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When international mobility meets local connections: Evidence from China

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Abstract

Transnational academic mobility has long been championed as positive and worthy of supporting. Yet, little attention has been paid to its joint impact with local connections on the career advancement of established scholars. Utilizing novel curriculum vitae data of 1447 Chang Jiang Scholars, we examine the relationship between academic mobility and the speed of obtaining prestigious academic titles. Our results suggest that local connections accelerate the career development of Chinese scholars, while international academic mobility has a negligible effect or even slows down the speed of late-phase career advancement. Returnee scholars tend to obtain national academic titles within a longer time period compared with their local counterparts. This penalty of international academic mobility also holds for returnees with only overseas PhD training experience and international research visits. Local scientists are more likely than their returnee peers with equivalent ties to have a quicker career trajectory. Policy implications are also discussed.

Key words: International academic mobility; local connections; China

1. Introduction

The race of competing for global talent is on (OECD-UNDESA 2013; Shachar 2013; Wang and Liu 2016). From brain drain to brain gain to brain circulation, migrations of the highly skilled are embraced by many countries for establishing international collaboration and strengthening knowledge diffusion as well as enhancing scientific competitiveness (Song et al. 2003; DEST 2006; Saxenian 2006; Biao 2007; Wang et al. 2016; Tang 2018). This is particularly true for developing countries. In order to reverse the outflow of talent, those countries that have suffered greatly from brain drain are striving to lure back overseas sojourners, especially those who are highly skilled (Kapur and McHale 2005; Woolley and Turpin 2009; Tian 2016; Wang and Liu 2016). China is no exception. Over the last few decades, the Chinese central government has launched numerous national initiatives and proactively brought back overseas talent. Although the far-reaching impacts of these talent programs, both expected and unexpected, remain to be seen, it is clear that they have increased the intentions of overseas talent to come back to China with widening rewarding opportunities. According to the statistics released by the Ministry of Education of China (MOE), as of the end of 2017, about 60% of the total number of overseas Chinese returned to China, a historical record high (MOE 2018).

The State's continuing efforts in promoting return migration are stirring heated societal debates between overseas returnees and locals in China (Zweig et al. 2004; Hao and Welch 2012; Tai and Truex 2015). At the center of these debates lies the suspicion of the difference between the perceived and the real added value of overseas experiences and the concern about the unleveled playing field against locals. An increasing number of studies have explored this issue by comparing the post-return performance and promotion probabilities of returnees and locals (Jonkers 2011; Jonkers and Cruz-Castro 2013; Zweig and Wang 2013; Lu et al. 2014). Yet, to the best of our knowledge, no study has examined the role of international academic mobility in the late phase of career advancement taking both transnational capital and local connections into consideration. The extant literature also has not empirically explored the impact of international academic mobility on speeding up the winning of academic titles. In this study, utilizing the curriculum vitae (CV) of 1447 Chang Jiang Scholars (CJSs)—recipients of China's most prestigious academic title available to both returnees and locals[1]—we investigate the catalyst role, if any, of international mobility on returnees' career advancement.

This article makes the following contributions. First, given the heterogeneity of overseas experiences, it tries to differentiate the impacts, if any, of different types of international academic mobility on career advancement. We pay particular attention to the two types of mobility: foreign doctoral education and international research visiting. Second, bridging transnational capital and local connection literature, this article contributes to a better understanding of the mechanism of how international mobility impacts the speed of

career advancement. Finally, in a departure from previous studies focusing on entry- or mid-level academia, this article sheds some light on factors influencing the academic career advancement of a rarely discussed group—established scholars.

The remainder of this article proceeds as follows. Section 2 reviews the existing literature on academic mobility and career advancement followed by our hypotheses for testing. Section 3 depicts the CJS program and the choice justification for our study. The next section covers the data and methodology description. Section 5 presents the main results. The final section discusses research limitations and policy implications and concludes with future research directions.

2. Literature review and hypotheses

2.1 International mobility, transnational capital, and academic performance

International mobility is becoming an intrinsic part of academic life in many countries (Jonkers and Tijssen 2008; Fontes et al. 2013; Jonkers and Cruz-Castro 2013; Scellato et al. 2015; Wang et al., 2019). Being championed as a common good, national governments and supranational governments embrace scientific exchange and researcher mobility across national borders. A growing body of literature has empirically investigated the association between international mobility and returnees' performance. As delineated in Table 1, most of the early forays report that scholars with international mobility outperform locals in terms of research profile and international engagement. It was found that returnees tended to publish more papers in international journals, file more national patents, be granted more research projects, and received more science and technology awards (Li 2004b; Rosen and Zweig 2005; Zweig et al. 2006; Lu and Zhang 2015). Compared with their local counterparts, overseas returnees also maintained stronger international contacts (Jonkers and Cruz-Castro 2013; Scellato et al. 2015), thus contributing more in helping their students, colleagues, and institutions that became involved in international engagements (Li 2004b; Rosen and Zweig 2005; Zweig et al. 2006).

International mobility also plays a positive role in career advancement. Previous studies report that Chinese returnee scholars with foreign PhD degrees are more likely to receive promotions than scholars with domestic PhD degrees (Zweig et al. 2004; Lu and McInerney 2016). Similar results have been revealed in other countries. Lawson and Shibayama (2015) find that Japanese bioscience academics with short-term overseas experience are promoted faster than those without, and Jonkers (2011) observes that overseas working experience significantly quickens the career progress of Argentinean life scientists.

Some commentators noted that transnational capital accumulated through mobility across national borders contributes to, at least partially, better career prospects for academic returnees than for locals. Though there is no agreed-upon definition of

Table 1. Summary table on academic mobility and academic performance

Performance	Outperforming group[a]	Source
Research activities		
Grants or research projects	R	Zweig et al. (2006); Rosen and Zweig (2005)
Papers submitted to domestic conferences	—	Li (2004b)
	R	Rosen and Zweig (2005)
Patents filed	R	Rosen and Zweig (2005); Lu and Zhang (2015)
Economic returns of research	—	Li (2004b)
Papers published in international journals	R	Rosen and Zweig (2005); Lu et al. (2014)
Science and technology awards	R	Lu and Zhang (2015)
Papers published in domestic journals	L	Rosen and Zweig (2005)
Research in manufacturing	L	Li (2004b)
Teaching and graduate training		
New graduate courses offered	R	Zweig et al. (2006)
Graduate students supervised	R	Zweig et al. (2006)
Diversified curricula developed	R	Choi and Lu (2013)
Academic lectures given	—	Li (2004b)
Teaching materials prepared	L	Zweig et al. (2006)
International engagement		
Importing international technology	—	Zweig et al. (2006)
	R	Zweig et al. (2006) (2002 and 2004 survey)
Translating foreign research materials	R	Rosen and Zweig (2005)
Papers presented at international conferences	—	Li (2004b)
	R	Rosen and Zweig (2005)
International collaboration	R	Jonkers and Cruz-Castro (2013); Scellato et al. (2015)
Knowledge transfer	R	Zweig et al. (2006)
Career advancement		
Promotion	R	Lu and McInerney (2016); Jonkers (2011); Lawson and Shibayama (2015)
Leadership in top universities and departments	R	Chen (2003)
Leadership in non-top universities anddepartments	L	Chen (2003); Li (2004a)
Job switching	R	Zweig et al. (2004)
Administrative responsibility	R	Rosen and Zweig (2005)

[a]*R* denotes returnees, *L* denotes locals, and '—' indicates no conclusive findings found in that study.

transnational capital in extant literature, scholars tend to agree that it embeds global vision, advanced knowledge and skills, abundant resources, and a professional network via scientific mobility across national borders (Welch and Jie 2013; Wang et al. 2016). In other words, it encapsulates both scientific human capital and social capital gained through overseas experiences (Bozeman et al. 2001; Meyer 2001; Jonkers and Tijssen 2008; Woolley et al. 2008).

