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Researchers' Report 2014

Country Profile: Italy



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1. Key data

National R&D intensity target

“The Italian national R&D intensity target will be achieved if the current trend continues, but the target is not very ambitious. Italy set an R&D intensity target of 1.53% in the context of the Europe 2020 strategy, well below the current EU average, thus running the risk of the country falling far behind a moving technology frontier in some sectors of its economy. Over the 2000-2011 period, R&D intensity in Italy increased by an average of 1.69% annually, passing from 1.04% in 2000 to 1.25% in 2010. Both public sector and private sector expenditure on R&D have grown during the period, but at modest rates. The difference between Italy's R&D intensity and the EU average is mainly due to lower industrial R&D. In 2011 business R&D intensity in Italy was 0.68% compared to an EU average of 1.26%. Public sector R&D intensity is also lower than the EU average (0.53% for Italy compared to an EU average of 0.74% in 2011)¹.

Public funding for R&D as a percentage of GDP has been decreasing over the last eight years, after a period between 2000 and 2004 in which a substantial increase was registered. The need to reduce the public deficit has imposed budgetary constraints. The trend shows also a decreasing public R&D budget in 2011 and 2012. Likewise, Italy has one of the lowest levels of public expenditure on education as a % of GDP in the EU (4.7% in 2009). In addition, Italy faces the problem of very low business investment in R&D. The low level of business R&D intensity is partly linked to the structural composition of the economy which has a low share of high-tech industries in total manufacturing, and partly the result of low R&D investment by Italian firms. The small size of Italian firms, 95% of which are small or micro enterprises, aggravates this situation. There is also a low presence of foreign-owned firms which has remained unchanged over the period 2001-2008.

Italian R&D performers have received almost EUR 2.2 billion in EC contributions under the 7th Framework Programme (8.27% of the total EC contributions). Italy counts three universities (Bologna, Milan and Rome) among the top 50 participant HES organisations in FP7 and two research institutes among the top 20 participant REO organisations. For the ERDF programming period 2007-2013, Italy has been allocated a total of EUR 27 billion for research, innovation, support for SMEs, information technologies and other measures to stimulate innovation and entrepreneurship. These funds will be crucial for the development and catching up of some of the regions. However, by January 2012 only 34% of the available structural funds for research and innovation related themes had been allocated.”²

Key indicators measuring the country's research performance

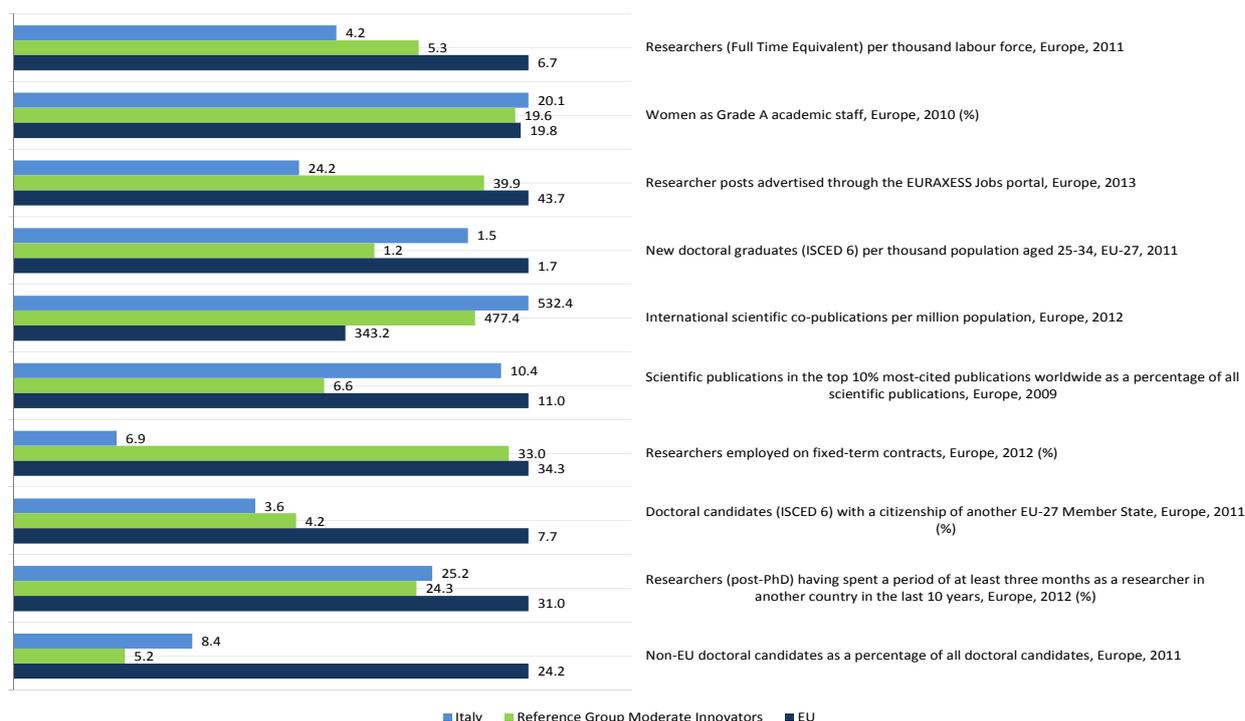
The figure below presents key indicators measuring Italy's performance on aspects of an open labour market for researchers against a reference group and the EU average³.

