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Scientometrics

An International Journal for all
Quantitative Aspects of the Science of
Science, Communication in Science and
Science Policy

ISSN 0138-9130

Volume 124

Number 2

Scientometrics (2020) 124:925-952

DOI 10.1007/s11192-020-03509-2

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Investigating the relationship between job satisfaction and academic brain drain: the Italian case

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Received: 2 June 2019 / Published online: 25 May 2020
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Abstract

This work aims to show whether working in a good organisational atmosphere (job satisfaction) in the academic sector influences the propensity to migrate. This theory was tested using two surveys administered to Italian researchers abroad (IRA) and Italian researchers in Italy (IRI). The main purposes were: first, to study the relation among job satisfaction, quality of life and the propensity to migrate between IRA and IRI; second, to quantify how job satisfaction influences the academic brain drain propensity and the quality of life. Our research reveals a dual state of Italian academic job satisfaction. Those researchers who live abroad report satisfaction for all the four dimensions of job satisfaction, which influences positively their quality of life and decreases their propensity to return to Italy. In contrast, researchers that remain in Italy adapt to the system and record negative perception of job satisfaction, low quality of life and show propensity to emigrate abroad. The Italian academic environment must improve its status with an emphasis on organisational and job satisfaction. This can be done through a direct intervention in organisational administration favouring streamlined procedures, functional research productivity, harmony of academic standards and a meritocratic reward process.

Keywords Academic brain drain · Academic job satisfaction · Education policy · Human capital · Ordered probit

JEL Classification I28 · I29 · J24 · O15

Introduction

Job satisfaction and quality of life are two of the main factors to assess the determinants of a worker's performance (Iaffaldano and Muchinsky 1985; Böckerman and Ilmakunnas 2012; Saranya 2014; Oswald et al. 2015). This is indeed true for the academic context,

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where a lot of mental energy is needed to produce the output (Torrissi 2013). The complexity of the phenomenon (Masum et al. 2015) makes it difficult to find a univocal definition for “job satisfaction”. As a result, many aspects need to be considered and among the others, working environment and quality of life represent two important variables (Raziq and Maulabakhsh 2015; Ramawickrama et al. 2017; Haddon 2018).

Job satisfaction and quality of life are closely related and sometimes it is difficult to distinguish whether is the former to influence the latter or vice versa (Taylor 1977). However, several aspects, primarily environmental and socioeconomic resources, are relevant for both factors. In this paper, we test two hypotheses. The first hypothesis concerns whether an appropriate organisational atmosphere and a high level of job satisfaction are correlated with propensity for academic migration (or academic brain drain) and perception of quality of life. The second hypothesis concerns whether job satisfaction affects perceived quality of life and tendency towards the academic brain drain. These findings are very important, as a matter of fact, there have been various studies related to job satisfaction (e.g. Locke 1976; Cranny et al. 1992; Aronson et al. 2005), and part of them investigated higher education and the dynamics of academic mobility (e.g. Eyupoglu and Saner 2009; Scott 2015; Teichler and Cavalli 2015).

Several statistical tools and ordered probit modelling are used in this study to test the two hypotheses. The main purposes were: first, to study the relation among job satisfaction, quality of life and propensity to migrate between IRA and IRI (see “Dataset and methodology” Section for a definition); second, to quantify how job satisfaction influences academic brain drain propensity and quality of life. These targets were reached implementing micro-data gathered by one of the authors, in the spirit of validating empirically an issue vastly analysed in literature from a theoretical perspective.

Theoretical framework

Job satisfaction

Scientific studies on perception of life quality are diverse and have developed the concept of job satisfaction in different ways (Wingo 1973; Roback 1982; Kahneman et al. 1999; Biagi et al. 2006; Cheshire and Magrini 2006; Shapiro 2006; Kollmann et al. 2020). Job satisfaction is the oldest paradigm used in the context of organisational psychology. Many authors see it as a powerful measure of attitudes in organisational research (Wright 2006). Job satisfaction is the feeling of pleasure resulting from the appraisal of the work performance (Locke 1976). The simplicity of this classic definition hides the multidimensional structure of job satisfaction.

Job satisfaction is composed of the following elements: an *emotional component* (Weiss and Cropanzano 1996), which is the pleasurable emotional state perceived by human capital; a *cognitive component* (Lawler 1973), which is the perception of “fair or unfair” treatment in relation to colleagues (in terms of responsibility, career development, achievement and recognition); a *behavioral component* (Hackman and Oldham 1976), which refers essentially to how the job is conducted and determined (Herzberg 1959).

The models mentioned above are all elements that influence, positively or negatively, job satisfaction in the workplace. We now shift our attention to the effects on performance and quality of work that typically result from a state of ease or discomfort with the work. They include withdrawal or absenteeism, high turnover, workplace abandonment and

negative individual outcomes, such as stress, burnout, and bullying (Akerlof et al. 1988; Clarke et al. 1998; Freeman 1977; Penn et al. 1988). These effects tend to set the level of comfort or discomfort that permeates an organisation and, consequently, the wellness of the actors involved.

The studies produced on the issue are generally theoretical in nature, but many empirical works have enlightened the importance of the topic. For example, Cheshire and Magrini (2006) identified the determinants of quality of life and how they are linked to territorial characteristics; Shapiro (2006) studied the link between human capital productivity and perceived quality of life; De Man (1931) and Accornero (2006) studied the multidimensionality of job satisfaction in relation to individual, social, cultural, environmental and organisational factors. In a recent paper, Webber (2019) remarked the fact that environment plays a relevant role in determining the satisfaction of faculty members. Machado-Taylor et al. (2016) related academic job satisfaction to 11 dimensions: “teaching climate, management of the institution/department/unit, colleagues, non-academic staff (administrative staff, technical, and laboratory staff), physical work environment, conditions of employment, personal and professional development, institutional culture and values, institutional prestige, research climate, and general satisfaction” (Machado-Taylor et al. 2016, p. 546). However, in this work we envision job satisfaction, as perceived in the workplace, as having four dimensions (Torrissi 2013): *physical*, *organisational*, *relational*, and *personal satisfaction*. Each dimension generates effects on the quality of life and the propensity to leave the current work environment for a better one. The four dimensions are described in Torrissi (2013); they are used in this work as proxies obtaining four dimensions for job satisfaction. The four dimensions are:

1. *Physical* (B_p) is the dimension of satisfaction related to material aspects of the workplace, such as individual safety or adequacy of working instruments.
2. *Organisational structure* (B_o) is the dimension of satisfaction related to the entire organisational structure. Relevant examples are working schedules, bureaucracy, or the role of the policy maker with respect to the profession.
3. *Relational (or group)* (B_r) is the dimension of satisfaction deriving from the relationships and the habits characterising a given work environment.
4. *Individual satisfaction* (B_p) can be defined as “the level of subjective wellbeing attributed to that “sense of pleasure” [...] with respect to Locke’s classical definition of job satisfaction” (Torrissi 2013, p. 803). This of course may vary from individual to individual and includes how autonomy at work is considered by researchers, how researchers perceive their career, and how much equity and remuneration are linked to the effective performance.

It is evident that these dimensions affect how workers perceive their quality of life and, therefore, they can be used to strengthen our knowledge of the phenomenon of brain drain (Torrissi 2013), in this case studying the Italian academic context. The choice of this model depends on the fact that we are using the same data for the present study, therefore, it is necessary to maintain the definitions provided by the author of the dataset (see “[Dataset and methodology](#)” Section for further information on data).

Finally, we should clarify the idea of quality of life investigated in this paper. As pointed out by one of the reviewers, scientific mobility does not relate only to the academic context, but also to the welfare system, the housing market, and other social and economic aspects. This can influence the decision to stay or move abroad, but this aspect of quality

of life is not investigated in this paper. In this research the decision to move or to stay is only related to the academic system, other elements were excluded because they were not part of the project. Nonetheless, these elements are important in explaining the decisions of scholars and the interested readers are referred to other works (see, for example, Saint-Blancat 2017a, b).

Brain drain

Academic mobility, a broad term to refer to students and academic staff members moving to another institution inside or outside of their own country, has received great interest since the 1990s (e.g. Altbach 1989; Blumenthal et al. 1996; Welch 2008; Fahey and Kenway 2010; Jöns 2015). In this context, the notion of brain drain is particularly important. The name was coined by the London-based newspaper Evening Standard in the 1960s to describe the emigration of UK scientists to the United States and Canada in the 1950s and 1960s (Cervantes and Guellec 2002; Balmer et al. 2009; Jöns 2015). The notion of brain drain usually identifies “a permanent loss of highly skilled professionals with significant negative effects for the home countries” (Jöns 2015, p. 374) and should be conceptually discerned from the notion of brain circulation. Brain circulation can be intended as a reversion of brain drain (Saxenian 2005). This can be a positive phenomenon because once the skilled workers who left their home countries return home, they can establish new relationships while maintaining their social and professional ties with the foreign country (Saxenian 2005).

In this paper, we focused on the notion of brain drain. This choice is motivated by the available data: through our questionnaire it was not possible to gather information whether the intention of the respondents was to exploit the network built abroad to enforce their position in Italy. With our survey, we aimed to gather information on the level of satisfaction of scholars with the Italian system. This research serves to measure potential brain drain as it explores the propensity of scholars to return to Italy or to emigrate abroad. In fact, job satisfaction has a relevant role in explaining brain drain as shown by many researchers in different geographical contexts (e.g. Monteleone and Torrissi 2012a, b; Okoro et al. 2014; Moris et al. 2017).

