

# Should the Title of Talents Be Necessary? A Study on the “Open Bidding for Selecting the Best Candidates” Mechanism

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## ABSTRACT

In order to improve the efficiency of scientific research and innovation, China is accelerating the exploration and implementation of the “Open Bidding for Selecting the Best Candidates” mechanism. How to identify and select the high-level research teams and project leaders who are capable to make breakthroughs in core technologies is the key challenge of this new type of talents selection mechanism. Recent practical experience has shown that most of the research project leaders selected by this mechanism have one or more titles of talents. This paper aims at exploring whether the title of talents can fully reflect the research ability and team leadership of the scholars and then become necessary for selecting the best candidates. Based on a sample of selected project leaders, the empirical results show that although the title of talents facilitates the scholars to win honor and awards, the title of talents has no significant effects on their research achievements in terms of the quantity of academic papers, books, and projects, and also it is not related to their research leadership. Our findings provide policy implications that the title of talents should play a limited role in the “Open Bidding for Selecting the Best Candidates” mechanism.

## KEYWORDS

open bidding for selecting the best candidates; title of talents; selecting mechanism; crowd Intelligence

In the era of deep integration of knowledge and rapid development of technology, group cooperation has been increasingly widely used in the field of scientific research because of its advantages of breaking through subject restrictions and giving full play to the wisdom of different kinds of talents. The rapid development of information network results in larger group cooperation and deeper interaction, and thus more disruptive achievements are obtained that break through the traditional framework. Such more complicated phenomenon of group cooperation is also called the “crowd intelligence”<sup>[1]</sup>. In recent years, with the intensification of competition in the field of science and technology in the world, all countries are accelerating the institutional reforms to improve the efficiency of utilization and transformation of crowd intelligence. Among them, a typical case is the “Open Bidding for Selecting the Best Candidates” mechanism being implemented in China. “Open Bidding for Selecting the Best Candidates” is a new system, mechanism, and model that is oriented to the major scientific and technological innovation needs, promotes open innovation and coordinated development through resource integration, selecting and appointing talents, and innovating the management mode of scientific research funds<sup>[2,3]</sup>. “The Outline of the 14th Five-Year Plan for Economic and Social Development and Long-Range Objectives through the Year 2035 of the People’s Republic of China” clearly put forward that it is necessary to improve the organization and management of scientific and technological projects and implement the “Open Bidding for Selecting the Best Candidates” mechanism. Thanks to the vigorous advocacy of the central government and the active response of departments and local governments, this new type of talents selection mechanism has embarked on a fast-track of growth.

Although the application of the “Open Bidding for Selecting the Best Candidates” mechanism is growing rapidly in China, compared to the worldwide mature implementations of inducement prize, gaps, and deficiencies such as imperfect system specifications, inconsistency between project requirements and realistic technology demands, and low efficiency in the transformation of research outcome still exist<sup>[4,5]</sup>. One big issue in terms of the system design is the evaluation and selection mechanism for the research teams and leaders in charge of the projects. At present, the comprehensive evaluation system of the candidates overemphasizes standardization and unification, and listing projects often impose hidden restrictions on academic qualifications, professional titles, awards, and many other conditions on the team leaders, resulting in that many of the selected team leaders are already well-known senior experts and scholars<sup>[6]</sup>. The imperfection of the mechanism hinders the potential young researchers that actually have the ability and enthusiasm to achieve scientific and technological innovation to be selected, and also weakens the motivation of research teams to participate in the open bidding for projects.

According to a recent survey, most of the research project leaders in universities selected by the mechanism already have the ex-ante title of talents such as the Changjiang Scholar or the Young Changjiang Scholar<sup>[7]</sup>. However, with regard to whether the title of talents can fully reflect the research ability and research leadership of the scholars and then should become the necessary condition for selecting the best candidates, the existing studies pay less attention and cannot provide any evidence. In order to fill this gap, we collect the data of a sample of scholars as the research project leaders selected by the “Open Bidding for Selecting the Best Candidates” mechanism in recent years, and then for the first

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time empirically explore the potential relationship between the title of talents and the research and innovation ability as well as the team leadership. We find that although the title of talents can facilitate the scholars to win more research awards, the title of talents has no significant effects on their research output including papers, books, or projects, and also it is not related to the research leadership of the selected project leaders. Based on those results, this paper provides conducive policy implications that the title of talents should play a rather limited role in the “Open Bidding for Selecting the Best Candidates” mechanism while a result-oriented multi-dimensional selection mechanism regardless of identity or position is needed.