¹ In 2012, R&D expenditure was 1.27% (Eurostat, 2014).

² European Commission (2013), “Research and Innovation performance in EU Member States and Associated countries. Innovation Union progress at country level 2013”

³ The values refer to 2013 or the latest year available.

Figure 1: Key indicators – Italy



Source: Deloitte

Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, UNESCO OECD Eurostat education survey, Innovation Union Scoreboard 2014, MORE2.

Notes: Based on their average innovation performance across 25 indicators, Croatia, Czech Republic, Greece, Hungary, Italy, Lithuania, Malta, Poland, Portugal, Slovakia and Spain show a performance below that of the EU average. These countries are “Moderate innovators”⁴.

Stock of researchers

The table below presents the stock of researchers by Head Count (HC) and Full Time Equivalent (FTE) and in relation to the active labour force.

Table 1: Human resources – Stock of researchers

Indicator	Italy	EU Average/Total
Head Count per 1 000 active labour force (2011)	6.05	10.55
Head Count (2011)	151 597	2 545 346
FTE per 1 000 active labour force (2011)	4.23	6.75
Full time equivalent (FTE) (2011)	106 151	1 628 127

Source: Deloitte

Data: Eurostat

2. National strategies

Italy has introduced a range of initiatives aimed at creating the conditions to train enough researchers to meet its R&D targets and at promoting attractive employment conditions in public research institutions. The table below presents key programmes and initiatives intended to implement the strategic objectives to train enough researchers to reach Italy’s R&D targets, to promote attractive working conditions, and to address gender and dual career issues.

⁴ European Commission (2014), “Innovation Union Scoreboard 2014”