Dataset and methodology

The data are based on the surveys administered in 2009 and in 2010 used in the work of Torrissi (2013). They can be divided into two categories: 1400 individual online interviews of Italian researchers abroad (IRA) and 4700 interviews of Italian researchers in Italy (IRI). The advantage of such a survey design is that with micro-data, we can better investigate the opinions of individuals, whereas common databases cannot offer such a deep analysis.

The IRA data derive from a sample of 1400 Italian Ph.D. researchers (assistant professors) and Italian professors at various universities worldwide. The target respondents were Italian immigrant researchers in appealing foreign countries in terms of career perspectives (see Table 6). Even years after of our survey, career perspectives still represent one of the main drivers of migration as shown in a study of Franzoni et al. (2015). Of the 1400 individuals contacted, only 68% (955/1400) responded in full. Of the respondents, 42.1% were tenured researchers, 35.7% were associate researchers and full professors, 15.08% were Ph.D. students, finally, 7.1% were postdoctoral researchers. To compose the

Table 1 Classification of factors representative of wellness in IRA and IRI. *Source:* Torrissi (2013) (Table 1)

IRA	IRI	Score on	
$X_{26.1}$	$X_{19.1}$	Work organisation as a whole	B_o
$X_{26.2}$	$X_{19.2}$	Workplace	B_f
$X_{26.3}$	$X_{19.3}$	Policies supporting research	B_o
$X_{26.4}$	$X_{19.4}$	Freedom in choice of research topics	B_p
$X_{26.5}$	$X_{19.5}$	Career development	B_p
$X_{26.6}$	$X_{19.6}$	Work hours	B_f
$X_{26.7}$	$X_{19.7}$	Relationship with superiors	B_r
$X_{26.8}$	$X_{19.8}$	Relationship with colleagues	B_r
$X_{26.9}$	$X_{19.9}$	Availability of scientific equipment	B_o
$X_{26.10}$	$X_{19.10}$	Affinity in teamwork	B_r
$X_{26.11}$	$X_{19.11}$	Bureaucratic level	B_o
$X_{26.12}$	$X_{19.12}$	Easy access to information	B_o
$X_{26.13}$	$X_{19.13}$	Workplace safety	B_f
$X_{26.14}$	$X_{19.14}$	Level of satisfaction with work	B_p
$X_{26.15}$	$X_{19.15}$	Level of satisfaction with salary	B_p
$X_{26.16}$	$X_{19.16}$	Level of satisfaction with research funds	B_o

IRI dataset, 4700 Italian researchers were interviewed (by population source MIUR¹), with a response rate of 76% (3575/4700). The IRI sample was derived from a population of 26,312 researchers distributed among Italian universities: 43.7% of the respondents were experienced researchers (i.e. associate researchers and full professors), 23.4% were Ph.D. students, 17.8% were confirmed researchers and 15% were postdoctoral researchers.

Both the surveys were carried out through an online questionnaire administered to the selected subjects, whereas the sample methodology derives from previous studies (Skonieczny and Torrissi 2009, 2010; Monteleone and Torrissi 2012a, b; Biondo et al. 2012; Torrissi 2013). The questionnaire administered to both IRA and IRI (Catania University StatEcon database 2010) quantified 60 variables in six macro-areas (Skonieczny and Torrissi 2009; Monteleone and Torrissi 2012a, b; Biondo et al. 2012; Torrissi 2013): “(a) general aspects; (b) evaluation and comparison of the Italian system and host country system; (c) motivation for migration; (d) level of satisfaction [...] with certain factors in the host country; (e) motivation to return and quality of life; (f) aspects on productivity” (Torrissi 2013, p. 804).

The data gathered included several job aspects, from the type of contract to the quality of work and social life. Tables 1 and 2 show, respectively, the composition of the (d) and (e) macro-areas, which are the focus areas of this paper.

The four dimensions of IRA and IRI job satisfaction were estimated via mean values of opinions, relatively to the variables used to define each dimension. In other words, for example, the dimension B_f is quantified taken the mean of the respondents’ scores for each variable used to define that dimension. Further information on the procedure to obtain the four dimensions can be found in the paper of Torrissi (2013) and the interested readers are referred to that source. The overall well-being (which is a synthetic job satisfaction indicator for IRA and IRI) “was estimated using the index

¹ The MIUR is the Italian Ministry for Education, University and Research.

Table 2 Classification of factors representative of propensity to return to Italy (IRA) or to emigrate from Italy (IRI). *Source:* StatEcon - Unict - Anno 2010

Score on	IRA	IRI
Propensity to return in Italy (IRA) or to emigrate from Italy (IRI)	X_{27}	X_{24}
Quality of life perceived abroad (IRA) or quality of life perceived in Italy (IRI)	X_{29}	X_{25}

Table 3 IRA and IRI responses distribution by university type (first table) and IRA and IRI distribution responses by time spent abroad (second table). *Source:* StatEcon - Unict - Anno 2010

University	IRA X_7 %	IRI X_5 %
Private	27.4	8.7
Public	72.6	91.3
Total	100.0	100.0
Time	IRA X_{13} %	IRI X_9 %
< 1 year	3.2	26.3
1 to 5 years	35.4	67.1
5 to 10 years	23.1	6.6
> 10 years	38.3	–
Total	100.0	100.0

weight average of the 4 dimensions in relation to the number of variables used for each dimension (the weight is calculated as the ratio between the number of variables for each dimension of wellbeing, compared to the total of the variables used in the questionnaire)” (Torrise 2013, p. 805). Mathematically:

$$I_i^{B_{IRA}} = B_f * 0.20 + B_o * 0.33 + B_r * 0.20 + B_p * 0.27 \tag{1}$$

$$I_i^{B_{IRI}} = B_f * 0.19 + B_o * 0.38 + B_r * 0.19 + B_p * 0.25 \tag{2}$$

The weights in formulas (1) and (2) are computed “as the ratio between the number of variables for each dimension of wellbeing, compared to the total of the variables used in the questionnaire” (Torrise 2013, p. 805). The analysis for each variable was carried out on an individual basis using different scales of measurement. Principally, the Likert scale was employed, however, for some variables the use of ordinal, nominal and interval-based scales was needed. The methodology adopted consisted of the Chi squared test (level of significance at 5%), analytical techniques to quantify the relationship between ordinal variables (Kendall’s tau-b) and ordered probit models.

Table 4 IRA and IRI responses distribution relatively to adequacy of research financed (first table) and IRA and IRI distribution of responses relatively to access to research funding (second table) *Source*: StatEcon - Unict - Anno 2010

Is research financed adequate?	IRA $X_{13}\%$	IRI $X_9\%$
No	90.9	95.1
I do not know	6.2	2.8
Yes	2.9	2.1
Total	100.0	100.0
How is the access to research funding?	IRA $X_{14}\%$	IRI $X_{10}\%$
N.R.	4.3	–
Meritocratic	5.4	9.7
Not meritocratic	90.3	90.3
Total	100.0	100.0

N.R. stands for “no response”

Descriptive IRA and IRI results

From the IRA and IRI sampling process, the following descriptive picture emerged. Over 72% of respondents abroad found work at a public university, whereas 91.3% of respondents in Italy (see Table 3) worked, at the time of the questionnaire, in a public university. Most of the researchers abroad had lived abroad for more than a year, while only 6.6% of the Italian researchers in Italy have lived abroad for more than 5 years (see Table 3).

Before discussing the dimensions of job satisfaction, the respondents' opinions regarding the organisational system of research in Italy should be compared with the system of their host countries. This information is important to introduce a detailed analysis of job satisfaction. The respondents (90.9% for IRA and 95.1% IRI) overwhelmingly answered that research in Italy is not adequately financed (see Table 4) and that access to financing programs is mostly not meritocratic (for both IRA and IRI) (see Table 4). More than 90% of IRA had a favourable opinion of the level of research development in their host country (see Table 5). Furthermore, more than 96% of the IRA were satisfied with their salary (see Table 5), while 51% of IRI were dissatisfied; 91.3% of IRA believed their career progress was meritocratic (this percentage is consistent across all countries analysed except for Canada, France, Spain and Switzerland). For those working in Italy (IRI) who had experiences abroad, we assessed meritocratic career progress in the host country (see Tables 6, 7). What emerges from Tables 6 and 7 is that, Italian researchers abroad considered meritocratic the system of other countries (except for Spain), whereas Italian researchers working in Italy, who spent a period of study abroad, thinks that the Italian system is not totally meritocratic. Surprisingly, Italy was the only country reputed to be not totally meritocratic by all the IRI respondents that worked for a period abroad (Table 7).

The job satisfaction levels of Italian researchers abroad (IRA) were high for all 4 dimensions (B_f, B_o, B_r, B_p). Overall, the majority of IRA respondents perceived a high level of well-being in the workplace (see Table 8-IRA). The trend was reversed in the perception of satisfaction at work for Italian academics (IRI). They predominantly perceived low to medium job satisfaction levels, both in the overall vision and individual size dimensions; most responses for IRI are concentrated at low and moderate levels (see Table 8-IRI).

