



# Introducing Human Capital in Greek Higher Education Institutes in the Postcrisis Era. The Case of the “Acquisition of Academic Teaching Experience for New Scientists” Public Initiative

Evi Sachini<sup>1</sup> · Nikolaos Karampekios<sup>1</sup> · Charalampos Chrysomallidis<sup>1</sup>

Received: 10 April 2019 / Accepted: 6 January 2020/Published online: 11 January 2020  
© Springer Science+Business Media, LLC, part of Springer Nature 2020

## Abstract

Due to the decade-long economic crisis in Greece, the number of academic personnel in tertiary education significantly decreased. To counter this, the “Acquisition of Academic Teaching Experience for New Scientists” initiative was established in 2016. The aim was to introduce young scientists as adjunct teaching personnel. In this paper, we present evidence concerning this policy measure. The data has been compiled through a survey questionnaire addressed at all the recipients of the initiative. Queries involved demographic data, potential updating of taught thematic areas and modules, and potential curbing of brain drain. In terms of results, the initiative significantly increased the number of teaching personnel. It helped update teaching modules’ content, and new teaching methods were introduced. Also, it contributed to the decrease of the outward mobility of the highly educated – a phenomenon particularly acute in Greece as a result of the economic crisis. The paper builds upon the bibliography on highly skilled human capital, its mobility, and the acquisition of new skills, such as teaching, and contributes by providing first evidence on a country-level case.

**Keywords** Tertiary education · Academic teaching experience · Greece · Crisis · Public policy · Brain drain

---

**Disclaimer** Authors work for the National Documentation Centre (EKT), which conducts the survey “Evaluating NSRF’s Tertiary Education Initiatives” funded by the Greek National Strategic Reference Framework (NSRF) 2014–2020.

---

✉ Nikolaos Karampekios  
nkarampekios@ekt.gr

<sup>1</sup> National Documentation Center, Vas. Konstantinou 48, 11635 Athens, Greece

## Introduction

A range of negative results ensued to the decade-long economic crisis in Greece, among which the number of academic personnel in tertiary education significantly decreased. In this article, we present evidence concerning the “Acquisition of Academic Teaching Experience for New Scientists” initiative. It was established in 2016, and the aim of this public initiative was to introduce young scientists as adjunct teaching personnel. This initiative forms part of a new “generation” of research-related public initiatives aiming to support the different highly educated Greek subpopulations (e.g., PhD candidates, postdoctoral researchers, groups of young researchers). The purpose of this paper is to present evidence concerning the specific initiative aiming to address the decreasing numbers of academic teaching staff. The paper builds upon the bibliography on highly skilled human capital, its mobility, and the acquisition of new skills, such as teaching, and contributes by providing first evidence on a country-level case.

The structure of the article is the following. Part 2 provides the theoretical background referring to the special weight of skilled and highly educated human capital for economic growth and development. Part 3 provides empirical notes on the experience of other countries supporting teaching activities as a set of skills within tertiary education and places the subject within the relevant lines of thought. Part 4 addresses the relevant initiative in the Greek case and traces its creation within the relevant Greek macroeconomic environment. It should be mentioned that the somewhat lengthy “setting the scene” parts (Parts 2–4) of the article have been preferred in order to explore the various angles within which the specific initiative was conceived and implemented. The authors argue that this brings narrative richness and only adds to the contextualization of the subsequent empirical evidence. Part 5 provides background information on the initiative in terms of funding, number of beneficiaries, cycles, etc. Part 6 posits the research questions and methodology. Part 7 presents the research results and proceeds to a discussion based on the results, before a concluding part (Part 8).

## Theoretical Background

The role of the state in supporting research and technological activities has been widely recognized as pivotal (Bernake 2011; Mazzucato 2013) in that the former supports areas that may appear non appealing to market forces yet hold the potential of great social impact (e.g., rare diseases) – i.e., addressing market failures. The importance of human capital is even more profound in what appears a common objective among developed and developing countries alike: moving toward a knowledge-intensive economy. Here, the role of human capital stands central by virtue of its potential impact in addressing pressing issues of economic development and facing societal challenges, by applying technology-based solutions. More generally, human capital is both the medium and the means in promoting knowledge for the benefit of future generations (Hendricks 2002).

In the context of ever-increasing global networking, human capital embodies the level of knowledge, technical know-how, skills, and creativity accomplished by any organized entity (the state, enterprises, etc.) (Behrman and Rondinelli 2002). As such, it

is considered among the most important asset classes given that human capital both produces and diffuses scientific and technological knowledge (Challof and Lemaitre 2009; Bertoli et al. 2011).

While policies to actively promote the acquiring of new skills, dexterities, and knowledge as a means to sustain a top-performing human capital vary according to the type of the organizational entity and the market initiative involved (e.g., financial and tax-based reward, public versus private sector), in the case of the highly educated within tertiary education, it (also) involves the acquiring of research, managerial, and teaching skills (Suntharasaj and Kocaoglu 2008). For the purposes of the article, the notion of human capital and/or highly educated refers to young scientists/researchers holding a PhD.

## ***Teaching as a Set of Skills Within Tertiary Education. Empirical Evidence from Other Countries***

### **Why Should There Be Such Initiatives?**

Dedicated public intervention mechanisms have been devised in recent decades aiming at assisting new doctorate holders in acquiring and bettering their teaching skills. Such initiatives have been documented since the end of the 1980s (Diehl and Simpson 1989). Since then, they have become widespread in North America, Europe, Australia, and Hong Kong (Land and Gordon 2015). Teaching abilities, according to Ramsden and Moses (1992) and Chalmers (2010), are increasingly being seen as part and parcel of the academic quality of any given candidate – an attribute complementary to that of research skills.

