Evaluating the Success of China’s “Young Thousand Talents” STEM Recruitment Program


Immigrants are playing an increasingly significant role in U.S. scientific and engineering fields. China has been an especially important source of international students going into U.S. STEM fields. In recent years, however, China launched 200+ talent recruitment programs to recruit high-caliber scientists from around the world. Among these, the most prominent ones have been the Thousand Talents Program and its youth branch, China’s Young Thousand Talents (YTT) program. How successful have China's talent recruitment programs been — and, in particular, its Young Thousand Talents program — in recruiting and fostering the productivity of top-caliber scientists from around the world?

The data. This study first empirically estimates the YTT program’s ability to attract scientists at various levels of career development and research caliber and, second, measures the YTT program’s effectiveness in fostering the research productivity of the returnees. To evaluate the YTT program’s ability to attract scientists, researchers undertook a detailed review of the YTT program’s first four cohorts between 2011 and 2013 (with two cohorts in 2012) and compared the educational and publishing records of 399 YTT awardees prior to their return to China against 73 individuals who had rejected YTT offers to return to China. To further contextualize the research capabilities of YTT recruits, researchers also benchmarked them against early-career, research-active scientists based in the U.S. who bore Chinese surnames.

INSIGHTS

- While China’s Young Thousand Talents (YTT) program has fallen short of recruiting the highest-level foreign-educated Chinese STEM researchers back to China, generous support allows returnees to later surpass their peers who stayed abroad in publishing productivity.

- Compared to scientists who had rejected the YTT offers to remain overseas, returnees ranked lower (15th vs. 10th percentile) in publishing productivity, held fewer faculty positions, worked in other people's labs, and received minimal research grants in the pre-return period.

To evaluate the YTT program’s impact on the productivity of its recruits after their return to China, the researchers matched each returnee against comparable scientists with similar educational backgrounds and early-career performance but who opted to stay in academia abroad.

Researchers collected three main types of data: a) the name list and career information for the YTT recruits and their overseas counterparts; b) each scientist’s publication and citation records for both the pre-return era and the post-return era; and c) each scientist’s research team and grant information. The researchers collected the information mainly from the following sources: the Thousand Talents Program website; ProQuest Dissertations and Theses Global database; personal webpages, LinkedIn, and Google Scholar; ISI’s Web of Science; and Dimensions.

YTT program attracts high-caliber, but not top-caliber recruits. According to the analysis, China’s YTT program successfully drew in high-caliber researchers. More than half had received PhDs from globally top-100 STEM programs, and these recruits were also highly productive, annually averaging 2.39 publications before returning to China. When benchmarked against all early-career, research-active scientists based in the U.S. with Chinese surnames, these returnees ranked in the top 15th percentile in terms of their productivity. Those who rejected the YTT program offers were more productive, however (2.93 vs. 2.39 publications per year), were more likely to have overseas faculty appointments (89% vs. 14%), and received larger annual research grants ($30,365 vs. $4,439 in 2010 USD) when compared to those who accepted the award, indicating that the program fell short of recruiting the highest-caliber scientists.

YTT scientists experience productivity gains. According to the findings, YTT scientists produced 27% more publications than their overseas peers after returning. Their performance gain continued to hold when examining only publications in high-impact journals.
Once back in China, the publishing productivity of YTT returnees (including in high-quality journals) rose significantly, reaching 27% higher than their peers who had chosen to stay in overseas academia. After controlling for funding and team sizes that benefitted the YTT returnees, these gains diminished considerably.

YTT returnees also outperformed their overseas peers in last-authored publications by 144%, suggesting that upon return, they were more likely to become independent researchers pursuing their own scientific agendas.

YTT recruits had slightly fewer first-authored post-return publications, but over-performed in last-authored post-return publications by 144%; this gain held across journal-quality tiers. (In STEM fields, the principal investigator is conventionally named last in academic publications.) Taken together, researchers posit that YTT recruits were more likely to become independent researchers pursuing their own agendas in the post-return period than their overseas peers.

**More funding and larger team sizes drive YTT returnees’ success.** Researchers next investigated each YTT returnee’s research funding and team size. The study’s authors note how early-career scientists in the U.S. often lack sufficient funding and suggest that YTT scientists probably benefited from the program’s generous start-up grants and China’s abundant supply of STEM students. When funding and team sizes were statistically controlled for, YTT recruits only published 1.4 times as many last-authored publications as their overseas counterparts compared to 2.4 times without the controls. YTT returnees also outperformed their peers in fields of chemistry and life sciences, which require significant physical assets, financial resources, and research teams. In sum, researchers point to funding and team sizes as playing critical roles in explaining the publication gap between YTT returnees and their overseas peers.

**YTT program raises questions regarding the established model of university science in the U.S.** International competition for human capital is intense. This study’s findings demonstrate how talent recruitment programs like the YTT can effectively attract and foster high-quality expatriate scientists. According to the researchers, a declining share of research grants now go to early-career researchers in the U.S. As China continues to invest in higher education and cultivate academic talent, researchers suggest that more Western-trained students from China might opt to return to China. Universities in China could also become magnets for Chinese and other international students intending to pursue scientific research careers — students who might otherwise study in the U.S. If either of these scenarios materializes, researchers posit that it could disrupt the current model of university science in the U.S., which relies heavily on international students to carry out its research agenda.