Table 5 IRA and IRI responses distribution relatively to development level of research in the host country (first table) and IRA and IRI responses distribution relatively to salary in the host country (second table). *Source:* StatEcon - Unict - Anno 2010

Rating of the development level of research	IRA $X_{19}\%$	IRI $X_{15}\%$
Very low	.7	1.3
Low	.7	1.3
Sufficient	6.9	7.0
Good	49.5	47.5
Excellent	42.2	43.0
Total	100.0	100.0
Rating of the salary	IRA $X_{20}\%$	IRI $X_{16}\%$
Very low	–	12.8
Low	3.2	38.8
Sufficient	17.0	35.2
Good	58.5	11.7
Excellent	21.3	1.4
Total	100.0	100.0

Table 6 IRA responses distribution relatively to level of career advancement (X_{21}) for host country (X_8). *Source:* StatEcon - Unict - Anno 2010

X_8 (Country)	X_{21} (Career advancement)			Total (%)
	Totally meritocratic (%)	Not meritocratic (%)	Somewhat meritocratic (%)	
Other	100.0			100.0
Austria	100.0			100.0
Canada	88.4		11.6	100.0
France	80.5	9.8	9.8	100.0
Wales	100.0			100.0
Germany	100.0			100.0
England	96.8		3.2	100.0
Netherlands	100.0			100.0
Scotland	100.0			100.0
Spain	66.7		33.3	100.0
South Africa	100.0			100.0
Switzerland	81.8		18.2	100.0
USA	94.0		6.0	100.0
Total	91.3	1.0	7.7	100.0

The propensity to return to Italy (IRA) is predominantly very negative (31.4%) and low (39.3%), contrary to the medium–high propensity to emigrate from Italy (IRI). Opinions of the quality of life abroad (11.2% Average; 49.5% High; 34.9% Very high) are higher than those recorded in Italy (64.2 Average; 13.1% High; 0.7% Very high) (see Table 9).

The correlations between job satisfaction and quality of life (X_{29} for IRA) perceived abroad and tendency to return to Italy (IRA) (X_{27} for IRA) confirm and reinforce the results on the

Table 7 IRI rating of the level of meritocracy in career advancement by state (X_{17}) for host country (X_7) but working in Italy (IRI). *Source:* StatEcon - Unict - Anno 2010

X_7	X_{17}					
	Totally meritocratic	Not meritocratic	Somewhat meritocratic	As in Italy	I do not know	Total
Germany	56.3	6.3	6.3	6.3	25.0	100.0
Poland	100.0					100.0
Australia	100.0					100.0
Austria	100.0					100.0
Belgium	20.0	20.0	20.0		40.0	100.0
Canada	66.7		16.7		16.7	100.0
Finland	100.0					100.0
France	37.5		18.8	18.8	25.0	100.0
Japan	100.0					100.0
England	81.5	3.7			14.8	100.0
Ireland	100.0					100.0
Italy			100.0			100.0
Luxembourg	100.0					100.0
Norway	100.0					100.0
Netherlands	80.0				20.0	100.0
Scotland	50.0				50.0	100.0
Spain	45.5		27.3	18.2	9.1	100.0
Sweden	100.0					100.0
Switzerland	85.7		14.3			100.0
USA	66.7				33.3	100.0
Total	67.7	1.9	8.9	4.4	17.1	100.0

Table 8 IRA and IRI distribution responses in relation to the 4 dimensions of job satisfaction. *Source:* StatEcon - Unict - Anno 2010

Rating	IRA					IRI				
	B_f	B_o	B_r	B_p	I_i^{BIRA}	B_f	B_o	B_r	B_p	I_i^{BIRI}
Very low	–	–	–	–	–	0.7	4.6	1.4	0.7	–
Low	3.6	1.5	3.1	–	0.5	12.1	44.0	11.3	28.7	22.0
Sufficient	7.2	17.4	11.0	4.3	8.4	42.2	45.0	35.8	53.9	64.2
Good	51.9	66.0	51.9	55.8	67.8	37.6	5.7	40.4	16.0	13.1
Excellent	37.3	15.1	34.0	39.9	23.3	7.4	0.7	11.0	0.7	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

For a definition of I , see Eqs. (1) and (2) in “Dataset and methodology” Section

perceived well-being of Italian researchers living abroad. All relationships are significantly positive for the perceived quality of life and negative for the propensity to return to Italy (see Table 10). This result confirms that the presence of positive factors is associated with both the perception of quality of life and the decision to return or remain in the place evaluated.

Table 9 Percent distribution of propensity to return to Italy (X_{27IRA}), perceived quality of life abroad (X_{29IRA}), propensity to migrate from Italy (X_{24IRI}) and perceived quality of life in Italy (X_{25IRI}). *Source:* StatEcon - Unict - Anno 2010

Rating	X_{27IRA}	X_{29IRA}	X_{24IRI}	X_{25IRI}
Not at all	31.4	1.5	13.6	0
Low	39.3	2.8	27.5	22.0
Average	18.1	11.2	30.0	64.2
High	11.2	49.5	12.5	13.1
Very high	0	34.9	16.4	.7
Total	100.0	100.0	100.0	100.0

Table 10 Kendall's tau-b correlation among propensity to return to Italy (X_{27IRA}), perceived quality of life abroad (X_{29IRA}), propensity to migrate from Italy (X_{24IRI}), perceived quality of life in Italy (X_{25IRI}) and the four dimensions of job satisfaction

	Correlation	B_f	B_o	B_r	B_l	$I_i^{B_{IRA}}$
X_{29}	Kendall's tau-b	.255(**)	.169(**)	.202(**)	.143(**)	.238(**)
	p-value	.000	.000	.000	.002	.000
X_{27}	Kendall's tau-b	-.162(**)	-.043	-.123(**)	-.072	-.126(**)
	p-value	.000	.339	.006	.118	.006
	Correlation	B_f	B_o	B_r	B_l	$I_i^{B_{IRI}}$
X_{24}	Kendall's tau-b	.027	-.084	.048	-.052	.011
	p-value	.601	.104	.340	.309	.826
X_{25}	Kendall's tau-b	-.018	.015	.065	-.042	-.002
	p-value	.741	.785	.221	.443	.976

For a definition of I , see Eqs. (1) and (2) in “Dataset and methodology” Section

**Correlation is significant at the 0.01 (2-tailed)

This trend is largely reversed in correlations of the same variables for Italian researchers in Italy (IRI). In fact, no significant results emerge from the coefficients of the relationships between well-being, quality of life (X_{25} for IRI) and propensity to leave Italy (X_{24} for IRI) (see Table 10).

From these results, we can assume that those who remain in Italy get used to their work environment and organisational climate. If they were not, it would significantly affect both their quality of life and propensity to leave. Moreover, as evidenced by Torrisi (2013), the perception of job satisfaction in Italy is inversely related with time at work; abroad, this relationship is reversed. This reinforces the idea that perceived job satisfaction in Italy decreases with increasing seniority, while abroad the perception of well-being remains high, strengthening the initial hypothesis that in a workplace where the climate and organisation are satisfactory, the academic output will increase (Torrisi 2013; Kadtong et al. 2017).

Econometric model

We faced a problem multidimensional in nature (Masum et al. 2015), therefore, we adopted multivariate statistical models to validate our assumptions. The multidimensionality derives from the necessity of using several independent variables (predictors) to explain the propensity for academic brain drain. The process of best-model selection ended with the selection of an ordered probit, which held the most statistically significant results. The choice between the logit framework and the probit framework is usually based upon the researcher's preference, because the two models generally give similar results (Gujarati 2011). We opted for the probit model because the logit model is largely diffused in social sciences (given its easier mathematical structure), so we wanted to bring new evidence using the less diffused model. This model estimates the degree of propensity of academic researchers to emigrate or return to Italy, in relation to the dimensions of job satisfaction and quality of work life (discussed in previous sections). The estimated models relate job satisfaction (in 4 dimensions), propensity to return to Italy (IRA) or to leave Italy (IRI), and perceived quality of life abroad (IRA) or that is perceived in Italy (IRI).

We provide the opportune model fitting information to test whether the adopted models are statistically significant (see Tables 11, 12, 13, 14). As we can see from the Chi squared test of the four models, the probit framework fits very well the set of data, since all the p -values are close to zero. The “threshold” represents the outcome variable in the ordered probit regression; the model estimate for each threshold represents the cut-off value where the units might be predicted into the higher category. The results of the ordered regressions with probit function are synthesised as follows.

- The propensity to return to Italy (IRA) is inversely related to medium–high levels of physical and organisational job satisfaction (see Table 11, significant relationships with p value < 0.05 indicated as bold values), which means that when researchers and professors are satisfied (in physical terms) of their job, they are less inclined to return to Italy.
- The propensity to emigrate from Italy is significantly and inversely influenced by medium–high levels of satisfaction in organisational and academic relationships (see Table 12, significant relationships with p -value < 0.05 indicated as bold values). This result implies that, where the perception of organisational and relational well-being is high, the propensity for academic brain drain decreases.
- The perception of quality of life abroad (IRA) is inversely related to medium–high levels of physical job satisfaction (see Table 13, significant relationships with p -value < 0.05 indicated as bold values), which means that probably the perception of life abroad must be high to satisfy the scholar; the perception of quality of life abroad is also directly influenced by good levels of organisational and relational conditions (see Table 13, significant relationships with p -value < 0.05 indicated as bold values).
- The perception of quality of life in Italy is significantly and inversely influenced by various degrees of job satisfaction in academic relationships (see Table 14, significant relationships with p -value < 0.05 indicated as bold values), which means that low, sufficient or good relational conditions are not enough to increase the perception of the quality of life of academics in Italy.

