation of the diplomas granted to completing students.

Table 2.2. **Italian students graduate very late**

Graduates	No. of years to achieve the degree	2005		2006		2007		2008	
Before the time	2	6 537	5.1	7 434	4.8	11 240	6.7	7 116	4.3
On time	3	39 398	30.5	39 468	25.5	38 817	23.1	37 362	22.5
1 year after the statutory length	4	51 571	39.9	52 751	34.0	51 274	30.5	48 934	29.5
2 years after the statutory length	5	14 936	11.5	31 503	20.3	30 096	17.9	30 010	18.1
3 years after the statutory length	6	6 062	4.7	9 697	6.3	18 531	11.0	18 008	10.9
4 years after the statutory length	7	3 367	2.6	4 564	2.9	6 623	3.9	11 399	6.9
5 years after the statutory length	8	2 172	1.7	2 649	1.7	3 217	1.9	4 203	2.5
6 years after the statutory length	9	1 354	1.0	1 633	1.1	2 013	1.2	2 173	1.3
7 years after the statutory length	10	3 973	3.1	5 243	3.4	6 559	3.9	6 595	4.0
Total number of graduates[1]		**129 370**	**100**	**154 942**	**100**	**168 370**	**100.0**	**165 798**	**100.0**
Graduates already holding a degree or for which the year of enrolment is unknown		8 937		6 503		5 301		5 615	
Total number of graduates		138 307		161 445		173 671		171 413	
Average number of years to complete a 3 year degree		4.19		4.39		4.52		4.70	

1. Excluding graduates already holding a degree or for which the year of enrolment is unknown.
Source: CNVSU, 2009, Table 2.34.

Figure 2.9. **Drop-out increases the cost of education**



Source: OECD calculations on the *OECD Education Database*.

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Reducing drop-out

Dropping out from university is generally attributed to the lack of initial preparation, mismatch between subjects studied before and at university, financial factors and the capacity to integrate into the university – the latter being a function of family background,

previous schooling and perceptions of student-teacher relationships (OECD, 2008). In the case of Italy, family and educational backgrounds appear to have a strong influence on the probability of continuation of studies (Cipollone and Cingano, 2007). Family factors are likely to work through short-run financial constraints (if, for instance, students need to work part-time because of a lack of family financial support) rather than through factors such as innate ability or the home learning environment.

In the light of OECD countries' experiences, several measures appear to be effective in reducing dropping out from university (OECD, 2008):

a) imposing student selection at entry (Jacobs and van der Ploeg, 2006);

b) provision of targeted support and remedial courses to individual students, as done in some US states (Gansemer-Topf and Schuh, 2006);

c) financing help conditioned on student performance, as done in the Czech Republic, where tertiary institutions can charge fees as penalty for students who do not graduate on time, and in Norway, where public loans are converted to grants if students complete their studies on time; a similar provision is contained in the Law 240/2010 though the extent of its application will depend on available funding;

d) incentive-based funding to tertiary institutions, as funding systems based on the number of students may encourage universities to recruit students irrespective of their ability to complete;

e) a flexible remuneration system for teachers based on outcomes, including completion rates;

f) vocational tertiary instruction so as to allow students to join and complete other study programmes, as done in France where, in 2005, almost 15% of enrolled students did not complete the original degree but successfully switched to a vocationally oriented tertiary education (see also O'Brien, 2008); it would be important to create the conditions for a similarly swift transition across degrees in the Italian system too;

g) raising tuition fees so as to increase the financing available to universities, allowing them to respond better to students' specific needs and to give students more incentives to complete swiftly their studies. In this respect a successful example is the decision of an Italian private university to set tuition fees as a function of studies completion speed (Garibaldi *et al.*, 2008).

These policy options may involve some delicate trade-offs with respect to guaranteeing an equitable access to tertiary education. For instance, a selective university system (through entry tests or high tuition fees) may discourage disadvantaged students from entering universities, as these are also those who have the worst outcomes at upper-secondary level (PISA 2006). Similarly, conditioning financial help on students' performance may be detrimental for equity, unless public subsidies are large enough to cover living expenses (so as not to force disadvantaged individuals to work part-time, which may delay completion of studies). Thus selection policies need be accompanied by flanking measures in the form of targeted financial support to low-income prospective students, as also discussed in a later section of this chapter. Equity, however, need not be compromised by measures aiming at enhancing the performance of teachers and the tertiary institutions: these measures must also be given priority in the tertiary education reform agenda and are discussed in the next section.

Granting universities more autonomy, while holding them accountable

As in many other OECD countries, the Italian authorities are increasingly granting more autonomy to universities and developing arm's-length relationships with them. Indeed, aiming for an appropriate degree of autonomy (to enable universities to improve performance) and accountability (to give them appropriate incentives to do so) is the best way to improve results and efficiency. Universities in most countries are academically autonomous, but they vary widely in the degree of administrative freedom accorded. Research shows that certain aspects of institutional administrative autonomy have an important influence on the effectiveness of universities (Oliveira *et al.*, 2007; Aghion *et al.*, 2008; Aghion *et al.*, 2010; St. Aubyin *et al.*, 2009). In particular, the ability to choose professional staff and set their working conditions is found to be a key determinant of the quality and performance of teachers. Autonomy is of course a necessary pre-condition for accountability: if universities are to be held responsible for their results, they must be free to decide how to use their resources.

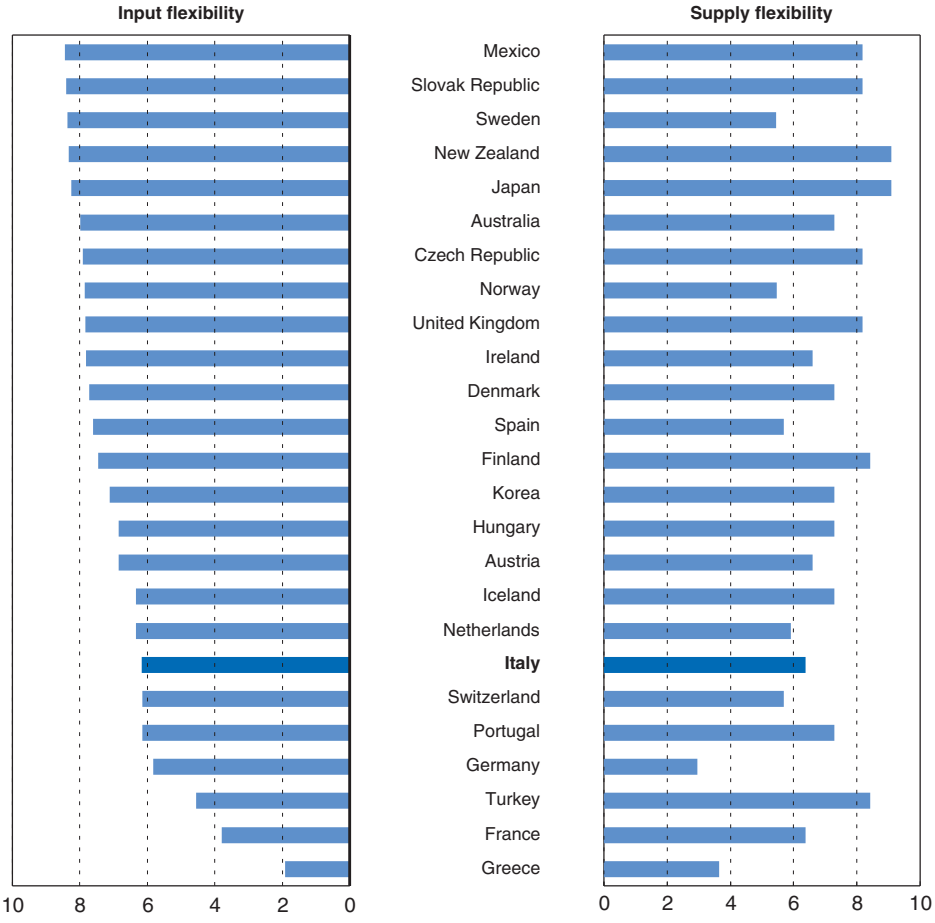
At present autonomy is limited though the new University Reform Act aims at changing this

Italian universities have less autonomy than universities in many other OECD countries, especially in staffing and funding decisions (Oliveira *et al.*, 2007; Figure 2.10). In particular, faculty salaries in public universities are determined centrally,[9] although private universities are free to pay more. Recruitment procedures have been the subject of a series of reforms, discussed below, but universities are still seriously constrained in their recruitment. In terms of course content and examinations, in contrast, Italian universities are relatively free. On the latter aspect, the Ministry of Education provides some general guidelines and some accreditation procedures to set minimum quality standards. But universities are free to decide modalities for the achievement of both credits and the final degree, with little if any external verification. This very decentralised system of quality assurance appears to result in highly heterogeneous quality of degrees across institutions, despite the legal equivalence (*valore legale del titolo*) of all degrees (Bagues *et al.*, 2008). These two examples illustrate an extreme mismatch between autonomy and accountability: where there is autonomy (in examination standards) there is no accountability, and where there should be accountability (in teaching performance) there is no autonomy.

Two models are considered as best practices for widening the scope of autonomy (OECD, 2008): establishing private foundations or not-for-profit corporations; and permitting innovations in contracting for services, labour relations and public auditing within the framework of universities operating as public institutions. In 2008, Italy opened the possibility of moving toward the first model with a law allowing public universities to convert themselves into private foundations. The idea was to improve accountability, separating the management board from that dealing with academic issues, and redefining the responsibilities and powers of the university presidents. In practice, however, no university has chosen to take this route. This seems to be partly because the financial consequences of the conversion were unclear, with a risk that reductions in public funding would offset the private funds attracted. In addition, universities already have the ability to raise funds from the private sector, but rarely do so, mainly because of lack of institutional capacity, which the proposal did nothing to remedy. Another reason explaining the lack of interest is that private foundations would still seem to be subject to central constraints on

Figure 2.10. **The Italian tertiary education system has little autonomy and flexibility**

Increasing in flexibility[1]



1. Input flexibility is a composite indicator describing a university's freedom in choosing various inputs to the supply of educational services (for instance autonomy in recruiting faculty, in setting their working conditions, in allocating resources to different purposes, etc.). Supply flexibility is a composite indicator reflecting a university's freedom in expanding and differentiating the supply of education services along various dimensions (*e.g.* number and type of courses/program, type of learning, etc.).

Source: OECD, Oliviera *et al.*, 2007.

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academic staff management, one of the main determinants of universities' ineffectiveness, rather than, for example, being able to follow the practice of Italian private universities. Finally, private foundations would also be subject to national regulation of tuition fees. Another, more comprehensive, approach to widen the scope of autonomy while enhancing accountability would be to reform the governance of universities, change the modes of recruitment and career decision of the academic staff, and put in place a sound evaluation of learning outcomes. These issues are addressed in turn.

Governance rules for autonomous universities are being changed

At the moment governance of Italian universities is based on the idea of the university as an autonomous body of academics, so that the governing body is dominated by professors with security of tenure, each with their own, or their own faculty's, interests at

heart. This makes formal accountability very difficult to introduce. OECD countries have chosen various models of governance to meet similar challenges, usually opting for a model organised around a governing board, an executive head supported by a team of administrative chancellors, faculty senates, academic deans and some form of student representative organisation. Best practices in this area indicate that the effectiveness of governing boards depends crucially on their composition and the level of independence, in particular relative to the institution's constituencies – staff and students (OECD, 2008; Jacobs and van der Ploeg, 2006). Balancing various arguments (Box 2.1), it appears that the governing board should feature a number of internal members with an experienced and broadly based membership and, because of their external trusteeship role, a small majority of external members (OECD, 2008). This is provided for in the new University Reform Act (Box 2.2).

There is also evidence that the separation of strategic leadership and management functions is an important determinant of the ability of governing boards to respond to new challenges and, in general, of their effectiveness (OECD, 2008). In particular when the governing board becomes involved in the micro-management of implementation issues, some other important tasks, such as policy formulation and approval, monitoring, review and appraisal functions, are underperformed. Finally an essential feature of governing boards and institutional leaders is their professional skills. Many studies highlight the need of reinforcing leaders' capabilities, in particular managerial skills which are often the smallest comparative advantages of leaders with a strong academic background (OECD, 2008). OECD countries have responded to the challenge of attracting and training qualified managers for governing boards in various ways. Examples include Australia, The Netherlands and the United Kingdom.[10] The recent Italian legislation certainly seems to have taken on board most of these ideas. It will be important that there be proper

Box 2.1. **Strengths and weaknesses of various tertiary institutions governance models**

The composition of universities' governing board is critical to the effectiveness of universities (OECD, 2008). Independent members can help to prevent local interests from hampering the achievement of the institutional goals. But a fully external board can also be an impediment to the effectiveness of a university to the extent that the specific context and needs of the institution are insufficiently understood and taken account of in decisions. In addition, the involvement of the academic communities is paramount to build consensus around policy decisions and to ensure implementation of policies. However, the traditional "collegial" governance model – where higher education institutions operate as self-governing communities of scholars – has shown some limitations in the past few years. In particular the higher levels of autonomy have translated into a pattern of "least resistance" rather than one of "moving forwards" (OECD, 2008). It is also important that members belong to sufficiently diversified backgrounds so as to represent a wide range of perspectives, skills and interests. In this respect an interesting example is given by The Netherlands where Supervisory Boards include members with professional, industry, governmental and academic perspective so as to mobilise a number of constituencies while anchoring the institution more firmly to business and the community.

Box 2.2. **2010 Legislation on universities and research**

The 2010 law on University Reform, law 240/2010, approved by parliament in December, provides for changes in three key areas of university administration: governing bodies, recruitment, funding and salaries.

Separation of didactic from financial/administrative management

The administrative board will have up to 11 members, of which 3 (or at least 2 if fewer than 11 members in total) must be external experts with financial/managerial skills and will be chaired by the Rector (elected by University employees) or one of the external members. The Senate, chaired by the Rector, will have up to 35 members; it will make proposals to the Rector and administrative board on teaching and research matters, and its approval will be needed for policy in these areas. The administrative board's approval will be needed for appointments and promotions.

Universities and public research institutes will be allowed to federate, or share certain facilities, and retain any cost savings for their budgets.

Funding

In 2010 10% of funding (increased from 7% in 2009) was allocated to universities on the basis of teaching and research performance (with weights of one third and two thirds respectively). Teaching indicators include the number of students enrolled (provided they gained 5 credits) and the ratio of the credits actually gained to the number that full-time students "should" have gained in a year. ANVUR (*Agenzia nazionale di valutazione del sistema universitario e della ricerca*), when constituted, is to decide on future criteria. In the future, the share will be increased progressively towards 30%.

Staff costs will remain capped at 90% of an institution's funding and tuition fees remain subject to the limit of 20% of total university funds.

Overall funding was cut by some 3% between 2008 and 2010 and cuts of 9% are envisaged for the period 2010-12.

Recruitment and salaries

"Researchers" will have a "tenure track" system with fixed term contracts up to a maximum total of 8 years. For tenure, candidates have to be screened by a national panel for eligibility, taking into account the candidates' scientific production only, with universities free to make their own final decision about tenure taking into account other factors as well (*e.g.* teaching). Candidates judged negatively by the national panel cannot however be tenured locally. Rules for composition of the university panels are to be decided autonomously by universities (however universities will be encouraged to include external and foreign members). "Researchers" will be able to teach, and in practice are similar to "assistant professors" in other systems.

Automatic salary increments will be abolished. Increments, every 3 years, will only be awarded if professors submit a report on their activities. This report can include both teaching and publications. As of 1 January 2011, based on a law already in force, half of the salary increment will already be allocated or withheld on the basis of scientific production over the previous two years.

separation of different responsibilities among the different bodies, that people with appropriate abilities and training are selected and, perhaps most importantly, that the selection method for external members ensures both their competence and independence.

Reforming the recruitment system

A major flaw in the current teaching staff management system has to do with recruitment procedures. The probability of being recruited increases substantially when the candidate comes from the university with the job vacancy and there is some anecdotal evidence that in some universities family connections can be seen to be significant (Perotti, 2008). In contrast, having published in the 160 top international journals, or in the 20 top Italian ones, seems to have very little impact. Interestingly, the relative importance of these factors depends on the quality of the assessment panel itself: the importance of being a local candidate decreases with the quality of the panel, while that of having published in good journals increases with the quality of the panel. Official statistics show that the large majority of appointed candidates are internal (77% for assistant professors and 91.5% for full professors; CNVSU 2009). Arguably a majority of applicants to these positions are also internal (*e.g.* because there are no automatic promotion procedures, or because external candidates may just decide not to participate into the contest if they expect to have fewer chances of succeeding), so these figures do not exactly measure the success rate of external applicants. They nevertheless show that the faculty "turn-over" is small and that internal candidates are appointed or promoted more often than external candidates.

The recruitment system has been the object of many attempted but unsuccessful reforms in recent years. Both centralised and decentralised recruiting procedures have shown their pitfalls and limitations and none has succeeded in ensuring consistent selection of the best candidates. Centralised recruiting procedures have, in principle, the virtue of weakening, if not stopping local interference and manipulation in the decision process. But university context-specific information is lost and a national jury has little incentive to engage in a serious selection process because it does not have a strong direct interest in choosing good candidates. Decentralised procedures can in principle integrate context-specific information but, as for centralised ones, they will effectively do so only if the decision makers are held accountable (*i.e.* if they somehow bear the cost of a bad choice or are rewarded in case of a good choice). Thus, a key condition for recruiting procedures to be effective is that someone has to be made accountable for them. This is perhaps the main limitation of the Law Decree No. 180/2008, which reformed the recruitment procedure (temporarily, awaiting further reform in the 2010 legislation) for already open competitions being held in 2009 and 2010. Despite a good effort to increase impartiality and the importance of meritocratic principles when selecting candidates, the transitory system does not make any provision for the accountability of the process (Box 2.3). It remains to be seen whether the system planned in the new legislation will succeed in imposing sufficient accountability at local level to overcome a historical tendency to lack impartiality.

