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China's Young Talents Programs.

How do returnees perform?

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Published works from this topic

L. Yang, & G. Marini (2019) Research productivity of Chinese young thousand talents. *International Higher Education*, 17-18. https://doi.org/10.6017/ihe.2019.97.10944

G. Marini, & L. Yang (2021) The research productivity of Chinese academic returnees from the Global West: An evaluation of Young 1000 Talents recipients' productivity. *DoQSS Working Papers.* https://econpapers.repec.org/paper/qssdqsswp/2102.htm

G. Marini, & L. Yang (2021) Globally-bred Chinese Talents returning home: An analysis of a reverse brain-drain flagship policy. *Science and Public Policy*, https://doi.org/10.1093/scipol/scab021

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The context

- Mobility of PhD holders is key to trace leaders of the global competition in higher education and research (Lepori et al. 2015).
- Chinese universities may only be attractive to some of its diaspora who have not been hitherto particularly productive (Wang et al. 2015).
- The overall number and quality of international PhD students are still misbalanced between China and the Global West (Shen et al. 2016).
- Cheung and Xu (2015) demonstrated that China's ability to narrow the gap between its research capacity and the global excellence largely depends on dedicated policies of talents attraction.

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The context

- Institutions, and their prestige in particular, play an important role in attracting returnees and supporting their career development (Li et al. 2015).
- Chinese returnees may face problems in terms of readapting to their home country (Ma and Pan 2015).
- Chinese scholars and social capitals: domestically-educated ones use social capital in the closure mode; and those with more international experience turn on their *structural holes* to maximize opportunities (Lu & McInerney 2016).
- Publications largely depend on available financial resources, especially for STEM disciplines (Zhang et al. 2016).

Young Thousand Talents Program (Y1000T)

- Introduced in 2011
- Aimed at attracting relatively young talents (primarily in STEM areas) who have potential to become leading figures
- Below the age of 40, and normally with at least three-year overseas working experience
- Successful recipients shall have “engaged in scientific research, with formal teaching and research positions in overseas prestigious universities, institutions or enterprises”
- Generous support (research, infrastructure, salary …)

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Table 1 - Possible options in devising a comparison surrounding the Y1000T recipients

Possible comparisons / evaluation of policies
Y1000T vs. Chinese-bred recipients Do returnees have better research performance than domestically bred researchers?
Y1000T vs. Other Chinese academics of similar career stage To what extent this policy is effective in boosting the research performance?
Y1000T vs. Other non-Y1000T returnees of similar career stage To what extent returnees with the support from the Y1000T outperform those without?
Y1000T vs. Other Talents policies recipients based in Mainland China When recruiting talents, at what career stage can a system maximize the return of investing?
Y1000T vs. Other non-Chinese Y1000T-like recipients (e.g., European Research Council recipients) Which policy is better devised overall? Which national system is best to host a recipient?
Y1000T vs. Other globally-bred Chinese PhD holders who continue to work abroad **Is working under this generous scheme in the Chinese system a better choice than remaining abroad?**

Research question:

Are Chinese early- and mid-career researchers who received their PhDs from world-leading higher education institutions, and are recruited back to China under the scheme (Y1000T) better performing in terms of research quantity and quality in comparison to those who have similar education and research experience, but continue to be affiliated in the US research-intensive universities?

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Data

- A combination of individual curriculum vitae (CV) information plus respective Scopus publications.
- The ‘treatment’ group: first two waves of this policy (2011 and 2012 years).
  - ❑ The list of researchers who were recruited under the Y1000T policy was of public domain at the time of data collection (no longer available; data cleaned after collection).
- The ‘control group’:
  - ❑ Manually extracted from official websites of some US research-intensive universities.
  - ❑ Sampling of universities is proportionate to their places in rankings.
  - ❑ By name, we individually collected people who belonged apparently to the same generation of the first two waves of Y1000T (this is possible as information about the “treated” researchers’ birth year and the year of PhD attainment is available).

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Data

- There are 183 researchers in the treatment group and 369 researchers in the control group.
- Discipline: material science and engineering, life science, chemistry, information science, mathematics and physics, environment and earth science, medicine.
- Researchers in both groups are similar by age, career stage, doctoral background and publication record.
- The dataset comprises single scientific output as observations (around 37,000 in total) which can be referred to univocal authors, who in turns belong to either the treatment group or the control group.