Table 11 IRA ordered probit model of propensity to return to Italy (X_{27}) in relation to the four dimensions of job satisfaction (IRA $B_f - B_o - B_r - B_p$)

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
<i>Threshold</i>							
[X_{27} = Nothing]	- 1.073	0.155	47.660	1	0.000	- 1.378	- .769
[X_{27} = Low]	- .069	0.150	.211	1	0.646	- .363	.225
[X_{27} = Average]	.319	0.151	4.470	1	0.034	.023	.614
[X_{27} = High]	- .861	0.154	31.396	1	0.000	- 1.162	- .560
<i>Dimension</i>							
[B_f = Low]	- .480	0.348	1.906	1	0.167	- 1.162	.201
[B_f = Sufficient]	- .584	0.264	4.892	1	0.027	- 1.102	- .067
[B_f = Good]	- .286	0.139	4.215	1	0.040	- .559	- .013
[B_f = Excellent]	0(a)			0			
[B_o = Low]	- 1.094	0.542	4.077	1	0.043	- 2.156	- .032
[B_o = Sufficient]	- .265	0.231	1.312	1	0.002	- .718	.188
[B_o = Good]	- .312	0.178	3.076	1	0.009	- .662	.037
[B_o = Excellent]	0(a)			0			
[B_r = Low]	- .358	0.369	.940	1	0.332	- 1.081	.366
[B_r = Sufficient]	.332	0.251	1.744	1	0.187	- .160	.824
[B_r = Good]	.005	0.153	.001	1	0.974	- .296	.306
[B_r = Excellent]	0(a)			0			
[B_p = Sufficient]	.078	0.295	.071	1	0.791	- .499	.656
[B_p = Good]	- .102	0.140	.533	1	0.465	- .376	.172
[B_p = Excellent]	0(a)			0			
Model fitting information		-2 Log Likelihood		Chi Squared		Sig.	
Intercept only		403.339					
Final		377.202		26.137		0.006	
Goodness-of-fit			Chi Squared		Sig.		
Pearson			253.635		0.000		
Deviance			228.590		0.000		

Bold values indicate the significant coefficients commented in “Econometric model” Section

Link function: Probit

Endogeneity issues

As pointed out by one of the referees, the regressions in “Econometric model” section may suffer of bias from omitted variables. In this section we will provide three reasons why this problem should not be a major concern in this study. The first reason is theoretical. The regression model is based on the theoretical model provided by Torrisi (2013). This model tries to explain academic job satisfaction and quality of life using the four dimensions of job satisfaction as explained in “Theoretical framework” section of the present work. These dimensions are built such that almost every important aspect in determining satisfaction

Table 12 IRI ordered probit model of propensity to emigrate from Italy (X_{24}) in relation to the four dimensions of job satisfaction (IRI $B_j - B_o - B_r - B_p$)

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
<i>Threshold</i>							
[X_{24} =Nothing]	-2.376	0.808	8.643	1	0.003	-3.959	-.792
[X_{24} =Low]	-1.440	0.804	3.211	1	0.073	-3.016	.135
[X_{24} =Average]	-0.592	0.802	0.545	1	0.460	-2.163	.979
[X_{24} =High]	-0.119	0.801	0.022	1	0.881	-1.690	1.451
<i>Dimension</i>							
[B_j = Very low]	6.780	0.000		1		6.780	6.780
[B_j =Low]	-0.460	0.332	1.922	1	0.166	-1.111	0.190
[B_j =Sufficient]	-0.375	0.279	1.807	1	0.179	-.922	0.172
[B_j =Good]	-0.360	0.269	1.801	1	0.180	-.887	0.166
[B_j =Excellent]	0(a)			0			
[B_o = Very low]	0.358	0.909	.155	1	0.693	-1.423	2.139
[B_o = Low]	-0.265	0.845	.099	1	0.002	-1.922	1.391
[B_o = Sufficient]	-0.504	0.831	.368	1	0.009	-2.132	1.124
[B_o = Good]	-0.630	0.855	.543	1	0.002	-2.305	1.046
[B_o =Excellent]	0(a)			0			
[B_r = Very low]	-8.809	8220.648	0.000	1	0.999	-16,120.983	16,103.365
[B_r = Low]	-0.690	0.345	3.993	1	0.046	-1.367	-0.013
[B_r = Sufficient]	-0.793	0.283	7.874	1	0.005	-1.347	-0.239
[B_r = Good]	-0.827	0.257	10.349	1	0.001	-1.331	-0.323
[B_r =Excellent]	0(a)			0			
[B_p = Very low]	0.296	0.817	.131	1	0.717	-1.306	1.898
[B_p =Low]	0.551	0.261	4.461	1	0.035	.040	1.063
[B_p =Sufficient]	0.405	0.213	3.604	1	0.058	-0.013	0.824
[B_p =Good]	0(a)			0			
[B_p =Excellent]	0(a)			0			
Model fitting information		-2 log likelihood			Chi Squared		Sig.
Intercept only		516.140					
Final		269.546			246.594		0.000
Goodness-of-fit			Chi Squared			Sig.	
Pearson			372.887			0.349	
Deviance			316.515			0.962	

The bold values indicate the significant coefficients commented in “Econometric model” section

Link function: Probit

and perceived quality of life is included. Our results match exactly what the theoretical model would predict.

The second reason is technical. From basic econometric theory (e.g. Hill et al. 2008 or Woolridge 2010) we know that in order to have bias from omitted variables two conditions must hold simultaneously: the omitted variable should be relevant in explaining

Table 13 IRA ordered probit model of quality of life abroad (X_{29}) in relation to the four dimensions of job satisfaction (IRA $B_j - B_o - B_r - B_p$)

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
<i>Threshold</i>							
[X_{29} =Low]	-2.552	0.232	121.317	1	0.000	-3.006	-2.098
[X_{29} =Average]	-2.056	0.191	115.404	1	0.000	-2.431	-1.681
[X_{29} =High]	-1.262	0.164	58.868	1	0.000	-1.584	-0.939
[X_{29} =Very high]	0.295	0.155	3.636	1	0.057	-0.008	0.598
<i>Dimension</i>							
[B_j =Low]	-0.896	.351	6.525	1	0.011	-1.584	-0.209
[B_j =Sufficient]	-0.860	.266	10.446	1	0.001	-1.382	-0.338
[B_j =Good]	-0.487	.148	10.859	1	0.001	-0.777	-0.197
[B_j =Excellent]	0(a)			0			
[B_o =Low]	-1.379	.514	7.206	1	0.007	-2.386	-0.372
[B_o =Sufficient]	-0.059	.238	0.062	1	0.803	-0.525	0.407
[B_o =Good]	0.438	.187	5.510	1	0.019	0.072	0.804
[B_o =Excellent]	0(a)			0			
[B_r =Low]	-0.579	.367	2.497	1	0.114	-1.298	0.139
[B_r =Sufficient]	0.183	.259	0.496	1	0.481	-0.326	0.691
[B_r =Good]	-0.099	.162	0.371	1	0.542	-0.417	0.219
[B_r =Excellent]	0(a)			0			
[B_p =Sufficient]	-0.728	.301	5.862	1	0.015	-1.317	-0.139
[B_p =Good]	0.045	.147	0.094	1	0.009	-0.243	0.333
[B_p =Excellent]	0(a)			0			
Model fitting information		-2 Log likelihood			Chi Squared		Sig.
Intercept only		385.194					
Final		319.769			65.426		0.000
Goodness-of-fit			Chi Squared			Sig.	
Pearson			336.315			0.000	
Deviance			230.213			0.000	

The bold values indicate the significant coefficients commented in “Econometric model” section

Link function: Probit

the dependent variable and it should be correlated with at least one of the covariates. As the correlation between the omitted variable and the included covariates approaches zero, the bias vanishes. As shown in Table 15, the correlation between a potential set of control variables and the variables included in the regressions (the four dimensions of satisfaction) for both IRA and IRI is very low and in most cases non-significant, so approximately zero. Even though some coefficients are significant, their magnitude is very low; furthermore, few of them would result still significant if any correction to the significance level was applied (for example, the Bonferroni correction).

Table 14 IRI ordered probit model of quality of life in Italy (X_{25}) in relation to the four dimensions of job satisfaction (IRI $B_j - B_o - B_r - B_p$)

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
<i>Threshold</i>							
[X_{25} = Nothing]	- 3.922	1.345	8.503	1	0.004	- 6.559	- 1.286
[X_{25} = Low]	- 2.299	1.335	2.969	1	0.085	- 4.915	.316
[X_{25} = Average]	- 0.902	1.329	.461	1	0.497	- 3.507	1.702
[X_{25} = High]	- 0.079	1.328	.004	1	0.953	- 2.681	2.524
<i>Dimension</i>							
[B_j = Very low]	19.951	0.000		1		19.951	19.951
[B_j = Low]	- 0.813	0.566	2.067	1	0.151	- 1.921	0.295
[B_j = Sufficient]	- 0.588	0.474	1.538	1	0.215	- 1.518	0.342
[B_j = Good]	- 0.569	0.456	1.556	1	0.212	- 1.464	0.325
[B_j = Excellent]	0(a)			0			
[B_o = Very low]	1.168	1.517	.593	1	0.441	- 1.805	4.141
[B_o = Low]	- 0.240	1.405	.029	1	0.864	- 2.993	2.513
[B_o = Sufficient]	- 0.654	1.379	.225	1	0.636	- 3.357	2.050
[B_o = Good]	- 0.865	1.422	.370	1	0.543	- 3.651	1.922
[B_o = Excellent]	0(a)			0			
[B_r = Very low]	- 23.592	9255.593	.000	1	0.998	- 18,164.222	18,117.038
[B_r = Low]	- 1.180	0.588	4.026	1	0.045	- 2.332	- 0.027
[B_r = Sufficient]	- 1.375	0.481	8.163	1	0.004	- 2.317	- 0.432
[B_r = Good]	- 1.498	0.439	11.648	1	0.001	- 2.358	- 0.638
[B_r = Excellent]	0(a)			0			
[B_p = Very low]	0.503	1.397	.130	1	0.719	- 2.235	3.242
[B_p = Low]	0.949	0.446	4.520	1	0.033	0.074	1.824
[B_p = Sufficient]	0.680	0.364	3.482	1	0.062	- 0.034	1.394
[B_p = Good]	0(a)			0			
[B_p = Excellent]	0(a)			0			
Model fitting information		- 2 log likelihood		Chi Squared		Sig.	
Intercept only		516.140					
Final		468.255		47.885		0.000	
Goodness-of-fit			Chi Squared		Sig.		
Pearson			378.927		0.272		
Deviance			314.767		0.968		