Changing the rules for recruiting teaching staff may ensure that the best candidates get the job. But, as discussed already, it does not necessarily guarantee incentives to perform throughout the career if evaluation is not reformed at the same time. The introduction of an evaluation system, which could regularly and objectively assess the quality of teaching and research, is thus necessary. Accountability can effectively improve university performance (OECD, 2008), especially in countries where higher education is not supplied through the market but is publicly provided and heavily controlled by the state (Oliveira *et al.*, 2007). More mixed evidence is found in some national studies of selected OECD countries (in The Netherlands the overall impact was negligible while in the United Kingdom, in Chile and in Australia the influence of quality assurance mechanisms was significant, OECD, 2008). Assessment is more likely to be effective when carried out by

a powerful and legitimate board of directors, contributing to a sense of ownership of the evaluation results. The presentation of results and the presence of sanctions matter, with widely-disseminated and precise recommendations most likely to have an impact, especially if there are financial consequences attached (Dubois, 1998).

Box 2.3. **Recruitment procedures in Italian universities**

For most of the past decade university recruitment has been under procedures legislated in 1998 and modified in 2000, under which selection committees were composed of a panel of five, only one of which from the recruiting university. Legislation in 2006 provided for a change to a two-stage process, in which the second stage was for universities to choose autonomously from a list of nationally-approved candidates. This change was not in fact implemented; a new law in 2009 restored the previous system, but with fewer external members on the panel.

The limitations of this system have been: first, external members have no incentives to appropriately carry out the selection process, as they are not held accountable for their decisions; second, given the small number of tenured professors by disciplines, some Italian professors have very high chances of finding themselves in more than one commission (thus making possible exchange of favours between universities); finally, given that the commission is relatively small, there could be strong differences in the quality of its work depending on which professors the commission may get.

The new University Reform Act (Law 240/2010) envisages a two-step procedure for the recruitment of professors. Each university will advertise individual posts, which will be decided by the Department concerned and ratified by the Board; only scholars who have obtained a national scientific qualification in the relevant field ("abilitazione scientifica nazionale"), or those who occupy a comparable position in foreign universities will be entitled to apply. The "abilitazione" will be granted, yearly, by a national panel composed of five members, four of which will be drawn from lists of full professors grouped by discipline and one drawn from a list of foreign scholars and experts proposed by ANVUR. Only professors with strong publication records will be part of the list. Each panel will evaluate candidates according to criteria defined by ANVUR and made publicly available in advance. The advantage of this system is that the institution will have primary responsibility for recruitment choices. However, if other important changes are not made at the system level, *i.e.* if tertiary institutions are not held accountable for their performance, as envisaged by Law 240/2010, some opportunistic behaviour distinctive of the old system would be likely to re-occur.

Comprehensive quality assurance

A variety of quality assurance approaches is used in OECD countries. A well-established model at international level is built around four pillars: *a)* autonomous and independent *internal* quality assurance; *b) self-evaluation* (*i.e.* universities evaluate themselves against an external common standard); *c) external* assessment by peer-review group and site visit; and *d) publication* of an assessment report. In particular, the European Association responsible for Quality Assurance (ENQA) has been developing guidelines around these four components for EU countries. Italy's current evaluation framework was set up along the ENQA directives, though in practice there is scope for improvement. For instance, even though each university must have an internal evaluation unit (*Nucleo di*

valutazione) which liaises with the CNVSU (the current national agency for monitoring university teaching – *Comitato nazionale per la valutazione del sistema universitario*), evaluation practices are heterogeneous across universities and do not always affect the actual performance of universities, being treated as formal, empty, procedures rather than as tools for improvement.

At the national level, two agencies have traditionally been responsible for carrying out periodical assessment of teaching and research: the CNVSU, responsible for evaluating the academic standards of Italian universities, and the CIVR (*Comitato di indirizzo per la valutazione della ricerca*), responsible for the assessment of research output. In practice, the CNVSU was mainly in charge of accreditation, *i.e.* for establishing the minimum prerequisites to open a course or an educational programme, while it carried out limited substantive assessment of university outcomes. In 2004, CNVSU defined a model to distribute a small part of public funds to universities on the basis of the number of students, teaching outcomes and research results, though the model became fully operational only later on (see Box 2.4). In 2009, the CNVSU proposed a new set of criteria to evaluate public universities along five teaching and five research criteria. 7% (10% in 2010) of public funding to universities was to be allocated according to its evaluation (see next section). The CIVR ran its first assessment exercise in 2004, though this was intended more as an experiment rather than a consolidated exercise, and the second started in 2010. This second exercise improves on the previous one: it performs evaluation at the individual teacher level; it enlarges assessment criteria and tools; and it is more explicit in its intentions, in particular with respect to the financial implications of the results of the evaluation.

In 2006 it was decided to set up a new agency, ANVUR (*Agenzia nazionale di valutazione del sistema universitario e della ricerca*), which will take over the activities of CNVSU and CIVR. The creation of ANVUR is still in progress, with its main board being appointed[11] in early 2011. In addition to its assessment functions, the ANVUR has a responsibility to propose the creation of new institutions. In setting up the agency it will thus be very important to benchmark it on best practice in this field (OECD, 2008), in particular by:

- developing a quality assurance framework that is consistent with the goals of the tertiary education system as a whole, providing both accountability and guidance for improvement;
- clearly announcing the goals and the implications of the quality assurance system;
- designing external evaluation procedures consistent with internal quality assurance mechanisms;
- building capacity and securing legitimacy of the quality assurance process, in particular by making stakeholders visible in the evaluation procedures;
- increasing focus on student outcomes;
- strengthening the dissemination of evaluation results;
- improving the information base so as to enhance the international comparability of the quality assurance framework.

The legal value of the degree

It has been argued that the "legal value of a degree" (*valore legale del titolo di studio*) should be abolished. This is better understood as a criticism of the use of possession of a

degree in the labour market. By law every degree in Italy has equal legal value. In particular, in the national competitions which are compulsory for professional employment in the public sector, two degrees delivered by two different universities are considered equivalent, independently of the underlying quality of the degree. *Ceteris paribus*, the higher is the final grade achieved, the higher the candidate will be ranked, even if (s)he comes from a lower quality university, known for inflating grades (Perotti, 2008). Even though in public competitions candidates' abilities get tested during an examination, the existence of the legal value of degree may distort competition between universities, providing a perverse incentive to lax examination standards unless funding is based on quality-adjusted output (Bagues *et al.*, 2008). By the same token, students' choices are distorted.. In principle, the private sector is not bound to the legal value of the degree and there is even anecdotal evidence that some large firms rank candidates to jobs on the basis of the perceived quality of degrees held. However, other factors, including the requirement of a degree to enter some professional services such as law and accounting and the fact about half of the tertiary graduates end up working in the public sector, imply that the legal value of a degree may have an impact on the job market.

The legal value of the degree is also deterrent to international mobility, of both students and workers, and in both directions. Foreign workers in the Italian public sector need to have their qualification endorsed by an Italian university in order to satisfy the *valore legale* conditions. Italy is the only country in the world with such an institutional arrangement, whereas European directives have introduced a harmonised system of accreditation (*i.e.* cross-recognition of qualifications and competences) which makes the Italian interpretation of the legal value of the degree redundant. While it makes sense for possession of a degree (recognised in the European system) to be a normal condition of employment in many cases, promotion and salary decisions that rely automatically on it rather than on performance, or recruitment which insists on it when a corresponding diploma is already held, should be abandoned.

Rethinking the balance between private and public funding to higher education

Italian public universities are mainly financed by the central government, which in 2007 provided 64% of the university budget on average. The allocation of state funding depends both on historical trends and other elements (Box 2.4). In 2008, it was announced that the core fund of universities (which, with tuition fees, covers 86% of total funding) would be cut by 14% for the three years 2009-11, with further cuts to come; some of these cuts were offset with funds granted to cover rewards for performance. Many universities were already in financial difficulty, especially those where student numbers have expanded (since funding is based more on historical spending than current needs), and across-the-board cuts penalise spendthrift universities but also those which have been relatively efficient in resource management. Since public resources are under strong pressure in Italy, it would be helpful to make greater use of private finance. The share of private expenditure in total tertiary education expenditure (25%) is lower in Italy than the OECD average (33%).

In addition to relieving the pressure on public resources, there are a number of reasons for increasing private financial funding:

- Private returns to education exceed social returns (Barr, 2004; OECD, 2008).

Box 2.4. **State funding of universities**

Since 2004, public funding has been distributed to universities according to a *baseline share* (based on historical spending) and a *balancing share* ("quota di riequilibrio"). Up to 2009 the balancing share allocated money as a function of standard costs per student (one third of the share), credits and degrees gained by students (one third) and the quality of research activities (one third). However, the balancing share was not fixed by law and the cost of personnel has increased substantially in the last ten years. Hence, a very small fraction of the core funding has actually been allocated to adjust historical spending trends. For the first time in 2009, the balancing share was set equal to 7% of core funding, increased to 10% in 2010 (and the intention is to increase this fraction to 30% in the future). In addition, new criteria were included in the balancing share, which are supposed to take into account progress in the underlying performance structural indicators.* While the decision to allocate a specific, predictable part of core funding to reward performance and efficiency is good, it should be noticed that some of the current input and output indicators are not yet *a)* fully supported by a thorough information dataset, which is still very much in progress; and *b)* totally understood and agreed by universities. Indeed, the agency – ANVUR – that is to define them is not yet staffed, as discussed above. These shortcomings should be considered in re-designing the current system. Another element of best-practice funding strategies would be to move to multi-year performance-based funding, which may encourage universities to plan and develop their strategies over the medium term.

* Two thirds of the balancing share are to be allocated to universities with the most progress in research (annual change in the percentage of academic staff and researchers participating in Research Programmes of National Interest, PRIN, which received a positive assessment; annual change in the percentage of funding obtained by European competition within the European Union Cordis projects) while the remaining one third goes to institutions with the best results in didactics (change in the ratio of in-charge academic staff in the academic year 2008-09; change in the ratio of enrolled students in the second year who obtained at least two thirds of statutory credits; change in the ratio of actual credits of all students to statutory credits; change in the share of all courses for which student evaluation is required; change of the percentage of students graduating in 2004 who were employed three years after graduation).

- Participation in and completion of tertiary education are correlated with parental income and social status (Causa and Johansson, 2009). This and the high private returns, together with the fact that tertiary education is financed through general taxation, imply that the current public financing of universities is regressive.
- Greater reliance on private financing tuition can increase cost-effectiveness when some conditions are fulfilled, as discussed below.
- Greater participation by business may strengthen the links between university and the economy.

The move towards greater private financing is not straightforward and requires public debate at various levels (OECD, 2008). Substantial reform would be needed to enable universities to make significantly greater use of direct collaboration with and funding by the private business sector. A simpler and more immediate mechanism, though possibly politically difficult to implement, is to increase tuition fees.

Increase tuition fees

Apart from their direct contribution to increase resources, tuition fees can enhance the quality and the equity of higher education as part of a performance-oriented incentive system. They provide information on the cost of education, providing strong incentives for

students to choose universities on the basis of a quality-cost comparison and, once enrolled, to complete their studies successfully and on time (Johnstone, 2004). Set at the right level, they also give universities an incentive to improve performance so as to attract students (Epple *et al.*, 2006).

The current level of tuition fees is around 20% lower than the OECD average, covering only between 7% to 15% of the actual costs. The current mechanism for limiting fees is that revenue from tuition fees should not exceed 20% of core funding (this constraint is binding in nearly all public universities). This makes it impossible for a university to offset cuts in central government funding even if it knows students are willing to pay, it may even require them to cut fees instead, and also prevents them from increasing fees to finance improved course quality.

Increasing tuition fees is, however, challenging:

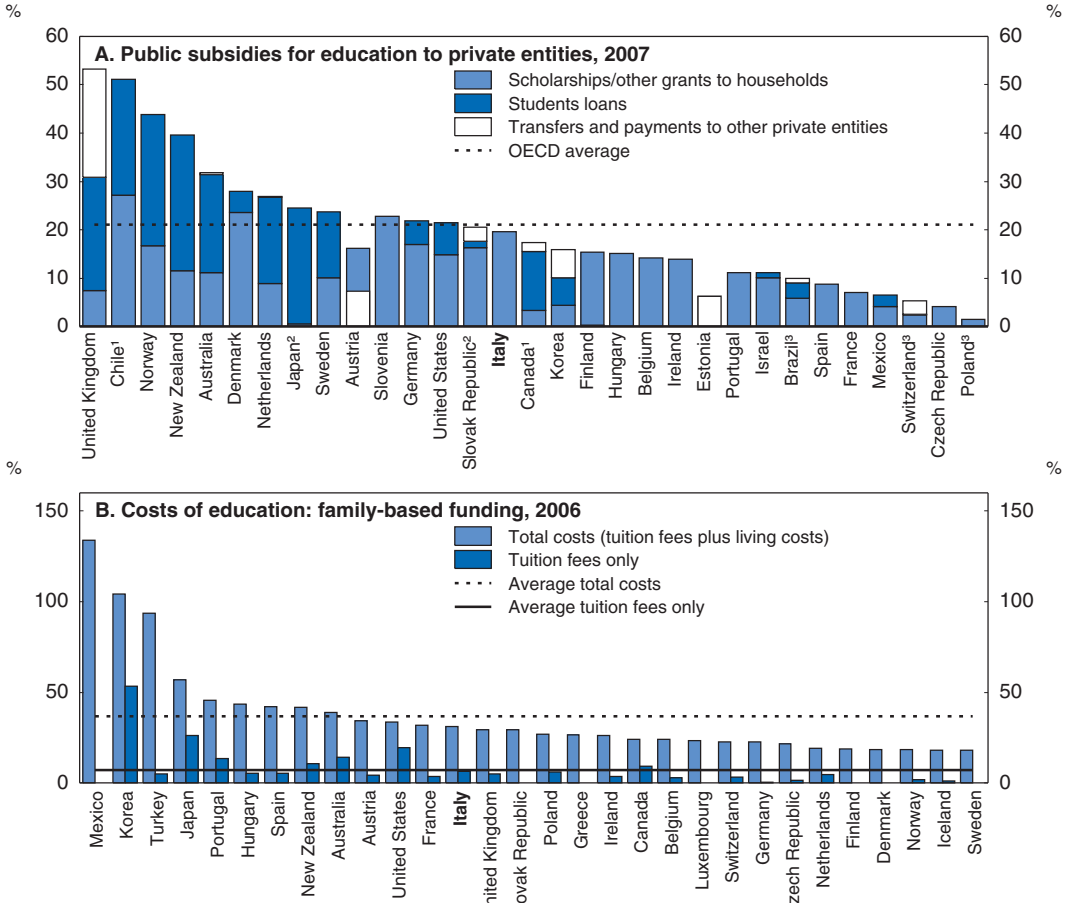
- A legitimate concern is that higher tuition fees may discourage access to university. However, international evidence suggests the opposite (Usher, 2005; OECD, 2008). Higher tuition fees also have only a moderate impact on the returns to tertiary education. Nevertheless, prices do affect students from more disadvantaged backgrounds while they do not seem to affect affluent students (OECD, 2008). Hence, higher tuition fees should be coupled with financial support for disadvantaged students (Oliveira *et al.*, 2007).
- High tuition fees may discourage international mobility and in particular exacerbate the brain drain of Italians while at the same time discouraging foreign students to come to Italy. While there are few studies estimating the impact of tuition fees on net brain drain, most of the Italian brain drain occurs towards countries with tuition fees higher than Italian ones and in fact among the highest of the whole OECD area (the United States and the United Kingdom). That seems to show that students going abroad are willing to pay a price for a good quality education and conversely that foreign students do not come to Italy just because education is cheap. Therefore increasing tuition fees on the premise that the quality therewith delivered will increase, may in fact reduce net brain drain, rather than increasing it.
- High tuition fees are questioned when social externalities to tertiary education are large and/or private returns are low. However existing evidence (not based on Italy) points out that social returns to education are generally lower than private returns (Barr, 2004) and, while private returns to tertiary education are relatively small in Italy, a study finds that the impact of tuition fees on private returns is limited (Boarini and Strauss, 2007).
- High tuition fees are often unpopular on the ground that education should be a right to everybody, irrespective of income conditions and possibilities. In reality, however, since social mobility is very low in Italy (Causa and Johansson, 2009), *i.e.* students whose parents have a tertiary education are more likely to hold a tertiary degree, and tuition fees are financed through general taxation, the current low level of tuition fees is in fact regressive (*i.e.* high-income students' studies are financed by low-income families). Therefore increasing tuition fees would in fact also increase the equity of the financing system.
- Finally, there is an economic and political timing issue. Raising tuition fees at the moment would certainly be difficult, considering that the household sector has been hit by the crisis but also that the University Reform has met a lot of reluctance among students. Because of this, and because the Italian debate on tuition fees is still in its

infancy, Italy should consider raising tuition fees (and removing the cap of 20%) only gradually. Preparatory steps to these measures may include advocacy of the benefits brought by higher tuition fees, as well as dialogue with the relevant stakeholders and with the general public.

Strengthening financial support to students

Student loans can improve the accessibility of tertiary education for all students and grants may encourage participation of the most disadvantaged ones (Usher, 2005; OECD, 2008). Financial support to tertiary education students is low in Italy (Figure 2.11), and is provided in the form of family-based means-tested funding. Though this limits budgetary costs, it is less effective in fostering tertiary education investment than universal funding (Oliveira *et al.*, 2007). Thus Italy needs a system to reduce liquidity constraints on students from low-income households, but also to encourage swift completion of studies by all

Figure 2.11. **Financial support to tertiary students is low in Italy**



Note: In the second panel, costs are expressed as a percentage of resources available to students to finance tertiary education studies. The latter include public financial support (all forms) and an estimation of household support and part-time earnings of tertiary students.

1. 2006 for Canada and 2008 for Chile.
2. Some levels of education are included with others. For more details, see Table B1.1a.
3. Public institutions only.

Source: OECD, *Education at a glance: OECD indicators*, 2010 and OECD, *Going for Growth*, 2008.

StatLink http://dx.doi.org/10.1787/888932385902

students. The 2010 University Reform Law envisages the possibility that loans may be converted in grants for students who complete their studies on time. The extent of the loan system has yet to be determined, however.

