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How do alumni faculty behave in research collaboration? An analysis of Chang Jiang Scholars in China

Feng Li[a], Yajun Miao[b,*], Chenchen Yang[c]

[a] School of Public Administration, Hohai University, 1 Xikang Road, Nanjing 210098, PR China
[b] Business School, Hohai University, 1 Xikang Road, Nanjing 210098, PR China
[c] School of Economics, Hefei University of Technology, 193 Tunxi Road, Hefei 230009, PR China

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ABSTRACT

Recruiting overseas alumni as faculty within their Chinese alma mater has become a common phenomenon in Chinese universities. This paper studies how the alumni linkage, the connection between alumni faculty members and their alma mater, influences the individual collaborative behaviour of returnee scholars. The results show that alumni faculty are inclined to conduct less intra-institutional collaboration than non-alumni faculty, and the impact of alumni linkage on a scholar's propensity towards international collaboration is not significant. Both results are inconsistent with expectations. The importance of local networking and other factors in Chinese research culture may cause returnee scholars to exhibit such unexpected behaviours in collaborative propensities. Another central finding is that alumni faculty members tend to publish in journals with an average greater impact factor than non-alumni faculty. We therefore argue that alumni linkage has played an important role in bringing about the prosocial behaviour of alumni faculty by strengthening their motivation to pursue quality research, and that the strength of a returnee scholar's local academic network also has a great impact on their tendency towards high impact research.

1. Introduction

As the country sending the most students abroad in the world, China has suffered a large outflow of top talent in recent years. Between 1978 and the end of 2012, China sent over 2.64 million students abroad, but only 41.2% of them returned after graduating (Wang and Miao, 2013). In order to reverse this "brain drain", the Chinese government has, since the early 1990s, introduced a series of policies aimed at attracting overseas academics (Zweig and Wang, 2013). The most well-known policy initiatives are the "Distinguished Young Scholars Program" introduced by the National Natural Science Foundation of China in 1994, the "Chang Jiang Scholars Program" co-founded by the Li Ka Shing Foundation and the Chinese Ministry of Education in 1998, and the "100 Talents Program" of the Chinese Academy of Sciences of 1999. More recently, the government has unveiled the country's *National Medium and Long-term Talent Development Plan* (2010–2020). The plan outlines 12 major programmes for recruiting top talent at home and abroad, including the "Recruitment Program of Global Experts" (the 1000 Talent Plan), which has been widely publicised as of late (Xinhua, 2011).

It has been claimed that returnee scholars may have "added value", or accumulate "some kind of transnational capital" during study and employment abroad (Zweig et al., 2004). Furthermore, many studies have shown that overseas experience increases both the "human capital" and "social capital" of returnees (Jonkers and Tijssen, 2008; Woolley et al., 2008). The return of overseas scholars to domestic institutions may benefit such institutions in two main ways. Firstly, the skills and knowledge obtained abroad may help improve the quality and broaden the areas of research at the institutions; secondly, returnees may provide an institution with access to international academic networks and resources (Velema, 2012). Ultimately, returnee scholars will help receiving institutions achieve their goals of research excellence. Considering the potential advantages overseas scholars can bring, most Chinese universities prefer recruiting faculty with overseas experience to those without. Moreover, the number of overseas scholars a university has brought back and the percentage of faculty members holding foreign PhD degrees have become important measures of a university's overall faculty strength and capacity. Overseas talent has become a critical academic resource for Chinese universities seeking to reach world-class standards.

* Corresponding author. Tel.: +86 025 68514620.
E-mail addresses: forestlee@hhu.edu.cn (F. Li), miaoblind@163.com (Y. Miao), yangcc@ustc.edu.cn (C. Yang).

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Great efforts have been made by Chinese universities to attract talent. On the one hand, Chinese universities have had huge financial support from both state and local government in bringing back global talent (Cao, 2008). On the other hand, universities themselves are implementing various institutional policies and strategies in order to obtain and retain overseas talent. Playing the "alumni card" appears to be one of the widely used strategies. Based on our observations, most Chinese universities, especially those in the top tier, have taken great care to maintain relationships with overseas alumni. The connections between overseas alumni and their Chinese alma maters are strengthened through joint research projects, student exchange programmes, and similar initiatives. These motivate alumni to come back and work as full-time faculty at their Chinese alma maters (Cai, 2012). In this paper, alumni faculty refers precisely to those returnee faculty members who work for the Chinese universities from which they received their undergraduate education, and non-alumni faculty refers to other returnee faculty members not working at their Chinese alma maters. Although the recruitment of alumni faculty has become commonplace in Chinese universities, no one has asked what advantages alumni faculty may offer in comparison to non-alumni faculty, and whether they behave differently in terms of teaching and research. This paper tries to answer these questions by exploring the differences in behaviour between alumni faculty and non-alumni faculty in research collaboration.

