The glass ceiling for female mathematicians in Italy

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The Italian mathematical community is made up of approximately 3000 mathematicians, who cover the positions of researchers, associate professors and full professors in Italian universities, plus a consistent number of young people in various post doc positions. According to the various areas of research, they are divided into seven sectors, which are called MAT 01 to 09 and SECS–S06, precisely devoted to logic, algebra, geometry, complementary mathematics, analysis, probability and statistics, physical mathematics, numerical analysis, operational research, mathematical methods for economics, actuarial and financial sciences.

As in a report of 2011, below we have described the precise situation at August 2013 with histograms.

A comparison of the data for 2011 and 2013 did not show any great difference. We can say that cuts in research and universities have led to a reduction in the workforce and, in particular, in the number of female in the staff.

Even now we observe the existence of the glass ceiling; the so-called "pipeline shrinkage" is quite clear. Only around twenty per cent of Italian full professors in mathematics are women, even though more than half of the graduates in mathematics are women. The Minister of University and Research has pointed out very clearly that women are doing very well in Italy in all degree courses in scientific areas. Of course this does not mean that things are going to be easy in the future. But at least in the Italian governance of mathematics, women steadily enter in the control room. As regards the Italian Association of Mathematics Applied to Economic and Social Sciences (AMASES) only two members are women, the Vice-President and Secretary.

We strongly believe that more work has to be done in this direction, but things are actually changing as far as the glass ceiling is concerned.

As we pointed out in a similar report in 2011, there are organizations in Italy who take care of the Italian mathematicians : the Italian Mathematical Union (UMI) , the National Institute for Advanced Mathematics (INdAM) All have a President, a Vice

President and a Scientific Committee. UMI is the Italian mathematical society. INdAM is the Italian Mathematics Research Institute, and it is a self-governing state research institute, similar to CNR, the National Research Council and INFN, the National Institute for Nuclear Physics. It is legally constituted and supervised by MIUR, the Ministry responsible for University Education and Research, and is extremely important because it receives money from the State to promote research in mathematics.

In the Scientific Committee of UMI, which is formed by the President, the Vice-President, the Administrator and the Secretary, plus 15 elected members, there are two women.

At INdAM, which is run by a President, a Vice-President and the Scientific Council, composed by seven elected members, there are also two women, one is the Vice-President.

This situation is actually quite new. As a matter of fact, two years ago the Italian Government organized the reform of the Italian Research and the Board of Administration of INdAM adopted a new Statute. One of the main features of this Statute was that new equal opportunity rules were introduced for elections of the governing members, and these produced, after the elections in July 2011, the presence of one woman in the Scientific Council and a woman as Vice President. One has to understand that up to 2007 no woman was ever elected in the INdAM governance. One of the visible effects of the gender oriented rules adopted by INdAM in the sequel was the introduction in 2013 of "quotas" in the election of the Scientific Councils of the four National Research Groups of INdAM. As a matter of fact, besides the 10 members of the research staff (three members on the Board of Administration, including President and Vice-president, plus seven members in the Scientific Council) the Institute has four Research Groups called GNAMPA (mathematical analysis, probability and their applications), GNFM (mathematical physics), GNCS (computer science) and GNSAGA (algebraic and geometric structures and their applications), and there are around 2500 members. Each group takes care of the research in its area.

On the occasion of the renewal of the Scientific Councils of each group, thanks to the "quotas", there is now at least one woman in each Council, up to three women in the groups GNCS and GNSAGA: in addition to the five elected members, for each group two experts have been nominated by the Board of Administration, eight all together, and among these there are two women.

Moreover, for the first time a woman has been nominated Director of one of the groups, GNCS.

This is an important step ahead, as the main goal in any positive action for the achievement of equal opportunities is to increase the presence of women in governance.

Of course, we are still far away from a real gender equality, but one has to take into consideration the fact that INdAM promotes the training of researchers in mathematics at national, international and European Community levels, develops research in pure and applied mathematics, especially in the emerging branches, fosters close contact between Italian and international mathematical research, so one understands that the existence of women in the ruling positions can help a gender oriented attitude.

This is not just a statement. In the four years of vice-presidency of a woman, equal opportunity rules were introduced in the yearly national challenge for bursaries awarded to students at the Bachelor level of study in the new LMD System, intended for nurturing vocations for mathematics among the young, and an Equal Opportunities Committee was appointed in the INdAM Co-fund Programme within the FP7 Marie Curie Actions active from 2011. This Committee regularly takes care of the gender balances in each of the bursaries.