Meanwhile, contradictory evidence also exists. Lutter and Schröder (2016) find that overseas education experience does not significantly predict scholars' chances of obtaining tenured positions. Tian (2016) reveals that the differences in research performance by those with overseas experiences are diminishing. Jonkers (2011) reports that the duration of overseas work experience was found to have a negative impact on returnees' chances of getting promoted in Argentina. Ackers (2008) notes that international mobility is a double-edged sword: in some research systems, returnees are discriminated against when they reenter their previous network.

One speculation about these contradictory findings is that overseas experiences are different from each other. With the increasing diversity of academic exchange activities, the demarcating line between returnees and locals becomes muddy. Yet, a majority of extant studies treated all returnees as the same group, regardless of the types of overseas experience they had, with very few exceptions (Fernández-Zubieta et al. 2015). Based on these studies, we propose Hypothesis 1 without indicating the direction of the catalyst role:

H1. International academic mobility plays a catalyst role in scholars' career advancement.

2.2 Local connections, academic inbreeding, and career advancement

The factors impacting scholars' career advancement cannot be understood without paying attention to domestic linkages. Both geographical and social proximity, that is, the co-location and professional links between candidates and the selection committee, increase candidates' odds of obtaining academic positions (Ackers 2008; Abramo et al. 2015). Combes et al. (2008) and Zinovyeva and Bagues (2015) document similar results in France and Spain, respectively. Both studies argue that the presence of a scholar's PhD advisor on the selection committee significantly increased said scholar's chances of getting hired (or promoted). A recent study on Chinese academics also finds that hometown ties to selection committee members significantly increased candidates' probability of being elected into the Chinese Academies of Sciences and Engineering (Fisman et al. 2018).

In the scientific community, the most salient indicator of local connections is academic inbreeding,[2] whose impact on scholars' career advancement is inconclusive (Gorelova and Yudkevich 2015). Some studies report that academic inbreeding tends to reduce scholars' research productivity and impact and thus slows down the speed of career development (McGee 1960; Horta et al. 2010; Inanc and Tuncer 2011), while others argue that academic inbreeding enhances intramural connections and increases the local social capital of scholars, which in fact benefits scholars' career advancement. For instance, Cruz-Castro and Sanz-Menéndez (2010) observe that inbred Spanish academics had higher chances of getting tenure within 3 years after obtaining their PhD degrees than noninbred academics. They argue that permanence and institutional commitment instead of mobility speeds up the career advancement in early phases of career development. Shen et al. (2015) also provide direct evidence of the positive impact of academic inbreeding in China. They find that Chinese inbred scholars spent about 1 year less in getting prompted to associate professor than their noninbred peers. Building upon these previous studies, without indicating the direction of the catalyst role, we then hypothesize:

H2. Local connections catalyze career advancement.

2.3 When international mobility meets local connections

International academic mobility and local connections are not necessarily separate from each other. The connections between overseas scholars and domestic employers play a crucial role in scholars' decision-making processes to return (Cai 2012; Wang et al. 2016). When returnees with foreign PhD degrees come back to their alma maters, or when domestic PhDs return to their previous institutions after short-term overseas experiences (i.e. silver-corded researchers), both transnational capital and local connections influence career advancement (Horta 2013; Gorelova and Yudkevich 2015; Horta and Yudkevich 2016). Very few studies have taken into account the impact of international mobility between inbred and noninbred returnees (Lawson and Shibayama 2015). We further investigate the impact of local connections on returnee scholars' career advancement by proposing Hypothesis 3:

H3. International mobility has moderating impacts on returnees' pace of career advancement with local connections.

Stimulated by the distinction between the pure inbred and the silver-corded (Dutton 1980; Horta 2013; Smyth and Mishra 2014), we next differentiate academic inbreds into two subgroups: those who had overseas experiences before career advancement and those who had none. Given the policy relevance of temporary international visits in China, we further zoom in on the aforementioned silver-corded scholars and identify returnee alumni with foreign PhD degrees and returnee alumni with temporary international visits. Through this approach, we are able to examine the joint role of international mobility and local connections in career advancement based on these subsamples. Accordingly, this leads to our next two hypotheses:

H4. Alumni returnees with foreign PhD degrees have faster career advancement than the pure inbreds.
H5. Alumni returnees with temporary international research visits outpaced the pure inbreds.

3. Case selection: The CJS program

We test the above hypotheses in the case of China. The academic title we select is CJS. Launched in 1998, the CJS program aims to increase the international academic standing of Chinese universities by attracting and retaining global academic leaders under 45 years of age.[3] The CJS program recruits both full-time distinguished professors (*tepin jiaoshou*) and part-time visiting professors (*jiangzuo jiaoshou*) who often hold 9 month appointments overseas and only visit China over breaks. Given the research scope of this article, only full-time CJS Distinguished professors are considered.

The CJS program adopts a three-stage selection process. The first stage is intramural evaluation. The academic committees of nominating universities are responsible for the selection and initial reviews of recommended candidates.[4] The recommendation lists of candidates are submitted to the Ministry of Education by the given

deadline. In the second stage, each candidate's profile is anonymously reviewed by a panel of international reviewers who score each of the six review criteria, with academic contribution being the most important criteria, accounting for 40% of the total score.[5] The reviewers' comments and scores are evaluated by the expert appraisal committee of the CJS program at the third stage. Public notification of the finalists lasts for a couple of weeks, in case there is a need for wider consultation due to possible disagreements, academic misconduct disclosure, or ineligible qualifications.

There are several reasons justifying the selection of the CJS program as our analyzing sample. First, the CJS program is open to both overseas and local candidates with the same standards, which renders us a great opportunity for examining transnational capital and local connections at the same time. Second, the selection procedure of the CJS program is very strict and has a reputation for fairness among Chinese researchers. Lastly, the CJS program has been in practice for nearly two decades, which has brought the program-related policies to a mature and stable state. The longtime implementation of the CJS program also provides our study with a sufficient sample size and thus renders evaluating the impact of returnee scholars' transnational capital possible.

4. Methodology

4.1 Data

Our data start with the whole population of CJS scholars from 1999 to 2015. Fourteen cohorts with a total of 1839 distinguished professors were recruited by the CJS program during this time period. We first retrieved and compiled the comprehensive list of awardees from the China Academic Degree and Graduate Education Information website and the official announcements released by the MOE. We next collected their CV from various sources. For accuracy and comprehensiveness, both CJS awardee names and their CV were collected by two separate teams independently, followed by cross-checking and validation until both teams had exactly the same information. Two hundred ninety-nine CJS professors in the fields of arts, humanities, and social sciences were excluded from our sample given the shorter implementation of the CJS program in these fields and the different age requirements for these domains. To ensure that professors from the same cohort and in the same area have equivalent scientific achievements, we excluded eighteen professors without doctoral degrees and fifty-four professors >45 years old in their applying year.[6] Another fourteen professors holding foreign bachelor's degrees[7] and seven without complete CV data were also excluded from our analyzing data. The above procedure leads to a final sample of 1447 CJSs in scientific fields.

4.2 Measurement

4.2.1 Dependent variable.

Two measurements on career advancement have been adopted in previous studies: the probability of being recruited or promoted and the waiting time for promotion (Cruz-Castro and Sanz-Menéndez 2010; Zinovyeva and Bagues 2015; Lu and McInerney 2016). Being awarded the CJS title represents high recognition in the Chinese academic system and is a landmark of career advancement.[8] In a departure from the extant literature, most of which focus on the early phases of academic careers, we use the elapsed time from obtaining a PhD degree to being granted the CJS title to gage the catalyst role of academic mobility of researchers in the late phases of careers. In other words, our dependent variable is the time duration from the year of getting a PhD degree to the year of being awarded the academic recognition title of CJS.

4.2.2 Explanatory variables.

Academic mobility across national borders means two things occur at the same time: the establishment and accumulation of transnational capital while staying abroad and attenuated local connections due to distant geographical proximity (King 1986; Cassarino 2004; Ackers 2008).