This is due for a variety of reasons. For one, the ability to cater for the educational needs of a global student “force” involves university teachers with skills that would enable them to communicate and transmit knowledge in a multicultural and multireligious environment (Hjerm et al. 2018). In addition, it is the new doctorate holders and postdoc researchers that form the pool from which the new generation of university professors will originate from. Being, thus, called upon to transmit cutting edge knowledge with academic clarity and pedagogic competency to a diverse set of students is increasingly seen as a nonstarter (Fry et al. 2009). It is in this context that communicative abilities are being reviewed as a parameter that should be taken into consideration in academic promotions policy (Subbaye and Vithal 2015).

Improving teaching quality is, also, increasingly seen as a part of universities’ future growth strategy to lure the best and the brightest (Efimenko et al. 2018; EFFECT project<sup>1</sup>). Complementary to this, findings indicate that new doctorate holders and postdoc researchers themselves have recognized the discrepancy between their teaching obligations and the received education (Golde and Dore 2001; Kloek et al. 2012). It is in view of this discrepancy that acquiring of new teaching skills would enable them to

<sup>1</sup> The European Forum for Enhanced Collaboration in Teaching (EFFECT) project aims to facilitate the exchange of experience and effective methods in staff development of university teachers’ development (<https://eua.eu/101-projects/560-effect.html>) (info accessed 5 August 2019).

better cope with the new educational realities and sell their services in the global marketplace.

The potential mobility of the highly educated is a special point in view of the policy considerations that gave birth to the specific Greek initiative (see below), inasmuch one-dimensional outward mobility (i.e., brain drain) had been the rule of the Greek highly educated in the previous decade. The curbing of this phenomenon had been a central policy objective of the specific initiative. In view of the “competition for talented people” in the global marketplace (Florida 2005), increasing the credentials of the highly educated by way of initiating public schemes providing new researchers enhanced teaching capabilities, dexterities, and skills is considered with very positive eyes, since they would create a “stopgap” on brain drain and help initiate a virtuous cycle by retaining and attracting the best of researchers. The bettering of the communication/channeling of cutting edge knowledge would create opportunities for both students and teachers, thus leading to (a) the decrease of the number of outgoing young researchers as well as of displeased students and (b) the dripping down of new ideas, technologies, etc. to the more market-oriented elements of the domestic innovation system. On a wider note, the boosting of didactic skills is seen as part of a wider approach to human capital formation and falls within the wider scope of continuous education, up-skilling, and re-skilling initiatives (Ramsden 2003; Broughan et al. 2018).

### **Teaching Skills’ Initiatives on Young Researchers. Empirical Evidence from Other Countries**

Recognizing the importance of providing incentives to junior researchers on the basis of their teaching achievements has become institutionalized in a number of countries. Such relevant initiatives supporting tutorship and/or young scientists are presented indicatively, hereafter.

In the UK, the Higher Education Academy awards four types of fellowship, reflecting “the wide range of professional practice carried out by individuals who teach and/or support learning in higher education; from those who have a partial role in teaching/supporting learning [bold by authors] through to senior professionals with strategic impact on teaching and learning in an organisational, national and/or international setting”.<sup>2</sup>

In Australia, the Department of Education and Training has established the Australian Awards for University Teaching, in order to promote quality teaching practices and outstanding contributions to students learning.<sup>3</sup> This initiative has been broadly recognized as leading to systemic change in learning and teaching practices extending knowledge sharing and dissemination. Indeed, public disclosure of each year’s best university teachers, since the inception of the award in 1997, is aimed toward bringing forward “change in higher education institutions” (VTAS-PEN 2016: 5).

In Canada, fellowships are awarded by the Society for Teaching and Learning in Higher Education on the basis of recognizing and featuring exceptional contributions to

<sup>2</sup> <https://www.heacademy.ac.uk/individuals/fellowship> (info accessed 18 January 2019)

<sup>3</sup> <https://www.education.gov.au/australian-awards-university-teaching> (info accessed 6 August 2018)

teaching and learning in the national tertiary education.<sup>4</sup> This practice is commonly accepted as encouraging and further supporting the academic experience of young scientists by way of “shap[ing], influenc[ing] and lead[ing] policy decisions that enhance teaching and learning in higher education at local, national and international levels” (STLHE 2019: 2). In this context, the STLHE’s Innovation Award in Teaching and Learning promotes innovative approaches that facilitate student-centered teaching and learning.<sup>5</sup>

In the USA, the National Science Foundation (NSF) has introduced the “Graduate Teaching Fellows in K-12 Education”, as well as the “Faculty Early Career Development (CAREER) Program” schemes. CAREER offers “the National Science Foundation’s most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. Activities pursued by early-career faculty should build a firm foundation for a lifetime of leadership in integrating education and research”.<sup>6</sup> In addition to such national-level schemes, similar initiatives have also been institutionalized on a university- or regional-level.<sup>7</sup>

A number of conceptual linkages can be found in the aforementioned examples. Institutionalization of teaching awards is the norm in the sense that in some cases such awards have been awarded for more than two decades by the highest public policy echelons. Secondly, a wider objective is being pursued. Prizes are aimed not only to honor specific recipients but to bring forward a wider, societal recognition of the importance of acclaiming teaching capabilities. In view of the Greek case, it should be noted that a similar kind of policy initiative – let alone an institutionalized approach to awarding the best academic teachers – had been never implemented in Greece. It was only in 2016 that such a public policy mechanism was implemented. This initiative was organized on an ad-hoc basis and depended upon the availability of public funding. In contrast to the aforementioned examples, the rationale was not based on putting a premium on teaching quality in recognition of the latter’s importance but rather on the expressed teaching needs by Greek universities for adjunct personnel in order to fill teaching positions that were left vacant because the numbers of permanent academic personnel had been dwindling dangerously low because of the economic crisis.