Moreover, on the occasion of the initiative called “INdAM Day”, featuring four high-level expository lectures which took place in 2008 (Padua), 2009 (Turin), 2010 (Catania), 2011 (L’Aquila), Genoa (2012), Palermo (2013), each time among the speakers a female mathematician was chosen, i.e. Claire Voisin, Idun Reiten, Irene Fonseca, Laure Saint-Raymond, Olga Holtz, Sophie Morel.

In any case all general improvements have been monitored since 2012 by the Italian Mathematical Union (UMI), which has appointed a Group for Equal Opportunities composed of six Italian female mathematicians who have the task of taking care of gender issues among the Italian mathematical community.

Lucia Maddalena (data elaboration)

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FIGURE: Gender distribution for several university roles and for the sectors of italian mathematicians

MAT/01 LOGICA MATEMATICA

MAT/02 ALGEBRA

MAT/03 GEOMETRIA

MAT/04 MATEMATICHE COMPLEMENTARI

MAT/05 ANALISI MATEMATICA

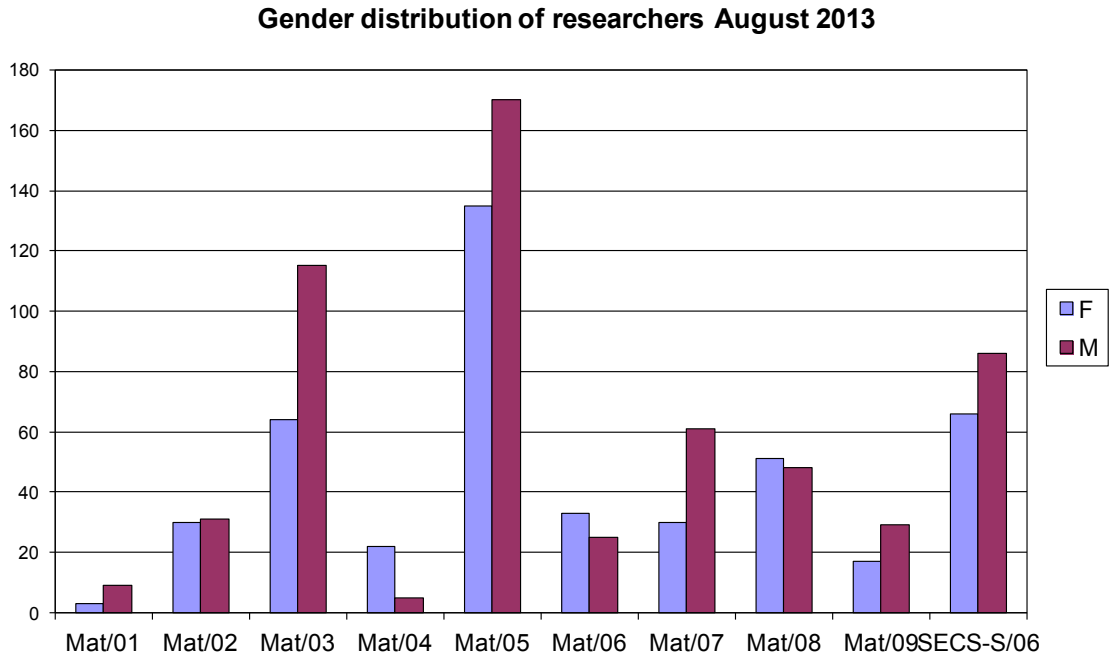
MAT/06 PROBABILITÀ E STATISTICA MATEMATICA