## 1 Literature Review

The “Open Bidding for Selecting the Best Candidates” system has been gradually implemented in various fields of science and technology in China. The related research mainly focuses on the connotation and characteristics of the system, the operation and optimization path of the system, and the evaluation criterion in the selection of talents.

### 1.1 Research on the connotation and characteristics of the system

“Open Bidding for Selecting the Best Candidates” is a new mode that is oriented to the major scientific and technological innovation needs, which aims to promote open innovation and coordinated development through talent selection and resource integration<sup>[3]</sup>. The system has the advantages of collecting projects, talents, and opinions on a larger scale throughout the country, which can better concentrate wisdom and utilize human resources<sup>[8]</sup>. The basic characteristics of the system mainly include three aspects<sup>[9]</sup>. First, it is aimed at the key core technology that is urgently needed to support the development of firms and the growth of the economy, and the ultimate goal of the system is to encourage scientific and technological innovations to meet market demand. Second, it tries to get rid of the traditional shackles of “selecting candidates by titles”, through providing participants with a high-quality environment of fair competition, and stimulating the innovation vitality of researchers. Third, it features a new mode of funding in which the rewards are mainly depend on the research output, and the sponsors can be the government, enterprises, or non-profit organizations.

### 1.2 Research on the operation and optimization path of the system

The operation of the “Open Bidding for Selecting the Best Candidates” system can be divided into three stages: publishing projects, selecting research teams, and checking and accepting the results. There are three key relations to deal with in the process of operation: the relation between government customization and public solicitation of the projects, the relation between scheme competition and result competition, and the relation between the selected teams and the projects<sup>[10]</sup>. The projects and the selected candidates are the key elements to guarantee the operation of the system. The listing projects mainly focus on the demands of the governments and enterprises across the country. The selected research teams are mainly from small- and medium-sized innovative high-tech enterprises, high-level universities, and scientific research institutes, due to their remarkable innovation ability<sup>[11]</sup>.

According to the practical experience of the system, the challenges still exist such as imperfect project system

specifications, inconsistency between list of projects and demands of core technologies, and low efficiency in the transformation of research into application. Therefore it is necessary to improve the top-level design and system guarantee, to make reasonable selection of applicable projects and clear objectives, to expand financing channels and accelerate technology transformation, to fully empower talents and strengthen process supervision, and to improve mechanisms that allow for and address mistakes<sup>[4]</sup>. In order to encourage scientific research organizations and individuals to actively participate in the open bidding, it is important to establish an incentive-compatible system with more efficient talent selection mechanism, achievement assessment mechanism, research funding tracking and evaluation mechanism as well as accountability system<sup>[12]</sup>.

### 1.3 Research on the evaluation criterion in the selection of talents

Talent evaluation is the premise of the development, management, and utilization of talent resource. There are several outstanding problems in the evaluation of high-level talents in universities, such as overstating titles or position, taking Science Citation Index (SCI) & Social Science Citation Index (SSCI) as the golden evaluation standard, evaluation approach is one-size-all, evaluation scope is limited to single discipline, and evaluation technique is quantitative<sup>[13]</sup>. In order to highlight the innovative ability, quality, and contribution of researchers, many universities and research institutions are exploring some new evaluation criterion of scientific research. For example, comprehensive talent evaluation system that consists of multi-dimensional evaluation indicators including originality, contribution, and influence has been increasingly used in the situation of talent introduction to overcome the deficiencies caused by relying solely on quantitative indicators<sup>[14]</sup>. The reformative system combines quantitative, qualitative, and peer evaluation, and can better track the past scientific research performance, current scientific research level, and future scientific research potential of talents in an all-round way to make objective and impartial evaluation.

