
Mobility of Scientists across Europe: The Role Played by European Research Funding

ADRIANO ZECCHINA* in cooperation with
ALBERTO ANFOSSI**

*University of Turin, Dipartimento di Chimica, Via Pietro Giuria 7, 10126,
Torino, Italy.

E-mail: adriano.zecchina@unito.it

**Compagnia di San Paolo, Sistema Torino Scarl, Corso Vittorio Emanuele 75,
10128, Torino, Italy.

E-mail: alberto.anfossi@csp-st.it

The European Research Council has provided substantial research grants across all disciplines during the period 2007–2013. An analysis of the distribution of the ERC (IDEAS) Starting, Consolidator and Advanced grants shows substantial differences by country. On the one hand, the UK excels in the relative number of awards, in its share among the top receiving institutions, in a high proportion of inwards mobile scholars and in the overall financial gain through ERC as compared with the UK's contribution to the EU budget. In addition, the Netherlands is among the winners in these respects. On the other hand, Italy fares unfavourably according to these measures. In the search for an explanation of the Italian situation, a comparison is undertaken with other European countries of a similar size. The article arrives at the conclusion that low Italian success in efforts to raise such ERC funds is not due to the low average quality of the Italian education and research system, but rather due to low funding, e.g. to a low proportion of the GDP spent on research.

Introduction

Before presenting the state of discussion concerning the impact of the research promotion in the framework of the European Research Council (ERC) and of the actual projects on European researchers' mobility, it is appropriate to underscore that the author of this contribution is not a specialist in the domains of migration and mobility. Rather, this presentation is based on the experiences of a professor (now emeritus) of physical chemistry who has been a member of the ERC panel PE4 for

four years. This experience, together with the stimulus deriving from the difficult Italian situation, has fuelled my curiosity and brought me to compile a few thoughts about the ERC program and some comparative data as regards EU countries. The data presented here are taken from official ERC sources and cover the 2007–2013 period. This overview cannot be comprehensive; readers interested in further details might consult the official ERC sources.

Some major features of the ERC (IDEAS) programme have to be named here in order to increase the readability of the data. Funding of projects is provided for different so-called ‘calls’: Starting, Consolidator and Advanced calls. Starting calls are designed for researchers of any nationality with 2–7 years of experience from the completion of a PhD (or equivalent degree) and with a scientific track record showing great promise. Consolidator calls address researchers of any nationality with 7–12 years of experience from the completion of a PhD (or equivalent degree) and with a scientific track record showing great promise. In the 2007–2013 period, only a few Consolidator calls have been operative. Advanced calls are meant for researchers of any age and nationality. Applicants must be scientifically independent and must have a recent research track-record and profile that identify them as leaders in their respective field(s) of research.

The Starting calls for young researchers will be most thoroughly scrutinized. As the envisaged research activities happen in an early stage of a scientific career and as the researchers in question are searching for a position at European universities or research institutions, they will be considered in greater detail, because they indicate the actual or prospective mobility of the new generations.

The calls are grouped into three disciplinary areas: Social sciences and humanities (SH); Life science (LS); and Physical sciences and engineering (PE). The so-called Social sciences and humanities ‘aggregation’ is undertaken in six calls (SH1–SH6), that for Life science in nine calls (LS1–LS9) and that for Physical and engineering in ten (PE1–PE10) calls, thus altogether in 25 calls. These 25 calls aim at covering all disciplines: all aspects of human knowledge ought to be represented. Thus, in principle, IDEAS is designed to provide opportunities for all people and to support cultural exchange among different nations. Individual Starting grants may run as high as €2 million, Consolidator grants €2.75 million, and Advanced grants €3.5 million. The total amount available for the 2007–2013 period was €7.5 billion.

