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Research evaluation: researchers' agenda setting, new role of scholars and science¹

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Abstract

The implementation of research evaluation policies, linked to a general trend of rethinking process of higher education in many Western countries, has stimulated a reflection among scholars on both short- and long-term effects. The aim of this paper is to provide a thorough literature review on research evaluation policies impact on knowledge productivity, notably focusing on the impact on research agenda setting related processes, thus proposing a discussion on research productivity factors. The purpose of the paper is also to enable a discussion on the changing conception of research production and academic life, as a result of the appearance of new actors in the academic landscape.

INTRODUCTION

The investigation of the process underpinning the creation of a research agenda is strictly connected to a broader reflection on researchers' role within the academic environment, that is a highly competitive field which is experiencing long lasting renewal and reorganization processes since the last two decades in most countries. Indeed, according to the research agenda definition proposed by Ertmer and Glazewski (that is defined as a sequence of actions oriented towards "both short and long-term goals", with the purpose of framing a robust individual research agenda to contribute to the production of new knowledge, Ertmer, Glazewski, 2013), an important interrelation between research agenda setting processes and knowledge production progress emerges.

The article thus aims to shed light over the mechanisms leading academics' research agenda setting related choices, by focusing both on individual and environmental factors. Among the environmental factors, we will pay particular attention to the issues linked to the interrelationship between researchers and the academic environment as a whole, with a specific reference to the role played by research evaluation policies.

Therefore, the research question we aim to address are: are research evaluation policies having an impact on research agenda setting related choices?

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We are going to address the research question through the review of the available literature, in order to illustrate the actual state of the art on this specific topic.

CONCEPTUAL FRAMEWORK AND METHOD

The purpose of the present paper is to foster our knowledge of research agenda setting drivers and mechanisms taking into account the preeminent ongoing phenomenon characterizing the university environment since the last two decades, and their consequences over academia.

Moverover, the role of research evaluation policies in influencing researchers' agenda setting choices will also be explored. Indeed, since the implementation of Research Assessment Exercise in the UK (1986), a general rethinking of research and university has been taking place in most Western countries, over the goodness of carrying on a series of reforms which modify the stable long-standing relationship between the state and academia. As a matter of fact, the implementation of research evaluation policies has in most countries progressively determined an impact on, for instance, university management and arrangement (Minelli et al, 2006, Elton, 2000, Reale, Marini, 2017), as well as research productivity and publication strategies (Elton, 2000, Reale, Seeber, 2011, Hammarfelt, de Rijcke, 2015, Borrelli, Stazio, 2018), which are worth furthering in order to better analyze the research agenda setting processes nowadays.

Thirdly, our analysis will stem from a reflection on the role of science and scientists in relation to society in a broader sense. This issue has actually triggered a considerable discussion among scientists on whether the huge economic development is conducting science towards new practices (Gibbons et al, 1994, Hessels, van Lente, 2015, Knuuttila, 2012), or towards more collegial decision making processes to establish the research activities' goals (Middlehurst, 2014, Whitley, 2010).

Therefore, the purpose of our work is to analyze the drivers and factors of researchers' agenda setting choices by stemming from a prior analysis on the previously mentioned macro dynamics, and then assuming a perspective more focussed on individual researchers and research groups' choices.

This article's purpose is to answer our research question through a literature review, for which we have then selected the most relevant scientific works per each of the 3 main thematic subgroups we intended to further: an overview of the consequences of research evaluation policies impact; an analysis of the relevant literature on research agenda setting drivers; and, in conclusion, a reflection on scholars and science's role and on the actual state of the academic profession.

More precisely, for the first group of material, we have started from 6 main works, from which we have subsequently selected 79 works. The subsequent selection of the materials from the initial works has been conducted with the snowball strategy and through the selection of further works on the web by a content analysis.