Table 2: National strategies

Measure	Description
Law 240/2010 on the General Reform of University Education (2010)	The Law on the General Reform of University Education introduced a new procedure in relation to the research profession 'career ladder' in state-owned universities. In addition, it set out a two-step process for researchers' careers ⁵ . Its Articles cover several relevant topics, e.g. researcher statutes, industry-academia partnerships. Gender equality provisions are limited to a generic 'declaration of intent'. The implementation of the Law is under way at universities and is resulting in profound structural changes in the way they are organised.
Law 238/2010: Tax incentives for the return of workers to Italy (2010)	This Law offers fiscal incentives to EU citizens who are holders of a university degree or an advanced tertiary degree. The beneficiaries need to have a work experience of at least twenty four months working outside Italy or their country of origin. The fiscal incentives pay particular attention to conditions for women.
National Agency for the Evaluation of Universities and Research Institutes (ANVUR) (since 2012)	ANVUR, which became operational in 2012, aims to evaluate the quality of research of all Italy's public research institutions and universities. An evaluation exercise was carried out for the seven-year period 2004-2010 (known as "VQR"). The results were published in July 2013. As a result of its findings, a performance-related element will apply to the government resources allocated to universities and public research organisations. In addition, the Agency has a mandate to establish a procedure for the accreditation of university teaching as well as to establish the criteria for participation in the national accreditation (<i>abilitazione</i>) of university professors and researchers. The criteria for PhD programme accreditation were issued in 2014, with the aim of assuring doctoral study quality standards, as a guarantee to candidates wishing to engage in a PhD.
National University Science Degree Plan (2010-2013)	The Ministry of Education, University and Research's National University Science Degree Plan aimed to increase the number of enrolments in scientific disciplines at university level through an improved approach to teaching. The National Plan was the successor of the University Science Degrees project that started in 2004.
Resolution of 6th October 2009 (2009)	In the context of the European Partnership for Researchers, the Italian Parliament adopted a Resolution aimed at improving researchers' employment and working conditions. Law 240/2010 is partly compliant with the objectives set out in the Resolution.

Source: Deloitte

3. Women in the research profession

Measures supporting women researchers in top-level positions

In 2010, the percentage of women grade A academic staff was 20.1% in Italy compared with 19.6% among the Innovation Union reference group and the EU average of 19.8%⁶.

At policy level, there is a Memorandum of Understanding on gender equality in the research profession between the Ministry of Education, Universities and Research and the Department for Equal Opportunities within the Office of the President of the Council of Ministers. The Department has also participated actively in a number of EU-funded projects promoting gender equality.

Table 3: Measures promoting equal representation of genders

Measure	Description
The STAGES project - Structural Transformation to Achieve Gender Equality in Science	The STAGES project - Structural Transformation to Achieve Gender Equality in Science, was financed by DG Research and Innovation of the European Commission within the Seventh Framework Research Programme and has the general aim of increasing the participation and career advancement of women researchers. It is coordinated by the Department for Equal Opportunities with the assistance of a research centre specialised in gender and science – ASDO, and involves five research institutes/universities from Italy,

⁵ The two-step process for researcher careers is: (1) a three year fixed-term contract (type A contract) – with the possibility of a two-year extension, awarded via an open selection process (which must be advertised on EURAXESS Jobs Portal), the researcher can participate in calls for a type B contract (three year fixed term, not renewable), under a public competitive process (also advertised in EURAXESS Jobs). During this triennium, the researcher can participate in a national evaluation aimed at obtaining a *habilitation* (the highest academic qualification). If the researcher is successful, the university can enrol him/her in a permanent position. A similar procedure is expected to be introduced in state-run Research Centres (e.g. CNR).

⁶ See Figure 1 "Key indicators – Italy".

Measure	Description
	Denmark, Germany, Netherlands and Romania. These are implementing a self-tailored action plan with activities in three strategic areas: a women-friendly environment, gender-aware science and women's leadership in science.

Source: Deloitte

In addition, Italian regional authorities have implemented specific measures to support female students' participation in scientific programmes in Universities (mostly at bachelor level) and to support women's careers through scientific training schemes.

Quotas to ensure a representative gender balance

In Italy, only a few universities indicate that they have quotas in the composition of their internal boards. However, Law 240/2010 calls for a representative gender balance in the 'Board of trustees' of research institutions.

Parental leave

Researchers may be entitled to maternity leave, depending on the type of contract with the host institution. Maternity leave is generally provided for in temporary contracts in accordance with the conditions defined by national laws and regulations. Research institutions enjoy the right autonomously to provide additional benefits to women researchers.

4. Open, transparent and merit-based recruitment

Recruitment system

Law 240/2010 promotes an open and transparent recruitment system.

Although the level of openness and transparency is not yet fully in line with the principles of the 'Charter & Code', the process is under way and this has been proved by the constantly growing number of research institutions (mainly universities) interested in joining the Human Resources Strategy for Researchers process. In addition, universities and public research organisations are requested to publish their research grant offers on the EURAXESS Jobs portal. In 2013 this obligation was also extended to PhD fellowships.