## The Economic Crisis as the Canvas for Setting the Policy Initiative in Greece

The Greek government-debt crisis resulted in the sovereign debt crisis faced by Greece in the aftermath of the financial crisis of 2007–2008. During the 2009–2016 period,

<sup>4</sup> <https://www.stlhe.ca/> (info accessed 6 August 2019)

<sup>5</sup> <https://www.stlhe.ca/awards/d2l-innovation-award/> (info accessed 6 August 2019)

<sup>6</sup> [https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=503214](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214) (info accessed 6 August 2019)

<sup>7</sup> For example, in the UK: <http://www.bath.ac.uk/learningandteaching/progressing-yourcareer/teaching-awards/best-team-supporting-student-learning-award/index.html>, <http://www.nottingham.ac.uk/teaching/teaching/pgche/index.aspx>. In the USA: <http://www.nationalpostdoc.org/?page=TeachingFellowships> (a complete account of per university teaching initiatives), <http://www.unl.edu/gradstudies/current/development/postdoctoral-teaching-fellowships>, <https://umdearborn.edu/faculty-staff/faculty-and-staff-awards/faculty-awards/eugene-arden-interdisciplinary-researchteaching-award>

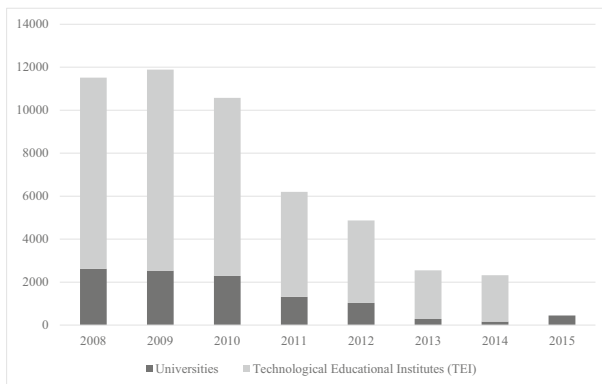
Greece experienced a rapid deterioration of macroeconomic indicators, resulting to its GDP decreasing by approximately 20%. As a result, a long list of sudden reforms and austerity measures had to be introduced to regain investor confidence according to the bailout programs as agreed with the country's international creditors (European Commission, European Central Bank, International Monetary Fund – also commonly named as the *Troika*). In the academic environment, these measures had the following, among others, implications.

### The Inability of Greek Universities to Employ New Scientists

It had been since the 1980s that the Greek public tertiary system routinely covered its teaching needs by way of employing young scientists and PhD holders as adjunct lecturers. This adjunct teaching and research personnel (hired on the basis of the following legislation: Presidential Decree 407/1980) was hired on short-term contracts at the level of assistant professor in order to conduct teaching, research, scientific, and managerial tasks on every academic field of study. The duration of these contracts were typically for one or two academic semesters.

In order to conform to the agreed austerity measures, the hiring of such adjunct teaching and research personnel had to be altogether stopped. The following figure (Fig. 1) indicates the deep cuts in such personnel during the economic crisis. In 2008, the number of adjunct and short-term researchers in both Universities and Technological Education Institutes (TEIs) was slightly above 12,000. From then onward, a sharp deterioration ensued resulting, in 2015, in a total of only 453 teaching personnel to be found in tertiary education institutions.

In addition and as a result of the same fiscal discipline, public authorities had to conform to legal constraints imposing limitations on the hiring of permanent personnel. This further negatively impacted the higher education system, since Greek universities and TEIs – that may be only public, according to the Constitution – were allowed to offer very few tender invitations for new tenured tertiary-level positions at any level



**Fig. 1** Number of adjunct teaching personnel in Greek universities and TEIs during the economic crisis, 2008–2015. Source: Hellenic Statistical Authority/ELSTAT (data available at <http://www.statistics.gr/el/statistics/-/publication/SED33/-> and <http://www.statistics.gr/el/statistics/-/publication/SED31/->, data accessed December 2018)

(lecturer, associate professor, professor). Invitations had to conform to the “5:1” attrition rule (meaning that one hire is permitted for every five departures) imposed by bail-out agreements between Greece and its creditors (European Commission 2014: 38). This led to further negative cascading, in terms of the number of teaching personnel, resulting in a compounded annual growth decrease of – 22% for the period 2008–2014.

Inability to hire new personnel (both of adjunct and permanent character) posed a severe block to the “natural” replenishment cycle of academics’ teaching life cycle, since it stopped allowing for the coming in of new, young recruits. Consequently, it led to an increase in the generation gap between those within and outside the public tertiary system. Given the increased importance of human capital in the knowledge transmission mechanisms, the above indicates a weak and delayed mechanism of renewing cutting edge knowledge.

### **One-Dimensional Outward Mobility of Young Scientists**

“Brain circulation,” describing the increasing movement of scientists around the globe, should be considered to be an original indication of international flow of human capital (Hunter 2013) and endemic of countries with strong science base (Wagner and Jonkers, 2017, Sugimoto et al. 2017). However, this phenomenon should be viewed cautiously in reference to countries with weak science base, over supply of scientists, or in financial distress. This is because the countries from which the scientists originate from lose a dynamic part of their human capital, such as young and talented scientists. This is commonly associated with one-dimensional outward mobility, a phenomenon detrimental for the societal and economic development and growth trajectory of the originating country (Martineau et al. 2004). In addition, it reflects a loss of national resources, as migrated scientists eventually work in another, hosting country that has probably not borne the cost of their education and training (Cervantes and Guellec 2002).

This kind of mobility had been the dominant trend of Greek researchers during the crisis years. According to findings, during the period of the crisis (2008–2017), more than 250,000 Greeks – the majority of which were of a young age and highly skilled – left the country, in pursuit of overseas employment (Labrianidis 2014, Labrianidis and Pratsinakis 2017, Triandafyllidou and Maroufouf 2017, Labrianidis 2017). A significant lowering of employment conditions/opportunities as a result of the overall financial crisis stands as one of the main reasons for the highly educated seeking employment opportunities abroad. This was coupled by the limitation placed on tertiary institutions not offering employment opportunities (both adjunct and permanent), thus creating a kind of “double disincentives” trap for the young highly educated.