4.2.2.1 International academic mobility. As stated previously, no consensus exists in the extant literature qualifying overseas experience and transnational capital. Some scholars distinguish returnees from locals by the designation of PhD degrees (Zweig et al. 2004; Choi and Lu 2013), whereas others cover a much wider scope including graduate education, exchange program, postdoctoral training, short-term visits, and corporate training (Fontes et al. 2013; Lu and Zhang 2015; Lawson and Shibayama 2015). In this article, we sit between the two measurements and set the threshold of 1 year and longer to label overseas experience and transnational capital. This is also the same standard that the MOE adopted for official statistics. Three subcategories are identified to investigate different types of overseas experience:

- overseas graduate degree education (i.e. overseas PhD degree in our case);
- full-time training and working experience in a foreign institution (including postdoctoral research); and
- short-term overseas experience such as visiting students and visiting scholars

Accordingly, we developed several dummy variables to measure the different types of international mobility. In the coding process, we paid particular attention to the timing of overseas experience: only experiences prior to the awarding year of the CJS title are taken into consideration.[9]

4.2.2. Local connections. Compared with mobile researchers, local scientists who stay domestic often have more local connections within home research systems. But the more salient or publicly observed connection is the alma mater. In the research, we developed two variables to gage the different types of alma maters between CJS scholars and their affiliations when they were recommended for CJS professorship: TIES_BACHELOR and TIES_PHD.[10] Additionally, a dummy variable TIES and a nominal variable TIES_LEVEL were generated to measure the existence and strength of intramural connections. If a CJS scholar obtains his/her Bachelor's degree and PhD degree from the same university where the scholar is hired, then (s)he appears to have stronger intramural connections than a scholar who has only a single tie to his/her affiliated university.

4.2.3 Control variables.

We included the following six factors as control variables to exclude competing explanations related to the speed of being granted the CJS title.

4.2.3.1 Awardees' cohort. Our CJS sample spans 14 years of cohorts. Scholars recruited by the CJS program in different cohorts may have unobservable differences in academic contributions due to policy adjustments and selection criteria. In comparison, it is reasonable to believe that professors admitted into the same cohort of the

CJS program share the most similarities in academic contributions, as they are evaluated by the same group of committees according to the same set of selection criteria.

4.2.3.2 Hosting university. The status of the hosting university impacts the speed of achieving national recognition via the symbolic capital and endowed resources associated with the reputation of the institution (Lutter and Schröder 2016). Studies have revealed that the features of the organizational contexts in which they work influence scholarly achievement and academic rewards (Fox and Mohapatra 2007; Cruz-Castro and Sanz-Menéndez 2010). Top universities are more likely to provide abundant resources, good working conditions, and a rich research culture for scholars, making them more likely to achieve academic success and earn the CJS title in a short time (Zhang et al. 2013). We therefore control for the status of host universities. We divided Chinese universities into four different groups: member universities of C9 League, universities sponsored by Project 985 (excluding C9 League), universities sponsored by Project 211 (excluding Project 985), and the remaining universities (Li 2012; Huang 2015; Shen et al. 2015).

4.2.3.3 Years of PhD degree completion. The duration of graduate training is claimed to be a strong predictor for career advancement and scientific recognition (Youtie et al. 2013). Following common practice (Cruz-Castro and Sanz-Menéndez 2010; Youtie et al. 2013), we adopt the elapsed years between getting Bachelor's and PhD degrees to capture the education and training work of obtaining the terminal degree.[11] Further examination of the non-normal distribution of TIME_PHD (Shapiro–Wilk test $W = 0.984$, $P < 0.00001$) suggests the common existence of a period of interruption in CJS awardees' educational trajectory. Thus, we transformed it as a nominal variable based on its frequency distribution.[12]

4.2.3.4 Research fields. Scholars in different research fields vary substantially in their career preferences (Fox and Stephan 2001) and research activities (Bonaccorsi and Daraio 2003; Cummings and Kiesler 2005). For instance, based on a national survey of PhD recipients, Fox and Stephan (2001) observe the different patterns of career prospects by field and gender of US young scientists. Li (2004b) finds that returnees in science had more direct economic returns than locals, whereas returnees in engineering had fewer returns than locals. To control for the possible confounding effect of research fields, we aggregated the eleven disciplines of the CJS program into four mega research domains.[13]

4.2.3.5 Gender. Gender differences of academics have been substantially discussed in studies of scientific labor force (Fox and Stephan 2001; Mairesse and Pezzoni 2015), academic entrepreneurship (Tartari and Salter 2015; Meng 2016), research collaboration (Bozeman and Gaughan 2011; Abramo et al. 2013), and career progress (Cruz-Castro and Sanz-Menéndez 2010; van Arensbergen et al. 2012; Parker and Welch 2013). Jonkers (2011) reports that when holding productivity constant, female researchers tend to work a longer time before being promoted. In terms of gender stratification in leadership, Parker and Welch (2013) find that female professors are more likely to lead disciplinary programs, whereas male professors are more likely to lead research centers or hold administrative university leadership positions. Though van Arensbergen et al. (2012) concede that the gender differences in research performance are small or insignificant for early-career scholars, van den Besselaar and Sandström (2016) find that male scholars tend to have faster academic career advancement than female scholars after 10 years.

4.2.3.6 Destination of overseas experience. A few studies claim that the location of overseas experience is related to the accumulation of transnational capital. In general, having overseas experiences in developed countries or regions help scholars build up a larger stock of transnational capital (Jonkers and Tijssen 2008; Ynalvez and Shrum 2011). Therefore, we generated a set of dummy variables (ASIA_PACIFIC, NORTH_AMERICA and EUROPE) to control for the potential effect of the region of obtaining overseas experience. For more details of the measurement, please refer to Table 2.

5. Analysis and findings

5.1 Descriptive statistics

Table 2 presents the descriptive statistics of our sample and the variable coding scheme. Some of the statistics are worth noting. For example, female scholars are far from being aptly represented in the CJS cohorts: only 7% (i.e. 101 of 1447) of CJS professors are female. This underrepresentation of women in academic positions of excellence may echo earlier findings on the glass ceiling phenomenon (Woo 1994; Xie and Shauman 2003; Lee 2004) or career preferences and prospects by gender (Fox and Stephan 2001).

Our data show that 1288 out of 1447 (i.e. 89%) of CJS professors have overseas experience (OVERSEAS_ALL), suggesting the prevalence of international mobility among recognized Chinese scholars. One speculation of the reason for this high bilateral correlation between international experience and CJS professorship is that a majority of CJS professors were finally chosen from research universities which attract more overseas returnees. A recent National Survey of Chinese Universities reveals that <53% of faculty members have at least 1 year of overseas experience (Shen 2016). In contrast, from 2011 to 2017, >80% of newly-recruited faculty members at Peking University and Tsinghua University, the two flagship research universities of China, have either overseas degrees or at least work full-time abroad (Li et al. 2018). In this sense, such a high proportion of CJS professors with overseas experience may be an artifact that faculty members in prestigious universities are more likely to be awarded the CJS title.

Contrary to intuition, a closer examination reveals that professors with only short-term overseas experience have the largest share of all the returnees (Obs. = 452), followed by returnees with both overseas PhD and professional experiences (Obs. = 296) and domestic PhDs with overseas professional experience (Obs. = 234). Less than one-third of CJS professors hold overseas PhD degrees (OVERSEAS_PHD), whereas about 50% had short-term overseas experience (OVERSEAS_TEMP). These findings are consistent with the Chinese talent policy of 'send out, attract back'. Undertaking short-term international visits and doing postdoctoral training overseas have become the most efficient way for domestically trained scholars to construct transnational capital (Zweig et al. 2004; Li et al. 2012; Li et al. 2018). Figure 1 depicts different types of foreign experiences and their combinations in more detail.