From the initial 79 works we have then selected 37 works that were deemed pertinent, that have then been analyzed and gathered in analytical grids. We have drafted 5 main grids,

gathering more subgrids per each topic, referring to research evaluation policies, academic profession, research agenda setting evaluation processes mechanisms and new role of science and scientists. For the first grid we have then identified 4 more subgrids (research evaluation policies principles/purposes, research evaluation policies features and consequences/research productivity, research evaluation policies consequences/organization and management, research evaluation policies consequences/teaching and education), thus grouping 19 works. For the second grid we have then identified two more sungrids (academic profession status, research productivity), thus grouping 13 more works. For the third grid we have then identified two more subgrids (research agenda setting/stakeholders' role), thus grouping 8 more works. For the fourth grid we have then identified just one sub grid, thus clustering two works. For the fifth grid we have identified just one subgrid, thus clustering 8 works.

We have organized the most relevant elements that were then used to create a conceptual map. Some works have been clustered in more than 1 grid.

The search for these works has thus been conducted in the web, namely:

- Web sources, such as Google Scholar and ResearchGate;
- Journal articles and working papers.

We searched works in the web sources through several combinations of some pertinent key words, and selected them, through a content-based analysis.

RESEARCH EVALUATION POLICIES: AN INFLUENCE ON RESEARCHERS' AGENDA?

In order to address our research question, it is useful to briefly introduce the concept of research evaluation policies and its main features. Since the pioneering initiative introduced in UK in the 1986 (Research Assessment Exercise), many countries have then implemented research evaluation policies with the purpose of fostering research quality since there was the widespread opinion that some universities were generally uncompetitive and not effective enough in fostering social cohesion and economic growth (Enders et al, 2011). Indeed, some of the primary underpinning principles of research evaluation policies are the enhancement of universities' competitiveness, the pursuit of excellence (Watermeyer, Olssen, 2016) and accountability (D'Albergo, Moini, 2019), by making academic institutions financially autonomous entities (Capano, 2014), and by fostering universities efficiencies (Reale, Pennisi, 2013).

As a matter of fact, these principles are all attributable to the "New Public Management" doctrine, according to which quality assurance and accountability are essential means to achieve good governance and public expenditure management. Still, since the emergence of "New Public Management" doctrine, evaluation practices have best fit the legislators' needs,

for the benefits they ensure to society, as they may grant a constant assessment of ongoing public activities, the possibility of improving the effectiveness of such initiatives and the planning of new ones according to the previous experiences' results (Palumbo, 2001).

Along with this emphasis on rationalizing economic resources to be invested in higher education systems, and, also, on making public investments meeting the "three Es of the economy" (Martin, 2011), many European countries then expressed a remarkable interest in fostering the national higher education systems, by making a common effort in complying with the principles established since the Bologna Conference in 1999 (Hicks, 2012), since European universities were deemed not effective enough in fostering social cohesion and economic growth. Interestingly, as for its role in enhancing economic growth and human capital, higher education-related issues have generally gained more importance in public policy agenda setting, to the point that higher education studies are gradually turning to be a specific scientific social sciences subdomain (Paradeise, Thoenig, 2013), in order to verify the effective economic relevance of research (Hicks, 2012).

According to some authors, research evaluation policies, which are based on a series of corrections measures as the result of the study of previously collected researchers' performance measurement outputs (Lewis, 2015) have been having a considerable impact on the academic environment. The impact of research evaluation policies is to be conceived as a consequence of, for instance, the many organizational changes they have been determining on university governance, such as the implementation of a vertical differentiation of university governance tasks and market-based reforms (Campbell, 2013), and an increased control over academics' activities (Musselin, 2013). Among the main consequences observed, the strengthening of university management (Minetti et al, 2006), the improvement of research management (Elton, 2000) and improvement in management performance through the rationalization of the use of available resources (Reale, Marini, 2017), are worth citing. Interestingly, the non-linear implementation process different research evaluation policies systems have been experiencing (as, for instance, the Italian case, which has undergone a convulsive and uncontrolled reform process, Reale, Pennisi, 2013, Borelli, Stazion, 2018) has been producing remarkably different effects on university management (Minelli et al, 2006, who proposed a comparison between Italian and Dutch research evaluation systems).