### **The “Acquisition of Academic Teaching Experience for New Scientists” Public Initiative**

The Managing Authority (MA) of the Operational Programme “Development of Human Resources, Education and Lifelong Learning” of the Greek Ministry of Economy and Development (MED) introduced and financed the public intervention



initiative named “Acquisition of Academic Teaching Experience for New Scientists” (hereafter: initiative) under the National Strategic Reference Framework (NSRF) 2014–2020 set of policy actions on “Evaluating NSRF’s Tertiary Education Initiatives”. As such, the specific initiative formed part of a new “generation” of research-related public initiatives aiming to support various highly educated Greek subpopulations (e.g., PhD candidates, postdoctoral researchers, establishment of research groups among young researchers).

Introducing the academic teaching initiative was based on a number of assumptions, according to the rationale put forward by the MA. First of all, it recognized that boosting the academic teaching experience of a young scholar constitutes a crucial element for enhancing his/her academic profile, closely associated with strengthening the necessary skills for an academic career. Secondly, the launching of this publicly financed initiative was considered to be the first attempt to restore the deteriorating teaching balance after the decade-long crisis by inviting young PhD graduates to hold teaching appointments. Thirdly, it sought to update the curricula of the university departments by way of allowing recipients to update existing modules or even teach new ones and introduce new thematic areas that are closer to the cutting edge of the respective academic discipline on the global scale. Lastly, by way of offering short-term employment incentives, the initiative aimed to mitigate the outflow of the highly educated, a pattern that was in full swing during the Greek economic crisis.

This public initiative was introduced for the first time during the academic year 2016–2017 under the title “Acquisition of Academic Teaching Experience for New Scientists” (coding number: EDBM20) and reintroduced for the 2017–2018 academic year, under the coding number EDBM45. As of mid-2019, a new tender is also open for the academic year 2018–2019. Within the scope of this paper, we examine the results of the 2016–2017 and 2017–2018 cycles.

Concerning financial remuneration, the initiative was not aimed toward providing a permanent financial reimbursement; this was not allowed due to the NSRF regulations. Rather, it was based on the approach to provide a stipend paid on a semester basis to the recipients for the period foreseen in the initiative. All public universities and TEIs were invited to participate. According to the issued tenders, 20 (out of 22) universities<sup>8</sup> and all 14 TEIs did indeed participate in the initiative as the hosting institutes. Hosting institutes were appointed as intermediate actors for (a) the recipients of the scholarship to conduct their teaching module in the respective departments in each institution and (b) the MED to issue the stipendium for the recipients.

Accordingly, the initiative had an overall budget of 35.7 million €. The budget was broken down to 7.1 million € for academic year 2016–2017, 8.6 million € for 2017–2018, and 20.0 million € for 2018–2019 (Table 1) and had to be provided to approx. 1500 recipients per academic year in the first 2 funding cycles of the initiative (e.g., academic years 2016–2017, 2017–2018). For the academic year 2018–2019, it is expected that the number of recipients will be fewer than 1,200, yet according to the relevant tender, doctorate holders will be employed for the whole academic year (2018–2019), being able to teach up to 3 modules in the hosting faculty. This will result in receiving a higher financial reward.

<sup>8</sup> The two universities that did not participate were the Hellenic Open University and the International Hellenic University.



**Table 1** “Acquisition of Academic Teaching Experience for New Scientists”

EDBM 20		EDBM 45		
Time	Winter Semester 2016–2017	Spring Semester 2016–2017	Winter Semester 2017–2018	Spring Semester 2017–2018
Budget	7.14 mil. €		8.56 mil. €	

EDBM20 – EDBM45. Basic information (time frame and budget)

Source: EDBM tenders available at <https://empedu.gov.gr/invitation/apoktisi-akadimaikis-didaktikis-empeirias-se-neoys-epistimones-katochoys-didaktorikoy/> and <https://empedu.gov.gr/invitation/apoktisi-akadimaikis-didaktikis-empeirias-se-neoys-epistimones-katochoys-didaktorikoy-2>, calculation by authors

## Research Questions: Methodological Issues

Given that this is the first ever attempt to present data on a nationwide initiative on a specific population group, this paper addresses the following questions centered around the extent to which the initiative managed to (1) repopulate Greek HEIs in terms of young scholars being given teaching assignments, (2) introduce the teaching of the new thematic areas, and (3) decrease/stop the brain-drain trend of the highly educated.

Answering the above, a research methodology had to be conceived. Central to this was a research questionnaire addressed to all recipients of the scholarship in both academic years. The questionnaire was structured according to tenders’ characteristics and scope and consisted of the following parts: (a) personal details, (b) teaching experience prior to the activity, (c) information on teaching experience that was acquired as a result of their participation in the activity, and (d) assessment of activity. In all, 53 structured questions were included to address these parts.

In more detail, Part A of the questionnaire inquired about the beneficiaries’ demographic details; Part B aimed at identifying the level of prior teaching experience, the institution in which it was conducted in and the fields of science of the teaching module. Part C aimed at collecting information on practical issues that were related to modules taught by the beneficiaries as a result of the activity, e.g., whether the recipient had prior teaching experience of the same module or whether the module preexisted in the existing curriculum of the relevant department/school. Finally, Part D sought to elicit an assessment of the initiative. Emphasis was laid on understanding the effect that this activity had on the brain drain and the ways that similar initiatives may address this phenomenon. Beneficiaries’ proposals for improving relevant future policy initiatives were also included in this part of the questionnaire.

The questionnaire, in electronic format, was uploaded on the LimeSurvey platform (<https://www.limesurvey.org/>) and sent electronically to the recipients of the initiative. The beneficiaries’ contact details were collected by EKT in collaboration with MED and the recipient university and TEIs’ research committees. The latter were responsible for managing the institutional calls and tenders. In addition, they were appointed as the intermediate actors responsible for communicating and addressing all the administrative and managerial issues concerning the recipients. As a result, the research committees had the contact details of each and every participant. Special attention was given to secure the private details of the recipients, in accordance with the General Data Protection Regulation (GDPR).