Indeed, a good solution for reducing completion times is to introduce a universal income-contingent-repayment loan system. Income-contingent-repayment loans address the risk faced by individuals investing in tertiary education and improve the progressiveness of the overall system (Barr, 2004; OECD, 2008). In this type of arrangement, graduates repay their loan if they find a job and if their earnings exceed a given threshold. The Australian Higher Education Contribution Scheme provides an interesting example in this respect (OECD, 2008). Income-contingent-repayment loans thus provide students with strong incentives to complete tertiary education and to enter the labour market.[12] Loans are sometimes questioned, as associated indebtedness may be detrimental for future graduates' prospects. However, there is little evidence supporting this as saving behaviour, wealth accumulation, home ownership and purchase of durables do not seem to be influenced by student loans (OECD, 2008). Another objection is that the fiscal costs of loans could be substantial in a context of very internationally mobile students. However, studies based on the New Zealand experience with income-contingent loans suggest that students' indebtedness does not lead them to leave the country within a few years after graduation (Kemp *et al.*, 2006).

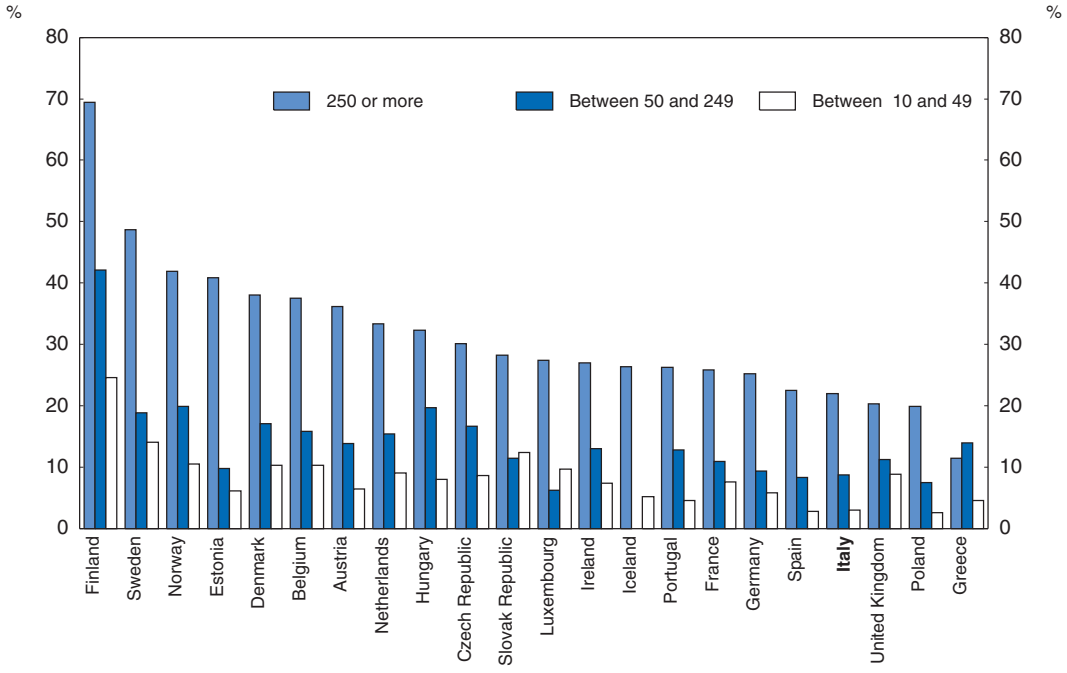
However, income-contingent loans impose quite large up-front budgetary costs, especially in difficult economic times when students may not be able to start repaying their loans shortly after their graduation or when the conditions for entering the labour market are structurally more difficult. Italy is indeed characterised by the latter situation and the recent deregulation of the labour market, which resulted in longer spans of temporary contracts and irregular presence in the labour market, may add to this difficulty. Another potential challenge for introducing income-contingent loans in Italy is tax evasion, which, while decreasing over time, remains widespread. These considerations weaken the case for introducing income-contingent loans in the short-term, however they do not invalidate its rationale in a longer term perspective, where inefficiencies of the labour market and of tax collection can be addressed.

Income-contingent-repayment loans may not fully address the needs of students from disadvantaged backgrounds, who are the most risk-adverse and the least informed on the potential benefits of tertiary education. Hence, means-tested grants may also be warranted. While grant schemes should be mainly based on need, some incentive elements could be included. For instance, grants should be awarded for only a limited number of years and could be made conditional on students' progress. Finally, financial support should be available on similar terms for students studying at both public and private institutions, to promote freedom of choice and effective competition between institutions.

Spreading innovation into the economy

While Italian research is of relatively good quality, the channels through which innovations diffuse through the economy are weak (Figure 2.12). Technology transfer in Italy most often consists of joint research projects between universities and industry, consulting services, or sale of patents/royalties to firms. Such interaction is usually initiated by individual professors, less often by firms or universities, *i.e.* tends to be more

Figure 2.12. **Low cooperation between firms and universities**
Share of innovating firms with cooperation with a university, by number of employees



Source: Eurostat, *Community Innovation Survey Database.*

StatLink http://dx.doi.org/10.1787/888932385921

supply-led than demand-led. The objective for professors is usually to generate funding for their own research projects, rather than develop sustained cooperation with the business sector (Muscio, 2008). The spill-over effects of this kind of collaboration are likely to be small.

Several factors appear to have impeded collaboration between universities and business.

- The structure of intellectual property rights (IPR): Italy introduced professor privilege (*i.e.* the academic exemption from the general rule that the employer, not the employee, is the owner of the property rights) in 2002, while many European countries had abolished it. This appears to have discouraged patenting activity because high costs, risk-aversion, a weak innovation culture and lack of institutional capacity to support inventions seem to have offset any increased incentive to individual researchers. Hence, Italy has abolished professor privilege in 2009. But the fact that each tertiary institution has its own, uncoordinated, IPR regulations hampers collaboration on innovation among different universities. Researchers face weak incentives to patent inventions or to spin off innovative ventures.
- Low mobility also appears to discourage collaboration with industry: for instance, until the 2010 legislation changed the rules, it was very difficult for tenured faculty to move in and out of university, notably to work in industry, without resigning.
- Also hampering collaboration is the low entrepreneurial propensity of university boards and leaders. Reciprocally, relatively few company directors and senior managers are tertiary graduates, so they are not naturally inclined to turn to universities for

collaboration (OECD 2008; Banca d'Italia, 2009). As a result, relationships between university and industry are essentially based on personal connections, and on sporadic contacts rather than systematic interactions (Muscio, 2008).

- The generalist nature of most Italian universities, with little specialised research, may reduce the ability of the tertiary education system to respond to industry needs because scientists are highly dispersed across institutions, hampering knowledge complementarities. Similarly, vocational and technical tertiary institutions are underdeveloped in Italy, while in other OECD countries their presence seems to be positively correlated with university-industry collaborations.
- The research priorities of the higher education system and those of the business sector are different. Most academic research is either fundamental or applied research centred around the discovery stage of the innovation process, which makes sense to the extent that it is publicly-funded. Industrial R&D is essentially concerned with the development stage and also more short-term oriented.
- Financing to support industry-university collaboration and innovation is underdeveloped. Equity markets are relatively underused in Italy and venture capital has grown very slowly (OECD; 2009, Banca d'Italia Italy, 2009).

Institutional initiatives can leverage public research results

In recent years universities have begun to take measures to promote the diffusion of university knowledge to the economy and to strengthen the interactions between public researchers and private firms. One of the most useful initiatives has been the creation of Technology Transfer Offices (TTO), frequently set up on the initiative of individual researchers or groups of researchers imitating "Anglo-Saxon" institutions. Italian TTO are still a relatively recent institution by international comparisons but their growth (at least in terms of number of staff and patenting activities) is encouraging (Netval, 2010, Table 2.3). TTO appear to improve universities' ability to attract private resources to finance research and collaborate with large firms (Mori, 2009). However, TTO are not yet the main channel through which collaboration between universities and firms develops (Muscio, 2008).

TTO emerged and developed essentially as a bottom-up initiative, to which education authorities subsequently provided a basic common framework. While this allows TTO to adapt to local industry's conditions and needs, it would be useful for the authorities to circulate best-practice guidelines, to reduce the cost of setting them up. Public "seed" funding might be useful, though successful TTO could expect to be more than self–financing in the medium term, and indeed must be encouraged to aim at this. But, especially in a period of budgetary stringency, the authorities could give this support selectively, based on an assessment of the ability of the university to make good use of the assistance.

Judging from preliminary evidence, the creation of scientific and technological parks and high-level research institutions, such as the IIT (Italian Institute of Technology), has had some success. The former have been particularly effective in supporting a growing number of researchers and innovative companies even in hard economic times,[13] though they were quite costly to put in place. The IIT's performance in publications and patents has been excellent so far, as has the institute's capacity to attract international and Italian researchers from abroad. However, not all IIT's laboratories have developed good links with

Table 2.3. **Italian Technology Transfer Office activity is relatively low**

	Selected European countries				European average		
	Italy 2008	Spain 2008	Denmark 2008	UK 2008	ProTon 2008	ASTP 2007	CEMI 2007
TTO average age (in years)	4.0	14.9	11.0	14.6	12.4	9.4	n.a.
TTO total number of employees	180	811	54	n.a.	1 335	1 197	2 203
TTO average number of employees	3.8	12.9	4.2	n.a.	9.7	8.9	10.8
Total number of inventions	401	973	296	4	5.8	5.2	n.a.
Average number of inventions	9.3	15.4	22.8	22.6	19.9	38.7	n.a.
Total number of new patents	99.0	243	n.a.	590	710	790	n.a.
Average number of new patents	2.2	4.1	n.a.	3.7	3.4	6.9	n.a.
Total patents since TTO start	1 949	2 634	80	13 978	1 899	n.a	n.a.
Average patents since TTO start	42.4	45.4	6.2	87.4	67.1	n.a	n.a.
Total licensing receipts (M€)	1.3	2.4	10.2	54.3	70.4	89.2	n.a.
Average licensing receipts (K€)	34.4	40.8	783.8	339.1	247	929	n.a.
Total number of new spin-offs	110	102	21	256	480	377	640
Average number of new spin-offs	1.6	1.8	1.6	1.6	1.6	2.8	4.1

ProTon: ProTon Europe, the European Knowledge Transfer Association, Brussels.
ASTP: Association of European Science and Technology Transfer Professionals, The Hague.
CEMI: Chair of Economics and Management of Innovation, Lausanne.
Source: Netval, 2010.

the local economy or cooperated with universities (Sylos Labini and Zapperi, 2010), suggesting that more effort should be paid to develop regional synergies.

Companies formed from academic spin-offs can also disseminate the impact of public research. They usually consist of enterprises working in the high-tech sector. Although concentrated in Northern Italy, they have spread all over the country in the last few years and are relatively well distributed across universities. However, while many spin-offs grow sluggishly at best, very few have closed: the main interest of some of the academics involved is to have a vehicle for private consultancy rather than to develop innovation. Slow growth may also indicate insufficient institutional support from universities, it is also likely that many academic projects fail in the market place. Some universities are now becoming more selective in choosing the projects embedded in spin-offs, to increase their chances in the market. "Netval" and "PNI Cube" are largely voluntary associations of researchers or TTO which aim to diffuse such best-practice information, and also to provide specific professional training on leveraging academic research.

Existing policies to sustain interaction between academia and industry, and to promote innovation

Research funding is the main tool that the Italian authorities use to foster linkages between public and private research. The main funding scheme is FAR (Fondo Agevolazione Ricerca), which in 2006 accounted for 46% of overall public resources devoted to research, providing an average 2.6 million euros to some 200 projects. Most of these projects led to an industrial application in either electronics or mechanical engineering (ICT applications were few), but there has been no impact assessment study on the overall effects of FAR. Only 30% of the projects led to the deposit of a new patent, suggesting a limited success of this measure. Having replaced various small but complicated funding mechanisms, FAR marks clear progress. Nonetheless, according to firms and universities, its tender procedures are cumbersome and above all rather sporadic (for instance the last tender was published in 2005 for the years 2006-09).

Tax credit measures are also used to strengthen links between public research and industry. In 2007-09, a tax credit of 40% was available for R&D involving contracts with universities or public research entities, compared with a 15% threshold in purely industrial R&D. In addition a Fund for Competitiveness and Development was created to support industrial innovation projects in specific areas. This fund is part of the PNR (National Research Plan), which has among its priorities that of strengthening the links between public and private research.

Some EU Structural Funds are also used to finance research and innovation and encourage university-industry links (MISE, 2009). In the Italian Community Strategic Framework, EUR 12.8 billion (corresponding to 18% of the Community financial resources) have been earmarked for R&D and innovation, with the aim of supporting the Europe 2020 strategy. All Italian regions have introduced the aforementioned policy objectives in their Operational Programmes, linking them to their specific needs. In addition, five Southern Regions (Sicilia, Campania, Calabria, Puglia and Basilicata) belonging to the Convergence Objective within the EU Cohesion policy, have been assigned 76% of the total amount of resources. The Ministry of Economic Development is also carrying out a capacity building project to empower Italian Regions with strategic design capabilities and project selection skills. This project also aims at mainstreaming evaluation practices and the use of result-oriented funding.

These measures notwithstanding, most innovation funding schemes are difficult to access owing to cumbersome procedures and slow bureaucracy, which are nevertheless necessary to avoid misuse. R&D tax credits are more simple and automatic tools, but highly vulnerable to misuse through simple reclassification of expenditure as R&D.

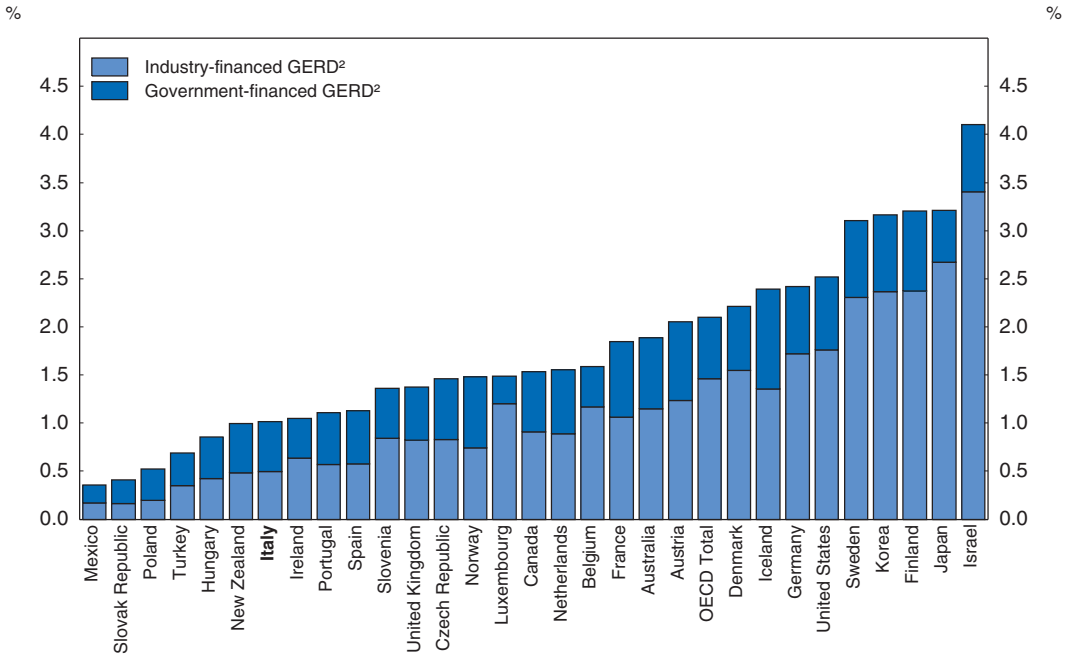
Despite individually promising initiatives, policies continue to suffer from lack of continuity, clarity and predictability. The number of instruments should be streamlined, in line with a clear and systematic approach to innovation. At the same time, key measures should be objectively assessed for cost–effectiveness and any new measures should have provision for such assessment built into their design.

Improving the policy approach to innovation

Given the considerable amount of public resources already spent in financing public R&D activity, compared with the weakness of private R&D (Figure 2.13), policy must increasingly concentrate on improving collaboration between universities and public research centres, and the private sector. In addition to specific measures directed to this end (see Box 2.4), this is more likely to be successful if backed by broader measures to facilitate innovation. Such measures are numerous, as discussed in previous *Economic Surveys* and OECD publications such as *Going for Growth* and the *Reviews of Regulatory Reform*. They include: less stringent regulation of product markets; simplification of regulation and red tape; more efficient public administration; leaner multi-level public governance; more efficient administrative, civil and penal justice; more flexible labour markets; a banking sector which is more supportive of innovation; and measures promoting a greater internationalisation of the economy.

Figure 2.13. **Research and development financing in OECD countries, 2007**[1]

As a percentage of GDP



1. Or latest year available.
2. Gross Domestic Expenditure on R&D.

Source: OECD, *Main Science and Technology Indicators (MSTI) Database.*

StatLink http://dx.doi.org/10.1787/888932385940

Box 2.5. **Summary of the main policy recommendations on tertiary education**

To improve cost-effectiveness of higher education:

- Rationalise the supply of courses, by eliminating duplicated programmes or low-enrolment programmes, increasing use of shared facilities and expanding student mobility between institutions.
- Reduce drop-out rates by selecting students at entry to universities, conditioning students' aid on performance, using outcome indicators to allocate funding to universities, developing vocational tertiary instruction, imposing tuition fees.

To increase performance of teaching staff and stop brain-drain:

- Ensure that in the new recruitment system, established by Law 240/2010, universities put in place impartial, merit-based procedures and that recruitment panels are held accountable for their decisions.
- Further reform wage progression and career advancement of teaching staff by devoting appropriate resources to the one-off merit bonus.

To enhance the performance of universities:

- To reform university governance *i)* set up independent and credible governing boards representing various universities' stakeholders; *ii)* separate strategic leadership from management functions; and *iii)* appoint university leaders with strong skills and incentives to achieve their mission. With such governance, give universities autonomy

Box 2.5. **Summary of the main policy recommendations on tertiary education** *(cont.)*

on the relative emphasis given to teaching and research, staff recruitment and performance incentives.

