

Forza scienza!

Italy is a major economic power, but it underachieves in research. Alison Abbott examines attempts to reform the nation's scientific institutions — and considers their prospects under the new government of Silvio Berlusconi.

As Italy hosts the G8 economic summit in Genoa this week, its scientists can be excused for reflecting on the irony of their position. They work in one of the world's wealthiest countries, yet on most measures of activity in scientific research, Italy compares not with powerhouses such as the United States, Germany or Japan, but with such minor scientific nations as Portugal (see figure, opposite).

The problems of Italian science are partly a result of chronic underinvestment. But decades of bureaucracy and cronyism must share the blame. Until recently, with academic appointments placed in the hands of powerful centralized committees, patronage held sway. The limited sums made available for research, meanwhile, were spread thinly across disciplines and research groups, with little attempt to promote priority projects. The problems of Italian science, in fact, were shared by the entire public sector, allowed to fester by a corrupt political élite.

But in 1997, after the 'clean hands' judicial investigation into corruption had swept away the old political guard, the centre-left



In safe hands? Research and education minister Letizia Moratti with Prime Minister Silvio Berlusconi.

'Olive Tree' government led by Romano Prodi — now president of the European Commission — began to reform the system. In science, those reforms are still a work in progress. And with the Olive Tree coalition cut down in April's general election by the challenge of the populist media tycoon Silvio Berlusconi, their future is unclear.

Unknown quantity

Basic science seems unlikely to be a priority for Berlusconi's centre-right coalition: the campaign of his *Forza Italia* (Come on Italy!) party had virtually nothing to say on the subject. The head of the new 'superministry' for education and research, Letizia Moratti, is an unknown quantity in scientific circles — she previously headed an investment house and served briefly as president of RAI, Italy's state television network. Her deputy, nuclear engineer Guido Possa, was one of Berlusconi's schoolmates. "I'm waiting and watching to see what happens," says developmental biologist Edoardo Boncinelli of DIBIT, the Department of Biological and Technological Research at Milan's San Raffaele Institute.

The Prodi government kick-started its reforms with a law pushed through in 1997 by public works minister Franco Bassanini. For the following two years, this allowed existing statutes governing state institutions to be revised without parliamentary approval. Research organizations were subjected to the Bassanini reforms. But the details, and many key appointments, are still being filled in.

Attempts to restructure the CNR, Italy's national research council, which supports research in fields from psychology to chemical engineering, illustrate the current situation. A decree passed in April 1999 proposed a thorough restructuring, condensing the

CNR's 330 institutes and centres to 100, mostly through mergers designed to achieve a critical mass in each research area.

It also sought to introduce a simpler organizational structure. As a first step, two years ago, the CNR's 15 discipline-oriented 'advisory' committees were dissolved. These committees, dominated by university professors, exerted tremendous power. Not only did they control research funds earmarked for the CNR, but they also decided on appointments in its institutes and influenced the direction of large strategic projects funded by the research ministry. They distributed funds thinly and widely in an attempt to keep everyone reasonably happy, rather than rewarding excellence and innovation.

Power over the CNR's spending and administrative decisions will now rest in the hands of a nine-member executive council known as the *consiglio direttivo*. Four of its members will be appointed by the Assembly of Science and Technology (AST), which will also advise the government on all aspects of science policy. A further four will be elected by academic researchers, with the ninth being the CNR's president, Lucio Bianco. But with the AST still awaiting appointment, and with methods for electing academic representatives onto the CNR central committee still to be agreed, the council so far exists only in interim form.

The huge task of restructuring the CNR's institutes is being carried out, albeit slowly, by this interim council. The directorships of half of the new institutes have been advertised internationally — previously they were not even advertised in Italy — and the first handful of selections is expected to be made within the next few weeks.

The CNR's 4,000 or so researchers seem

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Life's speeding up at universities such as Bologna.

reasonably happy with the changes made so far. "What is clear already is that the CNR reforms are very real," says Alberto Passerone of the CNR Institute for Physical Chemistry of Materials in Genoa. "The impacts will be beneficial, in my opinion."