Given that the scope covered both academic years (2016–2017 and 2017–2018), contact details were acquired for the respective beneficiaries. Personalized emails were sent to each recipient, in order to access the online questionnaire. A proactive approach in terms of reminders, follow-ups, and 24/7 e-helpdesk was embarked upon in order to maximize the response rate.

For the purposes of the survey, recipients were classified in terms of employability beyond their participation in this particular initiative, as well as according to the fields of science, regarding (i) recipients' most recent teaching experience in HEIs and (ii) recipients' participation and teaching tasks in the initiative. In both cases, established classification schemes such as the European Union Labour Force Survey and Frascati manual were taken into account and exploited accordingly.

Answers were downloaded and multiple validation cycles were undertaken for logical consistency errors. Where necessary, alterations to the variable formats (i.e., change string to numeric, change date formats, change initial blanks to missing values, removal of unnecessary characters created at earlier database production) were implemented so that new variables become compatible with and recognized by the software program used so as to undergo statistical computations. We used the IBM's SPSS statistical software. Upon the need to calculate number of months between two given dates, the remaining days were rounded off to the nearest month. Selection of index variables was undertaken, including testing for outliers and missing values of the index variables. For the analytic phase, descriptive statistics and contingency tables will be produced, in addition to creating the necessary tables and figures.

## Demographics of the Recipients

Table 2 presents the basic demographic data of the beneficiaries, per funding cycle as well as on an aggregate level. In the case of, e.g., the EDBM20 Winter Semester, the number of beneficiaries was 641, while those who answered the questionnaire was 583, reaching a 91.0% response rate. The overall response rate stands at 85.7%.

For the purposes of analysis, we controlled for the unique positions and beneficiaries both within the same academic year and across all EDBM cycles. In the case of unique positions, the absolute number of positions stands at 1524 for the EDBM20 and 1582 for EDBM45. For more than 3000 teaching positions (3106), a total of 1997 unique beneficiaries have participated in both cycles, with diminishing shares for every additional semester participation, with only 73 beneficiaries having participated in all 4 semesters. In matters of female participation, an above 40% participation for all cycles is observed (Table 2).

## Research Results and First Evidence from the Survey

In reference to the Greek universities and TEIs receiving adjunct teaching personnel of young age to conduct, mainly, teaching assignments, the following figure (Fig. 2) presents the number of the adjunct teaching personnel for the 2008–2017 period. As such, for the 2008–2015 period, this figure replicates the findings of Fig. 1. The trend strongly diverges in the following 2 years (2016 and 2017: referring to academic years 2016–2017 and 2017–2018, respectively in *y*-axis). Figure 2 indicates the accumulative

**Table 2** “Acquisition of Academic Teaching Experience for New Scientists”

	EDBM20 Winter Semester 2016– 2017	EDBM20 Spring Semester 2016– 2017	EDBM45 Winter Semester 2017– 2018	EDBM45 Spring Semester 2017– 2018
Number of beneficiaries (A)	641	883	665	917
-- having answered the questionnaire (response rate) (B)	583 (91.0%)	763 (86.4%)	559 (84.1%)	757 (82.6%)
Overall response rate	85.7%			
Positions within the same academic year	1524		1582	
Unique beneficiaries (C)	1997			
-- for 1 semester (% of C)	1267 (63.4%)			
-- for 2 semesters (% of C)	526 (26.%)			
-- for 3 semesters (% of C)	131 (6.6%)			
-- for 4 semesters (% of C)	73 (3.7%)			
Sex of participants				
M (% of B)	58.1%	58.8%	59.2%	59.8%
F (% of B)	41.9%	41.2%	40.8%	40.2%
Age of participants (B)				
< 35 (% of B)	26.8%	24.4%	21.2%	18.10%
35–44 (% of B)	56.9%	59.6%	64.9%	66.6%
> 45 (% of B)	16.3%	16.0%	13.9%	15.3%

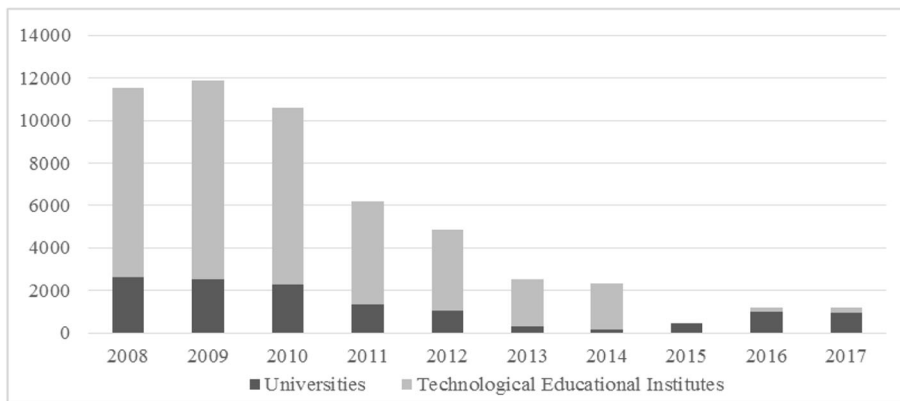
EDBM20 – EDBM45. Demographics of beneficiaries (number, sex, and age)

nature and effect of both the EDBM20 and EDBM45 for the number of adjunct teaching personnel. The number of teaching personnel has quadrupled in relation to the most recent, pre-EDBM, year (2015).

The initiative had been especially important in placing young researchers as academic teachers – indeed, it had been critical, given the near-total lack of any other human capital replenishment mechanism.