## 2 Data, Variable, and Model

### 2.1 Data source

In China, most high-level talents are working at universities across the country, and those talents become the major component of the research teams selected by the mechanism, especially for the scholars working at high-level universities such as “985” and “211” universities<sup>[15]</sup>. Therefore, this paper focuses on the selected research project leaders from various universities, and deeply explores the relationship between the title of talents of those researchers and their research innovation ability and team leadership. First, this paper randomly selects 35 research project leaders selected by the “Open Bidding for Selecting the Best Candidates” mechanism as a sample based on the public data of the recent approved projects of the “Open Bidding for Selecting the Best Candidates” mechanism, and collects and matches the information of individual research achievements, titles of talents, gender, age, organization, educational background, research fields, and other information from Baidu Baike, China Science Periodical Database, official websites, and other sources.

### 2.2 Variable construction

#### (1) Explained variable

This paper mainly measures the research ability of the selected

project leaders from four dimensions: papers, books, projects, and awards. In our study, the papers are limited to the high-quality academic papers published in the Chinese Social Sciences Citation Index (CSSCI) source journals and the core journals of Peking University, while the projects mainly refer to national-level research projects (such as projects supported by the National Natural Science Foundation or National Social Science Foundation) and provincial-level projects. In addition, in order to investigate the team leadership of selected project leaders, we divide the papers into individual works (the works completed by oneself alone) and group works (the works completed in cooperation with others or team members) for further analysis. Besides, this paper sets a period of time from 2010 to 2022 for the observations due to the data availability.

We define the explained variables specifically as follows: “Papers”, referring to the number of papers published by oneself alone or in cooperation with others in the core academic journals; “Books”, referring to the number of academic books completed by oneself alone or in cooperation with others; “Projects”, referring to the number of research projects conducted by the selected leaders and funded by the Ministry of Science and Technology, the Ministry of Education, the National Natural Science Foundation, the National Social Science Foundation, the Provincial Natural Science Foundation, and the Provincial Social Science Foundation; “Awards”, referring to the number of research awards won by the selected team leaders; “Papers\_alone”, referring to the number of articles published by the project leader alone in the core academic journals; “Papers\_coauthor”, referring to the number of articles published in cooperation with others in the core academic journals; “Papers\_coauthor2”, referring to the number of papers published in collaboration with team members in the same organization in the core academic journals.

### (2) Core explanatory variable

The core explanatory variable, “Title of talents”, measures whether the project leaders selected by the “Open Bidding for Selecting the Best Candidates” mechanism have the title of talents such as Changjiang Scholars and Young Changjiang Scholars. If he owns one or more title of talents, the variable takes the value of 1; otherwise, it takes the value of 0.

### (3) Control variable

The main control variables involved in this paper include: (a) the gender of the selected project leaders (“Male”), with a value of 1 for males and 0 for females; (b) the age of the selected project leaders (“Age”); (c) the research fields of the selected project leaders, including law (“Major\_law”), business (“Major\_business”), literature (“Major\_literature”), philosophy (“Major\_philosophy”), science (“Major\_science”), engineering (“Major\_engineer”), and art (“Major\_art”); (d) the organizations where the selected project leaders work, classified into the top two universities in China (Tsinghua University or Peking University, “Work\_top2”), 985 universities other than Tsinghua or Peking University (“Work\_985”), 211 universities (“Work\_211”), and other universities (“Work\_other”) according to their comprehensive research strength; (e) the educational background of the selected project leaders which measures whether they got their PhD degree from overseas university (“PhD\_overseas”), from Tsinghua or Peking University (“PhD\_top2”), from 985 universities other than Tsinghua or Peking University (“PhD\_985”), or from 211 universities (“PhD\_211”).

## 2.3 Empirical model

The econometric model used in this study is specified as follows:

$$Y_{it} = \alpha + \beta X_{it} + \gamma Z_{it} + \theta_i + \varepsilon_{it},$$

where the explained variable  $Y_{it}$  focuses on the comprehensive scientific research ability and team leadership of the selected project leader  $i$  in the year  $t$ , the constant  $\alpha$  is the intercept term, the core explanatory variable  $X_{it}$  is the dummy variable that describes whether the selected project leader  $i$  has the title of talents in the year  $t$ , and the control variable  $Z_{it}$  covers the basic characteristics of the selected project leaders, such as gender, age, field, organization, and educational background, with the year dummy  $\theta_i$ , and the random disturbance term  $\varepsilon_{it}$ .  $\beta$  represents the coefficient of the core explanatory variable  $X_{it}$ , and  $\gamma$  represents the coefficient of the control variable  $Z_{it}$ .