Our sample reports that a high proportion of CJS professors works at their alma maters. Over one-third of CJSs with foreign PhD degrees are hired at the universities where they obtained the Bachelor's degrees, which is consistent with previous findings of enduring social relationships: alumni were gone but not forgotten (Agrawal et al. 2006; Li et al. 2015). The data also show that 43%

Table 2. Descriptions of variables and descriptive statistics

Variable	Description	Obs.	Mean	SD	Min	Max
Dependent variable (DV)						
YEAR_LAG	Count variable, time elapsed between completing PhD degree and obtaining CJS title	1447	10.30	3.83	0	21
Explanatory variable (EV): International academic mobility						
OVERSEAS_ALL	Dummy variable, 1 if had overseas experience prior to CJS title; otherwise 0	1447	0.89	0.31	0	1
OVERSEAS_PHD	Dummy variable, 1 if had overseas PhD degree; otherwise 0	1447	0.29	0.45	0	1
OVERSEAS_TEMP	Dummy variable, 1 if had short-term temporary overseas experience; otherwise 0	1447	0.50	0.50	0	1
OVERSEAS_PRO	Dummy variable, 1 if had overseas post-doctoral training or full-time working experience; otherwise 0	1447	0.52	0.50	0	1
Explanatory variable (EV): Local connections						
TIES_BACHELOR	Dummy variable, 1 if working at the alma mater of the Bachelor's degree when obtaining the CJS title; otherwise 0	1400	0.40	0.49	0	1
TIES_PHD	Dummy variable, 1 if working at the alma mater of the PhD degree when obtaining the CJS title; otherwise 0	1447	0.43	0.50	0	1
TIES_LEVEL	Nominal variable, 1 if either TIES_BACHELOR or TIES_PHD equal 1; 2 if both TIES_BACHELOR and TIES_PHD equal 1; otherwise 0	1400	0.83	0.83	0	2
TIES	Dummy variable, 0 if both TIES_BACHELOR and TIES_PHD equal 0; otherwise 1	1400	0.56	0.50	0	1
Control variables (CV)						
MALE	Dummy variable, 1 if male; 0 if female	1447	0.93	0.25	0	1
COHORT	Year cohort, year of obtaining the CJS title	1447	2007	4.51	1999	2013
HOST_UNIV	Nominal variable, 1 if C9 League; 2 if Project 985 universities; 3 if Project 211 universities; otherwise 4	1447	1.93	0.90	1	4
TIME_PHD	Nominal variable, 1 if 2–8 years duration between completing Bachelor's degree and completing final degree; 2 if 9–12 years; 3 if 13–23 years	1369	1.53	0.69	1	3
FIELDS	Nominal variable, 1 if physical sciences; 2 if engineering and technology; 3 if life sciences; 4 if medicine	1447	2.02	0.95	1	4
ASIA_PACIFIC	Dummy variable, 1 if having overseas experience from the Asia and Pacific region; otherwise 0	1447	0.23	0.42	0	1
NORTH_AMERICA	Dummy variable, 1 if having overseas experience from North America; otherwise 0	1447	0.38	0.49	0	1
EUROPE	Dummy variable, 1 if having overseas experience from Europe; otherwise 0	1447	0.28	0.45	0	1
USA	Dummy variable, 1 if having overseas experience from the US; otherwise 0	1447	0.36	0.48	0	1

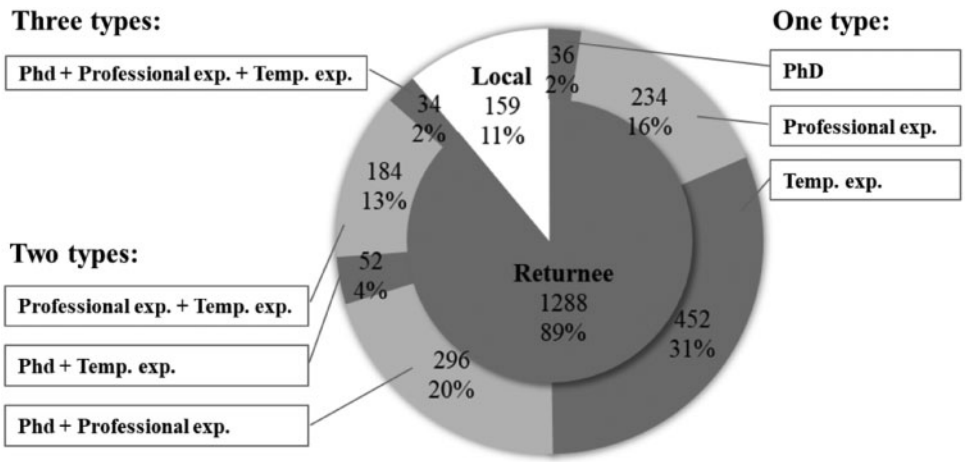

Figure 1. Distribution of CJS Professors with different types of international mobility.Yes

of CJSs were recommended by the alma maters where they earned their PhD degrees and 26% of total CJS professors worked and were recommended by the same institutions where they finished both undergraduate and doctoral training, suggesting the potential role of local connection, or to be more specific academic inbreeding, in the landmark of career progress. The next question is do these patterns also hold when we control for other factors?

5.2 Regression analysis

Before conducting regression analysis, we ran a few independent sample *t*-tests to compare the means of the dependent variable (YEAR_LAG) for two groups of CJS professors divided by the dummy variables of international mobility and local connections. The results show that overall there is no significant difference between professors with overseas experience and those without in terms of the time lag between obtaining a PhD degree and being granted the CJS title ($t = -0.12$, $P > 0.1$). When taking different types of overseas mobility into consideration, however, the results are not conclusive. On average, the year lag of being awarded the CJS professorship is significantly shorter for those with foreign PhD degrees than those without ($t = 11.68$, $P < 0.01$), whereas the elapsed time is significantly longer for CJSs with temporary overseas experience than those without ($t = -6.24$, $P < 0.01$). The analysis of variance test shows that the role of local connections (TIES_LEVEL) matters in predicting the year lag ($F = 3.92$, $P < 0.05$). CJS professors who work at the alma maters of their PhD degrees (TIES_PHD) tend to obtain the CJS title after a significantly longer waiting time than their counterparts ($t = -3.28$, $P < 0.01$). However, the local connection measured by TIES_BACHELOR is insignificant in predicting the year lag ($t = 0.9$, $P > 0.1$).

These results give us a general understanding of how different types of international academic mobility and local connections simultaneously impact the speed of obtaining the CJS title. To further differentiate the impact of both factors on scholars' career advancement, Poisson regressions were administered with heteroskedasticity robust standard errors controlling for other factors such as awardee cohort, hosting university status, years of PhD completion, research fields, gender, and destination of overseas experience.[14] The main results are presented in Table 3.

The Poisson estimates are incidence rate ratios (IRRs), and values in parentheses are robust standard errors (Inanc and Tuncer 2011; Smyth and Mishra 2014). The reference groups are the local scholars. As shown in Table 3, international mobility has a heterogeneous effect on the pace of career advancement. In general, international mobility slows down the pace of career development (Model 1). Returnees with international research visit experiences tend to obtain the CJS title 9% years later than locals (Models 2 and 3). The penalty of international mobility also holds for returnees whose *only* overseas experience is foreign PhD degree education experience (Model 4). Yet, such a liability could become a premium when more types of mobility across national borders are added, such as postdoctoral or full-time work experience or temporary research visits. The IRR for PhD education abroad in Model 5 is estimated at 0.83 and statistically significant at 1%, indicating that mixed long-term overseas experiences significantly speed up scholars' career progress by 17% years fewer than that of local scholars.

Therefore, Hypothesis 1 is partly supported. Different types of international academic mobility exhibit distinct results in predicting the speed of scholars' career advancement.