Furthermore, the impact of research evaluation policies implementation on research productivity and researchers' behavior has also been explored, as for the increasing pressure researchers are experiencing over their research performances (Campbell, 2013). Indeed, some authors attributed to the generally acknowledged increased competitiveness among researchers some changes in their publication strategies (Hammarfelt, de Rijcke, 2015, Elton, 2000) towards an increased internationalization process and an increased relevance of scientific articles, with more considerable consequences on less successful researchers (Karlsson, 2017) and researchers conducting studies in interdisciplinary fields (Elton, 2000). Moreover, research evaluation policies have also been having a different impact on different disciplines (Elton, 2000), and, more specifically, a more relevant effect has been observed on social sciences (Reale, Seeber, 2011).

Interestingly, the impact of research evaluation policies on research quality is still debated. Indeed, while in some cases the increased competitiveness level has been fostering research quality (Elton, 2000), in other cases scholars have observed a tendency by researchers towards a more cohesive and less innovative attitude (Watermeyer, Olssen, 2016).

According to some authors, additionally, the pursuit of excellence linked to research evaluation policies is inhibiting researchers' initiatives that may be perceived as risky or too pioneering (Borrelli, Stazio, 2018), thus preventing researchers from undertaking research topics which at the beginning seem to be unproductive or that initially seem to be a waste of time and money.

The impact of research evaluation policies has besides been observed on education and teaching activities. It has indeed generally been observed (De Philippis, 2015, Campbell, 2013) that researchers tend to focus more on research at the expense of teaching, as the result of the limited resources they have to invest on research.

RESEARCH AGENDA SETTING: DEFINITION AND DETERMINANTS

In this section we aim to introduce the concept of research agenda, and to further the elements and factors that contribute to its formulation.

As previously mentioned, we are herein going to start from Ertmer and Glazewski's definition (2013), which has the merit to first analyze the series of actions with which researchers and groups of researchers select and conduct their research activities. Furthermore, this definition highlights the link between research agenda setting results and researchers' career results. Indeed, the importance the authors attribute to research agenda setting mostly relies on individuals' capability of building new interesting and multidisciplinary bridges through several meaningful connections in other fields, that may grant researchers good reputation and credit in the academic environment, thus broadening individual academics' credibility cycle (Latour, Woolgar, 1979).

Hence, Ertmer and Glazewski's definition does not suggest a full description and systematization of the complex process that brings to a finalized individual research agenda, taking into consideration all possible determinants that may influence such a process, but, most importantly, they have contributed to highlight the individual and the context-related dimensions of research agenda setting process.

A fundamental contribution was given by Horta and Santos (2016), who developed a multi-factors explanatory model.

According to the authors, the "multi-dimensional research agendas inventory" describes the factors underpinning research agenda setting, that are strictly connected to both researchers' preferences and their approach to foster their academic career. This study mostly relies on the consequences of researchers' awareness that academic environment is increasingly dotted with challenges, as, for instance, ensuring the compliance of benchmark established by governmental authorities (Shore and Wright, 2004), contributing to the overall national knowledge production and academic expertise (Vessuri, 2008), and granting academic institutions visibility and prestige from an international perspective (McGill and Settle, 2012), as it is considered the *sine qua non* premise for granting both academics and institutions recognition. Moreover, agenda setting related choices may also be sensitive to the

researchers' personal ambition of peer recognition (Bourdieu, 1999), as gaining a recognised position in a specific field may require enough time. Thus, a researchers' position in a determined field along with the role of the mentor may both influence researchers' topic selection (Horta, Santos, 2016).

Therefore, taking into account some factors, that is, the benefits of getting specialized in a determined field (Leahey, 2007), and the high pressure to publish to ensure prestige (McGinn, 2012), that may influence researchers' decisions making process, Horta and Santos have then created a eight-dimensions explanatory model, with the purpose of examining a "broad range of factors critical to researchers' decision making".