- ANVUR's quality assurance procedures should: *i)* announce the goals and methods for evaluation and accountability clearly; *ii)* build capacity and securing legitimacy of quality assurance processes; *iii)* increase focus on student outcomes; *iv)* disseminate quality assurance reports widely.
- Design public funding to give universities incentives to improve performance and to provide relevant education programmes; in particular: *i)* include outcome and value-added indicators; *ii)* weight input indicators (and/or student support) by the level of private and social returns; *iii)* ensure that the indicators used are based on sound information, well-understood and supported by universities; *iv)* promote programmes and degrees of social and economic relevance for the country.

To release pressure on public resources, increase the quality of education and promote faster completion of studies:

- Consider gradually increasing tuition fees, in particular by removing the current link with base funding, and by differentiating fees across tertiary programmes and cycles. Foster the debate on tuition fees by highlighting their advantages and disadvantages. In parallel with increased fees, introduce a system of income-contingent-repayment loans together with means-tested grants for disadvantaged students.

To strengthen research collaboration between universities and business:

- Design the IPR structure of patents and trademarks in line with the incentives of the various stakeholders.
- Promote both domestic and international mobility across the research and the innovation system.
- Improve research career prospects, in particular by linking salary and career progression to public sector researchers' productivity, including their contribution to innovation and fruitful collaboration with the private sector.

Notes

1. Preliminary results from the OECD-led feasibility study on Assessment of Higher Education Learning Outcomes (AHELO) will become available only at the end of 2012.
2. More recently, the number of tertiary graduates has been falling. It is unclear whether this is only due to a measurement issue.
3. According to another ranking (webometrics.info) Bologna University ranks 86th in the global ranking. This ranking builds on three criteria: research output, size and visibility of the university. This ranking has the advantage of covering a very large number of universities across the world, though the underlying criteria are less sound than those of Shanghai and THES.
4. These data refer to the share of the 25 to 29 year olds with a tertiary degree who are not in education and are unemployed (see OECD, 2008, Table C4.3). See also Boarini and Strauss (2007), which show that the employability premia for tertiary graduates are among the lowest in the OECD area. ISTAT (2008) shows that the employability premia become positive only after 30 years of age.
5. There are also some international studies in support of massive over-education and over-skilling in the Italian labour market (McGuinness and Sloane, 2010; Di Pietro and Urwin, 2006). These studies also found that labour market mismatch is more persistent in Italy than in other European countries but that the impact of mismatch on earnings is lower in Italy. The latter result is

interpreted as a sign that employers have upgraded formal requirements of jobs without changing pay scales accordingly.

6. Procedures to obtain a visa to study in Italy are cumbersome and since 2003 non-EU students have to provide financial guarantees and a formal certification that they speak Italian.

7. The main factors hampering the return to Italy are similar to those explaining emigration in the first place and comprise in addition broader social integration in the host country.

8. Human resources include sciences and engineering (S&E) and social sciences and humanities (SSH) graduates per 1 000 population aged 20-29 (first stage of TE); S&E and SSH doctorate graduates per 1 000 population aged 25-34 (second stage of TE); population with TE per 100 population aged 25-64; participation in life-long learning per 100 population aged 25-64 and youth educational attainment level.

9. Yearly updates are set in specific ministerial decrees, in accordance to negotiation results achieved in other wage sectors.

10. In Australia a set of National Governance Protocols was introduced to set the appropriate skill mix, including strong financial expertise, in governing boards, and to ensure appropriate professional development of leaders. In The Netherlands participation on the Supervisory Board is seen as an effective training for later appointment to the Executive Board. In the United Kingdom a Leadership Foundation was created in 2004 to improve management and leadership skills.

11. Selection is by a committee of experts including the head of the OECD Centre for Education Research and Innovation.

12. It is true that there might be some disincentive to enter the labour market for a small group of people whose expected earnings are just above the threshold for repaying loans and who have little prospect of improvement over their lifetime.

13. A survey of Italian S&T parks was carried out recently (APSTI, 2010). Preliminary data covering the 2004-08 period show that the number of high tech firms hosted by parks increased from 364 to 548 in the period, the number of research centres from 123 to 159. The total number of employees increased from 10 117 to 15 396, and the number of R&D staff from 2 381 to 4 448. While only few of the S&T parks are originated by universities, the majority have regular contact with neighbouring universities.

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Chapter 3

Environmental policy: getting prices and governance right

In many areas environmental indicators are improving, although there have been frequent changes in some policy instruments, especially in energy related areas, where central government makes and enforces policy. Greater use of cost-benefit analyses of policies, regulations and investments, could improve the extent to which least-cost solutions are chosen. The decentralisation process in Italy has assigned responsibility for the implementation and enforcement of most environmental policy to sub-national governments and, while appropriate in many ways, this may be resulting in some excess costs and slower diffusion of best practices. Transport and energy policies contain a number of potential inefficiencies, particularly with regard to full implementation of the polluter-pays principle, since policy does not always succeed in making all polluters pay the same marginal cost for similar pollution. Policy with respect to household and packaging waste is advancing and innovative in some areas, but also overshadowed by recurring crises in the South which, while exacerbated by the involvement of organised crime, have also been the result of poor planning and mismanagement. In both waste management and water supply, the cost-efficiency of economic and environmental management would be improved by a programme of privatisation, provided independent national regulators are established to provide the appropriate framework.

The framework: integrating economic and environmental policy

Much economic activity has some adverse environmental impact, successful environmental policy needs to balance the benefits of environmental policy against the costs. In abstract terms, this is a relatively simple idea and Italy's environmental policy in theory incorporates the key principles, such as the polluter pays principle and full cost recovery, as well as tools, such as Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA), to bring this about. Many economic activities can be re-oriented, through the internalisation of environmental costs, to significantly reduce their negative environmental impacts.

Often, policy instruments such as taxes and charges, or tradable permits, set to reflect the external costs of certain activities, are an optimal solution to the problem of environmental externalities, allowing market forces to reconcile environment and economy. In other cases, a more direct regulatory approach is needed. In either case, policy needs to be based on a coherent assessment of the link between the activity (or government policy) and environmental damage, along with an assessment of the cost to society of that damage. This information allows a tax (or quantity) to be set, or provides the basis for EIA (the term used when looking at specific public investment projects) and SEA (for assessing overall policies). General tools which complement or support EIA and SEA when assessing the environmental impact of government actions are cost-benefit analysis and Regulatory Impact Assessment (RIA), whose role is to evaluate the economic impact of regulatory policies, including relevant environmental policies.

In the areas covered by these different assessments Italy falls short of what is desirable. This does not mean that environmental outcomes are particularly poor: progress is in fact being made in many areas, as in other countries. But more could be done with the same overall resource effort, and existing objectives could be achieved at lower cost either to the private or public sectors, or both. Some specific examples of policies that appear costly as a result of insufficient analysis are discussed in the following sections looking at energy, transport, waste and water.

As with Regulatory Impact Assessment (discussed in the recent OECD *Regulatory Reform Review* of Italy, and in the previous *Economic Survey*) the use of SEA and EIA seems to be hampered by three factors. First, there is insufficient use of expertise in spending ministries and in the environment ministry. Secondly, the legislative process often does not give sufficient time for the required analysis to be carried out, particularly for SEA. This is partly because much legislation first appears as a government decree in the form of enabling legislation, which may not trigger the need for an assessment; in the second stage the legislation is completed but usually within a time frame prescribed by the decree which does not allow sufficient time for an assessment. As a result, assessments are in some cases rather superficial, and may come too late in the process to take a serious look at possible alternative ways of achieving the same objectives – such a comparison should be a key component of both SEA and RIA. Thirdly, while these first two difficulties could be

overcome, the general problem of insufficient emphasis on outcomes and performance in the public administration contributes to making solutions more difficult than they need to be. Moreover, a lack of transparency can make it difficult for outsiders to challenge the results of what assessments have been made.

"Getting the prices right"

The slogan of "getting the prices right" is the key to using the market to help correct environmental externalities. It is important in two different contexts. First, although Italy does use a number of environmental taxes and also has a relatively innovative economic instrument in the form of the collective, self-financing, commercial packaging recycling consortia, it could certainly make much more use of environmental taxes. This applies in contexts such as fertiliser and pesticide taxation (though these should be differentiated by location and impact) but also to exemptions from fuel tax, such as in agriculture, aviation and fishing. To be effective, these taxes do not need to raise much revenue, and mostly they do not except for fuel taxes and the waste tax (and it can be argued that neither of these, but especially the latter, is solely an environmental tax) but their revenue could be helpful in the current fiscal situation in Italy.

The second sense in which it is important to "get the prices right" is in cost-benefit analysis (CBA), which should often be a component of the SEA and EIA exercises mentioned above. These ideally provide a monetary evaluation of net benefits, but in any case can provide the basis for a dispassionate consideration of the full implications of policy actions or infrastructure projects in order to make high quality and consistent decisions. It is difficult to get a clear picture of how much formal CBA is used in environmental policy. There is a unit within the Ministry of Environment responsible for CBA but it seems to be underused. Such a unit should be responsible for carrying out analyses of environmental policies and for developing and establishing methodologies and shadow prices needed for this analysis. It should also have a role in verifying CBA carried out by other ministries where it concerns environmental issues. The Evaluation Unit in the Ministry of Industry and Economic Development is responsible for this kind of analysis there, but the Ministry of Environment should both have an input into that analysis and be capable of vetting it.

Decentralisation of environmental policy

The implementation of much environmental policy is delegated to sub-national government – water, waste and many local air pollution issues are handled at this level. But they are not given full prerogative in developing environmental legislation, which is generally developed at the national level. For many purposes it is important to have rules set at the national level, particularly where the issue is not a purely local one but may have regional or even international spill-overs. This is the case for climate change policy, for example, which is naturally handled at the national level; even so, it seems that some regions have (or perhaps talk as if they have) their own energy supply objectives, which makes little sense in the context of an energy market that is increasingly unified at the European level.

It also makes sense to prevent regions from developing entirely uncoordinated policies when doing so could result in excessive costs for businesses operating across the country. In practice, this does not seem to occur in environmental policy. Sometimes this may appear to unnecessarily restrict regions' room to act. For example, Puglia (Apulia) is home

to one of the last major industrial polluters in Italy where surface water quality is a major local issue. A regional environmental regulation to force the company to take some action in this area was ruled inadmissible by the central government. It is not obvious who should legally have the last say in this context. Economically and socially, Puglia would suffer most of the direct consequences (such as lost employment if the company contracted or moved its operations abroad, which is the key concern), but the company also pays taxes to central government. In the event, the region rewrote the regulation as a measure under health policy, in which regions do have the relevant legislative freedom.

Other evidence suggests that, while in the end the arrangements for decentralisation may be effective, at the very least the transition is untidy. The constitutional court has several times had to rule on disputes as to who is responsible for what. In the past, with four levels of government (central, regional, province and municipality) potentially involved, there have been problems of overlapping responsibility (and therefore often an absence of responsibility) in some areas. The situation has been improving, but ambiguities remain and implementation and enforcement of environmental policies remain weak (Capozza and Garrone, 2007).

One area where some changes in the decentralisation arrangements might be useful relates to the national environmental monitoring agency, ISPRA. This is the technical and scientific support agency for the central Ministry of Environment, and is also responsible for gathering nationwide environmental data. Each regional government also has a technical and scientific support agency, ARPA, responsible for the advice on which regions base their policy. The ARPA have informal cooperation arrangements among themselves, and for some years there was a centrally sponsored "twinning" scheme to help the weaker regions develop their technical capacities. But with the disparity in population and wealth across regions, the larger richer ones will clearly have better technical capabilities than others, who will nevertheless be forced to duplicate some of the work. Depending on the balance between strict technical work carried out in the ARPA and their role in regional policy making, there may be an efficiency case for linking the scientific side of their work in a formal national organisation, which logically would be ISPRA. This would institutionalise existing networking efforts with the aim of and strengthening coordination and harmonisation of work.

Perhaps less important than duplication of effort, but significant nonetheless, is data collection. ISPRA data is in fact supplied by the ARPA, who collect it as they wish, in waste collection for example by in turn asking municipal administrations for the information. Data may thus be of different quality or completeness across the country, and the national agency has little direct control over this. This can be important if regional decision makers (or voters) wish to benchmark environmental performance or efficiency against results in others areas, to look for ways to improve their own performance, in such a context, nationally comparable data is important.

The following sections of this chapter take up some of these key issues in the context of some specific aspects of policies in the areas of energy, transport, municipal waste and water.

The energy sector

Is there a trade-off between energy and environmental policies?

The transformation and use of energy can have a range of impacts on the environment. Fuel combustion emits greenhouse gas (GHG) and releases air pollutants (acidifying substances, ozone precursors and particulate matters); the transportation of energy products is subject to accidental spills; power plants use water for cooling, heat-polluting nearby ecosystems; and the production of energy from biomass influences the opportunity cost of land use. In Italy, as in the rest of Europe, there has been a significant reduction of many of these impacts (EEA, 2008) but the energy sector still remains a major contributor of GHG emissions. GHG emissions from the energy sector are more than 80% of total emissions and between 1990 and 2008 they increased by 8% (IEA, 2010).

Furthermore, energy policies can sometimes conflict with environmental objectives. The former traditionally pursue stable and low-cost access to energy resources, in part through the diversification of the energy sources and limiting the reliance on imports. The adoption of low carbon energy technologies – such as nuclear or coal-fired power plants with carbon capture and storage (CCS) – foster energy security but can entail other negative impacts on the environment. The implementation of the EU ETS (Emission Trading System) and the deployment of renewable energy, mainly financed by charging additional fees to domestic and industrial users, are going to increase electricity prices that in Italy are, notwithstanding the liberalisation of the energy markets, among the highest in Europe.

Low energy intensity and high reliance on imported gas

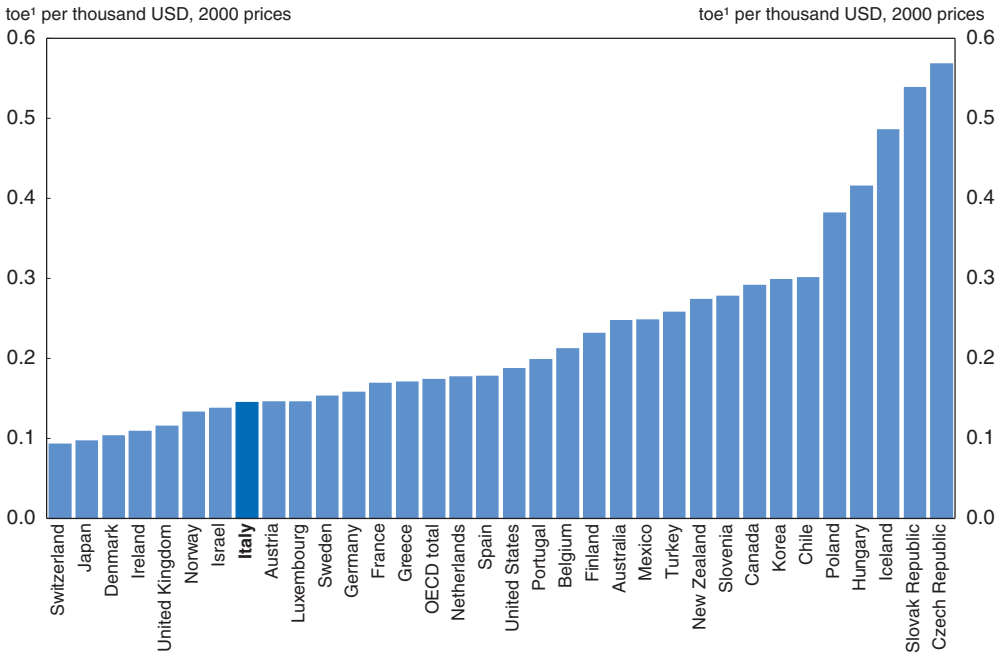
Italy uses less energy (per unit of output and per capita) than most OECD countries as the result of limited national endowments, high energy prices and taxes, and an industrial structure characterised by small firms which mainly operate in non-energy-intensive sectors (Figure 3.1). Indeed, up to the 1990s Italy used less energy per unit GDP than any other OECD country. Imports provide 88% of primary energy supply – with a heavy reliance on fossil fuels – making energy costs for the economy especially sensitive to world oil prices. This strong external dependency is exacerbated by the evidence that Italy's main suppliers of energy are in areas prone to political instability (Africa, Middle East and Russia being the main suppliers of oil and gas).

Natural gas, mainly imported through pipelines, plays a major role in Italy energy supply both for heating and electricity production. In 2008 gas-fired thermal generation accounted for 54% of the country's total production, compared with 4% for France, 14% for Germany and 46% for the United Kingdom, which is a major gas producer (IEA, 2009b). Non-hydrocarbon energy sources are limited: Italy has no nuclear energy (the last reactor ceased its production in 1990) and renewables satisfy a limited, although lately increasing, share of energy, mainly through hydroelectric production (about 70% of renewable-generated electricity).

Industry uses about a quarter of final energy demand while the remainder is shared almost equally between the transport and the residential sector (services and households). In the last twenty years energy demand in industry has remained broadly unchanged, while it increased at a much faster pace in services, for air conditioning and large scale retailing, and in the transport sector.

Figure 3.1. **Italy's energy intensity is one of the lowest in the OECD**

TPES/GDP, 2009 or latest available year



1. Tonnes of oil equivalent.

Source: International Energy Agency (IEA) Database.

StatLink http://dx.doi.org/10.1787/888932385959

The gap in energy efficiency between Italy and Europe narrowed progressively in the last decade

In the last fifteen years, energy intensity has been reduced much less than in other leading European countries. Although still more energy efficient overall than elsewhere, Italy has lost ground in all sectors with the exception of cars (Figure 3.2). Indeed, dwellings and road transport of goods are now less energy efficient than the European average.