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Variables

- Biographical information
  - ❑ Age, year of PhD attainment, gender, current scientific affiliation, and PhD awarding institution (the latter two also indicate respective countries) are the information grabbed from CV or institutional official websites.
- Dependent variables
  - ❑ The number of citations (ln_tcit; time scaled citations)

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Independent variables

- **Type of publication**: open access (*OA*, binary), language of publication (*lingua*, binary), typical output (*Type_p*, article/non-article)
- **Social capital**: number of co-authors by each output (*no_aut*), degree of internationality (*int_coll*), heterogeneity of co-authorships by country (*heter*), institutional mobility (*mob*), kept relationship (*KR;* did Chinese in the US co-authored with Chinese-based scholars? Y/N)
- **Standings of universities**: The list of institutional qualifiers: average of Categorical Normalized Citations Indicator (*CNCI*), average of Journal Normalized Citation Index (*JNCI*), average of percentile of articles (*av_percentile*), percentage of top 10 percentile articles (*perTOP10*), percentage of 1 percentile articles (*perTOP_1*), percentage of cited documents (*%documents cited*)

Treat and period simple interaction

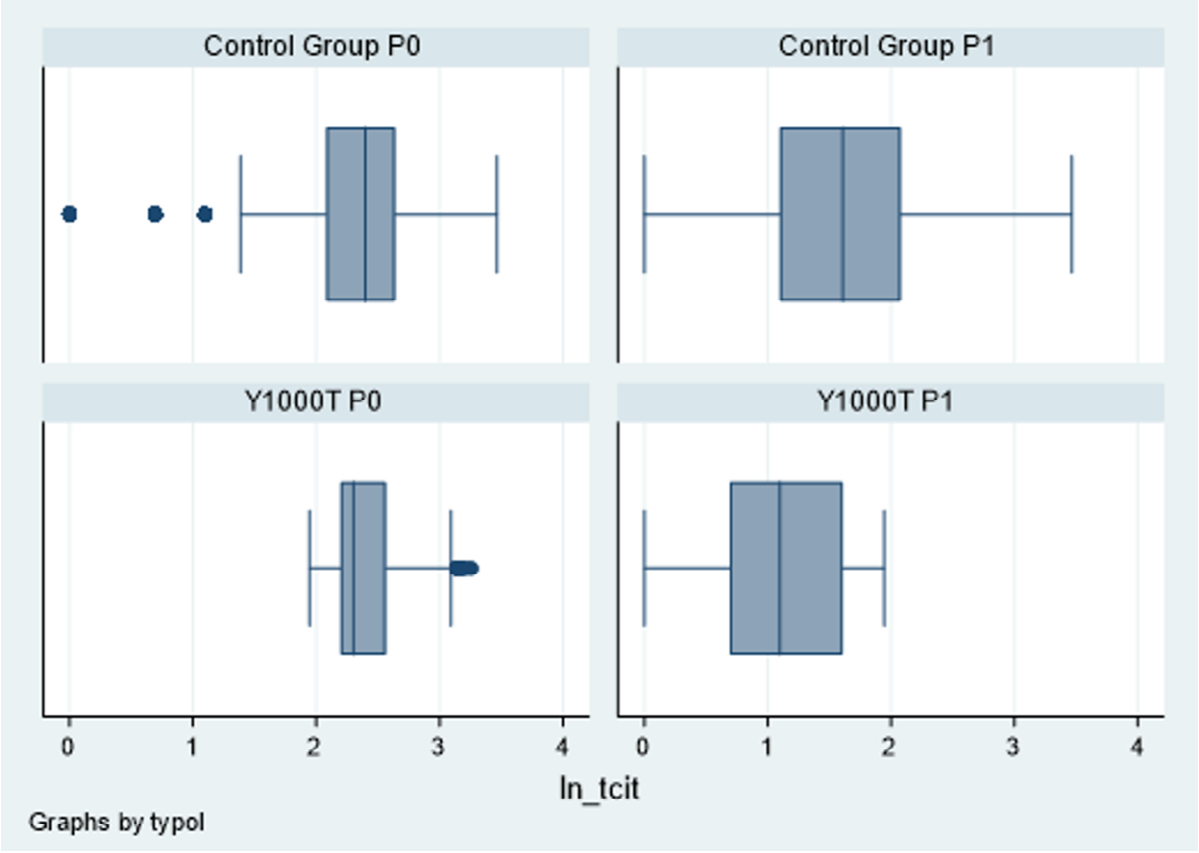

Figure 3. Distribution of dependent variable (**ln_tcit**) by group and period

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Main results (Logistic regressions - 6 Models)

Table 4 – Difference-in-differences tests for influence of papers (normalized citations) to predict treatment in belonging to first lower quartile (Model 1), top10% (Model 5) and top1% (Model 6).