In sharp contrast, Models 1–5 in Table 3 consistently show that local connections measured by TIES_LEVEL plays a positive catalyst role in career progression (Hypothesis 2 is supported). Holding other variables in the model constant, each unit increase in the levels of strength of intramural connections decreases the year lag of obtaining the CJS title by 2–6%. There is no apparent pattern observed on the overseas destination effect.[15]

To test the moderating effect of international academic mobility, we added an interaction term of local connections and international mobility regardless of the type in Table 4. As shown in Model 6, for CJSs without any overseas experience, working at their alma maters has a positive impact on quickening the process of obtaining the CJS

Table 3. Catalyst roles of international academic mobility and local connections on career advancement

	(1) Overseas all	(2) Only Overseas temp	(3) Overseas temp	(4) Only Overseas PhD	(5) Overseas PhD
EV					
International academic mobility	1.07 (0.03)**	1.09 (0.03)***	1.09 (0.03)***	1.10 (0.08)	0.83 (0.05)***
Local connections	0.98 (0.01)*	0.95 (0.01)***	0.97 (0.01)***	0.94 (0.02)**	0.94 (0.02)***
CV					
Destination of overseas experience					
ASIA_PACIFIC	0.98(0.02)	1.00 (0.03)	0.97 (0.02)	0.76 (0.12)*	1.05 (0.05)
NORTH_AMERICA	0.93 (0.02)***	0.97 (0.03)	0.95 (0.02)**	0.88 (0.14)	1.01 (0.04)
EUROPE	1.00 (0.02)	0.99 (0.03)	0.97 (0.02)	1.00 (omitted)	1.16 (0.05)***
Awardees' cohort	1.04 (0.00)***	1.04 (0.00)***	1.04 (0.00)***	1.03 (0.01)***	1.03 (0.01)***
Years of PhD completion					
Gender			Controlled		
Hosting university					
Research fields					
N	1365	570	824	173	544
Pseudo R^2	0.113	0.132	0.124	0.179	0.122

IRR = Incidence rate ratio.

*$P < 0.1$; ** $P < 0.05$; *** $P < 0.01$; robust standard error in parentheses. Appendix Figure A1 plots the predicted marginal effects across different types of international academic mobility and local connections. We would like to thank Reviewer #1 for this suggestion. The reference group of TIME_PHD is 2–8 years. Please note when confined to the subsample of CJS with overseas PhD only, the variables of Asia and Europe are highly correlated and thus the latter's standard error displays omitted in the model 4 of regression output.

Table 4. Catalyst roles of transnational capital and local connections

		Full sample	Silver-corded versus locals (TIES_LEVEL>0)	
		(6) OVERSEAS_ALL	(7) Only OVERSEAS_PHD	(8) Only OVERSEAS_TEMP
EV				
	International academic mobility	1.00 (0.04)	1.25(0.13)**	1.12(0.04)***
	Local connections	0.90 (0.04)**		
	International academic mobility* Local connections	1.10 (0.06)*		
CV				
	Destination of overseas experience			
	ASIA_PACIFIC	0.98 (0.02)	0.62(0.10)***	1.02(0.04)
	NORTH_AMERICA	0.93 (0.02)***	1.16(0.11)	0.92(0.04)*
	EUROPE	1.00 (0.02)	1.00(omitted)	0.99(0.03)
	Awardees' cohort	1.04 (0.00)***	1.03(0.01)***	1.04(0.00)***
	Years of PhD completion			
	Gender		Controlled	
	Hosting university			
	Research fields			
	N	1365	115	388
	Pseudo R^2	0.113	0.160	0.132

*$P < 0.1$; **$P < 0.05$; ***$P < 0.01$; robust standard error in parentheses.

title. The IRR of the interaction term (1.10), that is the difference between the differences, suggests that compared with nonalumni CJSs, the penalty of overseas experience is 10% years longer for those working at their alma maters to be granted the CJS title, indicating that transnational capital accumulated through international mobility cannot compensate for the loss of an attenuated intramural network.

Model 6 adopts the full data set to test the joint effect of international academic mobility and local connections; Models 7 and 8 zoom in on two subgroups in which all CJSs are alumni and investigate whether the gain of human and scientific resources via international mobility can make up for the weakened social ties in domestic networks in career advancement. Interestingly, both regressions show that the pure inbreds outperformed the silver-corded, regardless of the later expanding their horizons and network via foreign PhD degree or temporary overseas visits. Holding other factors constant, alumni returnees who received foreign PhD degrees take 25% years longer than local alumni to obtain the CJS academic title (Model 7). Even for alumni who only temporarily left for overseas experiences, international mobility costs them 12% more years than nonmobile alumni to obtain the CJS title (Model 8). This finding is understandable when considering that the disruptive nature of international research visits may weaken social ties in the local research system. In sum, Table 4 supports Hypothesis 3 of the moderating effect of international mobility on career advancement. It also suggests that when international capital meets local connections, the latter matters more (Hypotheses 4 and 5 are not supported).

For those who just got their overseas PhDs, theoretically, there are two options to remediate the loss of local connections. One is further strengthening transnational capital by enriching their experiences with other types of overseas experiences; the other is to return to their alma maters to reinstate intramural networks. We tested both strategies; the results are shown in Tables 3 and 4. As shown, *ceteris paribus*, overseas returnees endowed with different types of transnational capital can outpace locals (Model 5), while even if fresh overseas PhDs return to their alma maters, it still takes them a longer time to be granted the CJS titles relative to those never left (Model 7).

Aside from the impacts of the main explanatory variables, some of the control variables are also strong predictors of the time measures, and the results are mostly identical in different models. First, the recent cohorts of CJS professors tend to take a longer time to obtain the CJS title compared with the earlier cohorts of professors. One speculation for this is that the competition has become much fiercer in more recent years. Second, the time of PhD completion reduces the waiting period of advancement. More years of doctoral training make scholars obtain the CJS title more quickly.[16]

6. Conclusions and discussions

Being awarded the CJS title is an important milestone for a Chinese scholar in terms of career progression. The quicker a scholar obtains the title, the sooner he or she will be empowered with various resources and institutional support, and the larger the potential of being promoted to a higher level, such as Chinese Academician. In this article, we propose one long-neglected time-relevant measure—the elapsed time before being granted the CJS title—to test if international academic mobility (measured by different types of overseas experiences) and local connections (measured by alumni status and nonmobility), separately and jointly, play catalyst roles of speeding up the process of academic career development.

Our study reveals that the strongest and most reliable predictor for national academic recognition is local connections, while international mobility overall has a heterogeneous effect on career progression at the late phase, depending on the types of overseas academic experiences. When examining the joint effect of international mobility and local connections on career advancement based upon two groups of alumni scholars, we find similar results with greater certainty. Our finding on Chinese academics lends further empirical support of social capital theory (Cao 2008; Lu and McInerney 2016; Fisman et al. 2018). It also echoes the claim of Cruz-Castro and Sanz-Menéndez (2010) that though it is perceived as beneficial, mobility is often not rewarded by the incentive structures of employing organizations.

One interpretation is that returnees may suffer from reverse culture shock, having to spend time adapting to the Chinese political and cultural environment (Gill 2010). This slows down the pace of their career development. Another speculation is that the positive catalyst role of local connections is an artifact of self-selection—only those most able, with great potential for scholarship and leadership, were chosen and employed by then-established scholars after years of observation. Similarly, the opportunity costs of international visits render inbred scientists who are on the right track of career trajectory nonmobile.

It is worthy of noting that, departing from a few earlier studies which testified to the value of obtaining an overseas PhD degree in accelerating scholars' career paths (Zweig et al. 2004; Lu and McInerney 2016), we found that the premium of obtaining an overseas doctoral degree on achieving the CJS title sooner can only be achieved when combined with other types of academic mobility. In defense of inbred faculty members, McGee (1960) criticized the practice of robbing Peter to pay Paul in US land-grant institutions. If that also holds in China, then our results suggest that Peter, the inbred faculty member who shoulders 'disproportionately heavier teaching and outreach responsibilities', is finally paid off at a later career stage (Horta et al. 2010).

This research has some limitations. To begin with, we use overseas experience as a proxy indicator of international academic mobility. Different from extant research, we further differentiate it into different types and examine their heterogeneous impacts. Our data, however, cannot tell us the accurate number of years of overseas experience. It would also be interesting to explore the impact of the length of time abroad after PhD designation on career advancement. Second, this research uses the CJS professor title as a surrogate for career success. It would be interesting to further examine other high-end programs within and outside China and see if the same pattern holds. Another drawback is that local connections are multidimensional. In this article, we confine this measurement to the publicly observable and most salient dimension—alma mater—yet other hidden connections beyond alumni are not captured. Finally, our research focuses on established scholars who have won prestigious titles. As a note of caution we stress that the findings here should not be interpreted to indicate that overseas returnees are discriminated against in career development in general or for early career scholars.