Notes: The 2008–2015 data refer to the total number of adjunct teaching personnel for all categories of tenured teaching personnel as reported by the ELSTAT by end of 2018. Accordingly, for 2015, only data for universities has been published. The 2016–2017 data report the net contribution of the EDBM20 and EDBM45 in the overall number of the adjunct teaching personnel. The contribution of the latter will be further indicated when the total number of the adjunct teaching personnel for the same years is published by ELSTAT, taking into consideration the elimination of any other tenured teaching tender. Each year record refers to the respective academic year.

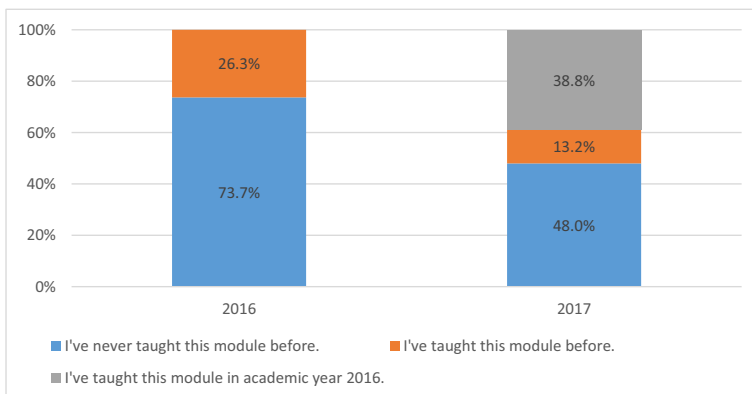
In reference to the introduction of new thematic areas and modules in Greek universities and TEIs’ curricula as a result of the “Acquisition of Academic Teaching Experience for New Scientists” initiative, Fig. 3 indicates the degree to which the modules taught were new or old. More specifically, it indicates whether the module(s)



**Fig. 2** Number of adjunct teaching personnel in Greek universities and TEIs. Prior years and the 2016–2017 period  
Source: ELSTAT (data available at <http://www.statistics.gr/el/statistics/-/publication/SED33/-> and <http://www.statistics.gr/el/statistics/-/publication/SED31/-> data accessed December 2018).

taught within the scope of the initiative had been taught before by the beneficiary or were taught for the first time as a result of the participation in the initiative. In the case of EDBM20, almost three quarters of the beneficiaries (73.7%) report that the initiative gave them the opportunity to teach the specific module for the first time, whereas for the remaining quarter (26.3%), this was not the case – they had taught the module before. In the case of EDBM45, the beneficiaries teaching a specific module for the first time amount to 48.0%. This decrease in comparison to EDBM20 is positively associated to the realization that a number of EDBM45 recipients had been already recipients of the EDBM20 cycle teaching the same module.

In reference to the significance of the “Acquisition of Academic Teaching Experience for New Scientists” as a means to put a stop on the one-dimensional outward mobility of the highly educated, Fig. 4 indicates the degree to which this policy measure helped.



**Fig. 3** Teaching of new modules and beneficiaries. EDBM20 (2016) and EDBM45 (2017)

In EDBM20 the percentage of those reporting that they were deterred from moving abroad because of their participation as academic teachers stood at almost half of the population (48.9%). The relevant percentage decreased to 38.3% in the EDBM45.

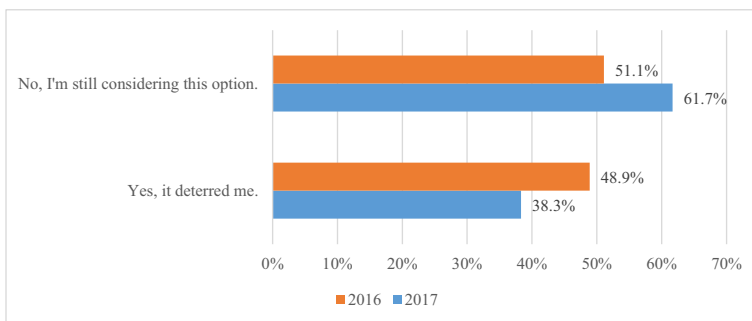
The above should be read in conjunction with the limited financial reward foreseen in the initiative (stipend) as well the initiative's yearly character, meaning that the recipients had had to reapply on a yearly basis. These factors were pointed out by the young academic teachers as critical in order to reverse this outward mobility in a more decisive way. According to Fig. 5, more than 90% of the beneficiaries pointed out that longer teaching periods, for example, three academic years, would contribute in curbing the outward mobility. Similarly, an increase of the monthly stipendium and scope of work within the framework of this initiative (e.g., combined with research activities) would help to a "great deal" to curb the brain drain further.

The "Acquisition of Academic Teaching Experience for New Scientists" initiative was conceptualized on the need to address two negative effects of the decade-long economic crisis in Greece that placed an extra burden on the operation of the national tertiary education system. These effects were (a) the very significant decrease of adjunct teaching personnel and (b) the one-dimensional outward mobility (brain drain) leading to a potential weakening of the country's pool of skilled and highly educated human capital. The latter is regarded to be one of the crucial components of a country's science base. In addition and closely associated with the tertiary system, the initiative sought to boost the teaching skills of the young scholars and restore the deteriorating teaching balance after the decade-long crisis by inviting young PhD graduates to hold teaching appointments.