The Awards for the Various Countries

The total number of Starting and Advanced grants awarded during the period 2007–2013 to scholars of EU member states was 3209, while the number of grants for associated countries was 519. The awards to the individual countries are presented in Figure 1. Some features are visible at first glance. The formidable score of the UK is most impressive, accounting for 25.8% of all grants. This finding is most striking if compared with countries with a similar population size, such as Germany (16.4%), France (15.3%), Italy (6.7%) and Spain (6.3%). Only the Netherlands – a relatively small country with 9.3% of the grants – appears to be equally successful. Among the associated countries, Switzerland and Israel obtain a substantial number of

ERC grants selected for funding by country of host institution (*)

(*) Current host institutions; data as of 11/02/2014 – Starting Grant calls 2007-2013, Consolidator Grant 2013 and Advanced Grant calls 2008-2013

Country of HI	Starting Grant							Consolidator Grant					Advanced Grant					Total	
	2007	2009	2010	2011	2012	2013	Total StG	2013	Total CoG	2008	2009	2010	2011	2012	2013	Total AdG	StG+CoG+AdG		
AT	5	7	15	16	11	11	65	6	6	9	7	6	7	3	6	38	109		
BE	10	14	15	21	23	15	98	16	16	5	2	5	9	6	10	37	151		
BG	1						1			1		1				2	3		
CY	2		1			1	4	1	1	1			1	2		4	9		
CZ	1		1	1			4	1	1	2		1		1	1	5	10		
DE	32	30	78	65	80	43	328	43	43	29	31	47	53	41	43	244	615		
DK	3	7	6	10	13		39	6	6	4	3	4	9	9	5	34	79		
EE	1	1		1			2									1	3		
EL	4	3	3	4	4	2	20	2	2	4		2	4	3	1	14	36		
ES	23	19	26	27	26	14	135	20	20	14	12	13	15	15	13	82	237		
FI	7	6	6	9	8	3	39	4	4	8	1	4	3	3	5	24	67		
FR	41	32	73	57	82	30	315	42	42	35	33	32	34	42	37	213	570		
HR						1	1									1	2		
HU	6	1	5	3	2	2	19	2	2	4	1	4	3	2	1	15	36		
IE	3	3	5	6	4	2	23	2	2			3	2	3		8	33		
IT	24	17	20	27	28	8	124	20	20	17	14	21	22	14	19	107	251		
LV																1	1		
NL	27	17	24	48	47	29	192	29	29	20	18	18	21	31	29	137	358		
PL	1	2	3	2	2	1	11			1	1		1			3	14		
PT	2	3	5	7	5		22	4	4	1	1	2	2	2		8	34		
SE	11	6	21	14	21	9	82	10	10	18	12	11	9	6	8	64	156		
SI				1			1							1		1	2		
SK					1		1										1		
UK	56	43	73	123	139	64	498	60	60	59	64	57	71	86	65	402	960		
CH	17	21	28	23	36	22	147	23	23	30	31	20	21	25	25	152	322		
IL	22	12	26	23	26	33	142	17	17	15	11	13	11	17	18	85	244		
IS										1						1	1		
NO	1	1	2	5	4	3	16	1	1	4	3	7	3	4	3	24	41		
TR					2	1	3	2	2							1	6		
Total	299	245	436	486	566	300	2 332	311	312	282	245	271	301	319	290	1 708	4 351		

Figure 1. Financed Starting and Advanced grants during 2007–2013 period (source: ERC Facts and Figures)

grants – more than Italy and Spain, countries with a much larger population. The setting is similar with regard to Consolidator grants, which are not covered in Figure 1.