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_tcitQ1	ln_tcitQ2_3	ln_tcitQ2_3a	ln_tcitQ4	ln_tcitTOP10	ln_tcitTOP_
Treat	-0.0298	0.0965*	0.0066	0.0206	-0.137**	-0.0475**
	(-1.09)	(2.24)	(0.10)	(0.37)	(-3.11)	(-3.06)
1.ytreat	0.273***	-0.262***	0.4184***	-0.457***	-0.254***	-0.0311***
	(16.25)	(-8.81)	(13.31)	(-15.73)	(-10.47)	(-3.69)
1.treat#1.ytreat	0.246***	-0.268***	0.2034***	-0.171***	0.0673	0.0365**
	(9.22)	(-6.11)	(3.94)	(-3.57)	(1.65)	(3.06)
CNCI	0.0309	-0.0419	-0.0582	0.0213	-0.00722	0.0113
	(0.37)	(-0.43)	(-0.38)	(0.17)	(-0.08)	(0.49)
perDOC_cit	-0.000775	0.00412	0.0053	-0.00324	0.00215	-0.00129
	(-0.22)	(0.96)	(0.74)	(-0.56)	(0.51)	(-1.53)
perTOP10	-0.00861	0.0135	0.0034	-0.00113	0.00606	-0.00347
	(-0.77)	(1.05)	(0.14)	(-0.06)	(0.45)	(-1.21)

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Findings and discussion

- Y1000Ts are more likely to produce papers with citations within the first quartile
- Y1000Ts are less likely to fall in the middle league of the distribution.
- Y1000Ts are more likely to result no better than non-returnees.
- Y1000Ts are more likely to produce top-1 percentile papers in comparison to control group researchers, although there is no traceable effect of Y1000T policy for falling in the top-10 percentile of papers in terms of citations.

There is no simple yes or no answer to the research question – the answer is more nuanced. Specifically, the Y1000T "treatment" is more likely to predict publications within the bottom or the top-1 percentile. In other words, Y1000T returnees either publish less successful outputs or publish in the very top quartile – a minority of outputs though. These mixed findings may pave the way to multiple interpretations.

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Findings and discussion

- The evaluation mechanism in Chinese universities/research institutions.
- Some returning researchers might have tended to publish *more* rather than *better* (Yang & Marini 2021) – provided the threshold of quality is kept above decency, not necessarily this factor is visible in the short term, if any, in terms of citations.
- While generous financial support is conducive to researchers' scientific performance, the soft environment including academic culture also makes a difference, echoing findings of Scaffidi and Berman (2011).
- Y1000T policy strongly attracted those who were already in contact with scholars in Mainland China (*KR* variable), being this a factor deserving more attention in future analyses.

Limitations

- The reasons of curvilinear outcomes are not probably all observed.
- Social capital might be measured in a more fine-grained way, considering not only country level, but also institutional and individual ones.

Thank you!

Q&A

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Annex 1 – List of US universities scanned to build up the control group (alphabetic sorting)

California Institute of Technology, Columbia University, Cornell University, Duke University, Emory University, George Washington University, Georgia Tech, Harvard University, Iowa State University, John Hopkins University, Louisiana State University, Massachusetts Institute of Technology, Michigan State University, New Mexico State University, New York University, Oregon State University, Princeton University, Purdue, Rochester, Stanford University, Temple University, University of Arizona, University of California at Berkeley, University of California at Los Angeles, University of California at San Francisco, University of California at Santa Barbara, University of Chicago, University of Cincinnati, University of Colorado, University of Connecticut, University of Florida, University of Iowa, University of Kentucky, University of Minnesota, University of Oklahoma, University of Oregon, University of Pennsylvania, University of Tennessee, University of Wyoming, Virginia Commonwealth University, Washington State University, West Virginia University, Yale University, Yeshiva University.

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Annex 2 - Determination of 'period'