The bold values indicate the significant coefficients commented in “Econometric model” section

Link function: Probit

Finally, there is also a practical reason. The potential control variables shown in Table 15 are the only ones available for this project. Nevertheless, using those variables would reduce the dimension of the dataset due to missing observations. Given that the obtained results are reasonable and justified by the two previous points, we believe that endogeneity is not a crucial issue for the results of this paper. Despite of these considerations, we think

Table 15 Kendall's tau-b and Spearman's correlation between the four dimensions of job satisfaction and a potential set of control variables

	Kendall's tau-b				Spearman's correlation			
	B_f	B_o	B_r	B_p	B_f	B_o	B_r	B_p
	<i>IRA</i>							
Gender	0.0454	0.1149*	0.0225	0.0583	0.0473	0.1200*	0.0236	0.0594
Age	0.0609	-0.0098	-0.0100	0.0303	0.0703	-0.0109	-0.0098	0.0336
Education	-0.0105	0.0201	-0.0169	-0.0034	-0.0103	0.0243	-0.0187	-0.0035
Academic role	-0.0589	-0.1967*	-0.1060*	0.0824	-0.0653	-0.2116*	-0.1148*	0.0892
Contract	0.0376	-0.1312*	0.0153	0.0860	0.0391	-0.1370*	0.0161	0.0877
EU State	-0.0227	-0.0305	-0.0283	-0.0876	-0.0236	-0.0319	-0.0297	-0.0892
Time	0.0451	-0.0734	0.0089	0.0546	0.0503	-0.0817	0.0108	0.0598
Life/health sciences	0.1101*	0.1050*	-0.0142	0.1039*	0.1147*	0.1095*	-0.0149	0.1059*
Physical/mathematical sciences	-0.0096	0.0439	0.0496	-0.1138*	-0.0101	0.0458	0.0520	-0.1159*
Social sciences and humanities	-0.1091*	-0.1403*	-0.0189	-0.0315	-0.1138*	-0.1464*	-0.0198	-0.0321
<i>IRI</i>								
Gender	-0.1046*	0.0036	-0.0345	-0.0561*	-0.1126*	0.0038	-0.0374	-0.0597*
Age	0.0206	-0.0872*	-0.0948*	0.1186*	0.0247	-0.1002*	-0.1120*	0.1392*
Academic role	0.0732*	-0.0417	-0.0292	0.2160*	0.0832*	-0.0465	-0.0341	0.2414*
Foreign experience	-0.0194	-0.0894*	-0.0558*	-0.0603*	-0.0209	-0.0937*	-0.0605*	-0.0643*
North	0.2171*	0.1751*	0.0585*	0.0623*	0.2336*	0.1834*	0.0633*	0.0663*
Centre	0.0375	-0.0435	0.0359	-0.0106	0.0404	-0.0456	0.0389	-0.0113
South	-0.1594*	-0.0858*	-0.0648*	-0.0673*	-0.1716*	-0.0899*	-0.0701*	-0.0718*
Islands	-0.1500*	-0.1024*	-0.0386	0.0008	-0.1614*	-0.1073*	-0.0417	0.0008

*Stands for 5% of significance

The control variables are defined as follows. *Gender*, 1 if female. *Age*, 5 classes: 20–30, 31–40, 41–50, 51–60, above 60. *Education*, 3 classes: degree, Ph.D., Post-doc. *Academic role*, 3 classes: Ph.D. or other position below researcher, researcher, professor. *Contract*, 1 if permanent. *EU State*, 1 if the State is part of the European Union. *Time*, 4 classes for the years abroad: less than 1 year, from 1 to 5 years, from 5 to 10 years, more than 10 years. *Life/Health Sciences*, *Physical/Mathematical Sciences*, *Social Sciences and Humanities*: dummy variables for the scientific sector. *Foreign Experience*, 1 whenever the scholar had a working experience in a foreign country. North, Centre, South, Islands: dummy variables for the geographical position of the university of the scholar

that future research should also include a large set of control variables to tackle properly the endogeneity issue. This will be possible only replicating and enhancing the survey used in this paper.

As required by one of the referees, in Appendix we report the four regressions adding the limited set of controls reported in Table 15. These new regressions are reported in Tables 16, 17, 18 and 19 of the Appendix. Note that the magnitude of the estimates is different because, due to numerous missing observations and potential outliers, we have run the regressions on a sample very different from the original one. Despite of this serious problem, the estimates obtained for the four dimensions are roughly consistent with the rationale of this work. For example, in Table 16 the coefficients associated with low levels of satisfaction are positive, which is reasonable since if a researcher abroad is unsatisfied is more willing to return to Italy. The other significant coefficients have approximately the same algebraic signs of the original estimates, so they can be interpreted as in “[Econometric model](#)” section.

Conclusions and policy proposals

Measuring job satisfaction as perceived in the academic workplace, considering quality of life and academic brain drain, has offered us a closer look on the Italian situation. The results support the initial hypothesis of this work in terms of the multidimensional nature of job satisfaction for both the correlation and regressive models estimated.

Our research reveals a dual state of Italian academic well-being. Those researchers who live abroad reported satisfaction for all four dimensions of job satisfaction, which influenced their quality of life and propensity to return to Italy. In contrast, researchers that remain in Italy adapt to the system and record negative perception of job satisfaction, low quality of life and the propensity to emigrate from Italy. The Italian academic environment must improve its status through direct intervention in organisational administration, favouring streamlined procedures, functional research productivity, harmony of academic standards and a meritocratic reward process. As highlighted in [Torrìsi and Pernagallo \(2020\)](#), the lower perception of the Italian system respect to foreign countries derives especially from insufficient career opportunities and an inadequate administrative and bureaucratic structure. A workplace will attract resources only when (as happens abroad) job satisfaction creates a friendly work environment that is challenging, productive and of high quality ([Torrìsi 2013](#)).

Conversely, if (as in Italy) perception of job satisfaction is low, a poor working environment that is not stimulating or attractive will result in low brain gain (low international attractiveness) and poor quality of life.

The empirical analysis carried out in this study supports this reasoning. This work supports the findings of [Torrìsi \(2013\)](#) which pointed out that improving the working environment and the organisational conditions of work would affect positively the performance of scholars. Working environments with a better organisational climate favour productivity. The results are also in line with other empirical works, corroborating the fact that Italy has experienced a relevant loss of highly qualified human capital (see, for example, [Saint-Blancat 2017a, b](#)). Furthermore, as shown by [Cattaneo et al. \(2019\)](#), brain drain has deeper consequences for the Italian system because the phenomenon is not limited to the “cream” of the most talented researchers, but it extends to a broader group of scholars. The findings

of our paper provide a hint for policy makers: in order to contain outflows of precious human working capital, it is fundamental to improve organisational and relational well-being in universities. This empirical research integrates with a rich line of literature on job satisfaction, proving that good conditions in working environment are essentials for happy and productive workers (Böckerman and Ilmakunnas 2012; Raziq and Maulabakhsh 2015; Essays, UK, 2018; Webber 2019; Torrissi and Pernagallo 2020), and the academia is not an exception. However, improving the four dimensions of job satisfaction is not an easy task. These dimensions can be influenced in different ways. For example, Bangwal et al. (2017) found that workplace design features of a green building contribute to job satisfaction of employees. Raziq and Maulabakhsh (2015, p. 724) suggested that “working environments where employees are made a part of the overall decision-making process, being given flexible working hours, less workload, a team work approach and a supportive top management have positive impact on the performance of employees” leading to high job satisfaction. Several authors have pointed out the importance of office design on job satisfaction, because an inadequate workplace can generate frustration, dissatisfaction and, consequently, poor working performance (Brill et al. 1984; Carnevale 1992; Leaman 1995; El-Zeiny 2012; Hansika and Amarathunga 2016).

But brain drain is not only a social cost. The Economy Minister Giovanni Tria said in 2019 that brain drain costs Italy around 14 billion euros a year²; an unacceptable loss in terms of potential growth for Italy. The takeaway from this study for the Italian policy maker is clear. Scholars abroad are more satisfied with their organisations and working environment, this not only affects their performance (Torrissi 2013; Albert et al. 2016) but, has enlightened in this study, is a fundamental factor to attract foreign researchers and to persuade Italian scholars to remain in Italy. The recipe may appear simple: emulating the virtuous European realities such as Germany, Netherlands, or England, for which our respondents manifested a high level of satisfaction thanks to a stimulating and meritocratic working environment. However, this could be potentially an oversimplification of reality. Indeed, all the involved actors should be ready for such a change. On one hand, the Italian policy maker should promote policies to increase funding for universities and research, providing a renewal of the academic system; on the other, Italian researchers should consider themselves as resources for Italy. Regarding this last point, Saint-Blancat (2017a) pointed out that many researchers did not think that Italy sees them as a resource. In our opinion, the first step should be made by the policy maker to meet the expectations of the scholars. In fact, a medium/high level of organisational satisfaction creates a productive and high-quality work environment. Conversely, low levels of job satisfaction and acceptance of mediocrity generate low productivity and a poor quality of life. To strengthen these results, future research should validate the hypothesis tested in this study using other national contexts and updating the dataset used for this study.