This eight-dimensions model (whose dimensions are scientific ambition, convergence, divergence, discovery, conservative, tolerance for low funding, mentor influence and collaboration), has subsequently let Horta and Santos (2018) define two main clusters (called "archetypes") that may be used to group academics. They identify, on the one hand, the "cohesive agendas", representing academics that show safer research behavior; on the other hand, the "trailblazing agendas", grouping the less risk averse researchers. More specifically, the authors point out that researchers pertaining to both clusters tend to use different strategies to achieve the same goal, that is, peer recognition. "Cohesive" researchers (who count for one third of the sample units analyzed by the authors) tend to search for attaining a remarkable expertise in a certain field by a long lasting engagement in few specific subjects, and are generally less collaborative. Furthermore, the authors highlight that "cohesive" researchers play a "stabilizer" role in the discipline they pertain to, thus contributing to the sustainability and coherence of the field.

On the other hand, "trailblazing" researchers tend to have a more explorative behavior by choosing different fields and subjects to analyze, with higher predisposition toward collaboration and to select transdisciplinary subjects. They aim to attain peer recognition and establish a remarkable presence in academia by publishing a relevant number of works. "Trailblazing" researchers generally seek for proposing disrupting traditional academic paradigms and subjects, thus often matching their interest in multidisciplinarity with the current increasing higher education tendency toward a more multidisciplinary approach.

Moreover, the authors specify that the two archetypes are generally not mutually exclusive, and that the pressure to publish and to attain peer recognition generally lead researchers to assume both archetypes' strategies, with different degree according to factors like the age, the career and contractual position.

Hence, these two models have then stressed the relevance of individual based factors and collective based ones.

Furthermore, as for the role of individual dimension in research agenda setting attitudes, it is worth quoting Åkerlind's work (2008), on researchers' perception of themselves as academics and of academic profession in a broader sense. Akerlind identified four basic attitudes to conceive being an academic ("fulfilling academic requirements, with research experienced as an academic duty; establishing oneself in the field, with research experienced as a personal achievement; developing oneself personally, with research experienced as a route to personal understanding; and enabling broader change, with research experienced as an impetus for change to benefit a larger community"). According to Akerlind, academics belonging to the second, the third and the fourth category are more likely to carefully select

the topics to study, as for the noteworthy involvement with the academic profession and the public utility of their job.

Furthermore, the role of environment related agenda setting factors (notably, the role of external stakeholders, such as, for instance, research councils) is also meant to be significant, according to certain authors.

First, Henkel (2005) analyzes the possible relationships that may exist between academics and external stakeholders (such as instrumental exchange, scientific collaborative and hybrid collaborative exchange). The author maintains that academics' autonomy in research agenda setting is experiencing a reshaping process, because of the UK government's steering policies. Indeed, research agenda setting is the result of a negotiation process both at micro and macro level, "realised by managing multi-modality and multiple relationships". According to the author, the reframed context in which these negotiations are taking place is also determining a reshaping of the concept of academics' autonomy itself, due to the highly competitive level that characterizes the academic environment. One of the main reasons for these changes is the power held by research councils, which actually have the power to steer researchers' agendas to address their objectives through a meaningful funding management. The basic concept is to make research strategic, that is, obtaining practical and useful results, as for the increasing interrelationships between academic institutions, research councils and the industrial sector.

Interestingly, Leisyte et al (2008) have proposed a study to verify whether Dutch scholars feel external pressure from the external stakeholders when it comes to setting their own research agenda. The authors' starting point is that researchers generally search for complete autonomy and freedom of room, as researchers traditionally required in the past. According to the authors, academics are generally perceiving "least collective freedom of choice". More precisely, their choices are being partially shaped by the popularity and fundability of the research topic.

Moreover, it is also worth citing Luukkonen and Thomas' concept of research agenda as a "negotiated space" (2016), which identifies the multiple relationships in which researchers' agenda construction is embedded. The study illustrates that researchers are generally able to adopt strategies with which to negotiate with both "internal and external expectations and requirements", thus establishing a continual compromise between different expectations. Still, the authors underline that external research funding seems to be one of the major actors at stake, as they have a remarkable impact on research activities, also for what it concerns topics not strictly related to the research agenda (namely, research strategies and methodologies).