Information is also available about the institutions, at which the grantees had prepared their eventually successful proposals. Among the 38 institutions most frequently featuring in this list, eight institutions that are located in the UK score high: University of Cambridge (76), University of Oxford (72), Imperial College (42), University College (42), National Institute of Health and Medical Research (28), University of Bristol (24), University of Edinburgh (23), and Medical Research Council UK (17). The major Institutions located in Germany are: Max Plank Society (62), University of Munich (23), University of Heidelberg (17), and Technical University of Munich (16). France is strongly represented by CNRS (124), French Alternative Energies and Atomic Energy Commission (29), Pasteur Institute (17). Spain is represented among the 38 institutions only by the Spanish Research Council (20), and Italy is not present among these institutions at all (not even the Consiglio Nazionale delle Ricerche) – a dramatic fact that will I will comment upon shortly. A look at the remaining 22 of the top 38 institutions underscores the good performances of those located in the Netherlands as well as in Switzerland and Israel. Some outstanding institutions might be named: the two Swiss Federal Institutes of Technology, the Hebrew University of Jerusalem, the Weizman Institute, the Leiden and Utrecht Universities and the Karolinska Institute in Sweden.

Actually, Italian institutions in the 2007–2013 period were awarded 127 Starting grants and 88 Advanced grants. Italy is absent from the list of the top 38 institutions,

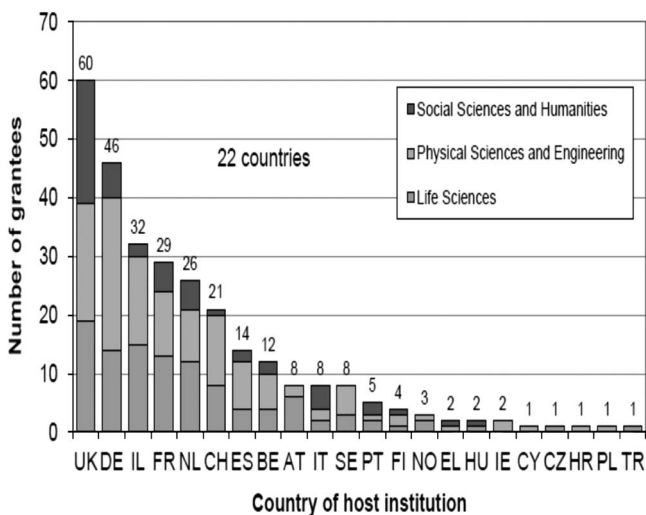


Figure 2. The Starting grants distribution among the EU countries in 2013 (source: ERC Facts and Figures)

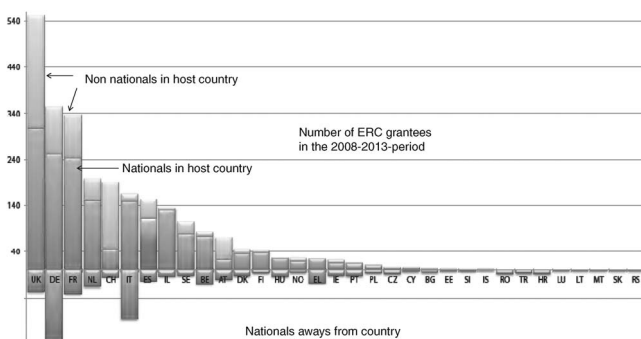


Figure 3. Nationality and national location of grantees of Starting grants and Advanced grants (source: ERC Facts and Figures)

though, and overall is underrepresented if the population size is taken as a criterion. It will be discussed later whether this can be regarded as indicating a low scientific level and a lower level of research productivity.

Figure 2 shows the distribution of Starting grants in the year 2013 by country and disciplinary area. It confirms by and large the findings presented above. As regards Italy, it must be stated that the 2013 results presented in Figure 2 are the worst of the overall 2007–20013 period.

Researchers’ Mobility

The ERC grants are open for mobile researchers. Notably, Starting grants are designed for young researchers possibly searching for a position and possibly being mobile.

Figure 3 is especially designed to illustrate the international mobility of persons awarded starting and advanced grants. The dark tone in the centre of the columns shows – for example in the first column – UK grantees located in UK and the dark grey, at the top of the columns, shows non-UK grantees located in the UK and the grey at the bottom the UK grantees located outside the UK.