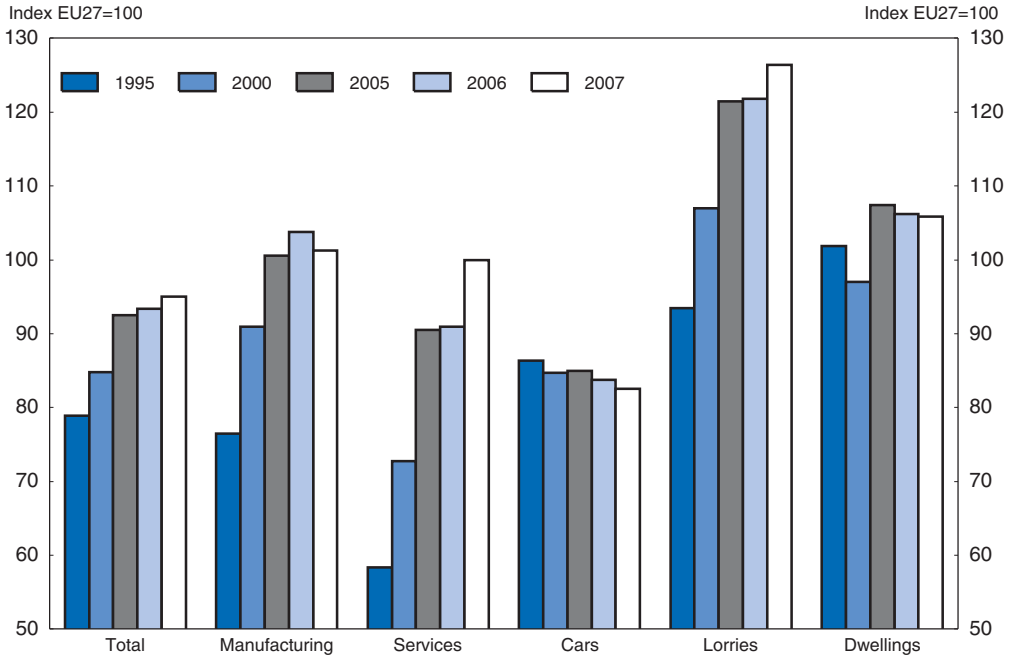
It is particularly striking that while cars exhibit a good, and increasing, degree of energy efficiency (in 2007 the average car used 17.5% less energy in Italy than the European average), the fleet of industrial vehicles is relatively energy inefficient: in 2007 Italian lorries required 26% more energy per unit of ton-km than the European average. The lorry fleet is older and uses less of its load capacity than in other European countries (IEA, 2009a). This level of energy inefficiency can be explained by the presence of many small operators, the existence of environmentally harmful tax deductions on energy products, and the limited capacity of the authorities to enforce vehicle emission standard compliance. It is also to be noted that part of commercial transport in Italy is made up of transit freight.

Italy has a low carbon intensity economy but emissions are rising

Italy is the third largest emitter of greenhouse gases (GHG) in the EU (after Germany and the United Kingdom). In 2008 total emissions excluding land use and forestry amounted to 540 million tonnes of CO_2 equivalent. But its carbon intensity is low by international standards (370 grammes per dollar of GDP at 2000 prices, compared with an

Figure 3.2. **Compared with EU27, Italy has become less energy efficient in the last decade**[1]

Energy intensity to the EU average



1. Italian energy intensities are expressed as a percentage of the corresponding EU27 measure. The total value normalises final energy use with unit of GDP (in EUR 2005, at PPP) while for estimates at the sector level each sector normalises final energy use with different measures: Manufacturing and Services with unit of value added (in € 2005, at PPP); Lorries with ton per km; Cars with equivalent car km; Dwellings with dwelling scaled to EU average climate.

Source: Calculation on ODYSSEE data.

StatLink http://dx.doi.org/10.1787/888932385978

EU average of 400 grammes and an OECD average of 430 grammes [IEA, 2009c]). GHG emissions have risen steadily in recent years and in 2008 were 4.7% higher than in 1990.

In 2002, Italy ratified the Kyoto protocol, committing to a 6.5% reduction of its GHG emissions in 2008-12 compared with 1990. Under its EU commitments, by 2020 the emissions of the most energy-intensive sectors (those subject to the EU emission trading system (ETS) caps) have to be cut by 21% compared with 2005, and those of other sectors (mainly transport and residential sector) by 13%. Italian governments adopted these GHG emission reduction targets despite considerable domestic opposition. The environment ministry has argued that the cost of attaining EU climate and energy targets is excessive. The Senate has approved two motions (one in 2009 and one in 2010) openly challenging climate science, while businesses often point to the danger that increasing energy prices risks carbon leakage from the manufacturing sector, although OECD work suggests that the risk of carbon leakage from the EU ETS is rather small (OECD, 2009a).

It is likely that emissions in 2008-12 will exceed Italy's Kyoto commitment. Even though emissions fell by 9% in 2009, largely owing to the recession-induced contraction in energy use, meeting the Kyoto commitment through domestic action only would require annual emissions in 2010-12 to average 6% less than in 2009. Since Italy's emissions per

unit GDP are relatively low, it is likely to have relatively high marginal abatement costs, and it therefore makes sense to expect to "buy" emission reductions in other countries with high emission intensities.

Policies pursuing GHG abatement are fragmented, perhaps biased towards electricity from renewables

Since GHG emissions are largely from energy-related activities, their reduction has to be part of an energy strategy. However, Italy has no clearly articulated energy strategy, despite its clear concerns about increasing dependence on imported energy and the share of gas within that, and despite the passage of a law in 2008 (133/2008) that foresaw the development of such a strategy. In practice the targets of the EU climate and energy package substantially shape Italian energy policy, with the development of renewable energy in the electricity sector playing a key role. The development of renewable energy sources is supposed to result in a 17% share of gross final energy uses by 2020 (a binding objective under the EU climate and energy package), while other objectives include energy efficiency improvements and, in the longer term, the return of nuclear generation and the deployment of carbon capture and storage (CCS).

In order to achieve the 2020 target and likely tighter subsequent targets, all of these approaches are likely to be needed. However, their costs per unit of abatement, with current technology, vary considerably. General energy efficiency measures are, in the short term, the most cost-effective. Some estimates suggest that nuclear generation and CCS are the next most efficient, followed by the deployment of renewables for heating purposes. Using renewables, especially solar energy, is currently one of the more expensive ways to reduce GHG emissions (Table 3.1 and ENEA, 2009a). These estimates are not uncontroversial, with CCS in particular being a technology that is largely untried on the scale that would be required, and estimates of abatement costs – including those in Table 3.1 – depend on assumptions about future technological progress. More is known about the running costs of nuclear generation but this involves other long-term costs, as discussed further below.

Table 3.1. **Italy GHG abatement costs**

	CO_2 reduction (%)		Unit abatement costs (€/t)	
	2020	2030-40	2020	2040
Energy use				
Energy efficiency (households and service sector)	> 20	> 15	< 0	< 0
Energy efficiency (industry sector)	> 10	< 5	< 0	< 0
Energy efficiency and transport sector	< 20	> 10	< 0	< 0
Renewables for heating	5	5	< 100	< 0
Renewables for transport	< 10	10	100	100
Energy transformation				
Energy efficiency (power plants)	10	10	0-20	100
CCS	0-2	> 10	50	50
Nuclear	0-7	> 10	50	0
RES-E other than solar	< 10	< 10	50-100	50-100
Solar energy (PV and solar thermodynamic)	< 5	< 10	> 100	50-100
Total reduction (Mt CO_2)	80-100	200-250		
As a percentage of 2008 emissions	17	42		

Source: ENEA (2009b), Table 6.1.

ETS verified emissions have been constantly higher than allocated permits

The electricity sector, characterised by thermoelectric gas-fired plants, exhibits relatively low carbon intensity.[1] In 2009, 1 029 installations have participated in the EU ETS, covering roughly 40% of total emissions. In 2005-09, the actual emissions of these installations have been higher than the allocated permits, with the sole exception of 2009, when the plunge in energy consumption due to the crisis resulted in a small surplus of emission permits. While the emissions of the industrial sector are in line or below the allocated permits, those from power plants on average have exceeded the cap by 10%.

Renewables are financed by generous incentives

Renewable energy in the electricity sector has a long tradition in Italy. Until 1967 hydropower was the main source of electricity generation and Italy was the first country to exploit geothermal energy for electricity production (starting in 1916). But as the demand for electricity increased, the contribution of renewables shrank. Since 2001, electricity generators and importers have been required to supply an increasing share of electricity produced from renewables.[2]

The deployment of renewable energy is largely based on economic incentives for the electricity generators. Theoretically, since the main object of this policy is to reduce GHG emissions, imposing the right price on CO_2should be sufficient. But even if this were done – and it is not clear that the EU ETS is yet providing the right price signals for longer term emission targets – this would not necessarily produce the share of renewables that the EU directives now mandate. Hence some form of incentive for renewables is required to meet the EU target, even if that target itself may not be fully cost-efficient (Box 3.1).

Just as emission trading under a cap for overall CO_2 emissions is theoretically the most efficient way to achieve a target for the quantity of emissions, so there is a corresponding efficient solution for renewables, in use in a number of countries, including Italy. This is the system of "green certificates", in which electricity distributors have to acquire certificates

Box 3.1. **Why subsidise electricity from renewables?**

Renewable energy provides a form of non-exhaustible energy with a minimal environmental footprint and improves energy security, reducing the share of imported energy. Theoretically, when the externalities (such as emissions of air pollutants such as ozone precursors and particulate matter and of GHGs such as CO_2) of other forms of energy emissions are easily measured, taxing them or setting up a cap-and-trade system should be preferred to subsidise low-carbon alternatives. In fact, subsidies run the risk to pay for infra-marginal investments (*i.e.* some investment decisions would have been taken even without the subsidy), can influence the adoption of certain technologies interfering with market signals and might reduce energy prices and encourage more energy use.

An argument in favour of specific support for renewables is based on evidence that their development entails large upfront capital costs when they are deployed but no fuel costs during their working life while the opposite is true for plants burning fossil fuels. With uncertainty about future energy prices and the social cost of CO_2 emissions, the impact of variations in future energy prices on the present value of an investment, for risk-averse investors, may be greater where upfront capital costs are relatively larger, hence leading to under-investment in renewables, from a social point of view.

to cover a certain share of their supply. They obtain them either when purchasing renewable electricity or by buying them from other distributors, so their price varies with supply and demand and falls as technology improves. Since, as with tradable emission rights, the same price applies to all kinds of renewable technology, this is a cost-minimising way of meeting the target, with producers of renewables receiving a subsidy for their production that depends on the balance between demand and supply. Since the latter is uncertain, it is probably a good idea for any green certificate system, in its early stages at least, to specify reasonable minimum and maximum prices. However, with a green certificate system, the market will determine which technologies are used, and some may be excluded. However, Italy targets specific technologies, notably solar energy but also offshore wind power, and the set of incentives used extends to other measures, notably feed-in tariffs, and also to differentiated green certificates (Box 3.2).

Box 3.2. **Incentives and the development of renewable energy in Italy**

In Italy renewables subsidies mainly take the form of green certificates (GCs) and feed-in tariffs (FITs). GCs are issued to renewables producers (with the exclusion of solar photovoltaic and thermodynamic and any plant installed before 1999). They can be traded on an organised market where the demand is determined by the minimum renewable targets to which distributors are subject. However, in practice GCs vary in value with five different coefficients, from 0.8 to 1.8, applied according to the technology used.

Small producers covered by GCs can opt for a FIT that includes both the subsidy and the value of the energy sold or used by the producer (*tariffa omnicomprensiva*). The incentives to support solar energy are based on a separate set of FITs (*conto energia*) and last 20 years for photovoltaic and 25 years for solar thermodynamic. They are set to decline through time. Some, small scale, installations may also be eligible for capital subsidies such as interest-free loans.

In 2010, feed-in tariffs ranged between € 0.346 and € 0.47 per KWh, six or seven times higher than the average wholesale price of electricity (€ 0.063 per KWh). Green certificate prices ranged between € 0.078 and € 0.089 per KWh (*www.mercatoelettrico.org*).

These economic incentives have boosted renewables capacity. In 2009 renewable-generated electricity production increased by 13%. Hydroelectric remains the most important source (16.4% of total electricity generation, most of which is not covered by any incentive scheme because installed before 1999), far ahead of production from biomass and urban waste (2.7%), wind (2.1%), geothermal (1.8%), and photovoltaic (0.3%).

The Community Strategic Framework 2007-13 contributes to the development of renewable energy.

The production of heat from renewables is supported with fiscal rebates while the deployment of renewables in the transport sector is achieved with a share obligation increasing in time (from 2.5% in 2008 to 10% in 2020). A tax subsidy (reduced excise duty) also applies to the use of biofuel in transport and electricity generation.

The government recently revised its Renewables Action Plan to comply with its 2020 target. On the basis of the projections on Italy gross energy consumption, renewables would provide 21.5 Mtoe (from 6.9 in 2005): 10.5 would come from heating, 8.5 from electricity generation and 2.5 from transport.

Box 3.2. **Incentives and the development of renewable energy in Italy** *(cont.)*

There have been many changes to these instruments. The GC scheme was initially intended to run for 8 years, then 12, and currently 15 as from 2008. Feed-in tariffs were planned to decline by 2% per year, but are now to be reduced by 11-13% in 2011.

Recent regulatory/legislative actions (2009-10), aiming to increase the efficiency of incentive mechanisms for renewable energy, *de facto* change the entire system. In early 2011 the Parliament was examining a Legislative Decree aiming at revising the incentive mechanism for renewable electricity generation: GCs would be phased out by 2015; a feed-in tariff will support smaller plants, while the production of plants above 5 MW will be auctioned using a tendering procedure.

Deployment of renewables is delayed by administrative hurdles...

The development of renewables, despite the generosity of subsidies,[3] is hampered by a number of non-economic barriers. Numerous amendments to the legislative framework and the lack of a long term perspective increase investor uncertainty. The rules governing green certificates have been changed 10 times in the last 10 years and the renewable generation obligation beyond 2012 has not been announced. Complex authorisation procedures and delays in accessing the grid (which is underdeveloped in the South, where most of the potential for renewables can be exploited) also contribute to restrain renewables development. The recent definition of national guidelines for renewable deployment should contribute to streamline administrative procedures.

... and it is a costly way to offset the externalities of the thermoelectric sector

Are these incentives a cost-effective way to reduce the externalities from electricity generation? In 2020 the annual cost to support renewable electricity will amount to about EUR 7 billion, for a production of around 90 TWh, roughly EUR 78 per MWh (ENEA, 2010). These costs exceed the estimated value of the externalities avoided: for Italy the value of the externalities related to electricity production are estimated to be in a range of EUR 27-67 per MWh, an average benefit-cost ratio of 0.6.[4] Some excess costs are not surprising given the size of and variation in the incentives to encourage some high cost technologies, both through feed-in tariffs for solar generation and by applying a different coefficient on green certificates for offshore wind compared with onshore wind (see Box 3.2). The general argument for accepting such excess costs is to encourage R&D and innovation, as such. However, it would be advisable to monitor the real effects of these policies to ensure that they are indeed generating such benefits. Otherwise it may be more cost-effective to benefit from such work carried out elsewhere, as many other countries are engaging in similar policies and Italy could reasonably expect to benefit from their work, just as it is in wind technology.

As in other countries, Italy faces the paradox that, although the most cost-effective option often seems to be related to the use of renewables in heating (ENEA, 2009c), take up tends to be low. Policies to encourage their development in Italy are essentially fiscal rebates, whose future is uncertain (the 2011-13 budget plans initially terminated them at the end of 2010, but they were subsequently re-instated).

Overall, supporting renewables through green certificates may be thought to raise some equity issues because the incentives are financed by charging household electricity

bills instead of using general taxation. Electricity bills represent 2.4% of total expenditure for the average household but twice as much for the poorest households, so that this type of charging might be thought regressive. To the extent that it represents energy-related externalities, this is no more a problem than any other market price. However, to the extent that it implicitly represents a subsidy to particular high-cost technologies or industries, it might be more appropriate to finance this from general taxation than current consumers.

Improving energy efficiency

Reducing electricity consumption directly through increased energy efficiency is likely to be more environmentally friendly than replacing the same amount of energy even with the cleanest form of electricity production. In Italy, the government estimates that policies to increase the energy efficiency of the household and service sectors have the potential to reduce GHG emissions by more than one fifth by 2020 and still leave households and industry better off, in the sense that reduced energy bills should more than cover the capital costs involved (see Table 3.1). But because most of these measures require the action of final energy users they can be limited by the presence of "hidden" costs (Box 3.3). Since the calculation that these measures have negative cost are mostly *ex ante* (calculation of theoretical costs and savings rather than the results of actual installations) it is hard to

Box 3.3. **What slows the introduction of energy efficiency innovations?**

The successful implementation of energy efficiency depends on the propensity of final users to adopt new technologies. These policies are often limited by a series of factors.

Lack of information. Often energy users are not aware of the costs and benefits of energy efficient technologies or practice. If they don't consider the purchase of energy-saving equipment as an investment they can be negatively influenced by upfront costs, disregarding the subsequent return. Moreover, consumers often have poor information on their energy consumption: energy bills come weeks after the actual consumption took place without reporting details on energy use (for example pinpointing energy-intensive behaviour).

Possible policies to deal with this include: energy audits and eco-labelling: information and education campaigns; fiscal support for energy measures; more detailed and timely information on energy behaviour and energy bills.

Financial constraints. Energy users may lack the money to pay for upfront investment costs in energy efficient measures.

Possible policies to deal with this include: public loans for energy measures; improve the energy knowledge of bank credit officers.

Split incentives. Dwelling owners have little incentive to invest in technologies that save tenants money on their utility bills and the same is true for builders.

Possible policies to deal with this include: compulsory energy standard for new buildings; energy audits.

Consumer preferences. Purchases are dominated by factors unrelated with energy-efficiency.

Possible policies to deal with this include: campaign for social responsibility, green attitudes, etc.

be sure what are the main constraints on energy users. To the extent that it is simple information costs, publicity programmes should be an important part of energy efficiency policies.

Nevertheless, the National Plan on Energy Efficiency from 2007 plans specific subsidies, aiming at an overall improvement in energy efficiency (energy consumption per unit of GDP) of 9.6% by 2016 compared with the average for 2001-05; the plan was extended in 2009 to include targets for 2020.The instruments adopted to support energy efficiency are Energy Efficiency Certificates (also known as "White Certificates"), that work with a similar cap-and-trade mechanism to that adopted for Green Certificates, and tax reductions to encourage energy efficiency of buildings and energy-using equipment.

Box 3.4. **Recommendations on energy efficiency**

- Assess the White Certificate programme to ensure that it is addressing true information barriers, not simply subsidising firms and households to save money.
- Ensure efficiency-related building standards on new buildings are properly enforced for both private and public construction.
- Take advantage of the large diffusion of electronic metering to profile consumer behaviour and provide them with periodic feedbacks and suggestions on how to improve their energy efficiency.
- Eliminate all energy tax rebates, such as those for commercial vehicles, agriculture, aviation, ships, for example – except those that reflect differences in externalities generated – so as to equalise energy efficiency incentives across the economy.