MAT/07 FISICA MATEMATICA

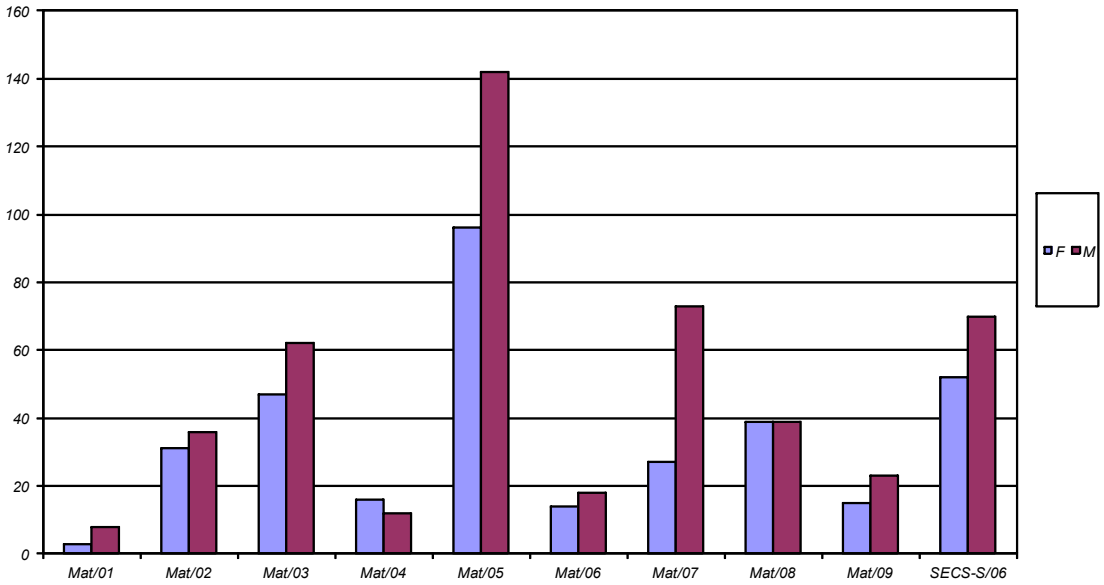
MAT/08 ANALISI NUMERICA

MAT/09 RICERCA OPERATIVA

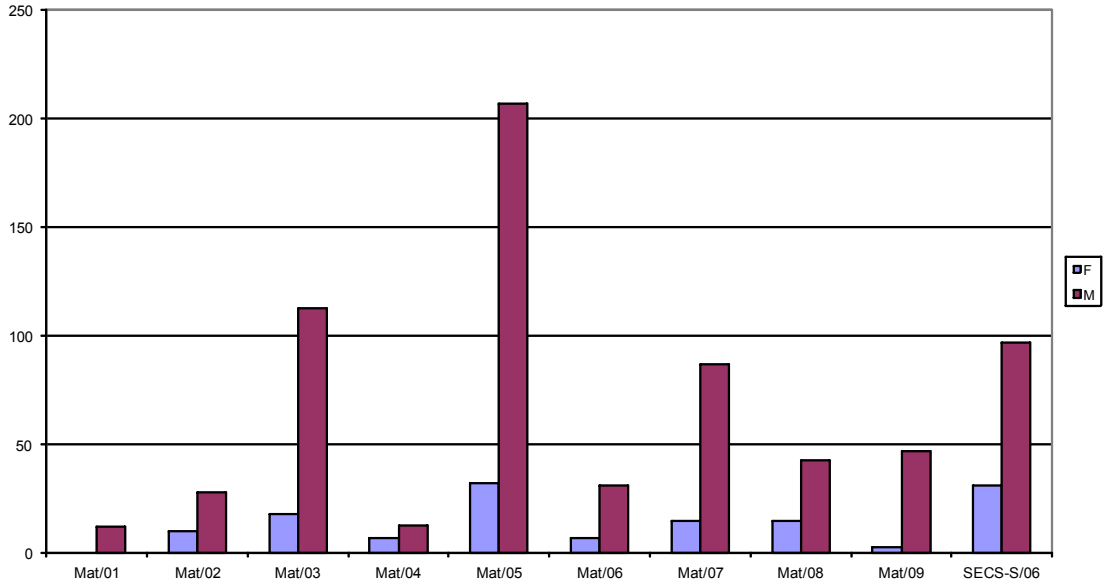
SECS-S/06 METODI MATEMATICI DELL'ECONOMIA E DELLE SCIENZE ATTUARIALI

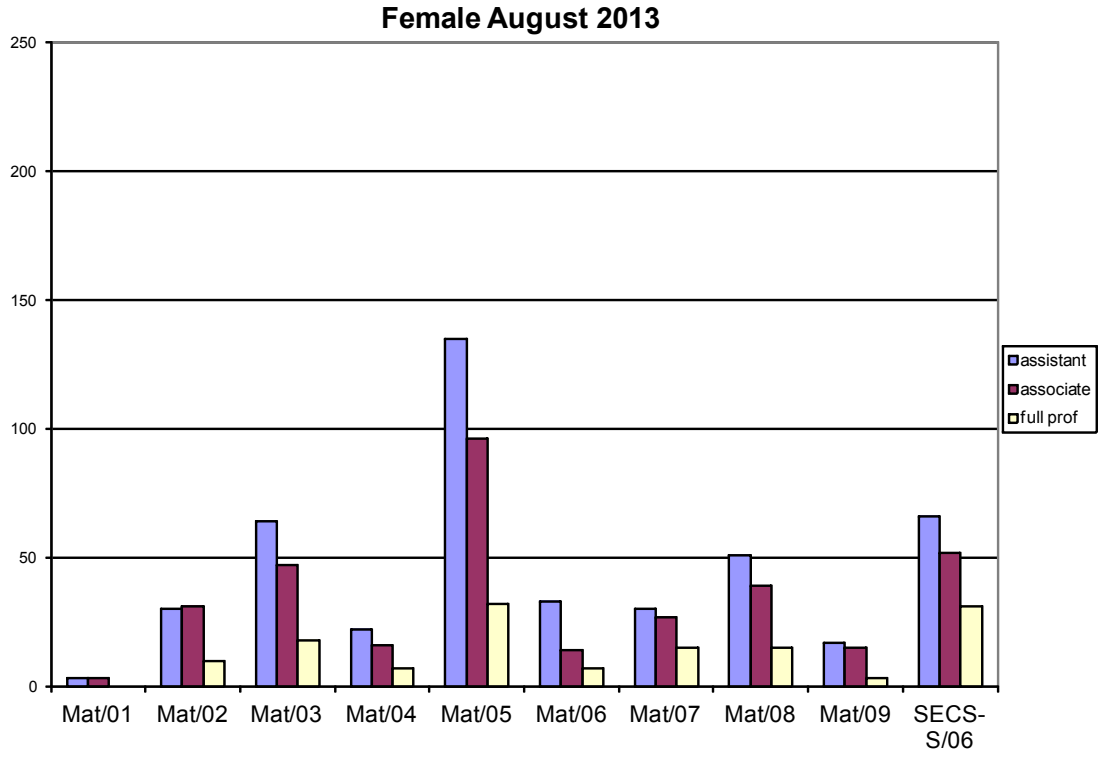


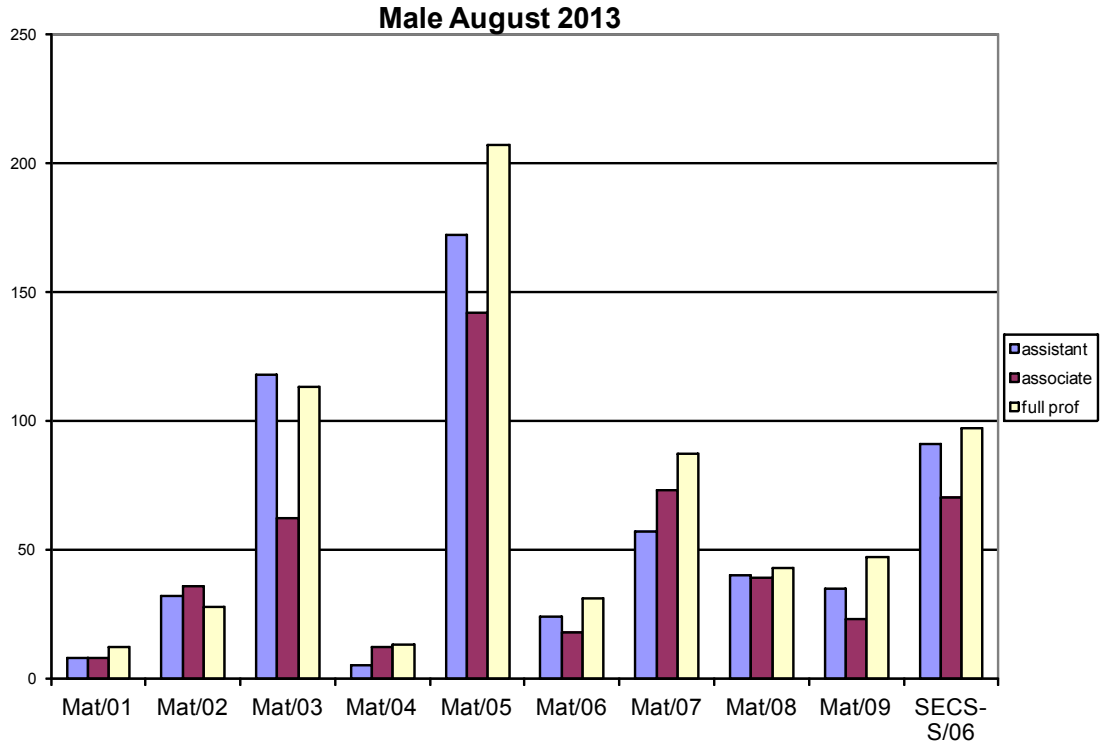
Gender distributions of associate professor August 2013



Gender distributions of full professor August 2013




Female August 2013
250
200
150
100
50
0
Mat/01
Mat/02
Mat/03
Mat/04
Mat/05
Mat/06
Mat/07
Mat/08
Mat/09
SECS-S/06
assistant
associate
full prof


Male August 2013
250
200
150
100
50
0
Mat/01
Mat/02
Mat/03
Mat/04
Mat/05
Mat/06
Mat/07
Mat/08
Mat/09
SECS-S/06
assistant
associate
full prof

Gender distribution for several university roles of Italian mathematicians in 2011 and 2013

	2011	2013
Researchers		
Female	477	451
Male	582	579
Associate Professor		
Female	372	340
Male	497	483
Full Professor		
Female	155	138
Male	743	678