A variety of studies have addressed the topic of individual-level research collaboration. Katz and Martin (1997) have discussed the basic nature of research collaboration, including the concepts, motivations, measurements, benefits and costs of collaborative activity. Melin (2000) has investigated the unstructured factors that foster research collaboration at the individual level through surveys and interviews. Most recently, Bozeman et al. (2013) have reviewed literature on the attributes of research collaboration, and presented several areas requiring research. They argue that current studies mostly focus on either the individual researchers or collaborating organisations, while ignoring the organisational contexts and individual dynamics that may shape the collaborative behaviour of individual researchers and organisations. In other words, previous studies fail to reveal the impact of relationships between individual researchers and their affiliated organisations on the outcomes of research collaboration (Kislov et al., 2011), while treating individual and organisational collaborations independently. This paper aims to fill this gap by focussing on the collaborative behaviour of Chinese returnee scholars recruited by the "Chang Jiang Scholars Program", the so-called "Chang Jiang Scholars". More specifically, through an analysis of alumni faculty and non-alumni faculty in the group of Chang Jiang Scholars, we try to investigate the impacts of alumni linkage on the returnee scholars' collaborative propensities, and find empirical evidence to support the contention that the connection between researchers and institutions can also influence individual research collaboration.

The remainder of this paper is organised as follows: in Section 2, we review the literature and form several hypotheses; Section 3 provides an overview of the Chang Jiang Scholars Programme and introduces measures and research methods; Section 4 presents our results and findings; the discussion and policy implications are given in Sections 5 and 6 respectively.

2. Literature and hypotheses

2.1. Research collaboration in the Chinese context

According to an annual report released by *the Institute of Scientific and Technical Information of China* (ISTIC), China has achieved a threefold increase in research publication in international peer-reviewed journals over the past 10 years (2002–2012), and roughly one-fourth of the papers published in 2012 covered by the *Science Citation Index* (SCI) feature international collaboration (ISTIC, 2013). As internationally co-authored papers have boomed, the bibliometric characteristics of international research collaboration in China have been heavily studied in recent years by both foreign and native scholars (Fu et al., 2011; Tyfield et al., 2009; Wang et al., 2013; Zheng et al., 2012; Zhou and Glänzel, 2010). Earlier studies have shown five basic principles for understanding international collaboration in the Chinese context. Firstly, the number of internationally co-authored publications has increased tremendously along with total publications, but this increase does not match that of China's total publications in international peer-reviewed journals (Zhou and Glänzel, 2010), which indicates that the publication of local-collaboration papers has increased rapidly (as solo-authored papers have decreased year by year). Secondly, internationally co-authored publications normally outscore other publications in citation impact, which helps raise the overall impact of China's publications in international peer-reviewed journals (Fu et al., 2011; Tyfield et al., 2009; Zhou and Glänzel, 2010). Thirdly, China's major partners in collaboration are the USA, Japan and the European Union (He, 2009; Zhou and Glänzel, 2010). Although collaboration between China and other Asian countries has become more frequent, there is no evidence to suggest that intra-Asian scientific collaboration will change the structure of China's collaborative network (Haustein et al., 2011). Fourthly, differences between disciplines have been found in international collaboration. Biology and medical sciences appear to be more active in international collaboration than physics, chemistry, mathematics and engineering (ISTIC, 2013; Zhou and Glänzel, 2010). Finally, most scholars believe that the rapid development of China's international collaboration is mutually beneficial for both China and its partners (Adams, 2012; Jonkers, 2009).

Compared to the abundant study of international collaboration, literature on Chinese intra-institutional and inter-institutional collaboration is lacking. Although a few scholars like Liang and Zhu (2002) have studied inter-regional research collaboration in China, and Fu et al. (2011) have compared inter-institutional collaboration and international collaboration, these studies have all been descriptive. It is important to fully investigate both international and localised collaboration inside and outside Chinese research institutes in order to get a complete understanding of research collaboration in the Chinese context (Wagner, 2005).

Furthermore, most studies focus on the macro level of research collaboration, such as national or institutional collaboration, while studies of research collaboration between individual Chinese researchers are far from sufficient. In fact, most literature on the topic of individual research collaboration is based on the observations of scholars from western countries (or developed countries), including studies of the motivations for individual researchers' collaborations (Bozeman and Corley, 2004; Fox and Faver, 1984; Melin, 2000), and studies of the factors that influence individual researchers' collaborative behaviours (Bozeman and Gaughan, 2011; Ponomariov and Boardman, 2010; van Rijnsoever and Hessels, 2011). Do researchers from developing countries have similar motivations for research collaboration, and are their behaviours in research collaboration affected by similar factors? These questions still need to be properly answered. A few studies targeted at developing countries have found that research collaboration is not necessarily associated with research productivity, and scholars in developing countries may face structural impediments and institutional barriers when attempting research collaboration (Duque et al., 2005; Toivanen and Ponomariov, 2011; Ynalvez and Shrum, 2011). It is important to consider the different social contexts of the developing world. In China, the impact of unique research cultures (such as the Chinese *guanxi* ethics) on the