Two long-term strategies to reduce the carbon footprint: nuclear energy and carbon capture and storage

To reduce the carbon footprint of the electricity sector, Italy is considering the possibility of re-introducing nuclear energy production[5] and deploying carbon capture and storage (CCS) technology. In terms of emissions reduction, both these technologies would bear fruit only in the medium-term. These technologies have an important impact on the ecosystem[6] and both present risks – though of very different natures – regarding the management, transportation and long term storage of waste products (radioactive waste and liquefied carbon dioxide). In order to define the location of the plants and of the storage facilities, a strategy will be needed to overcome the "Nimby" syndrome. The previous experience with wind parks, re-gasification terminals and coal-fired power plants indicates that this won't be easy.[7] The current law provides for operators compensating local municipalities as a function of installed capacity and then in proportion to the electricity produced.

Even if the political will to re-introduce nuclear energy is sustained, delays are practically certain: a nuclear energy commission was intended to set out the political and regulatory framework by July 2010 but its managing board had not even been fully appointed by the end of 2010. Furthermore, the current background legislation implies that all costs must be borne by the operators, so that there is no call on public finance. Operators would pay into a fund according to the amount of electricity they produced and the fund would finance future costs. Given the cost of tail risk in nuclear energy and the

long life of residues, this neither gives much incentive to investors nor does it provide a sensible framework for budgetary planning – in the event of a catastrophe that bankrupted an operator and exhausted funds put aside, it is implausible that the state would not intervene.

ENEL, Italy's largest energy utility, one-third owned by the state, and a big player on the international energy markets, is implementing two CCS projects. One is a post-combustion capture and storage demonstration project in Porto Tolle in partnership with ENI (that will make its gas depleted field in Cortemaggiore for liquefied carbon dioxide storage available to ENEL); the second is an oxy-coal combustion project in Brindisi. As with photovoltaics, CCS is a technology that is, at the moment, far from cost-effective as a way of reducing carbon emissions: large scale investment can only be thought of as a research project. The actual costs of developing this technology should be assessed carefully. Norway, with some experience in carbon storage, has postponed a major CCS project in an oil refinery, because large cost-overruns appeared likely.

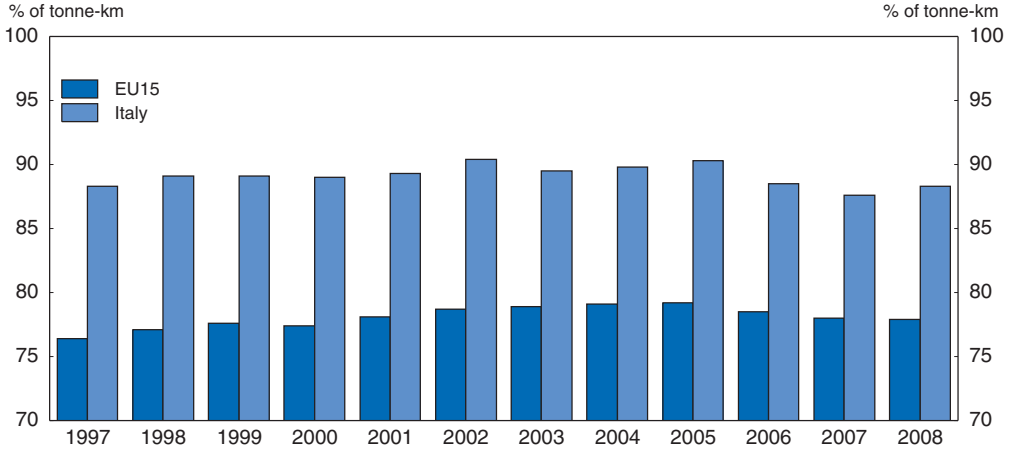
The transport sector

While the development of the transport sector is essential to sustain firms' competitiveness and to improve households' welfare, it produces a range of environmental externalities. Many air pollutants are linked to transport use (particulate matters, ozone precursors and benzene) and the transport sector is the second largest contributor to GHG emissions. One estimate of the external costs of transport in Italy is that in 2003 they amounted to more than 3% of GDP, of which almost a third was due to the effects of air pollutants and GHG emissions (Lombard *et al.*, 2005).

Road transport is dominant

In Italy, as in other developed countries, the transport of goods and passengers increased in the last decade and is dominated by road transport (Figure 3.3). The importance of road transport is slightly below the EU average for passengers but higher for goods: according to Eurostat, in 2008 about 88% of inland freight transport used road, ten percentage points more than in the EU average.

Figure 3.3. **The share of road transport in total freight**



Source: ISPRA and Eurostat.

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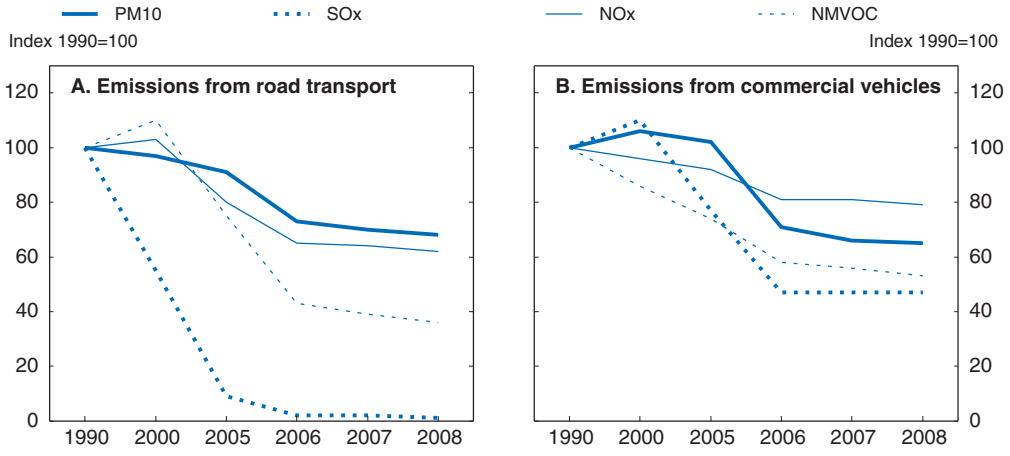
Italy has one of the highest motorization indexes in Europe (in 2009, 617 vehicles per 1 000 inhabitants, compared with less than 500 in Europe) and it has increased in the last twenty years.[8] Some structural changes, such as the increasing share of the population living in the outskirts as a consequence of rising house prices in city centres, coupled with poor urban planning, may also have contributed to the increased demand for private transport.

Roughly a third of Italian households are not satisfied with public transport although the quality of service varies a lot across the country.[9] The sector is constrained by the same problems that affect local public services in general: the small size of the operators, poor regulation, limited use of tendering procedures, persistent loss-making (usually paid off with central government transfers).

Vehicle emission and fuel quality standards contributed to curbing air pollution…

In recent decades, thanks to stricter standards on vehicle emissions and fuel quality, emissions of air pollutants from transportation decreased dramatically (Figure 3.4). The improvement was less pronounced for commercial vehicles due to a slower rate of renewal of the lorry fleet (see the previous section on energy).[10]

Figure 3.4. **Transport related emissions in Italy**



Source: ISPRA.

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… but urban air-pollution remains critical

Notwithstanding this progress, more than half of the 30 most polluted cities in Europe are Italian, with Turin, Brescia and Milan among the 4 most polluted. In 62 out of the 110 Italian provincial capitals the daily concentration of airborne dust (PM10) exceeded the allowed threshold more frequently than the 35 days imposed by the law[11] and in 10 provincial capitals (among which Naples, Milan and Turin) the limit was exceeded for more than 100 days. These air pollutants can have a significant impact on human health. An epidemiological assessment of 13 Italian cities, estimates that each year about 8 000 deaths can be attributed to the high concentration of PM10 and ozone precursors (NOx and NMVOCs) (Martuzzi *et al.*, 2006). It should be noted however, that in the cities on the northern Italian plain (such as Milan and Turin), pollution peaks are usually associated

with particular weather conditions (atmospheric inversions) in which all pollution emitted, including from industry and households, can be trapped for several days. In these conditions, pollution problems at street level usually associated with vehicle emissions in fact arise from several sources. Further improvements in vehicle emission standards would not be a very effective way to deal with this type of problem.

Policies to reduce the environmental impact of road transport

There are different options for reducing the emissions from the transport sector: improving emission standards of vehicles and fuel quality; limiting the access of urban areas; raising the costs of private transportation through an increase in fuel and transport taxes; or establishing road tolls and congestion charges. In the medium term, urban planning that takes account of transport externalities can also promote more effective use of public transport (as well as bicycles and travel on foot). So far, the reduction in transport emissions has been achieved mainly through better standards and regulations to limit access to urban areas.[12] The diffusion of less polluting vehicles has been also accelerated by government subsidies for the purchase of new cars (Box 3.5).

Box 3.5. **Are there environmental benefits from subsidising the purchase of new vehicles?**

In 2009, the government renewed the incentives to buy new, low emission (electric, hybrid or gas-powered) cars and light commercial vehicles. The incentive was not conditional on scrapping an old vehicle and varied according to the new vehicle's CO_2 emissions). The main objective was to help the automobile industry and support household demand, but may have had a positive environmental impact.

In practice, although the environmental gains were quite substantial, they are likely to have been considerably less than the expenditure on the scheme. Also it is estimated that, of 500 000 cars bought under the scheme, only 300 000 replaced older cars, the rest added to the total number of cars. Thus, while there were probably significant environmental benefits from the scheme, it would be far from cost-effective in environmental terms alone. Car-scrapping subsidies are not a good way to influence marginal investment and, in the same way as general energy subsidies, can have other unwanted consequences such as lowering the cost of energy consumption and biasing consumers' technology choice (OECD, 2010a; Molocchi, 2009; Metcalfe, 2009).

The use of price-based incentives to tackle transportation pollution has been more limited. Parking pricing, introduced in the early 1990s, is now used by nearly all provincial capitals;[13] area pricing has been implemented in some urban areas through an annual fee levied on the holders of access permits. Only few of the motorways around major towns are subject to tolls. In 2008, Milan was the first Italian city to experiment with the introduction of road pricing to access an urban area, a measure successfully introduced in some world capitals such as Singapore, London, Stockholm and Oslo (Box 3.6).

A preliminary cost-benefit analysis depicts this experiment as a success: in 2008 its net benefits amounted to EUR 15.7 million, mainly originating from the improving of the timing and the reliability of private and public transportation (EUR 12.4 million), the avoided road accidents (EUR 6.6 million) and the reduction of GHG and air pollutants (EUR 2.4 million). Even if this evaluation is not conclusive,[14] this experience conveys the

Box 3.6. **Ecopass in Milan: the first urban road pricing experiment in Italy**

Due to adverse climatic conditions and the widespread use of cars for passenger transport, Milan is one of the most polluted major cities in Europe. To deal with this problem, since 2008 private and commercial vehicles are charged a fee (Ecopass) to enter an 8 km^2 area in the centre of the city. The charge is differentiated according to vehicle emissions standard: low emissions vehicles (electric vehicles, HEV, LPG, gasoline Euro 3-4, gasoil Euro 4 with anti-particulate filter) pay no fee, while the other vehicles are charged according to their level of pollution (in a range of EUR 2-EUR 10 per day). The introduction of the fee was supplemented with an important reinforcement of public transport.

Ecopass is a pollution charge rather than a congestion charge because it regulates access only on the basis of vehicle emissions. Nonetheless, in the first period of its introduction a 14.4% traffic reduction was registered in the centre and a 3.4% reduction in the urban outskirts. PM10 and NOx emissions decreased by between 11 and 19%. In the first 9 months of 2009, traffic fell by 3.2% within the area and by 2.1% in the outskirts, with a 12% reduction in PM10 and a 8% decrease in NOx emissions. The effect of the measure on road safety is not clear: in 2009 road accidents in the Ecopass area showed a 10.9% decrease with respect to 2007 but a 7.2% increase if compared with 2008.

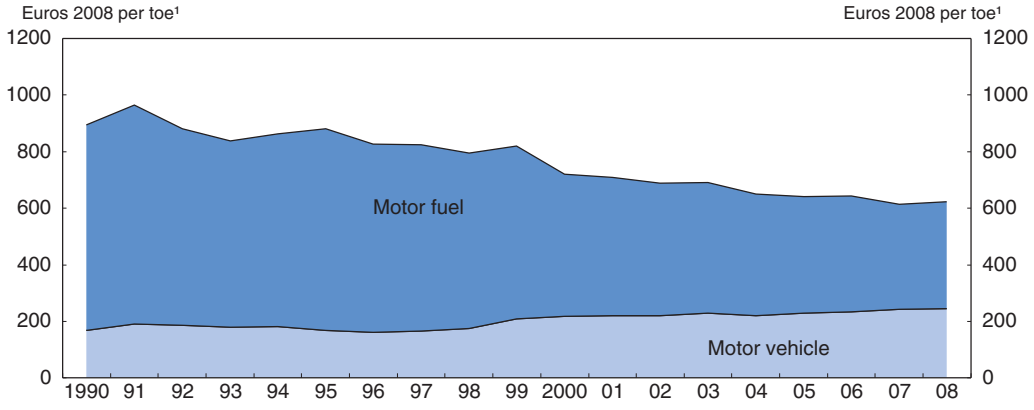
important message that the implementation of urban road charging is possible and, if well designed, it can also be popular with the public.[15] Moreover the cost-benefit appraisal finds that freight vehicles are those more affected by the introduction of the pollution charge, thus suggesting that this policy can be effective in reducing their high level of energy inefficiency and pollution. However, it must be noted that very little of the monetised benefit was attributable to reduced pollution, so the message is that such schemes improve welfare only partly because of reduced pollution, rather than that their costs can be justified solely for environmental reasons.

What role for transport taxes?

In Italy energy taxes are among the highest in Europe (the ratio of taxation to final energy use is more than 40% higher than in the EU) and a major component of these taxes are fuel and vehicle-related taxes. But the price signal from transport taxation, historically high in Italy more for revenue generation than for environmental awareness, has weakened progressively (Figure 3.5). The combination of motor fuel and motor vehicle taxation per unit of energy was EUR 862 per tonne in 2008, almost 20% less than in 1990 as a result of a steep reduction in the fuel taxes per unit of energy only partially compensated for by an increase in motor vehicle taxation. Excise duties on unleaded petrol and diesel are currently slightly higher than the EU average.

As in other countries, in Italy excise taxes on diesel are lower than on gasoline, a differential originally (and misguidedly) motivated by the higher energy efficiency of diesel. Although this gap has been slightly reduced, in 2009 the excise on diesel/gasoil was still 25% lower than the excise on gasoline. However, in terms of pollution externalities, the combustion of a litre of gasoil is not less pollutant than the corresponding quantity of gasoline (for some pollutants such as particles, CO_2 and NO_x it actually pollutes more). This differential treatment is therefore not justified on an environmental basis, while diesel's better fuel economy automatically benefits the consumer without any need for a tax subsidy, and should be removed. Furthermore tax rebates and exemptions for the freight

Figure 3.5. **Road transport related taxes in Italy**



Note: Value of fuel and transport taxes per unit of energy of road transport (EUR 2008) (in toe).
1. Tonnes of oil equivalent.

Source: Calculations on ISTAT and EUROSTAT data.

StatLink http://dx.doi.org/10.1787/888932386035

transport sector weaken the ability of taxes to price environmental externalities. Improving the consistency of price signals is important. This is also a more general issue for taxation, as tax rates for similar fuels vary according to the sector in which they are used. To some extent this may be justified because air pollution externalities vary according to where they are emitted, but it seems unlikely that this can explain all the variation (Figure 3.6).

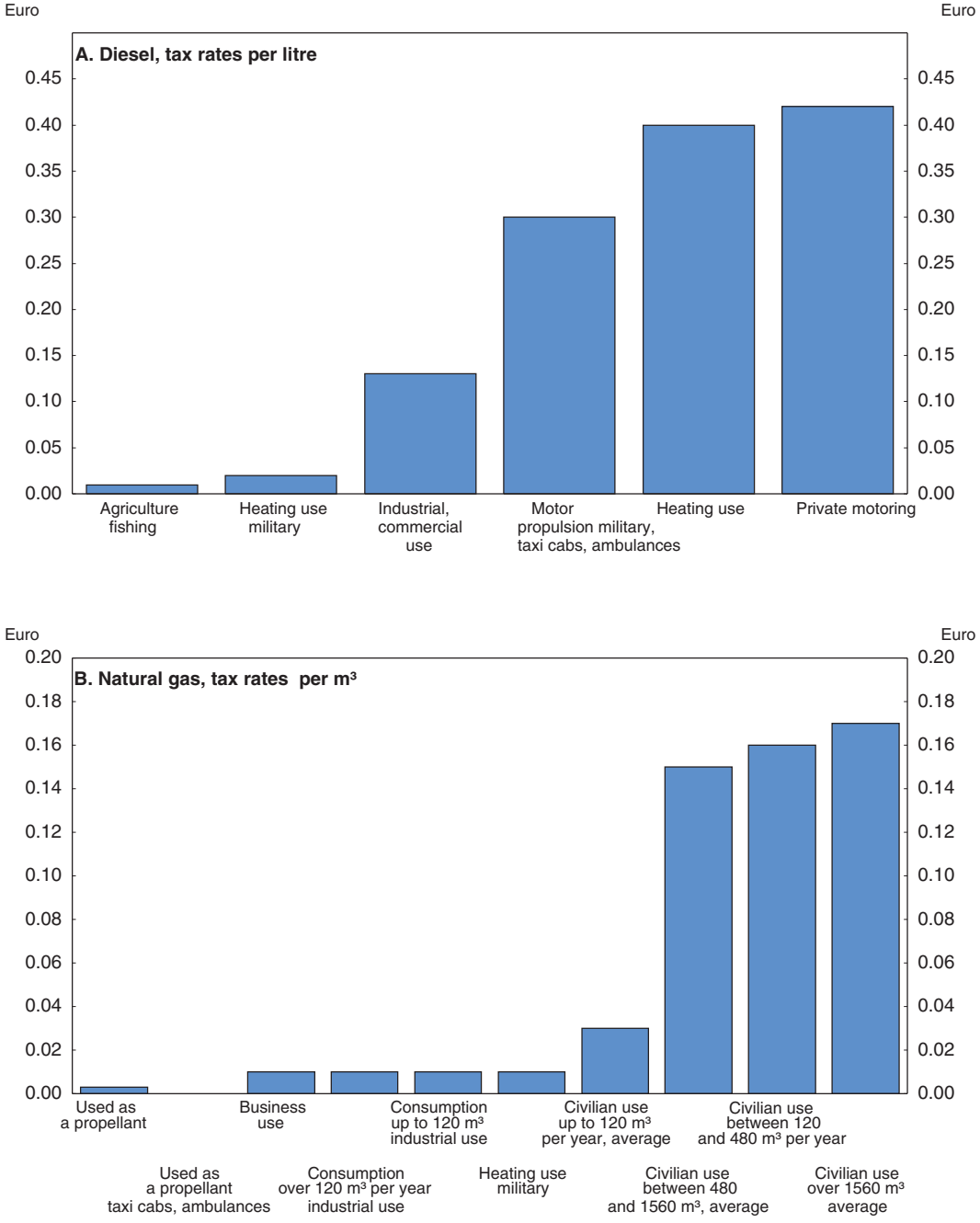
Investments in railway infrastructure

In the last two decades, the relative shares of road and rail transport, both for passengers and for goods, have barely changed. It is not clear to what extent providing better alternatives to road transport would encourage a significant shift. In case of freight transport this shift appears constrained by many other problems linked to the logistics of the supply chain, for example the high proportion of small geographically dispersed enterprises (Boitani *et al.*, 2007).