Open recruitment in institutions

The table below presents information on open recruitment in higher education and public research institutions.

Table 4: Open recruitment in higher education and public research institutions

Do institutions in the country currently have policies to ...?	Yes/No	Description
– publish job vacancies on relevant national online platforms	Yes	Law 240/2010 states that all (fixed-term) positions should be published on the national and EU websites. Even before adoption of this law, some Italian universities and research institutions were publishing their vacancies on the EURAXESS Jobs section on a voluntary basis. The vacancies are also available on a national database (run by the relevant Ministry).
– publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)	Yes	Law 240/2010 states that all positions should be made publicly available on national and EU websites. This obligation also includes PhD fellowships.
– publish job vacancies in English	Yes	
– systematically establish selection panels	Yes	Institutions have policies systematically to establish selection panels.
– establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)	Partly	The number and role of selection panel members is established by law. Inclusion of foreign experts is recommended by law 240/10, but it is not mandatory. A foreign member is always included on panels for awarding national accreditation for professors. There are no provisions for gender balance.
– publish the composition of a selection	Yes	Institutions must (by law) publish the composition of

Do institutions in the country currently have policies to ...?	Yes/No	Description
panel (obliging the recruiting institution)		the selection panels.
– publish the selection criteria together with job advert	Partly	The selection criteria are published together with the job advert.
– regulate a minimum time period between vacancy publication and the deadline for applying	No	Some institutions have adopted the 60-day rule defined by the 'Charter & Code' on an autonomous and voluntary basis.
– place the burden of proof on the employer to prove that the recruitment procedure was open and transparent	No	The burden of proof is placed on the applicant who has to prove, by a redress procedure, that the procedure was neither open nor transparent
– offer applicants the right to receive adequate feedback	Yes	All relevant documents are accessible to the applicants, on request.
– offer applicants the right to appeal	Yes	Institutions offer applicants the right to appeal.

Source: Deloitte

EURAXESS Services Network

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 24.2 in Italy compared with 39.9 among the Innovation Union reference group and an EU average of 43.7⁷.

Research grants from public research organisations and universities are regularly posted on the EURAXESS jobs portal. Law 240/2010 requires that all (fixed-term) positions be published on national and EU websites. The new Act on Doctoral Training (published on February 8, 2013) explicitly mentions publication of doctoral fellowships on the EURAXESS portal.

EURAXESS Italy provides information and administrative assistance on entry conditions and matters related to the relocation of researchers in another country (i.e. working conditions, social security, accommodation, etc.) during periods of mobility.

5. Education and training

Measures to attract and train people to become researchers

The Italian Government has implemented a set of initiatives aimed at increasing students' interest in (natural) science and technology with the ultimate aim of attracting them to become researchers.

For instance, the annual Week of Scientific Culture and the organisation of similar events by Italian institutions during the European Union's 'Researchers' Night' aim to make young people more familiar with and attract them to science. Additionally, most Italian universities and research centres meet regularly with primary and secondary education authorities to promote the research profession.

The National Plan for University Science Degrees introduced an improved approach to teaching to increase the number of enrolments in scientific disciplines at university level. As a result, the number of enrolments in science and technology-related disciplines has increased in recent years by approximately 20% on average (taking the year 2008 as baseline).

Doctoral graduates by gender

The table below shows doctoral graduates in Italy by gender as a ratio of the total population cohort.

Table 5: Doctoral graduates by gender

Indicator	Italy	EU average
New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (total) (2011)	1.5	1.7
Female Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2011)	1.6	1.6
Male Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2011)	1.4	1.8

Source: Deloitte

Data: Eurostat

⁷ See Figure 1 "Key indicators – Italy".

Funding of doctoral candidates

In Italy, doctoral candidates are not always supported by fellowships. In 2008, approximately 60% of some 37 000 PhD students received a fellowship and this trend is confirmed by recent data. Until recently, the Government promoted various funding schemes on specific or general topics and subject to specific conditions.