## 3 Result

### 3.1 Statistical analysis

Table 1 reports the descriptive statistics of the variables used in this paper. It can be seen that each selected project leader in the sample publishes 3–4 papers in the core journals on average every year, of which about 1 paper is published independently and 2–3 papers are published in cooperation with others. Each selected project leader publishes a book on average every three years, presides over two national or provincial research projects on average every three years, and gets 1–2 scientific research awards on average every two years. More than half of the observations in

**Table 1** Descriptive statistics (N=455).

Variable	Mean	Standard deviation	Min	Max
Papers	3.668	3.745	0	27
Papers_alone	1.145	1.947	0	13
Papers_coauthor	2.523	3.585	0	27
Papers_coauthor2	1.796	2.929	0	22
Books	0.299	1.192	0	20
Projects	0.701	1.004	0	6
Awards	0.835	1.179	0	7
Title of talents	0.549	0.498	0	1
Male	0.800	0.400	0	1
Age	41.31	5.361	28	54
PhD_overseas	0.143	0.350	0	1
PhD_top2	0.114	0.319	0	1
PhD_985	0.600	0.490	0	1
PhD_211	0.114	0.319	0	1
Work_top2	0.171	0.377	0	1
Work_985	0.543	0.499	0	1
Work_211	0.229	0.420	0	1
Work_other	0.057	0.232	0	1
Major_law	0.114	0.319	0	1
Major_business	0.314	0.465	0	1
Major_literature	0.229	0.420	0	1
Major_engineer	0.171	0.377	0	1
Major_philosophy	0.114	0.319	0	1
Major_science	0.029	0.167	0	1
Major_art	0.029	0.167	0	1

the sample have the title of talents. 80% of the selected project leaders are men. Most of the selected project leaders graduated from domestic first-class universities or overseas famous universities, 17.1% of them work in the top two universities in China (Tsinghua University or Peking University), and 54.3% of them work in the other 985 universities. Among those selected project leaders, 20% of them specialize in the fields of science or engineering, and the remaining 80% are engaged in the research fields of humanities and social sciences (such as business, law, literature, philosophy, or art).

### 3.2 Baseline regression

The results in Table 2 show the influence of the title of talents on the scientific research achievements in various dimensions, including the number of papers published, the number of books published, the number of projects conducted, and the number of awards won. The results indicate that the title of talents has no significant effect on the number of papers published, the number of books published, and the number of projects conducted by the selected project leaders, except for the significant positive impact of the title of talents on the number of awards won by the leaders. On the whole, although having the title of talents may bring more honor and higher reputation and awareness to the selected project leaders, there is no evidence that having the title of talents leads to more research achievements or higher innovation ability. In terms of the goal of solving key technical problems, the title of talents is not enough to fully reflect the true level and potential of the candidates.

### 3.3 Robustness check

In order to verify the robustness of the baseline regression results, we replace the indicators of some explained variables with alternative measurement, including: (1) the number of papers published ("Papers\_2"), measured as the number of papers published in the core journal with the selected project leaders as independent authors or first authors; (2) the number of books published ("Books\_2"), measured as the number of academic books published with the selected project leaders as independent authors or first authors; (3) the number of projects conducted ("Projects\_2"), measured as the number of national research projects presided over by the selected leaders.

The results of robustness checks reported in Table 3 show that the title of talents has no significant influence on the number of papers or books mainly completed by the selected project leaders, and is also uncorrelated to the number of national research projects hosted by the selected leaders, which is still consistent with the baseline regression results in our study.