In the last decade, the Italian railway system has invested heavily in high speed rail (HSR) infrastructure (*linea Alta Velocitá/ Alta Capacitá* – AV/AC).[16] Unlike in many other countries, Italian HSR is integrated with the conventional network, thus improving the connection with the local railway system. Furthermore, while HSR is usually considered a competitor of air-transport, in Italy it can also be considered in competition with road transportation because of the short distances between Italian cities; However, Italian HSR has cost twice as much per kilometre as in Spain and Germany and four times more than in France and Japan. This may partly be due to the characteristics of Italian terrain, but also the tendering procedures (RFI, 2007).

The actual potential of the new AV/AC line to shift passengers and goods from road to rail is still not clear. Eurostat data shows that passenger traffic on Italian railways rose only 0.6% between 2004 and 2008, a meagre increase when compared with 12% in Germany and 15% in France and Spain. For freight, Boitani *et al.* (2007) estimate that completion of the HSR connection between Turin and Lyon – an investment of EUR 13 billion – will have a negligible impact on both congestion and environmental externalities of road transport. As mentioned earlier, careful cost-benefit analysis seems to

Figure 3.6. **Tax rates on fuels vary across sectors**



Source: European Commission, Excise duty tables, Part II – Energy products and Electricity, July 2010 and *OECD/EEA Database*.

StatLink http://dx.doi.org/10.1787/888932386054

have been lacking in assessing, both *ex ante* and *ex post*, these programmes. The construction of these lines may be beneficial in permitting increased overall traffic, but not because it reduces environmental externalities or congestion.

Box 3.7. **Recommendations for transport**

- Improve the link between variations in transport taxes and charges and associated environmental externalities. Notably, eliminate the gap between gasoil and gasoline excises and do not discriminate taxation according to fuel use.
- Encourage the use of schemes such as Milan's Ecopass system for regulating urban traffic. Where possible, build provision for assessing the impact of such schemes into their design. Ensure objective and transparent use of cost-benefit analysis of projects such as high-speed rail networks.

Waste

Waste frequently makes the headlines in Italy. Media attention is often largely focused on the situation in the South, which is not typical of the country as a whole. The problems here have resulted from mismanagement, sometimes exacerbated by the involvement of organised crime (so-called "Ecomafia"). In some areas there has been a striking inability of local government to achieve a consensus on where and how to dispose of legal waste. Most notoriously, these two problems overlap in Campania, the region whose capital is Naples. The diversity of types of waste and of types of waste producers, with different laws and regulations applying, adds to the complexity. Some of these problems may be exacerbated by an unclear allocation of responsibility between State and Regions: according to Utilitatis (2009), this lack of clarity leads to actions by one or the other level frequently being contested in the courts by the other, and certainly contributes to the wide regional variation in approaches and results. Regulation of waste disposal services is effected in some areas by municipalities or groups of municipalities, in some by specifically established "optimal territorial units" and in one region – Campania – by provinces (sub-divisions of regions).

This section does not attempt to deal with the complexity of these issues. Rather, it focuses on some issues in dealing with urban (mainly household) waste, on the assumption that law enforcement is not entirely dysfunctional. It may be noted, however, that some of the associated activity, notably the past involvement of Italian ports and ships (or shipping companies) in the illegal transport and export of household or hazardous waste, involved waste not only from Italy but from other European countries, and to some extent may have reduced the apparent costs of meeting targets elsewhere.

For want of time and space, this chapter also does not deal with toxic waste in any detail, but one observation is relevant. Key European legislation (the "Seveso" directive) partly derives from a major accidental toxic release in Seveso, Italy, in 1976. One of the problems on that occasion was lack of awareness in the local population of the potential danger from toxic chemicals. In the United States one response to this issue has been the Toxic Release Inventory, under which companies handling relevant chemicals must make the information available on a public Database where citizens can check what is being handled where. In Italy, such transparency could be a useful way to back up the safety requirements defined in the Seveso directive and improve information on environmental risks (provided it was effectively enforced).

Urban waste

Legislative action on urban waste seems to owe more to EU-derived legislation than to explicit national concerns. In fact, per capita waste generated in Italy has historically been below that in many other countries, though cross-country statistical comparisons may not be fully reliable.[17] From this relatively low level, however, generation has been increasing relative to EU and OECD averages over the last decade or more (Table 3.2), though some pause or decline is apparent[18] after 2006. National statistics also show that waste generation varies across the country, being significantly above the OECD average in the Centre area of Italy, about 10% below in the South; all regions have shown a similar growth rate however. For Italy this data is collected by ISPRA (*Istituto Superiore per la Protezione e la Ricerca Ambientale*), the national institute for environmental protection and research, which in turn relies on data provided by independent regional environmental agencies (the ARPA, who report to regional governments), which collect data reported by municipalities; this may mean that data is not fully comparable across the country (especially given the situation referred to in the opening paragraphs), nor across countries.

Table 3.2. **Urban waste generation, 1998-2008**

kg per inhabitant

	1998	2000	2005	2008	Change, 1998-2008, per cent
Italy	**472**	**508**	**542**	**545**	**15.5**
EU27	496	523	517	524	5.6
EU15	540	569	558	565	4.6
OECD	540[1]	580	580		7.4[2]

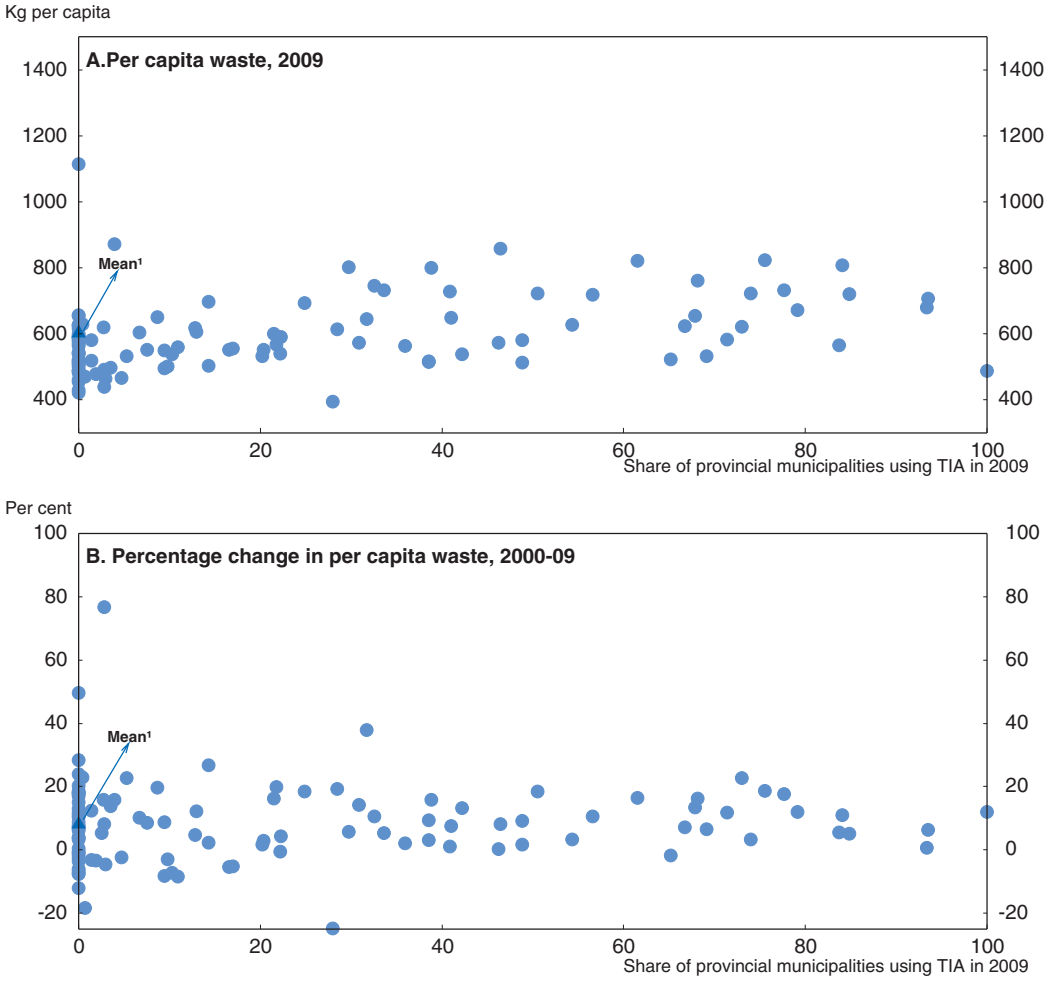
1. 1995.
2. Change in 1995-2005.

Source: ISPRA, Istat, Eurostat and OECD data.

Concern about disposal of waste in landfill has led to efforts to discourage their use through landfill charges. But the chain of transactions can be quite long and individual bits of much waste cannot, at reasonable cost, be traced to the producer, so landfill charges on their own have little direct impact on the generation of waste such as packaging material. The likelihood that increased charges will be met by increased illegal disposal of waste, a risk everywhere, may also be particularly high in Italy. Charging households for the amount of waste they deliver to the collection system should in principle give them an incentive to reduce production. From the late 1990s onwards, municipalities were encouraged to switch from the previous cost-recovery system with charges based solely on dwellings' surface area to a charge (the TIA, *Tariffa d'Igiene Urbana*) which is intended to be based on the amount produced ("pay as you throw"), on top of a fixed component to cover overheads and management. In practice the TIA in most cases is based on the dwelling surface and the number of inhabitants, and the pay-as-you-throw approach is rarely used. Nevertheless, in practice the TIA is somewhat higher than the previous waste tax because municipalities had discretion as to whether the tax covered all costs, whereas with the TIA, full cost-recovery is the basic principle; this may also discourage the adoption of the TIA by municipalities. In 2008, charges (averaged over all municipalities, whether using the new or old system) covered about 91% of total costs, generally higher in the North than the South.

In 2006 a legislative decree required that all municipalities should switch to the TIA by 2008 but, partly due to delays in issuing regulations, this deadline was put back to 2009 and now 2010. By 2009, 1 197 out of 8 100 municipalities (covering about 30% of the population) had made the switch; in one small region, Trentino Alto Adige (population 1 million), which borders Austria and Switzerland, all municipalities had switched. In introducing the new charge, municipalities are also required to set up associated regulations and financial plans, which in some cases have delayed its introduction. In the southern regions, only 7% of the population lived in municipalities using the TIA. In principle switching to a charge based on the amount of waste produced is a good idea, but in practice there has been no obvious impact of this change on waste generation or its rate of change: provinces with a high share of municipalities using the TIA look very similar to those with a low or zero share (Figure 3.7).

Figure 3.7. **Waste generation and "pay as you throw"**



1. Mean of 75 provinces with no TIA.

Source: ISPRA (2010a).

StatLink http://dx.doi.org/10.1787/888932386073

The reason for this lack of impact is probably quite simple: while the law provides for charging on the basis of actual waste generated, in practice most municipalities are simply using a better proxy than previously, but one which is still unrelated to actual waste production by households. Typically, the charge is made up of two components: the size of dwelling and the number of household members (Chiades and Torrini, 2008). This provides a somewhat fairer method of covering costs than the previous tax, but provides no incentive for households to reduce the quantity of waste they produce. Furthermore, municipal waste collection is frequently made from collective kerbside bins serving many households. This keeps average collection costs for the municipality down but makes charging individual households impossible. Hence, while the impact of TIA might come to be felt more strongly over time, this is unlikely for the moment.

While policy needs to aim at ensuring that the costs of dealing with waste are taken into account at the point where it is produced, strategies such as "Reduce, Re-use, Recycle" require a mixture of administrative and voluntary action. Separate collection of different kinds of waste at the household level is a prerequisite for recycling, but this is not yet widespread. While increasing everywhere, it seems to be taken more seriously in the North, where some 45% of urban waste was subject to separate collection in 2008, against 15% in the South and a national average of 30%. It is hard to judge whether this is a problem, since the policy of targeting a high degree of recycling does not seem to have been the object of a specific cost-benefit analysis. The conclusions of such analysis tend to depend strongly on the valuation of the time households have to spend separating waste; if this is not too high, the environmental benefits of recycling exceed the net economic costs (New Zealand Ministry of Finance, 2007). The latter costs are usually significant except when the resale price of recycled material is particularly high, which has not generally been the case since the recession, for example.

The national environmental monitoring agency's report on costs covers only the direct operating cost of different types of collection system, and does not attempt to evaluate the environmental externalities (ISPRA, 2010b).[19] The data show, however, that the cost of separate collection and differentiated treatment of waste are subject to economies of scale (stronger than those for undifferentiated collection and treatment) suggesting that joint action across large numbers of municipalities should be encouraged; but it is not easy to use this information to assess, for example, whether there are large gains from pushing to reach recycling targets faster. It is also paradoxical that in the South, where the share of landfill is high and separate collection very low, there is an ongoing problem (it was classified as an "emergency" until late 2009 when it was thought to have been resolved) in Campania, with apparently inadequate landfill capacity and violent disputes with local residents over maintaining disposal sites inside a national park (Box 3.8). A contributory factor to this crisis in the south was the operation of market forces in the North. Once EU directives on higher standards in landfill sites began to be enforced, the price of landfill in the North rose suddenly, sometimes from a few euros per ton to 150, as in some parts of Lombardia (Massarutto, 2010). Until municipalities could develop the capacity to treat waste to avoid using landfill, a significant amount of it was exported to southern regions (not always legally).

For recycling specific types of packaging waste at the industrial level, which is covered by an EU directive, Italy uses an approach based on producer responsibility. Producers or importers of packed goods are required to pay a fee (the *Contributo ambientale*) per weight of different types of packaging (paper, plastics, aluminium, steel, wood and glass). The fee is

Box 3.8. **Waste in Campania**

The problem of waste management in the Naples province of the Campania region has become recurrent. A number of factors contribute to the difficulties, among which are: the high population density; lack of forward planning for waste treatment capacity; the direct influence of organised crime; and weak environmental awareness. As can often happen, some of the short-term solutions may have made the underlying problems more intractable.

High population density has meant very low levels of separate collection which implies that incineration and landfill are the only available disposal methods for most of the waste. Low separation of waste in Naples itself contrasts with recycling rates among the highest in the country in nearby cities, though these are much smaller. The organisation of waste collection by province (rather than by optimal management areas) has effectively prevented the export of untreated waste to other provinces: the national implementation of the waste directive forbids it, and neighbouring regions have often refused it in any case. This is ironic given that the exhaustion of existing capacity has probably been accelerated, by the often illegal import of waste from other regions of Italy.

Lack of planning has meant that incinerators that could cope with the necessary volume of waste without excessive atmospheric emissions were planned late. Of three eventually authorised, only one is in commission and does not manage to operate full time. At the same time, the construction of facilities that minimize the impact of landfills was also delayed. Taken together this creates problems of organisation so that even in the landfill site that satisfies legislative norms (although it is adjacent to the Mount Vesuvius national park), externalities such as noise and odour are excessive. The chances of getting the local population to believe that further landfill sites can be developed with little long-term environmental impact is thereby further reduced.

The national response to the situation has been to appoint external Commissioners, with special powers, to manage the situation in place of the local authorities. These special powers have included the ability to bypass normal rules on transparency and competition in allocating funds. In 16 years of such administration, there have been 11 commissioners. Among other consequences, this may have contributed to a predilection for short-term solutions, while likely making it more difficult to get local politicians to take responsibility for solving the crisis.* The practice of storing waste temporarily in bales pending their treatment for landfill or incineration creates potential hazards and owners of storage sites inevitably begin to have a vested interest in their continuing use. The lack of clear allocation of responsibility may have also favoured the involvement of organised crime (Corte dei Conti, 2007). Any long-term solution will have to break this vicious circle.

* The use of special commissioners is not unique to Campania. They have been used in other regions, notably Puglia, apparently with more success than in Campania.

paid to a national non-profit organisation (the National Packaging Consortium, CONAI) which co-ordinates recycling consortia for each of these materials. The fee is an item identified on invoices to "consumers", *i.e.* other producers or distributors supplied. In turn, CONAI finances a series of "consortia", for each of the six materials, which are responsible for dealing with all the packaging waste delivered to them either by producers or registered consumers of such waste.