Notes

1. CJS is also known as the Cheung Kong Scholars Program or the Yangtze River Scholars program.
2. There is no agreed-upon definition of academic inbreeding. Some define it as the practice of hiring an institution's own graduates immediately after their graduation (Eisenberg and Wells 2000; Smyth and Mishra 2014), and others define inbred scholars as those whose current affiliations are with the same places where they got their PhD degrees (Horta et al. 2010) or Bachelor's degrees (Cruz-Castro and Sanz-Menéndez 2010; Horta and Yudkevich 2016). These definitions of academic inbreeding, though different, both pinpoint the existence of educational and social ties between scholars and their affiliations.
3. The CJS program opened to scholars in arts, humanities, and social sciences in 2004, 6 years after its launch in 1998. Applicants must be under the age of 55 years, which is 10 years older than the requirement for scholars in the hard sciences. The Chang Jiang Scholar Program for Youth was launched in 2015 as a candidate pool for the Chang Jiang Distinguished Scholar program. The recognition award for CJS professors consists of a 5-year term. In addition to an annual post allowance, awardees are also provided with a lucrative package including a salary, insurance, a research fund, and welfare provided by the hosting university.
4. The list of research fields can be found at the official website of the Ministry of Education of the People's Republic of China. <http://www.moe.gov.cn/srcsite/A04/s8132/201705/t20170523_305576.html > accessed 28 July 2018.
5. The six criteria are teaching abilities, academic contribution, potential in doing creative research, leadership in major research projects, future plans, and supporting research team.
6. Please note that according to the 1998 and 2004 program rules, for those professors with extraordinary achievements and specializing in high-demand fields, the program will stretch the basic requirements.
7. The eight CJS were either foreigners or overseas Chinese who stayed abroad at very young ages.
8. Among the newly elected Academicians, or the highest academic recognition in China, CJS professors are taking an increasingly large share: 45% in Cohort 2015 and 47% in Cohort 2017. Additionally, these Academicians are on average 5.6 and 3.5 years younger as CJS professors than non-CJS Academicians in the Cohorts of 2015 and 2017, respectively, suggesting the premium of CJS awardees in the career path of Chinese established scholars.
9. For example, for CJSs in the 2003 cohort, only overseas experiences completed before 2003 were taken into consideration.
10. Based on the CV, we also coded TIES_MASTER to examine whether a CJS scholar is affiliated with his/her master's degree alma mater. Unfortunately, unlike the two variables of TIES_BACHELOR and TIES_PHD, the missing data for TIES_MASTER reach up to 262. Thus, we used only TIES_MASTER in robustness testing in regression tests. The main findings are the same.
11. There are 27 researchers holding two PhD degrees prior to being awarded the CJS title in our sample. The dependent variable was calculated based on the last degree. In the late section of regression tests, we ran robustness checks by measuring the dependent variable based on the first PhD degree. The major findings hold.
12. In addition to the discussed control variables, we also generated the variable AGE_PHD to measure how old CJSs were when they obtained their PhD degrees. The correlation matrix shows multicollinearity between AGE_PHD and TIME_PHD; thus, we removed AGE_PHD from our regression model.
13. Our classification is based on the broad subject fields proposed by OECD (http://www.oecd.org/sti/inno/38235147.pdf) and Shanghai Jiaotong University (http://www.shanghairanking.com/ARWU-FIELD-Methodology-2016.html). Appendix Table A1 tabulates the coding of the 12 disciplines and 4 research domains.
14. The distributions of dependent variables show no concerns about over-dispersion.
15. Lawson and Shibayama (2015) found that international mobility to the USA has a significant career advancing effect; thus, we also generated a dummy variable of 'US' and ran robustness tests to capture whether there exists a premium effect of US mobility. Yet, similar to the results of NORTH_AMERICA, there is no consistent pattern

suggesting that overseas experience in the USA is more valuable than that in other countries because of the global status of US institutions. Another robustness check we ran is leaving all the destination dummies out of the regression models, and the main results hold. The catalyst role of international academic mobility on career advancement varies by the type of overseas experiences. Among Models 1–5, only when overseas PhD training experience is combined with other types of overseas experience, the penalty of overseas experience on career advancement turn into a premium. Local connections matter. Additionally, we ran regressions including all mobility dummies in the model, but no patterns were found.

16. Those results not reported in the article are available upon request from the authors. For robustness tests, we substituted local connections with Bachelor's degree and PhD degree alumni, and the main findings hold. The Cox hazard model yields the same results.

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References

Abramo, G., D'Angelo, C. A., and Murgia, G. (2013) 'Gender Differences in Research Collaboration', *Journal of Informetrics*, 7/4: 811–22.

———, ———, and Rosati, F. (2015) 'The Determinants of Academic Career Advancement: Evidence from Italy', *Science and Public Policy*, 42/6: 761–74.

Ackers, L. (2008) 'Internationalisation, Mobility and Metrics: a New Form of Indirect Discrimination', *Minerva*, 46: 411–35.

Agrawal, A., Cockburn, I., and McHale, J. (2006) 'Gone but not Forgotten: Knowledge Flows, Labor Mobility, and Enduring Social Relationships', *Journal of Economic Geography*, 6/5: 571–91.

Biao, X. (2007) 'Productive Outflow of Skills', *Asian Population Studies*, 3/2: 115–33.

Bonaccorsi, A., and Daraio, C. (2003) 'Age Effects in Scientific Productivity', *Scientometrics*, 58/1: 49–90.

Bozeman, B., and Gaughan, M. (2011) 'How do Men and Women Differ in Research Collaborations? An Analysis of the Collaborative Motives and Strategies of academic researchers', *Research Policy*, 40/10: 1393–402.

———, Dietz, J. S., and Gaughan, M. (2001) 'Scientific and Technical Human Capital: An Alternative Model for Research Evaluation', *International Journal of Technology Management*, 22/7: 716–40.

Cai, H. (2012) 'Deploying the Chinese Knowledge Diaspora: a Case Study of Peking University', *Asia Pacific Journal of Education*, 32/3: 367–79.

Cao, C. (2008) 'China's Brain Drain at the High End: Why Government Policies have Failed to Attract First-rate Academics to Return', *Asian Population Studies*, 4/3: 331–45.

Cassarino, J. P. (2004) 'Theorising Return Migration: a Revisited Conceptual Approach to Return Migrants', *International Journal of Multicultural Societies*, 6/2: 253–79.

Chen, Q. (2016). *Globalization and Transnational Academic Mobility: The Experiences Of Chinese Academic Returnees*. Singapore: Springer.

Chen, X. (2003) 'Ren cai liu dong yu liu xue xiao yi zhi ping shuo', China Scholars Abroad (Shen zhou xue ren), 7: 18–19.

Choi, S.-J., and Lu, J. (2013) 'Returnee Faculty Members, Network Position and Diversification Strategy: an Analysis of Business Schools in China', *Asia Pacific Business Review*, 19/4: 559–77.

Combes, P.-P., Linnemer, L., and Visser, M. (2008) 'Publish or Peer-rich? The role of skills and networks in hiring economics professors', *Labour Economics*, 15/3: 423–41.

Cruz-Castro, L., and Sanz-Menéndez, L. (2010) 'Mobility Versus Job Stability: Assessing Tenure and Productivity Outcomes', *Research Policy*, 39/1: 27–38.

Cummings, J. N., and Kiesler, S. (2005) 'Collaborative Research Across Disciplinary and Organizational Boundaries', *Social Studies of Science*, 35/5: 703–22.

DEST. (2006). *Backing Australia's Ability: Innovation Report 2005-06*. Canberra: Commonwealth of Australia.

Dutton, J. E. (1980). 'The Impact of Inbreeding and Immobility on the Professional Role and Scholarly Performance of Academic Scientists'. In *Paper presented at the annual meeting of the American educational research association*, Boston, MA, 7–11 April 1980. http://eric.ed.gov/? id=ED196714

Eisenberg, T., and Wells, M. T. (2000) 'Inbreeding in Law School Hiring: Assessing the Performance of Faculty Hired from Within', *The Journal of Legal Studies*, 29/S1: 369–88.