As a result of the current economic and financial crisis and accompanying austerity measures, the Ministry of Education, University and Research has put many funding schemes on hold. Consequently, some Italian Universities have introduced internal rules to co-fund doctoral studies with financial resources based on their research grants.

Measures to increase the quality of doctoral training

The new Act on Doctoral Training (2013) includes measures aimed at increasing the quality of doctoral training, and encourages academia-industry collaboration, but it does not fully cover the “Principles for Innovative Doctoral Training”.

Doctoral Programmes are assessed and evaluated at national level by the Ministry of Education, University and Research, on the basis of an evaluation and accreditation process against a set of criteria drawn up by the National Agency for the Evaluation of Universities and Research Institutes (ANVUR).

Skills agenda for researchers

The Italian Government has not adopted a Skills’ Agenda to improve researchers’ employment skills and competencies. However, higher education institutions are increasingly providing a variety of training and several skills portfolios on an autonomous basis.

6. Working conditions

Measures to improve researchers’ funding opportunities

The ratio of R&D investment to GDP is lower than the average in other countries. The Italian government has introduced fiscal incentives for the private sector to invest in R&D development. A private company is able to fund doctoral study only on the basis of an agreement with a university.

Remuneration

Under Law 240/2010, researchers’ pay no longer increases automatically with age, but is results-related: young researchers receive regular pay increases irrespective of age, but in general the remuneration of active researchers will increase based on their effectiveness and research activity.

For further information, see the country profile on remuneration of researchers from the MORE2 study on the EURAXESS website⁸.

Researchers’ Statute

Researchers (including doctoral candidates not receiving fellowships/stipends/grants) are eligible for social security coverage. Law 240/2010 on the General Reform of University Education ‘discourages’ exploitation of researchers and doctoral candidates. Once employed under a fixed-term contract, researchers are supposed to receive a fixed salary.

Italian universities and state-run research centres (e.g. the National Research Council - CNR) statutorily enjoy a high degree of autonomy in allowing students and researchers to participate in decision-making processes.

Law 240/2010 includes a fixed 15% quota for student representation on the decision-making boards of Italian universities. However, the fixed quota does not explicitly cover ‘research fellows’; they are generally included in the quota reserved for the ‘academic staff’ on the Academic Senates.

⁸ <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

‘European Charter for Researchers’ & the ‘Code of Conduct for the Recruitment of Researchers’

The ‘Charter & Code’ principles are referred to in several Articles of Law 240/2010. However, they are promoted merely based on an ‘encouragement to comply’ rather than a mandatory obligation.

Autonomy of institutions

Italian universities and research centres are autonomous in developing the different profiles of their academic staff. However, under Law 240/2010, institutions are in theory free to develop specific profiles for their staff – ranging from 100% teaching to 100% research, with all possible ‘mixtures’ in between. However, institutions need to take the restrictions established by the Law into account, as well as the minimum number of annual teaching hours for professors and maximum amount of annual teaching hours for ‘research fellows/lecturers’).

Career development

Law 240/2010 foresees a two-step process for researcher careers: (1) a three year fixed-term contract (type A contract) – with the possibility of a two-year extension, awarded via an open selection process, (2) the researcher can participate in public competitive calls for a type B contract (three year fixed-term, not renewable). During this triennium, the researcher can participate in a national evaluation aimed at obtaining *abilitazione* (accreditation – the highest academic qualification). If the researcher is successful, the university is required to enrol him/her in a permanent position.

Shift from core to project-based funding

In Italy, the shift from core to project-based research funding is still modest. Most researchers have the status of public servants and their salary is covered by core funding. Restrictions have been placed in the recent past over the amount by which State core funding could increase or decrease. Overall, core funding guarantees the salaries of the staff (researchers, technicians and administrators), while project-based funding covers research activities and infrastructures.

Social security benefits (sickness, unemployment, and old-age)

Researchers with publicly funded fellowships/grants or employment contracts are entitled to sickness benefits, but do not have an automatic right to maternity leave.