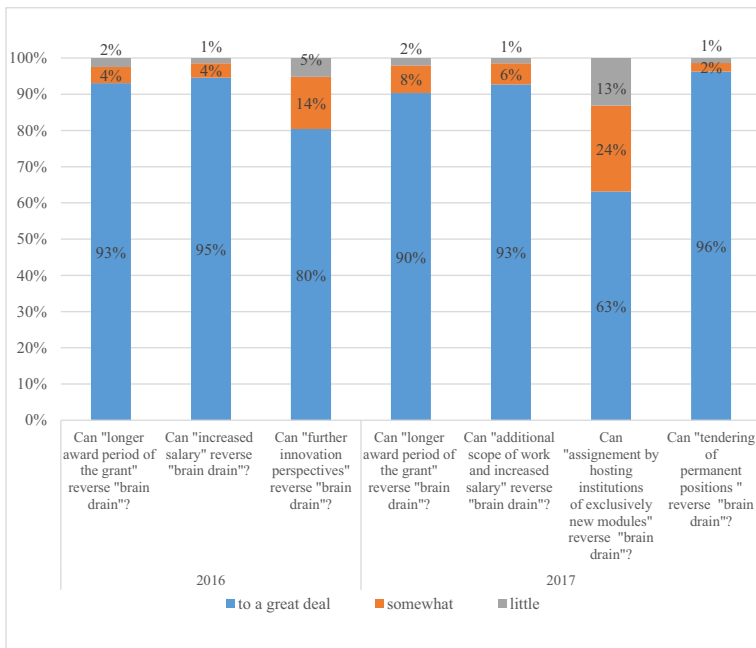
According to the findings presented, both EDBM cycles injected much-needed young researchers as teaching personnel. By way of employment opportunities, this policy measure contributed to reversing the downward teaching trend and upgraded the content of the existing modules in most universities and TELs' faculties. In addition, it provided crucial ground for the beneficiaries to refine their teaching skills by way of teaching new modules.

In relation to decreasing the outward mobility of the highly educated, participation in the initiative prevented almost half of those seeking to move abroad from actually doing so.

Further parameters that would (greatly) mitigate the phenomenon, according to the beneficiaries, are the longer duration of the scholarship and the higher salary/



**Fig. 4** The importance of "Acquisition of Academic Teaching Experience for New Scientists" initiative in curbing the one-dimensional outward mobility. EDBM20 (2016) and EDBM45 (2017)



**Fig. 5** Parameters assisting in curbing one-dimensional outward mobility. EDBM20 (2016) and EDBM45 (2017)

payment. Upcoming EDBM cycles have indeed taken note of these points and have been authored to better address the relevant issues. This should be viewed in combination with the following EDBM cycles being the main channels through which Greek universities will rejuvenate themselves insofar tenured teaching is concerned.

## Conclusion

Supporting the acquisition of teaching experience among young scientists holding a PhD, as a public intervention initiative in the higher education sector, can be found among a number of developed countries. The ability to transmit cutting edge knowledge with academic clarity and pedagogic competency and offering teaching opportunities to the future university professors are central to the rationale of such initiatives. In addition, refining young scientists' teaching skills is increasingly being seen as a must in a global academic marketplace, where tutors have to operate and incentivize knowledge creation within multicultural and multireligious environments.

In the Greek case, the above reasons were complemented with the need to replenish academic institutions with human capital that were exiting the institutions as a result of the decade-long economic crisis. The initiative was conceived as a "stop-gap" measure against the limitations of hiring short-term and permanent teaching personnel and an increasing outgoing global mobility pattern of the

highly educated. It is in this context that the “Acquisition of Academic Teaching Experience for New Scientists” initiative was conceived and implemented.

This paper contributes to the relevant bibliography by way of providing the first-ever country-level analysis in the case of Greece. As such, it is one of the latest country-level teaching skills’ initiatives worldwide (Diehl and Simpson 1989; Land and Gordon 2015). For this, the paper contributes to the relevant debate with updated evidence of a European country. It is important to state that the specific initiative was conceived and implemented in the context of an acute financial crisis – a framework condition that other similar country-level initiatives did not have and the relevant bibliography up to now did not have to take into account. On a wider note, this paper contributes to the bibliography on scientific mobility and more especially to the types of incentives that can be deployed for both sustaining a domestic science base and luring the foreign highly skilled.

Avenues for further research include the tracking of those beneficiaries in later stages of their professional life and examining their career trajectories in view of and in relation to the specific initiative, their acquired skills, etc. Implementation of future cycles will provide extra data on the existing data set and extend the available time series. This would offer opportunities for deeper understanding on issues such as unique recipients per university, per field of science, creation of networks with other academics both in and out of the country, etc. Also, (re)viewing the initiative in terms of addressing administrative and public policy-related questions is regarded to be critical. Examples would include the implementation efficiency and potential institutional overlapping between the ministry, intermediate actors, and the recipients.

## References

- Bernake, S.B. (2011). “Promoting research and development: The Government’s role”; speech at the conference on “new building blocks for jobs and economic growth,” Washington, D.C., may 16, speech #571.
- Bertoli, S., Brucker, H., Facchini, G., Mayda, A. M., & Peri, G. (2011). The battle for brains: how to attract talent. In T. Boeri, H. Bruecker, F. Docquier, & H. Rapoport (Eds.), *Brain gain and brain drain* (pp. 84–102). Oxford: Oxford University Press.
- Behrman, J. N., & Rondinelli, D. A. (2002). The cultural imperatives of globalization: urban economic growth in the 21st century. *Economic Development Quarterly*, 6, 115–125.
- Broughan, C., Steventon, G., & Clouder, L. (Eds.). (2018). *Global perspectives on teaching excellence. A new era for higher education*. New York: Routledge.
- Cervantes, M., Guellec, D. (2002). ‘The brain drain: Old myths, new realities’, OECD Observer, available at: <http://oecdobserver.org/news/archivestory.php/aid/673/The%20brain%20drain:%20Old%20myths,%20newrealities.html> (accessed 6 August 2019).
- Chalmers, D. (2010). Rewarding and recognising quality teaching in higher education through systematic implementation of indicators and metrics on teaching and teacher effectiveness, National Teaching Quality Indicators Project, Sydney, NSW: Australian Learning and Teaching Council.
- Diehl, P. F., & Simpson, R. D. (1989). Investing in junior faculty: The teaching improvement program (TIPs). *Innovative Higher Education*, 13, 147–157.
- European Commission (2014). The second economic adjustment programme for Greece, fourth review – April 2014, European Union: Luxembourg, available at [https://ec.europa.eu/economy\\_finance/publications/occasional\\_paper/2014/op192\\_en.htm](https://ec.europa.eu/economy_finance/publications/occasional_paper/2014/op192_en.htm) (accessed 7 August 2019).
- Efimenko, E., Roman, A., Pinto, M., Remiao, F., & Teixeira, P. (2018). Enhancement and recognition of teaching and learning in higher education. The Impact of Teaching and Excellence Prizes. *Journal of the European Higher Education Area*, 2, 99–117.