### 3.4 Further analysis

In order to investigate the relationship between the title of talents and the team leadership of the selected project leaders, this paper further distinguishes the individual works (the papers completed by oneself alone) and group works (the papers completed in cooperation with others or team members). The regression results in Table 4 show that the title of talents have no significant impact on either the papers completed independently by the selected leaders, the papers completed in cooperation with others, or the papers completed in cooperation with research team members in the same organization. In general, it implies that owing the title of talents for the selected project leaders has little spillover effects on the overall output of their research teams.

In addition, this paper also examines the heterogeneous effects

**Table 2 Title of talents and research innovation ability.**

Variable	Papers	Books	Projects	Awards
Title of talents	-0.311 (0.992)	0.189 (0.212)	0.126 (0.201)	0.740*** (0.276)
Male	0.631 (0.613)	-0.256 (0.246)	0.207 (0.196)	-0.007 (0.230)
Age	0.255*** (0.060)	0.027 (0.017)	-0.045** (0.019)	-0.106*** (0.020)
PhD_overseas	-2.319** (1.009)	0.474*** (0.167)	-0.049 (0.340)	0.025 (0.305)
PhD_top2	-2.241** (1.102)	0.390* (0.235)	-0.224 (0.350)	-0.861*** (0.297)
PhD_985	-2.543*** (0.892)	0.274** (0.116)	0.050 (0.299)	0.062 (0.206)
PhD_211	0.424 (1.224)	1.084 (0.686)	0.058 (0.367)	0.813** (0.320)
Work_top2	-3.394*** (0.847)	0.209 (0.195)	-0.758*** (0.268)	-0.352 (0.319)
Work_985	-2.827*** (0.695)	0.095 (0.161)	-0.360 (0.220)	-0.938*** (0.221)
Work_211	-2.270** (0.974)	-0.538 (0.411)	-0.199 (0.334)	-1.380*** (0.314)
Wajor_law	-0.107 (1.230)	0.071 (0.381)	-0.021 (0.377)	-0.639 (0.483)
Major_business	0.030 (1.034)	0.046 (0.278)	-0.606** (0.287)	-0.759** (0.315)
Major_literature	-5.196*** (1.135)	-0.090 (0.299)	-0.622* (0.317)	-1.354*** (0.394)
Major_engineer	-2.653** (1.138)	-0.141 (0.441)	-0.477 (0.327)	-1.131*** (0.382)
Major_philosophy	-3.230*** (1.051)	-0.233 (0.291)	-0.622** (0.286)	-0.797** (0.332)
Major_science	-0.846 (1.545)	-0.483 (0.407)	0.526 (0.489)	-1.157 (0.804)
Year fixed effects	Yes	Yes	Yes	Yes
Constant	-0.471 (3.496)	-1.021 (1.039)	3.166*** (1.067)	6.586*** (1.116)
Observation	455	455	455	455
R <sup>2</sup>	0.345	0.099	0.164	0.182

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

of title of talents on the research achievements across team leaders with different genders, age, fields, and organizations.

The regression results in Table 5 show that, for both male and female scholars, the title of talents has no significant influence on the number of published papers, books, or research projects. Moreover, the positive effect of the title of talents on the number of research awards is highly significant among male scholars but not significant among female scholars.

The regression results in Table 6 show that the title of talents

Table 3 Robustness check.

Variable	Papers_2	Books_2	Projects_2
Title of talents	0.607 (0.583)	0.202 (0.183)	0.076 (0.141)
Characteristic	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Constant	12.654*** (3.379)	-0.499 (0.935)	1.929*** (0.745)
Observation	455	455	455
$R^2$	0.348	0.098	0.191

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$ .

has no significant influence on the number of papers, books, and projects conducted by either young and middle-aged scholars under 45 years old or senior scholars over 45 years old. Moreover, the positive effect of the title of talents on the number of research awards is highly significant among young and middle-aged scholars but not significant among senior scholars.

The regression results in Table 7 show that the title of talents has no significant influence on the number of papers, works, and projects conducted by the selected project leaders in the fields of either science and engineering, or humanities and social sciences. Moreover, among the scholars in the research fields of science and engineering, the positive impact of the title of talents on the number of research awards is remarkably greater and more significant.