Old-age benefits are foreseen both for employees (permanent and fixed-term contracts) and for those on temporary contracts. However, the procedures which apply to the two groups are not the same.

7. Collaboration between academia and industry

Law 240/2010 establishes a legal framework for regulating partnerships between academia and industry. A vast majority of universities and doctoral schools offer doctoral programmes between academia and industry on the basis of a memorandum of understanding. Thanks to their autonomy, Italian universities are free to establish bilateral relations with the business sector.

Moreover, doctoral students are free to sign a high level apprenticeship contract (*contratto di alto apprendistato*) with an enterprise. Enterprises and other (private) employers can recruit a PhD student (under the age of 29) under a fixed-term contract subsidised by the local (regional) governments.

Decree 297/1999 allocates financial contributions to SMEs where a researcher from a university or a (public) research centre is employed by the company for a period of at most four years, renewable only once (eight years in total). However, this possibility has rarely been taken up.

The new Act on Doctoral Training promotes industry-academia doctoral programmes. On occasion, several Regions have financed mixed industry-academia doctoral programmes which are conditional on the doctoral candidate’s inter-sectoral mobility.

8. Mobility and international attractiveness

In 2011, the percentage of doctoral candidates (ISCED 6) with citizenship of another EU-27 Member State was 3.6% in Italy compared with 4.2% among the Innovation Union reference group and an EU average of 7.7%⁹. In

⁹ See Figure 1 “Key indicators – Italy”.

the same year, the percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 8.4% in Italy compared with 5.2% among the Innovation Union reference group and an EU average of 24.2%¹⁰.

Nevertheless, there are a few Italian universities attracting a higher number of non-Italian students and/or doctoral candidates (as high even as 30%), thanks *inter alia* to the development of teaching activities in English.

Measures aimed at attracting and retaining 'leading' national, EU and third country researchers

The *Rita Levi Montalcini* Programme is a national fellowship programme managed by the Ministry of Education, University and Research. It promotes the internationalisation of Italian universities by enabling early-stage researchers working abroad to carry out research projects at an Italian university of their choice. Its purpose is to recruit outstanding post-doctorate researchers working abroad and give them the opportunity to submit a proposal for a temporary position in conjunction with a proposal for a research grant.

Inward mobility (funding)

Although Italy has transposed the Scientific Visa Directive 71/2005 Universities and public research organisations have still faced difficulties when recruiting third country researchers. Some problems have been partly overcome thanks to fruitful cooperation established in 2013 between the ministry, universities, research organisations, the Italian Rectors' Conference and the Ministry of Foreign Affairs. This resulted in amendments to the procedures on immigration being introduced in December 2013, thus establishing the conditions for facilitating the entry of third country researchers to Italy.

Outbound mobility

The Italian Government has not put in place concrete measures to encourage young researchers to spend some time as a researcher in another country. However, the activation of Doctoral Training Courses in IT since 1985 has opened up the opportunity for doctoral candidates to spend some time working abroad. Since then, approximately 20% of doctoral candidates have benefited from this mobility support and this has been encouraged by recent national regulations on PhD programmes.

A few universities have also adopted, on a voluntary basis, an internal regulation which requires that doctoral students spend at least six months outside Italy before they sit their final exam to obtain their doctoral degree. In general, the outbound/inward mobility ratio is extremely high, to an extent that it has become a worry for the Research Authorities.

Promotion of 'dual careers'

The Italian Government has no national policy to support researchers' dual careers, but some general measures are being implemented, on a voluntary basis, by a few universities (e.g. reserved places at kindergartens for researcher couples' children). On the whole, however, higher education institutions and public research centres do not promote researchers' dual careers.

Portability of national grants

In Italy, publicly funded grants or fellowships are not portable per se but they can potentially be portable on a case-by-case basis.

Access to cross-border grants

In Italy, national grants or fellowships are open to graduate students of all nationalities. However, all non-national beneficiaries are obliged to carry out part of their project in Italy, though they do not necessarily need to become Italian residents.

¹⁰ Ibid.