ACADEMIC PROFESSION STATUS AND THE NEW ROLE OF SCIENCE AND SCIENCES

The present discussion on researchers' agenda setting policies goes hand in hand with a broader discussion on the current status of the academic profession in an evolving academic

context.

The academic profession has indeed been experiencing a considerable renewal process, especially since the last three decades, as a result of the process of massification of higher education and the implementation of research evaluation policies. These changes have thus contributed to an increased fragmentation of academics' tasks (Moss, Kubacki, 2007), a reduction of the prestige of the academic profession, also called the "proletarianisation" process of the academic profession (Shattock, 2014, who also pointed out the lacking representativeness of the professional organizations within the UK academic environment), and a loss of researchers' financial and working autonomy (Rostan, 2011). Concurrently, the pressure and competitiveness to which researchers are subject are also rising (Shore, Wright, 2004), as a consequence of the necessity to comply with determined benchmarks. According to Moss and Kubacki (2007), this emphasis over research performance and competitiveness is determining an increasing sense of social isolation and loneliness, in contrast with the previously academic collegial atmosphere.

More specifically, we are assisting to a long lasting process which is determining a reshaped role of scholars within society at large, namely, from a more isolated and self referential academia attitude (Merton, 1979), toward a renewed social contract which requires academics' participation to social and economic progress (Martin, 2011). This process of interdependence between academia has been leading to an increased mutual legitimization (Lamonte, 2009), and to a progressive rise of funding to academic networks and projects that may match some social engineering measures.

The current "publish or perish" academic culture, the necessity of complying with established benchmarks and the changed role academics have been playing within society, have thus been triggering curiosity on the determinants of research productivity, that, according to some authors, should be linked to researchers' time management skills (White et al, 2012), to rewards (Chen et al, 2004), level of collaboration of multidisciplinary scientific work environment (Ramsden, 1998), to self-efficacy (Quimbo et al, 2014), and to researchers' perception of themselves as scientific community member (Brew et al, 2016).

Moreover, if on one hand researchers have sometimes been facing the negative side of this over emphasis on knowledge productivity, on the other side they are still major players of this phase characterized by a renewed social contract between society and academia (Martin, 2011). Indeed, academics have gradually acquired a major role by joining several research networks and councils (Middlehurst, 2014, Musselin, 2013), thus enabling a process of redistribution of power within the academic environment.

The relevance of the role of academics within society is also linked to a broader discussion on the changes regarding the new knowledge production and practices and the role of science in a modern economy (Gibbons et al, 1994). Therefore, even though the terms of this switch are still debated (Knuttila, 2012), this discussion identifies a new framework in which researchers play a renewed role.

The new knowledge production concept (Gibbons et al, 1994) mainly refers to a new system of carrying on science (additional to the traditional "Mode 1") which is meant to have a more socially distributed knowledge production system, that comprises new locations, practices and principles on which science is based on, and that tends to overcome the previous distinction between basic science and applied science. The "Mode 2" of knowledge

production describes a more interactive relationship between academia, industry and government, where external stakeholders are contributing to make research more strategic and oriented to societal needs, in which evaluation processes are deemed fundamental in order to constantly evaluate the fitness of research products for industrial and governmental purposes.

Gibbons et al Mode 2 way of conceiving research has been widely criticized, mostly because of the lack of empirical validity as well as its long-term context specific and historical framework (Hessels, Van Lente, 2015). Moreover, according to Knuuttila (2013), Mode-2 theorists seem to have underestimated the importance of justifying with a conceptual framework such assumptions; instead, they seem to be more focussed on research practices organization, rather than the eventual actual changes in science methods and content.

Moveover, it is worth citing that universities have been enthusiastically accepting the new knowledge production, thus making universities sort of spin-off firms institutions (Knuuttila, 2013).