According to (self-reported) data from CONAI, this system has been very effective in achieving high rates of recycling for these classes of waste. In contrast with Italy's record

on municipal waste, recycling rates for packaging waste are above the targets set by EU directives. Membership of the consortia is not compulsory, but companies who are not members must deal with their own waste subject to the same regulations as the CONAI. For smaller companies this may potentially pose some problems with the monopoly power of the consortia. The presence of economies of scale in dealing with waste means that some conflict between competition and efficiency is inevitable. In the early years of setting up such a new system, it is perhaps acceptable to run the risk of a bias against competition. The fact that municipalities are beginning to use the CONAI consortia to deal with sorted household waste suggests that they are indeed relatively cost-efficient. In the longer run it would make sense to ask the Competition Authority to investigate the system to ensure that potential cost-reducing competition is not being unnecessarily limited. As in other aspects of local services, ensuring effective competition means monitoring governance, notably conflicts of interest; for this a national regulator (independent of municipal administrations and the management of the sectoral consortia) should be responsible for monitoring the system.

Illegal waste

Where the problem of illegal waste intersects that of organised crime the solutions are not obvious. However, illegal waste also concerns small–scale dumping by otherwise well-behaved citizens and companies and here progress is feasible. For example, the number of known illegal dumps has diminished substantially over the last decade, partly under pressure for action from the European Commission, while the number of prosecutions related to waste dumping have been increasing. Illegal dumping will be chosen when the alternatives are too expensive and the expected penalties are not too high, hence the importance not only of achieving high rates of recycling but of providing cost-efficient methods of disposal. The Italian authorities are putting in place a system to trace generation and movement of waste, SISTRI (*Sistema di controllo della tracciabilità dei rifiuti*), which replaces a previous paper system of documentation with a system based on electronic centralised registration of production, transport and disposal of waste. With "real-time" information on movement of waste available, quicker checks of legality should be possible, provided the initial declarations are complete and accurate.[20]

Special waste commissioners

The decentralisation of waste management (and other public services, too) is tempered by provisions for the imposition by the central government of special government commissioners to operate the service in the event of gross mismanagement or other exceptional circumstances.[21] In Campania this has happened a number of times but problems remain (see Box 3.8). However, in other cases it seems to have been less ineffective. The region of Puglia had a "waste emergency" for almost as long as Campania, but the special commissioner for most of that time was not an outsider but the president of the regional government itself. The emergency in Puglia was more strongly related to dealing with legacy polluted sites than with overwhelming flows of currently-generated waste, nevertheless one of the measures taken was to allow imports of waste from elsewhere only if there were no capacity shortage in Puglia itself. The emergency was declared to be over in early 2010.

This experience suggests that some problems in dealing with waste may be related to the inability of decentralised management to deal with conflicts of interest between

different localities or interest groups. No-one wants a waste-management facility next door, but with suitable compensation paid (and financed by waste producers) it should be possible to find an acceptable solution; ultimately the authorities need the power to expropriate, with fair compensation and external monitoring to ensure that the expropriation is necessary and the compensation is just.

Box 3.9. **Recommendations on waste**

Where feasible, fully privatise publicly-owned waste management companies, while strictly enforcing rules requiring public tendering for provision of local waste services. The implementation of tenders and their outcomes, as well as the subsequent operation of the services should be monitored by the Competition Authority. The Authority might need more resources, or a separate national regulator, to do this effectively.

While the operation of the packaging waste recycling consortia seems effective, the Competition Authority could be asked to verify the absence of efficiency-impairing restraints on competition that result from their monopoly position.

Revisit the attribution of authority in waste management to ensure that the imposition of external special commissioners is necessary only in extreme cases of incompetence or corruption, rather than to overcome conflicts of interest or "nimby" problems.

Continue to encourage increased separation of household waste, but increase "upstream" taxation on consumer products and related packaging, as a function of the costs, economic and environmental, of disposal.

Water supply and pricing

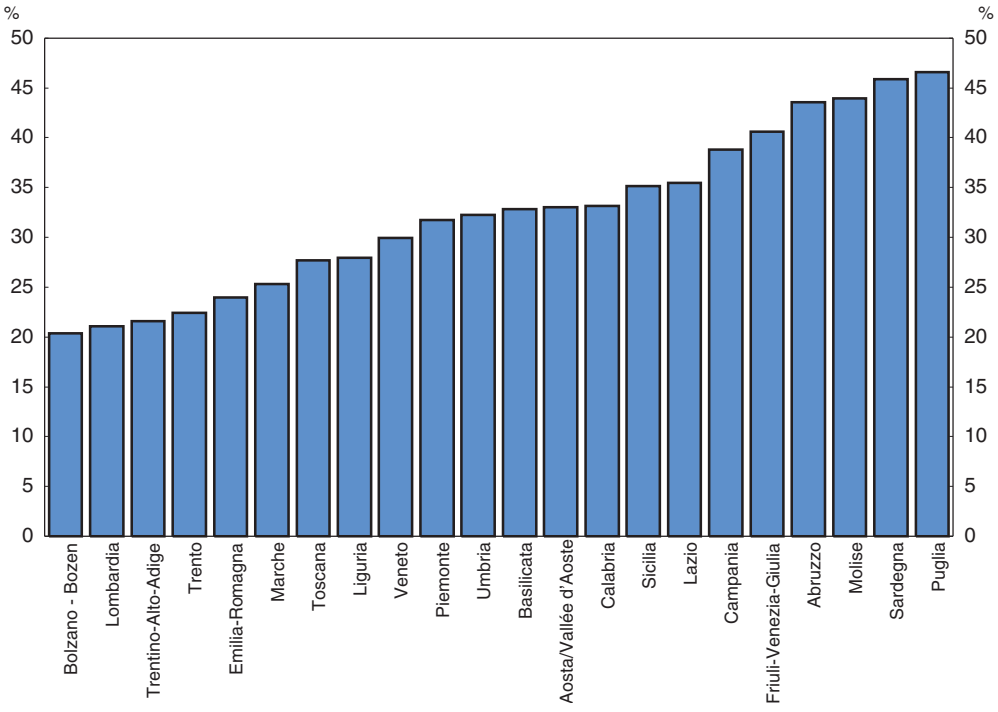
As in most medium-sized or large countries, problems of water supply and water pollution are typically local or at most regional concerns. This section looks briefly at the key issue of water pricing.

A very striking fact is the high rate of apparent losses in distribution. Most water systems do lose what can seem quite a lot of water.[22] Nevertheless, in Italy, with a nationwide average of just over 30%, the rate of loss is as high as 47% in Puglia (Figure 3.8). Yet Puglia is a region with almost no surface water resources of its own, importing most water from neighbouring provinces. A partial explanation may be that the physical losses are rather less than 47% if, as is likely, some of the losses represent water that is supplied but not properly metered or paid for. But another part of the explanation is that the suppliers may have little incentive to reduce distribution losses if the costs of renewing the infrastructure are large relative to the cost of water extraction.

The structure of water pricing typically does not in fact give distributors any particular incentive to minimise capital costs; indeed this is one of the key criticisms of the national water monitoring commission (Conviri, 2010). For current management costs, pricing is regulated on the basis of cost recovery with price capping, so that efficiency gains are retained by the supplier. Capital costs are covered by an allowed 7% rate of return on capital; so long as there is no competition and the price elasticity of demand is low, there is no incentive to keep capital costs down. Hence, the pricing structure may on the one hand encourage suppliers to skimp on maintenance costs, allowing excessive leakage, while perhaps encouraging excessive capital investment.

Figure 3.8. **Water: distribution losses**

Water lost as a percentage of water entering the distribution system, 2008



Source: ISTAT, *Rilevazione sui servizi idrici*, Anno 2008.

StatLink http://dx.doi.org/10.1787/888932386092

In practice it is not clear that the pricing structure achieves any of the aims set by the law – providing safe water to households and allocating it efficiently among various users. Water prices are on average quite low compared with other European countries; this would not be a problem *per se* if it reflected relative abundance of water or a particularly low level of costs. However, it is partly due to a long period of public price controls which prevented water prices from rising in line with inflation. Overall it appears that water has been underpriced for a long time and that both price controls and the organisational structure have prevented a rational use of resources. Despite the suggested bias towards capital expenditure in the pricing system, in practice there was a large fall in investment in water infrastructure in the 1990s. The level of investment has not recovered since then, although reported problems with interruptions in water supply – which had risen, especially in the South, around the turn of the century – have fallen back again since 2001 (Istat, 2010). From this overview it is not entirely clear whether the pricing system is in reality distorting the choice between maintenance and investment, or the nature of investment. Other problems are related to the enterprise structure of the industry.

Most water supply companies are rather small (with the exception of Puglia, where one company serves almost the entire region), and there is wide variation in their apparent efficiency (Benvenuti and Gennari, 2008). Most companies are wholly or partly owned by municipalities (in the case of Puglia by the region). Opening up competition for management, at the same time as allowing mergers across companies, could reduce costs. This process should be supported by the establishment of an independent authority. Because of the difficulty of entrenched conflicts of interest in local public sector

management, privatisation may be necessary to enforce competition (Bianco and Sestito, 2008; OECD, 2009b). A law requiring privatisation of water management companies was introduced in 2009. Such a policy has been recommended for some time by the Competition Authority, and is also a way to get investment into the sector given that public funds are scarce. Its implementation has been held up by regional challenges to its constitutionality (but its legality has been confirmed by the Constitutional Court) and it may also be challenged by a referendum in 2011. One strand of opposition to this necessary reform is based upon a United Nations declaration[23] that safe drinking water is a basic human right. Privatisation is unlikely in practice to violate this principle and – while a right to water does not need to mean a right to free water – charging structures which provide a certain quantity of free water to consumers are not unprecedented, such as the one introduced by private water companies in the Flanders region of Belgium in 1997 (O'Brien *et al*, 2001).

Box 3.10. **The use of result-oriented devices to improve the quality of services in waste and water management: regional policies in the southern regions**

In the last decade, regional policies in the southern regions have given great emphasis to environmental issues. The preservation and sustainable exploitation of natural resources together with the improvement of the quality of environmental services are among the most relevant priorities of all programmes implemented within the framework of EU structural funds and national resources devoted to regional development (so-called FAS).

In the 2007-13 period, the focus of regional policy strategies in these areas has shifted towards a clearer definition of results to be achieved in terms of minimum service standards in municipal waste and water management. Rewards for the eight regions of the Mezzogiorno are linked to the achievement of fixed targets in 2013.

These targets are aligned with EU structural funds objectives, such as increasing the share of the population served by sewage treatment plants. They may be an improvement on previous rewarding mechanisms which focused more on process (such as setting up plans, or management systems), but there is room for more improvement in specifying targets which are related to environmental or health outcomes, rather than input measures – for example, by targeting water quality rather than the number of sewage treatment facilities. It would also be helpful for such programmes to be accompanied by evaluation, for example to verify whether health outcomes are better in areas where targets have been better respected.

While the above concerns piped water supply to households and businesses, around half the water used in Italy is in irrigated agriculture, much though not all of it in areas with very low annual precipitation. Conflicts between agriculture and other water users seem to have been rather limited, and the annual reports of the national water monitoring commission do not even mention irrigation (Conviri, 2009, 2010).[24] The fact that farmers in areas of water scarcity often extract groundwater themselves means that they face the right incentives for efficient use of the water extracted. But uncoordinated extraction (where individual farmers do not take into account the effect of their extraction on the situation of neighbouring farms or other water users) is likely to lead to falling water tables, which damages non-irrigated activities, or salinity. Salinity may occur either through evaporation of water applied in irrigation or through infiltration of seawater into some

low-lying coastal areas. To some extent there is a self-correcting mechanism in that if groundwater becomes too saline, agriculture will cease or adapt, but there may still be externalities where the natural environment is sensitive to this. In most areas there does not seem to be an active policy to avoid these problems, and information about who extracts water and how much is often scarce. To ensure that agriculture uses water efficiently where it is scarce, as well as to reduce problems with excess use of nitrates and phosphates (which are also hard to deal with at the moment because little effort is made to trace use of fertilisers and feed, even in areas where surface water quality suffers from this) more effective use of the existing licensing system would be useful. It would both improve information on which to form policy and could form the basis of a market in water – which is likely to be the best way to deal with increasing water scarcity (Bazzani, 2004).

Box 3.11. **Recommendations on water**

Fully privatise water supply and treatment operators, where feasible, while strictly enforcing rules requiring public tendering for provision of local water services. Allow water companies to charge prices that fully reflect costs including the need to renew infrastructure over time. Social concerns should be dealt with using social policies.

The existing national commission, Conviri, should become an independent national regulatory authority to monitor water supply and quality, including water that does not enter public distribution networks, enforcing competition rules (in conjunction with the Competition Authority) and quality standards. Its mandate should also include improving the reliability and comparability of statistics on water.

Revisit national legislation on the structure of water pricing. Prices should be set as a function of the cost of supply and the level of demand, not as a function of the nature of the consumer, and should fully reflect the polluter-pays principle.

In areas where groundwater resources are overstretched, or potentially so, ensure that extraction is regulated by licensing, abstraction charges and tradable water rights.

Notes

1. In 2007 the production of 1 kWh entailed the emission of 388 g of CO_2 in Italy against 427 in Germany, 500 in the United Kingdom and 549 in the United States.
2. The share increases each year: it was 2% in 2001, 6.05% in 2010 and it will be 7.55% in 2012.
3. In the last IEA policy review of Italy, support for renewable energywas considered among the most generous in Europe. This may be partly because other European countries, started to support renewables earlier than Italy. See I-Com (2010), "Il possibile contributo del settore fotovoltaico al sistema Italia".
4. ENEA (2010) does not specify if RES costs are in current or constant euro. Here we assume that reported costs are in current 2020 euro. The 2005 value of the externalities for Italy from EEA (2008) has been revaluated to 2020 assuming a 2% inflation rate. A more accurate analysis should consider the levelised social cost of energy, in order to spread the value of the subsidies along the life of the RES plant and should include the benefit from energy security and deduct system integration costs. See Ea Energy Analyses (2008) and EEA(2008).
5. Italy abandoned nuclear power after a popular referendum in 1987. Law 99/2009 sets out a new energy strategy in which electronuclear production should cover 25% of electricity demand by 2030 (estimated on the basis of an installed capacity of 13 GW and an annual production of about 100 TWh). With the return to nuclear power the Italian government aims to improve energy security, stabilize electricity costs and lower the carbon intensity of the electricity sector.

6. Nuclear and CCS use more water per unit of energy produced than traditional coal-fired plants and CCS exhibits higher NOx and ammonia emissions (IEA, 2010).
7. In 2003 Scanzano Jonico was identified as the best option for the national nuclear storage site but the opposition of the local people hindered the project after few days of protest.
8. In 2008, 80% of households owned a car, 34% more than one car and 22% a motorcycle. Istat (2009), "La vita quotidiana nel 2008".
9. A larger share of people living in larger towns or in the Centre-South is critical of the quality of public transportation. See ISFORT (2010), "Settimo rapporto sulla mobilità urbana in Italia".
10. In 2007, 23% of cars had the strictest emissions standard (Euro 4) while this was true only for 10% of light duty vehicles and less than 4% of heavy duty vehicles.
11. In 2009 on average the limit was exceeded for 54 days in Italy.
12. At local level, regions and municipalities employ a set of planning instruments to tackle with the problems of congestions and reduced mobility (Piano Urbano del Traffico, Piano urbano della Mobilità) and of air pollution (Piano regionale per il risanamento e la tutela della qualità dell'aria), but those plans, as underlined in the last Italy Environmental Performance Review (OECD, 2002), are rarely integrated.
13. The effect of this measure on urban congestion is not clear: charged tariffs appear low by international comparison and while the instrument is well-suited in reducing parking duration and improving space management, it can increase cars' turnover with a negative effect on urban congestion. See Majocchi, A. and A. Zatti (2008), "Land use, congestion and urban management", ISAE Working Papers No. 99.
14. To properly assess the effect of the introduction of Ecopass one should understand to what extent the emissions reduction was to be ascribed to the effects of the economic crisis or to the continuous improvement in vehicle standards. A preliminary epidemiological assessment casts doubt on the reduction of air pollutants in the Ecopass area. See Ruprecht and Invernizzi (2009), "Milano, Ecopass e PM10". Epidemiologia and Prevenzione, 33(1-2), pp. 21-26.
15. The idea of funding public transports with the resources collected through the charge is one of the key strategies to improve public consensus. See Albalate D. and G. Bell (2008), "Shaping urban traffic patterns through congestion charging: What factors drive success or failure?", *Working Paper* 2008/01, Research Institute of Applied Economics, Universitat de Barcelona.
16. In 2009, the AV/AC line consisted in a network of about 1 000 km crossing the country from Torino to Salerno.
17. Urban waste means waste generated directly by households as well as packaging waste, etc., from the retail sector, all of which is usually handled by municipalities. But municipalities may also handle some industrial waste, while many industries handle their own, and the extent of this may vary significantly across countries. Urban waste statistics therefore may include some industrial waste, though the latter is usually subject to different legislation, mostly not discussed in this chapter.
18. Legislation in 2006 reduced the extent to which municipal waste could be collected along with other hazardous and non-hazardous waste. According to ISPRA this is in part an explanation of the flattening trend of urban waste generation in the statistics (ISPRA, 2010).
19. In fact the presentation of cost data in ISPRA (2010) is not comprehensive and contains some inconsistencies.
20. Perhaps more a reflection on transparency in the public administration (see Chapter 1) than on the likely effectiveness of SISTRI, it may be noted that in mid-November 2010 the SISTRI website provided no clear information on how much the fee for (compulsory) registration with SISTRI is. In December 2010, employers' organisations argued that the introduction of sanctions foreseen under the SISTRI regime should be delayed for a year because the system was not yet proven.
21. A similar provision exists for regions to impose commissioners on their component provinces or ATO.
22. The OECD does not collate internationally comparable figures on this issue, but some information is available. In England and Wales, where water is generally more abundant than in the south of Italy, water companies lose between 10% and 30%. According to the New Scientist magazine (30/10/2010), losses in some major cities in OECD countries ranged from 10% in Paris, 30% in Rome and London, 36% in Boston, 42% in Seoul. Singapore loses 4%, Dhaka 62%.

23. The text was inserted in a non-binding UN resolution, of which Italy voted in favour, while many OECD members abstained. The resolution (July 2010) states that governments should ensure that people have access to clean water, but does not stipulate how that access should be guaranteed, nor that it should be free.

24. Conviri (2010) has one mention of irrigation, in the context of possible subsidies for collecting rainwater. The word irrigation does not appear in the previous year's edition of the same report.

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