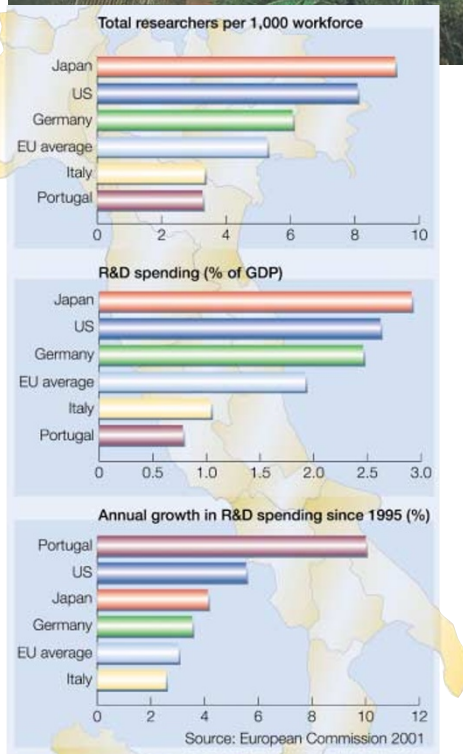
At Italy's smaller research agencies, reforms are progressing with varying degrees of success. The INFN, which supports research into nuclear and high-energy physics, was always efficiently run, and so has escaped major changes. Scientists funded by the Italian Space Agency (ASI), meanwhile, have profited from the reform process. ASI has no research institutes of its own, but its new governing statute, passed in 1999, made research its first objective. Since then, ASI's annual research budget has more than trebled, to 200 billion lire (US\$87.5 million), not counting Italy's contributions to the European Space Agency's science programme. "It is more than we have for our national programme in Germany," says an envious Günther Hasinger, director of the Max Planck Institute for Extraterrestrial Physics in Garching.

But the 1,500 staff of the ISS, the Higher Institute of Health in Rome, fear that the reforms have made a bad situation worse. The ISS both conducts medical research and is responsible for technical aspects of drug regulation. It was supposed to be reformed to boost its efficiency and make it independent of the health ministry. But its new statute, finalized earlier this year, appears to give even more power to bureaucrats who have traditionally frustrated the working lives of ISS scientists. "The situation is worse than ever," says one disgruntled staff member. Worryingly, research is not even mentioned in the ISS's new mandate. "We won a few battles in the restructuring, but we lost the war," says former ISS director Giuseppe Benagiano. Since April, the revamped ISS has been headed by Enrico Garaci, a microbiologist and former president of the CNR, who is seen as an old-style political appointee.

Wheeling and dealing

The research agencies are only half of the picture, however. The universities have contributed to the problems of Italian science, in particular through a system of academic appointments based on national competitions, or *concorsi*, that were notorious for the wheeling and dealing conducted on the appointment committees. During the mid-1990s, state prosecutor Adelchi D'Ippolito brought 50 cases alleging corrupt practices during *concorsi* — although none has yet led to a conviction.

In 1998, the national *concorsi* were replaced with a system that allows individual universities to make their own appointments. Dario Braga, a chemist at the University of Bologna who argued for reform for more than a decade, says that the advantage



of the new system is speed. "The old *concorsi* procedures used to take ages to draw conclusions, and the value of speed in Italy should not be underestimated," he says.

But he is disappointed that deal-making is still a large part of the process. Appointments at each university are now made by five-member committees, four of whom are elected at the national level by the relevant academic community. These elections are frequently rife with deal-making, the goal being the selection of committee members who will favour the 'right' candidate. These are often internal candidates who are cheaper to hire. The previous government recognized this problem, and provided funding to cover the additional costs of recruiting external candidates. But whether Berlusconi's administration will continue this policy is unknown.

Indeed, the new coalition's policies on science and the universities remain mysterious. *Nature* requested an interview with Moratti,

Slimmed down: bureaucracy at the national research council's base is being streamlined.

but she is not yet speaking about her plans.

Near the top of Moratti's in-tray must be the implementation of Italy's first national research plan, drawn up by the former government with the help of a high-level expert committee. It includes a series of strategic programmes, in areas such as post-genomics and nanotechnology, which are supposed to be funded over the next three years by a one-off windfall of some 800 billion lire from the sale of licences to companies operating mobile-phone networks. Researchers are now wondering whether the first call for proposals will go out in September, as planned, whether the programmes will be redirected into applied projects to reflect Berlusconi's business-oriented policies, or even whether a new set of priorities will be drawn up.

Scientists in the south of Italy, meanwhile, are nervous about the election of a government dominated by politicians from prosperous northern cities. The previous government supported investment in research in the economically depressed south, including a 40-billion-lire-development fund known as Biogem to build up a concentration of genetics in the Naples area. Biogem's president, Roberto Di Lauro, a geneticist at the Federico II University of Naples, says he is "waiting for the new government to settle, to see what commitment it will make to the south".

When it comes to the ongoing reforms that are the biggest issue facing Italian science, leading researchers want Moratti to push through the changes initiated by the previous government, and reward successful reform by increasing Italy's spending on research to levels commensurate with its status as a G8 nation. "It will be hard to operate the new system efficiently if there is no new money made available," says Arturo Falaschi, director of the International Centre for Genetic Engineering and Biotechnology in Trieste, and a member of the CNR's interim executive council. ■

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