- Florida, R. (2005). *The flight of the creative class*. New York: Basic Books.
- Fry, H., Ketteridge, S., & Marshall, S. (Eds.). (2009). *A handbook for teaching and learning in higher education enhancing academic practice*. New York: Routledge.
- Hjem, M., Johansson Seva, I., & Werner, L. (2018). How critical thinking, multicultural education and teacher qualification affect anti-immigrant attitudes. *International Journal in Sociology of Education*, 27(1), 42–59.
- Hendricks, L. (2002). How important is human capital for development? Evidence from immigrant earnings. *American Economic Review*, 92(1), 198–219.
- Hunter, P. (2013). Brain drain, brain gain or brain sharing? *EMBO Reports*, 14(4), 315–318.
- Golde, C. M., & Dore, T. M. (2001). *At cross purposes: what the experiences of doctoral students reveal about doctoral education*. Philadelphia: A Report for The Pew Charitable Trusts.
- Kloek, T. A., Verbakel, J. R. A., Bernard, S. E., Evenboer, J., Hendriks, E. J., & Stam, H. (2012). The desirability of education in didactic skills according to medical interns. *Perspectives on Medical Education*, 1(5–6), 262–269.
- Labrianidis, L. (2014). Investing in leaving: the Greek case of international migration of professionals. *Mobilities*, 9(2), 314–335.
- Labrianidis, L. (2017). Why high school students aspire to emigrate: evidence from Greece. *Journal of International Migration and Integration*, 18(1), 107–130.
- Labrianidis, L., Pratsinakis, M. (2014). 'Outward migration from Greece during the crisis', *Project funded by the National Bank of Greece through the London School of Economic's Hellenic Observatory 2014 call*, available at [https://www.lse.ac.uk/europeanInstitute/research/hellenicObservatory/CMS%20pdf/Research/NBG\\_2014\\_-\\_Research\\_Call/Final-Report-Outward-migration-from-Greece-during-the-crisis-revised-on-1-6-2016.pdf](https://www.lse.ac.uk/europeanInstitute/research/hellenicObservatory/CMS%20pdf/Research/NBG_2014_-_Research_Call/Final-Report-Outward-migration-from-Greece-during-the-crisis-revised-on-1-6-2016.pdf) (accessed 21 January 2019).
- Labrianidis, L., & Pratsinakis, M. (2017). Crisis brain drain: short term pain and long term gain? In D. Tziouvas (Ed.), *Greece in crisis: the cultural politics of austerity* (pp. 107–144). London: I.B. Tauris Press.
- Land, R., & Gordon, G. (2015). *Teaching excellence initiatives: modalities and operational factors*. York: Higher Education Academy.
- Martineau, T., Decker, K., & Bundred, P. (2004). Brain drain of health professionals: from rhetoric to responsible action. *Health Policy*, 70(1), 1–10.
- Mazzucato, M. (2013). *The entrepreneurial state. Debunking public vs Private Sector Myths*. New York: Anthem Press.
- Ramsden, P. (2003). *Learning to teach in higher education*. London: Routledge Falmer Press.
- Ramsden, P., & Moses, I. (1992). Associations between research and teaching in Australian higher education. *Higher Education*, 23(3), 273–295.
- STLHE (2019). *Annual Report 2018*. Canadian Society for Teaching and Learning in higher education, available at [https://www.stlhe.ca/wp-content/uploads/2010/06/STLHE\\_AnnRpt\\_2018\\_20190524\\_Web.pdf](https://www.stlhe.ca/wp-content/uploads/2010/06/STLHE_AnnRpt_2018_20190524_Web.pdf) (accessed at 6 august 2019).
- Subbaye, R., & Vithal, R. (2015). Teaching criteria that matter in university academic promotions. *Assessment & Evaluation in Higher Education*, 42(1), 37–60.
- Suntharasaj, P., & Kocaoglu, D. F. (2008). Enhancing a country's competitiveness through national talent management framework. *Management of Engineering & Technology*, 314–327. <https://doi.org/10.1109/picmet.2008.4599637>.
- Sugimoto, C., Robinson-Garcia, N., Murray, D., Yegros-Yegros, A., Costas, R., Larivière, V. (2017). 'Scientists have most impact when they're free to move', *Nature*, 550(7674), available at [https://www.nature.com/polopoly\\_fs/1.227301/menu/main/topColumns/topLeftColumn/pdf/550029a.pdf](https://www.nature.com/polopoly_fs/1.227301/menu/main/topColumns/topLeftColumn/pdf/550029a.pdf) (accessed at 21 January 2019).
- Triandafyllidou, A., Maroufouf, M. (2017). 'Migration in Greece: Recent Developments', *Report prepared for the OECD Network of International Migration Experts, Paris, 2–4 October 2017*, available at [https://www.eliampe.gr/wp-content/uploads/2018/10/Greece-report-for-OECD\\_2-Nov-2017.pdf](https://www.eliampe.gr/wp-content/uploads/2018/10/Greece-report-for-OECD_2-Nov-2017.pdf) (accessed 22 January 2019).
- VTAS-PEN (2016). 'Australian University Teachers of the Year, 1997–2015', *Booklet on recipients of Australian Award for University Teacher of the Year (AAUTY)*, available at <http://aautn.org/wp/wp-content/uploads/2016/10/Profile-booklet-AAUTY-97-15.pdf> (accessed 6 August 2019).
- Wagner, C., Jonkers, K. (2017). 'Open countries have strong science', *Nature*, 550(7674), available at <https://www.nature.com/news/open-countries-have-strong-science-1.22754> (accessed 21 January 2019).