Acknowledgements The database and the empirical research project are the work of Benedetto Torrissi (StatEcon- Area of Economic Statistics, University of Catania), author and principal investigator of the project PIR “Productivity of Italian Researchers” and “Italian Academic Potential Brain Drain”. The authors would like to thank the two anonymous reviewers for their thoughtful comments.

² http://www.ansa.it/english/news/2019/07/16/brain-drain-costs-italy-14-bn-a-year-tria_d579508c-5d68-4a7a-a2e3-449ecd683ade.html.

Appendix

See Tables 16, 17, 18 and 19.

Table 16 IRA ordered probit model of propensity to return to Italy (X_{27}) in relation to the four dimensions of job satisfaction (IRA $B_f - B_o - B_r - B_p$) with controls

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
<i>Threshold</i>							
[X_{27} =Nothing]	1.289	.554	5.413	1	.020	.203	2.374
[X_{27} =Low]	2.603	.562	21.467	1	.000	1.502	3.705
[X_{27} =Average]	3.512	.569	38.115	1	.000	2.397	4.626
<i>Dimension controls</i>							
[B_f =Low]	.480	.375	1.635	1	.201	-.256	1.215
[B_f =Sufficient]	.678	.306	4.894	1	.027	.077	1.278
[B_f =Good]	.221	.167	1.753	1	.185	-.106	.547
[B_f =Excellent]	0(a)		0				
[B_o =Low]	2.809	.731	14.767	1	.000	1.376	4.241
[B_o =Sufficient]	-.358	.280	1.629	1	.202	-.907	.192
[B_o =Good]	.260	.211	1.511	1	.219	-.154	.674
[B_o =Excellent]	0(a)		0				
[B_r =Low]	.853	.394	4.686	1	.030	.081	1.625
[B_r =Sufficient]	-.319	.308	1.078	1	.299	-.922	.284
[B_r =Good]	-.034	.178	.037	1	.847	-.383	.314
[B_r =Excellent]	0(a)		0				
[B_p =Sufficient]	-.040	.331	.014	1	.904	-.689	.609
[B_p =Good]	-.028	.162	.030	1	.863	-.346	.290
[B_p =Excellent]	0(a)		0				
[Gender = .00]	.550	.138	15.911	1	.000	.280	.820
[Gender = 1.00]	0(a)		0				
[Age = 1.00]	1.583	.543	8.500	1	.004	.519	2.647
[Age = 2.00]	1.641	.532	9.529	1	.002	.599	2.683
[Age = 3.00]	1.949	.481	16.390	1	.000	1.006	2.893
[Age = 4.00]	.350	.528	.440	1	.507	-.684	1.384
[Age = 5.00]	0(a)		0				
[Education = 1.00]	-1.004	.242	17.206	1	.000	-1.479	-.530
[Education = 2.00]	-.217	.166	1.705	1	.192	-.542	.109
[Education = 3.00]	0(a)		0				
[Academic role = 1.00]	.049	.227	.047	1	.828	-.395	.493
[Academic role = 2.00]	-.169	.174	.944	1	.331	-.510	.172
[Academic role = 3.00]	0(a)		0				
[Contract = .00]	.611	.190	10.315	1	.001	.238	.984
[Contract = 1.00]	0(a)		0				
[EU State = .00]	.056	.129	.187	1	.666	-.197	.308

Table 16 (continued)

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
[EU State = 1.00]	0(a)			0			
[Time = 1.00]	.705	.364	3.760	1	.052	-.008	1.418
[Time = 2.00]	.113	.224	.252	1	.616	-.327	.552
[Time = 3.00]	-.382	.228	2.804	1	.094	-.829	.065
[Time = 4.00]	0(a)			0			
[Life/Health Sciences = .00]	.015	.147	.011	1	.916	-.272	.303
[Life/Health Sciences = 1.00]	0(a)			0			
[Physical/Mathematical Sciences = .00]	-.246	.208	1.396	1	.237	-.653	.162
[Physical/Mathematical Sciences = 1.00]	0(a)			0			
[Social Sciences and Humanities = .00]	0(a)			0			
[Social Sciences and Humanities = 1.00]	0(a)			0			
Model fitting information	- 2 log likelihood			Chi Squared		Sig.	
Intercept only	933.220						
Final	759.168			174.052		0.000	
Goodness-of-fit	Chi Squared					Sig.	
Pearson	973.306					0.000	
Deviance	746.494					0.000	

The significant (at 5%) coefficients for the 4 dimensions are in bold

Link function: Probit

Table 17 IRI ordered probit model of propensity to emigrate from Italy (X_{24}) in relation to the four dimensions of job satisfaction (IRI $B_j - B_o - B_r - B_p$) with controls

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
<i>Threshold</i>							
[X_{24} =Nothing]	-.547	1.103	.246	1	.620	-2.709	1.615
[X_{24} =Low]	.380	1.103	.119	1	.730	-1.781	2.542
[X_{24} =Average]	1.222	1.103	1.228	1	.268	-.939	3.384
[X_{24} =High]	2.117	1.104	3.679	1	.055	-.046	4.281
<i>Dimension controls</i>							
[B_j = Very low]	.112	.256	.191	1	.662	-.390	.614
[B_j =Low]	-.188	.172	1.195	1	.274	-.524	.149
[B_j =Sufficient]	-.250	.158	2.497	1	.114	-.560	.060
[B_j =Good]	-.302	.154	3.853	1	.050	-.603	.000
[B_j =Excellent]	0(a)			0			
[B_o = Very low]	.766	1.105	.481	1	.488	-1.399	2.932
[B_o =Low]	.601	1.100	.299	1	.585	-1.555	2.758
[B_o =Sufficient]	.537	1.097	.240	1	.624	-1.613	2.688
[B_o =Good]	.705	1.098	.412	1	.521	-1.448	2.858
[B_o =Excellent]	0(a)			0			
[B_r = Very low]	.390	.259	2.272	1	.132	-.117	.898
[B_r =Low]	.538	.135	15.843	1	.000	.273	.803
[B_r =Sufficient]	.332	.110	9.110	1	.003	.116	.548
[B_r =Good]	.088	.105	.710	1	.399	-.117	.294
[B_r =Excellent]	0(a)			0			
[B_p = Very low]	.403	.347	1.352	1	.245	-.276	1.083
[B_p =Low]	.168	.321	.275	1	.600	-.461	.797
[B_p =Sufficient]	-.021	.313	.004	1	.947	-.635	.593
[B_p =Good]	-.240	.315	.585	1	.445	-.857	.376
[B_p =Excellent]	0(a)			0			
[Gender = .00]	.117	.065	3.250	1	.071	-.010	.244
[Gender = 1.00]	0(a)			0			
[Age = 1.00]	.420	.181	5.412	1	.020	.066	.774
[Age = 2.00]	.098	.156	.392	1	.531	-.208	.403
[Age = 3.00]	.141	.143	.968	1	.325	-.140	.422
[Age = 4.00]	.037	.147	.063	1	.802	-.250	.324
[Age = 5.00]	0(a)			0			
[Academic role = 1.00]	.202	.116	3.036	1	.081	-.025	.430
[Academic role = 2.00]	-.020	.095	.043	1	.835	-.206	.166
[Academic role = 3.00]	0(a)			0			
[Foreign Experience = .00]	-.598	.064	88.115	1	.000	-.723	-.473
[Foreign Experience = 1.00]	0(a)			0			
[North = .00]	.098	.094	1.074	1	.300	-.087	.283
[North = 1.00]	0(a)			0			
[Centre = .00]	.206	.119	2.995	1	.084	-.027	.439

Table 17 (continued)

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
[Centre = 1.00]	0(a)			0			
[South = .00]	.060	.102	.346	1	.557	-.140	.260
[South = 1.00]	0(a)			0			
[Islands = .00]	0(a)			0			
[Islands = 1.00]	0(a)			0			
Model fitting information		- 2 log likelihood			Chi Squared		Sig.
Intercept only	3547.339						
Final	3297.502			249.837		0.000	
Goodness-of-fit		Chi Squared					Sig.
Pearson	4311.086					0.000	
Deviance	3155.223					1.000	

The significant (at 5%) coefficients for the 4 dimensions are in bold

Link function: Probit

Table 18 IRA ordered probit model of quality of life abroad (X_{29}) in relation to the four dimensions of job satisfaction (IRA $B_j - B_o - B_r - B_p$) with controls