As previously mentioned, since the last decades the role of academics have been adapting to the evolving higher education configuration. The proliferation of new research councils, evaluation panels and research-related tasks that constitute a bridge between research environment and external stakeholders (firms and government) has then determined an increased number of career possibility for academics, with a consequential fragmentation of the profession (Whitley, 2010, Musselin, 2013, Middlehurst, 2014). Additionally, this adjustment process has been also involving researchers' attitudes toward their agenda setting related choices (Horta, Santos, 2018), and, additionally, researchers' engagement in multiple research projects and networks (Middlehurst, 2014).

DISCUSSION

In this paper we have firstly proposed an overview of the research evaluation policies principles and features, with a specific focus on research evaluation impact on researchers' productivity.

Research evaluation policies have been implemented in many countries with the purpose of incentivizing researchers' and universities quality and productivity, fostering universities' governance and autonomy, as the result of the necessity of making universities more economically relevant and to face the tightened budget constraints.

The impact of research evaluation policies has triggered scholars' curiosity, especially for what it concerns the consequences of research evaluation policies over universities' autonomy and management (thanks to research evaluation policies government can exert a soft control over academic activities, through a steering-at-a-distance strategy, Musselin, 2013, Capano, 2014, Reale, Marini, 2017, Minelli et al, 2006) as for a newly-implemented top-down management academic governance (Watermeyer, Olssen, 2016).

A further discussion mostly refers to the impact of research evaluation policies on researchers' productivity (Elton, 2000, Karlsson, 2017), as for the increased level of competitiveness among researchers, on the impact on researchers' publishing strategies

(Hammarfelt, de Rijcke, 2015), and other higher education related activities (Campbell, 2013, De Philippis, 2015).

The impact of research evaluation policies on researchers' activities has further been stressed by Watermeyer and Olssen (2016), who point out a relative tendency of researchers to adapt to investigate just mainstream subjects, as for the remarkable government's control over academic activities.

Furthermore, we have then proposed an analysis over research agenda setting determinants, with a further focus of the consequences of the evolving academic environment on researchers' agenda setting related choices. After going through research agenda setting definition (Ertmer, Glazewski, 2013) and possible determinants (Åkerlind, 2008), we have mostly focussed on Horta and Santos (2018) research agenda setting archetypes, that identify two main kind of researchers' attitudes of the selection of topics. The two archetypes (cohesive and trailblazing) thus reflects a different approach to science, which, respectively, tends to further and strengthen the expertise and coherence to a determined field or subject, and, on the other hand, is more exploration oriented.

Some authors (Leisyte et al, 2008, Luukkonen, Thomas, 2016, Henkel, 2005) have additionally furthered the role of external stakeholders (research councils, governments, private firms) in addressing a possible research agenda, thus determining the formation of a "negotiation space" (Luukkonen, Thomas, 2016), in which researchers are involved in bargaining processes with multiple players.

Thirdly, we have examined the researchers' changing role within an evolving relationship between academia and external stakeholders (government, industry). As nowadays academics work in an environment in which there is more collaboration between industry, academica and government, researchers have been increasingly assuming new roles in newly formed institutions and research councils, thus determining a fragmentation of academic tasks (Musselin, 2013, Middlehurst, 2014).

CONCLUSIONS

The aim of the present paper was to shed light on the consequences of research evaluation policies and the new academia-stakeholders relationship on researchers' agenda setting related choices. Conceptually, our starting point is linked to the pressure exerted on researchers and the proliferation of industry-academics partnerships that may play a role in addressing researchers' attitudes and preferences. As we have already seen in our brief review, the role of external stakeholders in influencing researchers' agenda setting has been partially explored, especially for what it concerns the researchers' management of relationships with stakeholders within the negotiated space. In our opinion, an interesting and useful contribution would be a focus on to what extent, external stakeholders are affecting researchers' agenda setting according to the different relationships and working arrangement, by taking into consideration the analytical model proposed by Horta and Santos. Notably, it would also be interesting to further the different levels of researchers' perceived and real

freedom when they work in certain funding conditions, and how they interact with the different actors at stake at different levels.

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