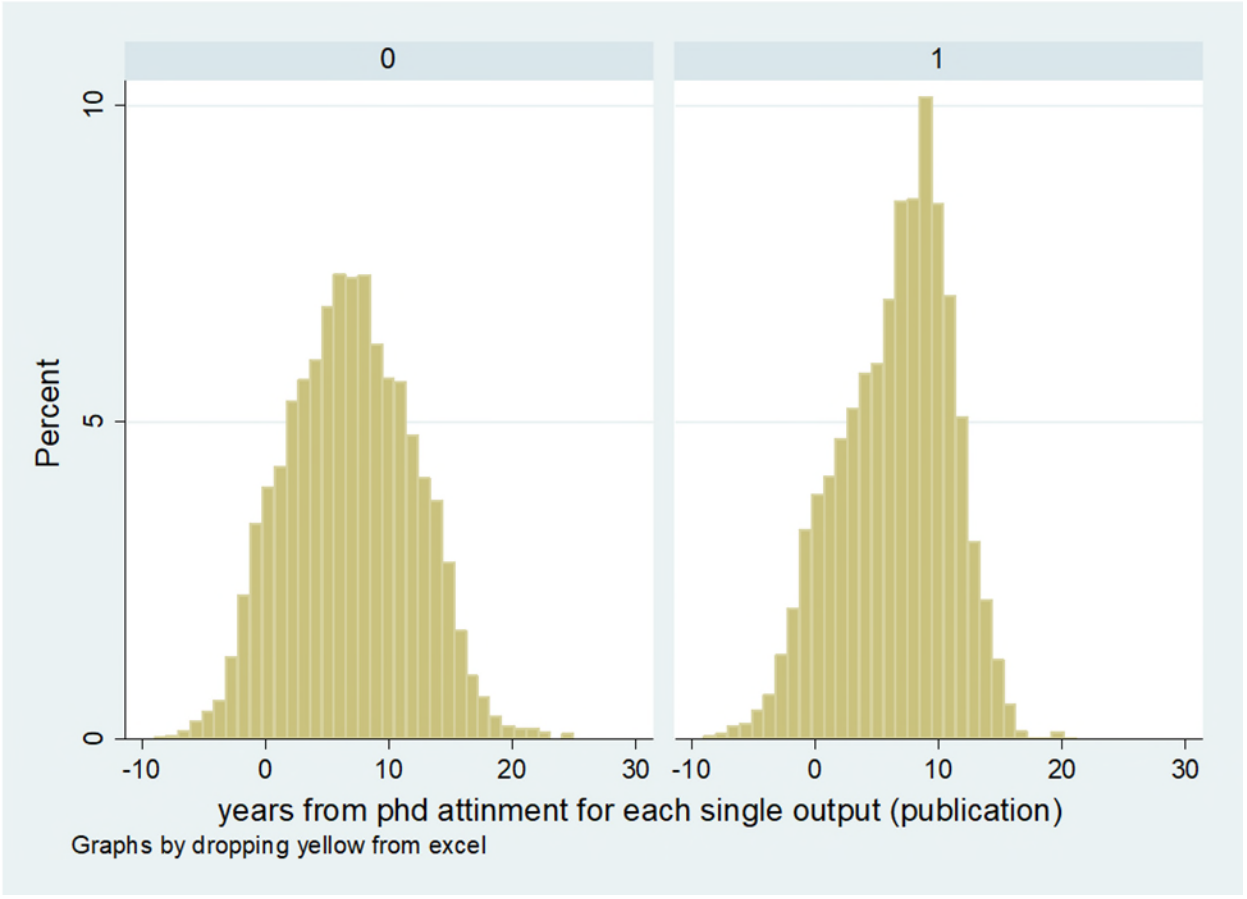

Fig. 1 Distribution of publications according to years elapsed from person's PhD attainment by treatment (treat = 1) and control group (treat = 0).