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
<i>Threshold</i>							
[X_{29} =Low]	-4.160	.539	59.498	1	.000	-5.217	-3.103
[X_{29} =Average]	-3.569	.516	47.843	1	.000	-4.580	-2.557
[X_{29} =High]	-2.678	.501	28.539	1	.000	-3.660	-1.695
[X_{29} =Very high]	-.870	.487	3.184	1	.074	-1.825	.086
<i>Dimension controls</i>							
[B_j =Low]	-1.424	.376	14.318	1	.000	-2.161	-.686
[B_j =Sufficient]	-.871	.305	8.185	1	.004	-1.469	-.274
[B_j =Good]	-.802	.170	22.371	1	.000	-1.135	-.470
[B_j =Excellent]	0(a)			0			
[B_o =Low]	-1.270	.555	5.241	1	.022	-2.357	-.183
[B_o =Sufficient]	.160	.275	.341	1	.559	-.378	.699
[B_o =Good]	.545	.217	6.313	1	.012	.120	.970
[B_o =Excellent]	0(a)			0			
[B_r =Low]	-.844	.402	4.399	1	.036	-1.633	-.055
[B_r =Sufficient]	-.340	.301	1.269	1	.260	-.930	.251
[B_r =Good]	-.377	.181	4.358	1	.037	-.731	-.023
[B_r =Excellent]	0(a)			0			
[B_p =Sufficient]	-1.113	.342	10.615	1	.001	-1.783	-.444
[B_p =Good]	.279	.166	2.822	1	.093	-.047	.605
[B_p =Excellent]	0(a)			0			
[Gender=.00]	-.180	.140	1.651	1	.199	-.454	.095
[Gender=1.00]	0(a)			0			
[Age=1.00]	-1.285	.470	7.462	1	.006	-2.206	-.363
[Age=2.00]	-1.107	.465	5.659	1	.017	-2.018	-.195
[Age=3.00]	-.927	.394	5.531	1	.019	-1.699	-.154
[Age=4.00]	-.888	.425	-	1	.036	-1.721	-.056
[Age=5.00]	0(a)			0			
[Education=1.00]	.147	.227	.420	1	.517	-.298	.592
[Education=2.00]	.159	.169	.886	1	.347	-.172	.489
[Education=3.00]	0(a)			0			
[Academic role=1.00]	-.099	.225	.191	1	.662	-.541	.343
[Academic role=2.00]	-.082	.176	.219	1	.640	-.426	.262
[Academic role=3.00]	0(a)			0			
[Contract=.00]	.759	.194	15.300	1	.000	.379	1.139
[Contract=1.00]	0(a)			0			
[EU State=.00]	.202	.131	2.362	1	.124	-.056	.459
[EU State=1.00]	0(a)			0			
[Time=1.00]	.817	.395	4.283	1	.038	.043	1.591
[Time=2.00]	-.260	.237	1.195	1	.274	-.725	.206

Table 18 (continued)

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
[Time = 3.00]	-.293	.233	1.582	1	.208	-.749	.164
[Time = 4.00]	0(a)			0			
[Life/Health Sciences = .00]	-.316	.147	4.614	1	.032	-.605	-.028
[Life/Health Sciences = 1.00]	0(a)			0			
[Physical/Mathematical Sciences = .00]	-.170	.211	.645	1	.422	-.584	.244
[Physical/Mathematical Sciences = 1.00]	0(a)			0			
[Social Sciences and Humanities = .00]	0(a)			0			
[Social Sciences and Humanities = 1.00]	0(a)			0			
Model fitting information	- 2 log likelihood			Chi Squared		Sig.	
Intercept Only	828.097						
Final	679.929			148.168		0.000	
Goodness- of-Fit	Chi Squared					Sig.	
Pearson	1115.330					0.000	
Deviance	671.612					0.993	

The significant (at 5%) coefficients for the 4 dimensions are in bold

Link function: Probit

Table 19 IRI ordered probit model of quality of life in Italy (X_{25}) in relation to the four dimensions of job satisfaction (IRI $B_f - B_o - B_r - B_p$) with controls

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
<i>Threshold</i>							
[X_{25} = Nothing]	- 1.854	1.158	2.565	1	.109	- 4.123	.415
[X_{25} = Low]	-.366	1.157	.100	1	.752	- 2.633	1.901
[X_{25} = Average]	.783	1.157	.458	1	.499	- 1.485	3.051
[X_{25} = High]	2.110	1.161	3.305	1	.069	- .165	4.384
<i>Dimension controls</i>							
[B_f = Very low]	-.315	.271	1.348	1	.246	- .846	.217
[B_f = Low]	-.294	.176	2.783	1	.095	- .639	.051
[B_f = Sufficient]	-.082	.162	.258	1	.611	- .399	.235
[B_f = Good]	-.017	.157	.011	1	.915	- .325	.291
[B_f = Excellent]	0(a)			0			
[B_o = Very low]	.759	1.159	.429	1	.513	- 1.513	3.031
[B_o = Low]	1.090	1.154	.892	1	.345	- 1.172	3.352
[B_o = Sufficient]	1.464	1.151	1.617	1	.203	- .793	3.721

Table 19 (continued)

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence interval	
						Lower bound	Upper bound
[B_o = Good]	1.572	1.152	1.859	1	.173	-.687	3.830
[B_o = Excellent]	0(a)			0			
[B_r = Very low]	-.820	.288	8.126	1	.004	-1.384	-.256
[B_r = Low]	-.108	.140	.599	1	.439	-.383	.166
[B_r = Sufficient]	-.047	.113	.172	1	.678	-.269	.175
[B_r = Good]	.182	.108	2.833	1	.092	-.030	.393
[B_r = Excellent]	0(a)			0			
[B_p = Very low]	-2.148	.364	34.840	1	.000	-2.861	-1.435
[B_p = Low]	-1.500	.333	20.322	1	.000	-2.152	-.848
[B_p = Sufficient]	-.908	.324	7.856	1	.005	-1.543	-.273
[B_p = Good]	-.408	.324	1.590	1	.207	-1.043	.226
[B_p = Excellent]	0(a)			0			
[Gender = .00]	-.124	.067	3.403	1	.065	-.256	.008
[Gender = 1.00]	0(a)			0			
[Age = 1.00]	-.163	.187	.765	1	.382	-.529	.203
[Age = 2.00]	-.149	.161	.861	1	.354	-.464	.166
[Age = 3.00]	-.114	.147	.601	1	.438	-.403	.175
[Age = 4.00]	-.114	.151	.568	1	.451	-.409	.182
[Age = 5.00]	0(a)			0			
[Academic role = 1.00]	-.549	.121	20.586	1	.000	-.787	-.312
[Academic role = 2.00]	-.005	.098	.002	1	.963	-.196	.187
[Academic role = 3.00]	0(a)			0			
[Foreign Experience = .00]	.188	.065	8.389	1	.004	.061	.316
[Foreign Experience = 1.00]	0(a)			0			
[North = .00]	.015	.098	.022	1	.882	-.177	.206
[North = 1.00]	0(a)			0			
[Centre = .00]	-.253	.123	4.237	1	.040	-.493	-.012
[Centre = 1.00]	0(a)			0			
[South = .00]	-.018	.106	.029	1	.864	-.225	.189
[South = 1.00]	0(a)			0			
[Islands = .00]	0(a)			0			
[Islands = 1.00]	0(a)			0			
Model fitting information	-2 log likelihood			Chi squared		Sig.	
Intercept only	3102.697						
Final	2578.928			523.769		0.000	
Goodness-of-fit	Chi Squared					Sig.	
Pearson	5369.592					0.000	
Deviance	2443.476					1.000	