Fernández-Zubieta, A., Geuna, A., and Lawson, C. (2015). 'What do We Know of the Mobility of Research Scientists and Impact on Scientific Production'. *Global Mobility of Research Scientists*, pp. 1–33. Elsevier BV: Amsterdam.

Fisman, R., Shi, J., Wang, Y., and Xu, R. (2018). '*Social Ties and Favoritism in Chinese Science*', *Journal of Political Economy*, 126/3: 1134-1171.

Fontes, M., Videira, P., and Calapez, T. (2013) 'The Impact of Long-term Scientific Mobility on the Creation of Persistent Knowledge Networks', *Mobilities*, 8/3: 440–65.

Fox, M. F., and Stephan, P. E. (2001) 'Careers of Young Scientists: Preferences, Prospects and Realities by Gender and Field', *Social Studies of Science*, 31/1: 109–22.

———, and Mohapatra, S. (2007) 'Social-organizational Characteristics of Work and Publication Productivity Among Academic Scientists in Doctoral-granting Departments', *Journal of Higher Education*, 78/5: 542–71.

Gill, S. (2010) 'The Homecoming: an Investigation into the Effect that Studying Overseas had on Chinese Postgraduates' Life and Work on their Return to China', *Compare*, 40/3: 359–76.

Gorelova, O., and Yudkevich, M. (2015). 'Academic Inbreeding: State of the Literature'. In: Yudkevich M., Altbach P. G., and Rumbley L. E. (eds) *Academic Inbreeding and Mobility in Higher Education: Global Perspectives*, pp. 17–45. Hampshire: Palgrave Macmillan UK

Hao, J., and Welch, A. (2012) 'A Tale of Sea Turtles: Job-seeking Experiences of Hai Gui (high-skilled returnees) in China', *Higher Education Policy*, 25/2: 243–60.

Horta, H. (2013) 'Deepening our Understanding of Academic Inbreeding Effects on Research Information Exchange and Scientific Output: New Insights for Academic Based Research', *Higher Education*, 65/4: 487–510.

———, and Yudkevich, M. (2016) 'The Role of Academic Inbreeding in Developing Higher Education Systems: Challenges and Possible Solutions', *Technological Forecasting and Social Change*, 113: 363–72.

———, Veloso, F. M., and Grediaga, R. (2010) 'Navel Gazing: Academic Inbreeding and Scientific Productivity', *Management Science*, 56/3: 414–29.

Huang, F. (2015) 'Building the World-class Research Universities: a Case Study of China', *Higher Education*, 70/2: 203–15.

Inanc, O., and Tuncer, O. (2011) 'The Effect of Academic Inbreeding on Scientific Effectiveness', *Scientometrics*, 88/3: 885–98.

Jonkers, K. (2011) 'Mobility, Productivity, Gender and Career Development of Argentinean Life Scientists', *Research Evaluation*, 20/5: 411–21.

———, and Cruz-Castro, L. (2013) 'Research Upon Return: The Effect of International Mobility on Scientific Ties, Production and Impact', *Research Policy*, 42/8: 1366–77.

———, and Tijssen, R. (2008) 'Chinese Researchers Returning Home: Impacts of International Mobility on Research Collaboration and Scientific Productivity', *Scientometrics*, 77/2: 309–33.

Kapur, D., and McHale, J. (2005). *Give Us Your Best and Brightest: The Global Hunt for Talent and Its Impact on the Developing World*. Washington, DC: Center for Global Development.

King, R. 1986. 'Return Migration and Regional Economic Development – an Overview'. In: King R (ed.) *Return Migration and Regional Economic Problems*, Beckenham, UK: Croom Helm.

Lawson, C., and Shibayama, S. (2015) 'International Research Visits and Careers: An Analysis of Bioscience Academics in Japan', *Science & Public Policy*, 42/5: 690.

Lee, S. (2004). *Foreign-born Scientists in the United States–do they Perform Differently than Native-born Scientists? (Doctoral dissertation). Georgia Institute of Technology, Atlanta.*

Li, C. (2004a) 'guiguo renyuan zai gaodeng jiaoyu lingyu de diwei ji bianqian [Coming Home to Teach: Status and Mobility of Returnees in China's Higher Education]', *Fudan Education Forum*, 2/1: 26–89.

Li, J. (2012) 'World-class Higher Education and the Emerging Chinese Model of the University', *Prospects*, 42/3: 319–39.

Li, X. (2004b) 'A Study by the Chinese Academy of Sciences on the benefits of study abroad', *Chinese Education & Society*, 37/2: 61–87.

Li, F., Miao, Y., and Yang, C. (2015) 'How do Alumni Faculty Behave in Research Collaboration? An Analysis of Chang Jiang Scholars in China', *Research Policy*, 44/2: 438–50.

Li, H., Zhang, Y., Li, Y. et al. (2012) 'Returnees Versus Locals: Who Perform Better in China's Technology Entrepreneurship?', *Strategic Entrepreneurship Journal*, 6/3: 257–72.

Li, X., Zuo, Y., and Shen, W. (2018) 'Who got the academic jobs in the Elite Universities—A curriculum vita analysis of new faculty members of Peking University and Tsinghua', *China Higher Education Research(Chinese)*, 8: 47–52.

Lu, X., and McInerney, P.-B. (2016) 'Is it better to "Stand on Two Boats" or "Sit on the Chinese Lap"?: Examining the Cultural Contingency of Network Structures in the Contemporary Chinese Academic Labor Market', *Research Policy*, 45/10: 2125–37.

——, and Zhang, W. (2015) 'The Reversed Brain Drain: A mixed-Method Study of the Reversed Migration of Chinese Overseas Scientists', *Science Technology & Society*, 20/3: 279–99.

——, Hong, W., and He, G. X. (2014) 'Academic and Innovation Performance of Overseas Returnees: Evidence from China's National Survey of Science and Technology Personnels', *Fudan Public Administration*, 2:7–25.

Lutter, M., and Schröder, M. (2016) 'Who Becomes a Tenured Professor, and Why? Panel Data Evidence from German Sociology, 1980–2013', *Research Policy*, 45/5: 999–1013.

Mairesse, J., and Pezzoni, M. (2015) 'Does Gender Affect Scientific Productivity?', *Revue Économique*, 66/1: 65–113.

McGee, R. (1960) 'The Function of Institutional Inbreeding', *American Journal of Sociology*, 65/5: 483–8.

Meng, Y. (2016) 'Collaboration Patterns and Patenting: Exploring Gender Distinctions', *Research Policy*, 45/1: 56–67.

Meyer, J.-B. (2001) 'Network Approach versus Brain Drain: Lessons from the Diaspora', *International Migration*, 39/5: 91–110.

MOE. (2018). '2017 Sees Increase in Number of Chinese Students Studying Abroad and Returning After Overseas Studies'. Retrieved from http://en.moe.gov.cn/News/Top_News/201804/t20180404_332354.html

OECD-UNDESA. (2013). 'World Migration in Figures'. Retrieved from http://www.oecd.org/els/mig/World-Migration-in-Figures.pdf

Parker, M., and Welch, E. W. (2013) 'Professional Networks, Science Ability, and Gender Determinants of Three Types of Leadership in Academic Science and Engineering', *The Leadership Quarterly*, 24/2: 332–48.

Rosen, S., and Zweig, D. (2005). 'Transnational Capital: Valuing Academic Returnees in a Globalizing China'. In: Li, C. (ed.) *Bridging Minds across the Pacific: US-China Educational Exchanges, 1978-2003*, pp. 111–132. Lexington: Lanham, MD.

Saxenian, A. (2006). *The New Argonauts: Regional Advantage in a Global Economy*. Cambridge, MA: Harvard University Press.

Scellato, G., Franzoni, C., and Stephan, P. (2015) 'Migrant Scientists and International Networks', *Research Policy*, 44/1: 108–20.

Shachar, A. (2013). 'Talent Matters: Immigration Policy-Setting as a Competitive Scramble Among Jurisdictions'. In: Triadafilopoulos, T (ed.) *Wanted and Welcome? Policies for Highly Skilled Immigrants in Comparative Perspective*, pp. 85–104. Springer: New York.