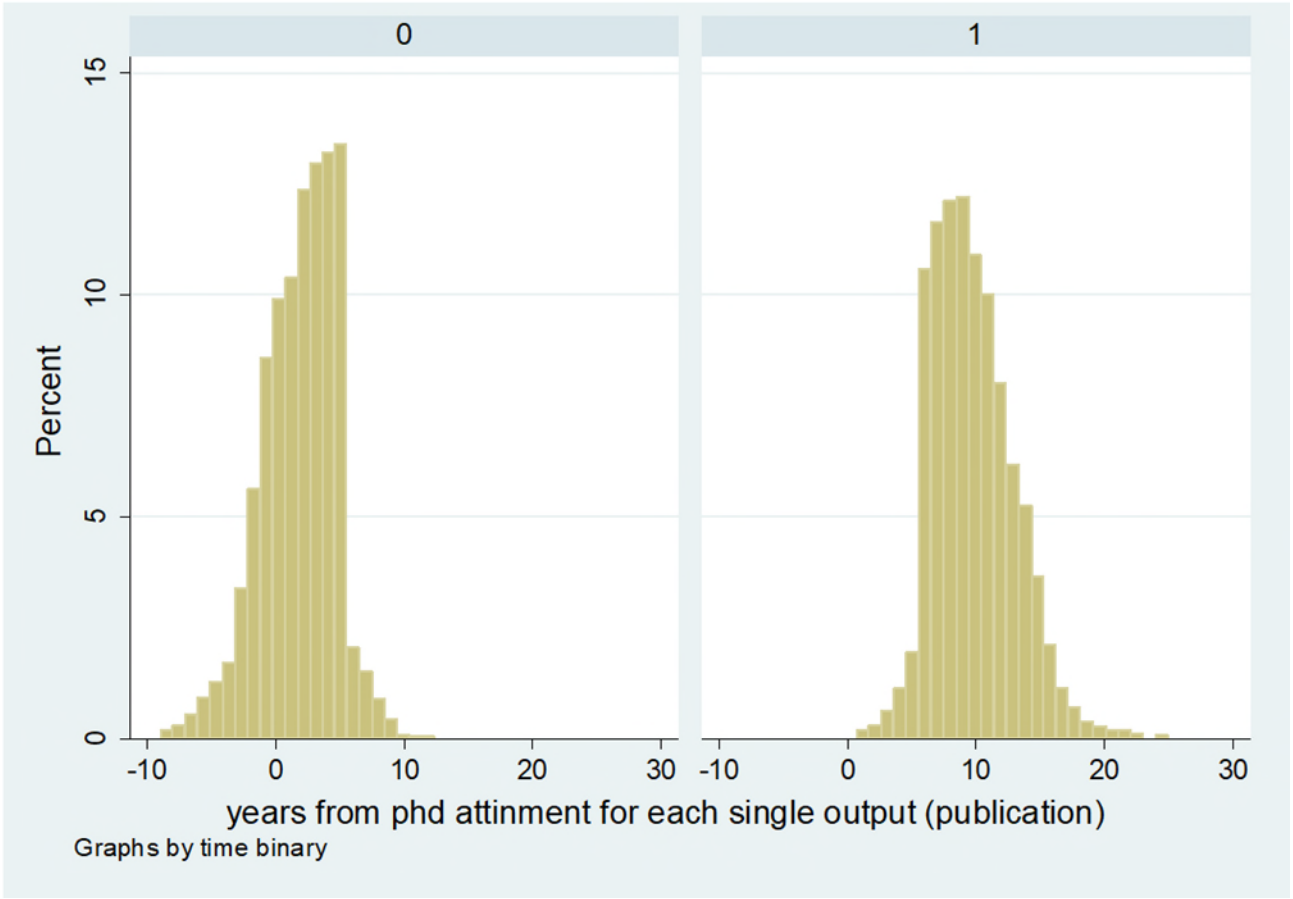

Fig. 2 Distribution of publications according to years elapsed from person's PhD attainment by period (ytreat) of treatment groups: "0" equals before treatment; "1" equals after treatment (both treated and control group).

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Annex 3 – Descriptive statistics

Table 3. Descriptive statistics by groups and period (summarized by individuals)

	Control group			*Treat "Y1000T"*		
Variable (constant against time)	*Obs.*	*Mean*		*Obs.*	*Mean*	
Sex	369	0.74		203	0.90	
Birth	332	1976.2		192	1977.2	
Year of PhD attainment	361	2005.8		202	2006.2	
Country of PhD (1: US; 0: other non-Chinese)	383	0.990		203	0.699	
		Before	*After*		*Before*	*After*
Variable (subject to change by period)	*Obs.*	*Mean*	*Mean*	*Obs.*	*Mean*	*Mean*
Time scaled Citations (ln_tcit)	363	2.416	1.609	203	2.419	1.441
Year of publications (years)	383	2007.8	2014.2	203	2008.5	2015.5
Years from PhD (Timefromphd)	358	1.993	9.195	202	2.196	9.334
International collaborations (int_coll2)	363	0.662	0.656	203	0.560	0.448
Number of co-authors per publication (no_aut)	363	5.275	6.871	203	5.531	6.917
Heterogeneity of international co-authorships (heter)	363	2.856	2.545	203	3.113	2.533
Lingua (1: English; 0 other language)	363	0.991	0.998	203	0.953	0.953
Open Access (OA)	363	0.046	0.066	203	0.037	0.069
Type of publication (Type_p)	363	0.703	0.771	210	0.782	0.848
Kept Collaboration with China (KC)	363	0.121	nil	203	0.600	nil
Mobility (institutional) (mob)	363	n.a.	0.961	203	1.000	1.000
Standing of institutions:						
CNCI	363	1.715	1.582	203	1.592	1.105
JNCI	363	1.23	1.19	203	1.181	1.06
av_percentile	363	50.573	51.591	203	50.421	53.769
perTOP10	363	17.947	16.676	203	16.752	12.506
perTOP_1	363	2.94	2.606	203	2.548	1.492
% cited documents	363	73.98	73.8	203	76.91	78.283

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