The significant (at 5%) coefficients for the 4 dimensions are in bold

Link function: Probit

References

- Accornero A. (2006) Il mondo della produzione, collana manuali ed. Il Mulino.
- Akerlof, G., Rose, A., & Yellen, J. (1988). Job switching and job satisfaction in the U.S. labor market. *Brookings Papers on Economic Activity*, 19(2), 495–594.
- Albert, C., Davia, M. A., & Legazpe, N. (2016). Job satisfaction amongst academics: The role of research productivity. *Studies in Higher Education*, 43(8), 1362–1377.
- Altbach, P. G. (1989). The new internationalism: Foreign students and scholars. *Studies in Higher Education*, 14, 125–136.
- Aronson, K. R., Laurenceau, J. P., Sieveking, N., & Bellet, W. (2005). Job satisfaction as a function of job level. *Administration and Policy in Mental Health*, 32(3), 285–291.
- Balmer, B., Godwin, M., & Gregory, J. (2009). The Royal Society and the 'brain drain': Natural scientists meet social science. *Notes & Records of the Royal Society*, 63, 339–353.
- Bangwal, D., Tiwari, P., & Chamola, P. (2017). Workplace Design Features, Job Satisfaction, and Organization Commitment, *SAGE Open*, 7(3).
- Biagi, B., Lambiri, D., & Royuela, V. (2006). Quality of life in the economic and urban literature. *Working Paper Crenos*. Cagliari-Sassari: CUEC.
- Biondo, A. E., Monteleone, S., Skonieczny, G., & Torrisi, B. (2012). Propensity to return: Theory and evidence of Italian brain drain. *Economics Letters*, 115(3), 359–362.
- Blumenthal, P., Goodwin, C. D., Smith, A., & Teichler, U. (Eds.). (1996). *Academic mobility in a changing world*. London: Jessica Kingsley Publishers.
- Böckerman, P., & Ilmakunnas, P. (2012). The job satisfaction-productivity Nexus: A study using matched survey and register data. *ILR Review*, 65(2), 244–262.
- Brill, M., Margulis, S., Konar E., & Buffalo Organization for Social and Technological Innovation, Inc, Westinghouse Furniture Systems. (1984). *Using office design to increase productivity*. Buffalo, N.Y.: Workplace Design and Productivity.
- Carnevale, D. G. (1992). Physical settings of work. *Public Productivity and Management Review*, 15(4), 423–436.
- Cattaneo, M., Malighetti, P., & Paleari, S. (2019). The Italian brain drain: Cream and milk. *Higher Education*, 77(4), 603–622.
- Cervantes, M., & Guellec, D. (2002). The brain drain: Old myths, new realities. *OECD Observer*, 230, 40–42.
- Cheshire, P., & Magrini, S. (2006). Population growth in European cities: weather matters—But only nationally. *Regional Studies*, 40(1), 23–37.
- Clarke, A., Georgellis, Y., & Sanfey, P. (1998). Job satisfaction, wage changes and quits: Evidence from Germany. *Research in Labor Economics*, 17, 95–121.
- Cranny, C. J., Smith, P. C., & Stone, E. F. (1992). *Job satisfaction: How people feel about their jobs and how it affects their performance*. New York: Lexington Books.
- De Man, H. (1931). *La gioia nel lavoro*. Bari: Edizioni La Terza.
- El-Zeiny, R. M. A. (2012). The interior design of workplace and its impact on employees' performance: A case study of the private sector corporations in Egypt. *Procedia - Social and Behavioral Sciences*, 35, 746–756.
- Essays, UK. (2018). Job satisfaction and its importance in the workplace education essay. Retrieved from <https://www.ukessays.com/essays/education/job-satisfaction-and-its-importance-in-the-workplace-education-essay.php?vref=1>.
- Eyupoglu, S. Z., & Saner, T. (2009). The relationship between job satisfaction and academic rank: A study of academicians in Northern Cyprus. *Procedia - Social and Behavioral Sciences*, 1(1), 686–691.
- Fahey, J., & Kenway, J. (2010). International academic mobility: Problematic and possible paradigms. *Discourse: Studies in the Cultural Politics of Education*, 31, 563–575.
- Franzoni, C., Scellato, G., & Stephan, P. (2015). International Mobility of Research Scientists: Lessons from GlobSci (Chapter 2). *Global Mobility of Research Scientists, The Economics of Who Goes Where and Why*, 35–65.
- Freeman, R. B. (1977). Job satisfaction as an economic variable, NBER Working Paper No. 225.
- Gujarati, D. (2011). *Econometrics by example*. London: Palgrave Macmillan.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of theory. *Organizational Behavior and Human Performance*, 16(2), 250–279.
- Haddon, J. (2018). The impact of employees' well-being on performance in the workplace. *Strategic HR Review*, 17(2), 72–75.
- Hansika, W. A. M., & Amarathunga, P. A. B. H. (2016). Impact of office design on employees' productivity; a case study of banking organizations of north western province in Sri Lanka. In *University of Sri*

- Jayawardanapura, Sri Lanka, 13th international conference on business management (ICBM). Available at SSRN: <https://ssrn.com/abstract=2910255>.
- Herzberg, F. (1959). *The motivation to work*. New York: Wiley.
- Hill, R. C., Griffiths, W. E., & Lim, C. G. (2008). *Principles of econometrics*. US: Wiley.
- Iaffaldano, M. T., & Muchinsky, P. M. (1985). Job satisfaction and job performance: A meta-analysis. *Psychological Bulletin*, 97(2), 251–273.
- Jöns, H. (2015). Talent mobility and the shifting geographies of latourian knowledge hubs. *Population, Space and Place*, 21, 372–389.
- Kadtong, M. L., Unos, M., Antok, T. D., & Midzid, M. A. E. (2017). Teaching performance and job satisfaction among teachers at region XII. *Proceedings Journal of Education, Psychology and Social Science Research*, 4(1). <https://ssrn.com/abstract=3169846>.
- Kahneman, D., Diener, E., & Schwarz, R. (1999). *Well being: The foundations of Hedonic psychology*. New York: Russell Sage Foundation.
- Kollmann, T., Stöckmann, C., Kensbock, J. M., & Peschl, A. (2020). What satisfies younger versus older employees, and why? An aging perspective on equity theory to explain interactive effects of employee age, monetary rewards, and task contributions on job satisfaction. *Human Resource Management*, 59(1), 101–115.
- Lawler, E. (1973). *Motivation in work organization*. CA: Monterey.
- Leaman, A. (1995). Dissatisfaction and office productivity. *Journal of Facilities Management*, 13(2), 3–19.
- Locke, E. A. (1976). The nature and cause of job satisfaction. In M. D. Dunnett (ed.) *Handbook of industrial and organizational psychology* (pp. 1293–1349). Chicago: Rand McNally.
- Machado-Taylor, M., Soares, V. M., Brites, R., Ferreira, J. R., Farhangmehr, M., Gouveia, O. M. R., et al. (2016). Academic job satisfaction and motivation: Findings from a nationwide study in Portuguese higher education. *Studies in Higher Education*, 41(3), 541–559.
- Masum, A. K. M., Azad, M. A. K., & Beh, L. (2015). Determinants of academics' job satisfaction: Empirical evidence from private universities in Bangladesh. *PLoS One*, 10(2), e0117834.
- Monteleone, S., & Torrissi, B. (2012). Italian researchers abroad: A multivariate analysis of migration trends. *Rivista Italiana degli Economisti*, XVII (1).
- Monteleone, S., & Torrissi, B. (2012b). Geographical analysis of the academic brain drain in Italy. *Scientometrics*, 93(2), 413–430.
- Moris, D., Karachaliou, G., & Kontos, M. (2017). Residency training in Greece: Job dissatisfaction paves the way to brain drain. *Annals of Translational Medicine*, 5(5), 123.
- Okoro, C. C., Omeluzor, S. U., & Bamidele, I. A. (2014). Effect of brain drain (human capital flight) of librarians on service delivery in some selected Nigerian Universities. *SAGE Open*, 4(3).
- Oswald, A. J., Proto, E., & Sgroi, D. (2015). Happiness and productivity. *Journal of Labor Economics*, 33(4), 789–822.
- Penn, M., Romano, J. L., & Foat, D. (1988). The relationship between job satisfaction and burnout: A study of human service professionals. *Administration in Mental Health*, 15(3), 157–165.
- Ramawickrama, A., Opatha, H. H. D., & PushpaKumari, D. (2017). Quality of work life, job satisfaction, and the facets of the relationship between the two constructs. *International Business Research*, 10(4), 167–182.
- Raziq, A., & Maulabakhsh, R. (2015). Impact of working environment on job satisfaction. *Procedia Economics and Finance*, 23, 717–725.
- Roback, J. (1982). Wages, rents, and the quality of life. *Journal of Political Economy*, 90, 1257–1278.
- Saint-Blancat, C. (2017a). Making sense of scientific mobility: How Italian scientists look back on their trajectories of mobility in the EU. *Higher Education Policy*, 31, 37–54.
- Saint-Blancat, C. (2017b). Ricercare Altrove: fuga dei cervelli, circolazione dei talenti, opportunità, Il Mulino.
- Saranya, K. (2014). Influence of job satisfaction on employees' performance—A general perspective. *International Journal on Global Business Management and Research*, 2(2), 25–27.
- Saxenian, A. (2005). From brain drain to brain circulation: Transnational communities and regional upgrading in India and China. *Studies in Comparative International Development*, 40(2), 35–61.
- Scott, P. (2015). Dynamics of academic mobility: Hegemonic internationalisation or fluid globalisation. *European Review*, 23(S1), S55–S69.
- Shapiro, J. M. (2006). Smart cities: Quality of life, productivity and the growth effects of human capital. *Review of Economics and Statistics*, 88(2), 324–335.
- Skonieczny, G., & Torrissi, B. (2009). A statistical approach to study the determinants geographic mobility of brain drain. In *Proceedings second Arab statistical conference*.
- Skonieczny, G., & Torrissi, B. (2010). Fuga del capitale umano italiano di alta qualificazione: Esclusione sociale o povertà indotta? In *Rivista Italiana di Economia Demografia e Statistica*, LXIV.

- Taylor, J. C. (1977). Job satisfaction and quality of working life: A reassessment. *Journal of Occupational and Organizational Psychology*, 50(4), 243–252.
- Teichler, U., & Cavalli, A. (2015). The diverse patterns and the diverse causes of migration and mobility in science. *European Review*, 23(S1), S112–S126.
- Torrisci, B. (2013). Academic productivity correlated with well-being at work. *Scientometrics*, 94(2), 801–815.
- Torrisci, B., & Pernagallo, G. (2020). The relationship between academic well-being and territoriality in Italy, Social Indicators Research.
- Webber, K. L. (2019). Does the environment matter? Faculty satisfaction at 4-year colleges and universities in the USA. *Higher Education*, 78, 323–343.
- Weiss, H.M., Cropanzano, R. (1996). An effective events approach to job satisfaction, in Staw. B.M. Cummings L.L. (eds.), *Research in organizational behavior* (Vol. 18, pp. 1–74). Greenwich, CT: Jai Press.
- Welch, A. (2008). Myths and modes of mobility: The changing face of academic mobility in the global era. In M. Byram & F. Dervin (Eds.), *Students, staff and academic mobility in higher education* (pp. 292–311). Newcastle: Cambridge Scholars Publishing.
- Wingo, L. (1973). The quality of life: Toward a microeconomic definition. *Urban Studies*, 10, 3–18.
- Woolridge, J. M. (2010). *Econometric analysis of cross section and panel data*. Cambridge: The MIT Press.
- Wright, T. A. (2006). The emergence of job satisfaction in organizational behavior. *Journal of Management History*, 12(3), 262–277.