Shen, H. (2016) 'Status of University Faculty Instructional Development at Colleges and Universities', *Journal of Higher Education (Chinese)*, 37/2: 37–46.

——, Xu, Z., and Zhang, B. (2015). 'Faculty Inbreeding in China: Status, Causes, and Results'. In: Yudkevich M., Altbach P. G., and Rumbley L. E. (eds) *Academic Inbreeding and Mobility in Higher Education: Global Perspectives*, pp. 73–98. Palgrave Macmillan UK: Hampshire.

Smyth, R., and Mishra, V. (2014) 'Academic Inbreeding and Research Productivity and Impact in Australian Law Schools', *Scientometrics*, 98/1: 583–618.

Song, J., Almeida, P., and Wu, G. (2003) 'Learning–by–Hiring: When is Mobility More Likely to Facilitate Interfirm Knowledge Transfer?', *Management Science*, 49/4: 351–65.

Tai, Q., and Truex, R. (2015) 'Public Opinion Towards Return Migration: A Survey Experiment of Chinese Netizens', *The China Quarterly*, 223: 770–86.

Tang, L. (2018) 'Return Entrepreneurs: Bind and Impact', *Book Review of Entrepreneurship and Talent Management from a Global Perspective. Science and Public Policy*, 45/2: 287–9.

Tartari, V., and Salter, A. (2015) 'The Engagement Gap: Exploring Gender Differences in University – Industry Collaboration Activities', *Research Policy*, 44/6: 1176–91.

Tian, F. (2016) 'Brain Circulation, Diaspora and Scientific Progress: A Study of the International Migration of Chinese Scientists, 1998–2006', *Asian and Pacific Migration Journal*, 25/3: 296–319.

van Arensbergen, P., van der Weijden, I., and van den Besselaar, P. (2012) 'Gender Differences in Scientific Productivity: a Persisting Phenomenon?', *Scientometrics*, 93/3: 857–68.

van den Besselaar, P., and Sandström, U. (2016) 'Gender Differences in Research Performance and its Impact on Careers: a Longitudinal Case Study', *Scientometrics*, 106/1: 143–62.

Wang, J., Hooi, R., Li, A. X., and Chou, M., (2019). 'Collaboration patterns of mobile academics: the impact of international mobility', *Science and Public Policy*, forthcoming.

Wang, H., and Liu, Y. (2016). *Entrepreneurship and Talent Management from a Global Perspective*. Global Returnees (ed.) Edward Elgar Publishing: Cheltenham, UK/Northampton, MA, USA.

——, Duan, T., Hou, W. et al. (2016). 'The Role of Returnees in Business: A Review'. In Wang H., and Liu Y. (eds.) *Entrepreneur and Talent Management from a Global Perspective*, pp. 52–61. Edward Elgar Publishing: Cheltenham

Welch, A., and Jie, H. (2013) 'Returnees and Diaspora as Source of Innovation in Chinese Higher Education', *Frontiers of Education in China*, 8/2: 214–38.

Woo, D. (1994). 'The Glass Ceiling and Asian Americans. A Research Monograph'. Retrieved from http://digitalcommons.ilr.cornell.edu/key_workplace.

Woolley, R., and Turpin, T. (2009) 'CV Analysis as a Complementary Methodological Approach: Investigating the Mobility of Australian Scientists', *Research Evaluation*, 18/2: 143–51.

——, ——, Marceau, J. et al. (2008) 'Mobility Matters: Research Training and Network Building in Science', *Comparative Technology Transfer and Society*, 6/3: 159–84.

Xie, Y., and Shauman, K. A. (2003). *Women in Science: Career Processes and Outcomes*. Harvard University Press: Cambridge.

Ynalvez, M. A., and Shrum, W. M. (2011) 'Professional Networks, Scientific Collaboration, and Publication Productivity in Resource-constrained Research Institutions in a Developing Country', *Research Policy*, 40/2: 204–16.

Youtie, J., Rogers, J., Heinze, T. et al. (2013) 'Career-based Influences on Scientific Recognition in the United States and Europe: Longitudinal Evidence from Curriculum Vitae Data', *Research Policy*, 42/8: 1341–55.

Zhang, H., Patton, D., and Kenney, M. (2013) 'Building Global-Class Universities: Assessing the Impact of the 985 Project', *Research Policy*, 42/3: 765–75.

Zinovyeva, N., and Bagues, M. (2015) 'The Role of Connections in Academic Promotions', *American Economic Journal: Applied Economics*, 7/2: 264–92.

Zweig, D., and Wang, H. (2013) 'Can China Bring Back the Best? The Communist Party Organizes China's Search for Talent', *The China Quarterly*, 215: 590–615.

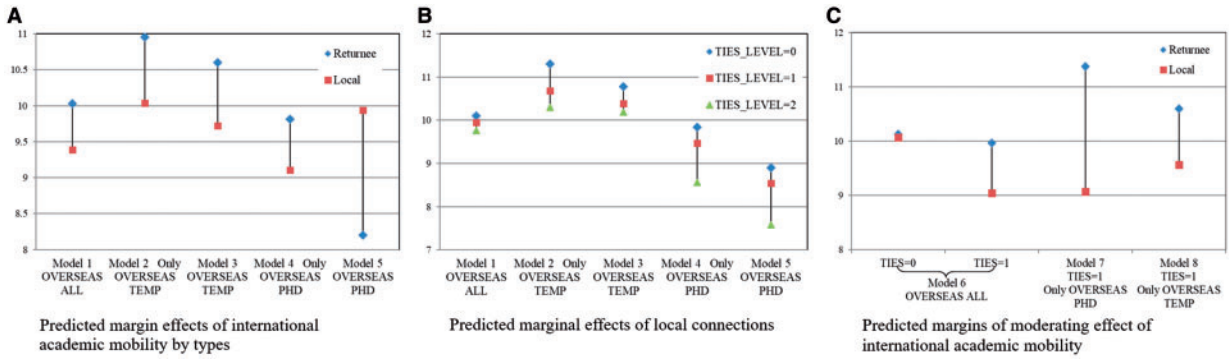
——, Changgui, C., and Rosen, S. (2004) 'Globalization and Transnational Human Capital: Overseas and Returnee Scholars to China', *The China Quarterly*, 179: 735–57.

——, Chung, S. F., and Vanhonacker, W. (2006) 'Rewards of Technology: Explaining China's Reverse Migration', *Journal of International Migration and Integration*, 7/4: 449–71.

Appendix

Appendix Table A1. Mega research fields versus CJS disciplines

Mega research fields	CJS disciplines	Obs.	Prop. (%)
Physical sciences	Mathematics and mechanics; Physics; Chemistry; Geosciences and environmental sciences	478	33.0
Engineering and technology	Chemical engineering; Engineering; Information sciences; Material sciences; Military science and national defense	615	42.5
Life sciences	Life sciences; Agriculture, forestry, and food science	197	13.6
Medicine	Medicine	157	10.9



Appendix Figure A1. Predicted margins of international academic mobility and local connections. (**A**) Predicted marginal effects of international academic mobility by type. (**B**) Predicted marginal effects of local connections. (**C**) Predicted margins of moderating effect of international academic mobility. The predicted year lags at each level of explanatory variable are calculated and presented in (**A**–**C**) when holding all control variables at their mean values. As shown in (**A**), in most cases local scholars tend to obtain the CJS title within a shorter period of time than returnee scholars. The predicted gaps range from 6 to 12 months. However, returnee scholars with foreign PhD degrees and other overseas experiences have spent about 2 years fewer than local scholars in obtaining the CJS title (Model 5 in A). (**B**) reveals consistently that the stronger the ties of CJS scholars to their affiliated institutions the quicker they obtaining this prestigious title. Holding the mean of other control variables constant, (**C**) reveals that international mobility is postponed almost another full year for alumni than for those nona-lumni CJSs. The pure inbred faculty members tend to be awarded CJS scholarships ranging from 13 to 26 months sooner than the silver-corded scholar with only overseas PhD degree and overseas research visit.