A comparison of the situation in the five countries of comparable size, i.e. the United Kingdom (UK), Germany (DE), France (FR), Italy (IT) and Spain (ES), is particularly interesting. The UK situation is characterized by a much higher number of incoming non-national grantees, i.e. researchers coming from other countries to conduct research at UK institutions, than of outgoing grantees. This suggests a very high attractive capacity of the UK research system.

The situation of Germany is characterized by almost a balance. The number of incoming grantees (about 100) is not much lower than the number of outgoing grantees (about 150). The situation for France and Spain is reversed, although characterized by smaller numbers.

The situation of Italy is exceptional with a much higher proportion of outgoing than of incoming grantees. In other words: Italy is exporting young researchers. Altogether, the sum of mobile, i.e. incoming and outgoing researchers is similar in the case of Italy as in the case of France. The data suggest, however, that Italian researchers are appreciated in other countries.

The available data are sufficient to estimate the financial gains and losses of the individual European countries through the awards of these ERC grants. The available information on the total amount of grants, divided by the number of granted projects, shows that the average amounts to €1,670,798. By multiplying this average with the number of grants per country, we can estimate the ‘income’ of each country through ERC grants. There are also data available regarding the contribution of each country to the overall budget (here calculated as the average over five years; non-EU countries are excluded in this calculation). In this way we can estimate whether the individual countries get a larger share of ERC grants than their contribution to the EU budget or a lower share.

The calculation shows that the nations having positive Δ are the United Kingdom, the Netherlands, Sweden and Belgium. The United Kingdom, as the most successful place in applying for grants, is clearly the dominant winner with about €800 million. The nations having negative Δ are Germany, France, Italy and Spain. Italy is clearly the biggest loser with about €570 million.

The Situation of Italy

The available information shows that Italy is underrepresented among the ERC grantees. Italy is not even represented at all among the 38 institutions with the highest number of awards. The first obvious question is whether this indicates a low scientific quality and a low scientific productivity of Italian researchers? A precise answer regarding scientific productivity can be given on the basis of a recent report provided by ANVUR (Agenzia Nazionale di Valutazione dell’ Università e della Ricerca –

National Evaluation Agency of University and Research). This report shows that the number of scientific papers per research unit (normalized scientific production) in Italy is high and even superior to that of many of the countries cited above. This indicates that Italian researchers active at universities and other institutions are very productive. This finding might challenge the widespread negative opinion about the Italian research and higher education system, and this also explains why young Italian researchers, who are the products of Italian universities, can find good positions abroad. The real problem is the low investment in research in Italy, which amounts to only 1.27% of gross domestic product as compared with an EU average of almost 3%. The Italian rate has not increased over the last 20 years, in fact it has decreased. This also explains – at least in part – why so many Italian researchers opt for outwards mobility.

Conclusions

The distribution of research funds of the European Research Council turns out to be quite uneven by country. The high success of the UK and a few other countries suggests that EU countries with a high concentration of research in prestigious universities and research centres are the main beneficiaries of ERC financial support. As Italy fares negatively in terms of ERC support and suffers an outflow of researchers who are awarded ERC grants, the reasons for this need looking into. The available information suggests that Italy does not fare badly in those respects due to a – often assumed, but by available data not confirmed – low average productivity of the Italian education and research system. Rather, research expenditures in Italy need to be increased.

About the Author

Adriano Zecchina is emeritus professor of the University of Turin, where he covered the chair of Physical Chemistry. He is member of the scientific board of Scuola Superiore of the same university. He is member of Accademia delle Scienze di Torino and of Accademia dei Lincei. He is author of about 450 papers in international journals covering chemistry, physical chemistry and catalysis.

Alberto Francesco Anfossi is head of the fund-raising office at Compagnia di San Paolo Sistema Torino Scarl. He got a PhD in theoretical Physics at Politecnico di Torino and a master degree in Economics at Collegio Carlo Alberto. He collaborates with the Italian Agency for the Evaluation of Universities and Research (ANVUR).