The regression results in Table 8 show that whether working in the 985 universities with strong overall research strength or working in the non-985 universities with relatively weaker overall research strength, the title of talents have no significant influence on the number of papers, books, and projects conducted by the selected project leaders. Moreover, the positive influence of the title of talents on the number of research awards is highly significant among scholars working in the 985 universities with stronger research strength and richer academic resources, but not significant among scholars in the non-985 universities which are less competitive.

#### 4 Conclusion, Policy Implications, and Future Research

To figure out whether the title of talents should be an necessary criterion for selecting the best candidates for the research projects, this paper examines the influence of the title of talents on the comprehensive research innovation ability and team leadership of the project leaders selected by the “Open Bidding for Selecting the Best Candidates” mechanism. First, the results of baseline regression and robustness checks show that although the title of talents are beneficial for the scholars to obtain more research awards, it has no significant positive impact on their research achievements in terms of papers, books, and projects. Second, further analysis reveals that the title of talents held by the project leaders also has no significant effect on the overall research outcome of their own teams. Finally, for selected research leaders with different genders, different ages, different fields, and different organizations, the title of talents consistently has no significant impact on their research achievements in terms of papers, books, and projects. Based on our findings, it can be generally concluded that for various kinds of researchers, the title of talents appears not enough to fully and accurately reflect the productivity and

Table 4 Title of talents and team leadership.

Variable	Papers_alone	Papers_coauthor	Papers_coauthor2
Title of talents	0.409 (0.321)	-0.712 (0.926)	-1.027 (0.808)
Male	-0.346 (0.220)	0.963* (0.551)	0.223 (0.436)
Age	0.002 (0.025)	0.250*** (0.053)	0.237*** (0.048)
PhD_overseas	-3.064*** (0.919)	0.726 (0.477)	0.958** (0.424)
PhD_top2	-3.646*** (0.907)	1.378** (0.659)	0.712 (0.567)
PhD_985	-2.679*** (0.882)	0.132 (0.327)	0.519 (0.327)
PhD_211	-3.247*** (0.931)	3.685*** (0.822)	3.304*** (0.711)
Work_top2	-0.134 (0.453)	-3.273*** (0.855)	-1.076** (0.432)
Work_985	0.052 (0.355)	-2.883*** (0.786)	-0.646* (0.370)
Work_211	-0.060 (0.466)	-2.250** (0.982)	-0.369 (0.591)
Major_law	2.416*** (0.592)	-2.550*** (0.943)	-2.358*** (0.740)
Major_business	-1.148*** (0.393)	1.169 (0.878)	0.400 (0.723)
Major_literature	-0.256 (0.471)	-4.972*** (0.954)	-4.472*** (0.776)
Major_engineer	-1.345*** (0.451)	-1.359 (0.961)	-1.513* (0.785)
Major_philosophy	0.663 (0.491)	-3.919*** (0.836)	-3.743*** (0.685)
Major_science	-1.032 (0.657)	0.152 (1.310)	-0.118 (1.077)
Year fixed effect	Yes	Yes	Yes
Constant	4.282*** (1.625)	-4.567 (3.000)	-6.053*** (2.510)
Observation	455	455	455
$R^2$	0.498	0.460	0.444

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

potential of their scientific research work.

The findings of this paper provide conducive policy implications for further improving the selection mechanism of “Open Bidding for Selecting the Best Candidates” system and creating a favorable academic ecological environment. In recent years, in view of the problems of academics such as speculation or cheating, the construction of a quality-and-contribution-oriented evaluation system for researches has become an essential starting point to improve the academic ecological environment<sup>[16]</sup>. In the

**Table 5 Title of talents and research innovation ability: Different genders.**

Variable	Male	Female	Male	Female	Male	Female	Male	Female
	Papers	Papers	Books	Books	Projects	Projects	Awards	Awards
Title of talents	-0.058 (1.233)	-1.593* (0.944)	0.269 (0.209)	0.395 (0.399)	0.385 (0.250)	-0.536 (0.346)	0.733** (0.337)	0.391 (0.312)
Characteristic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.016 (3.293)	-16.790** (6.648)	-1.586 (0.987)	0.157 (1.746)	5.030*** (1.047)	-0.295 (2.104)	6.475*** (1.207)	-2.194 (2.965)
Observation	364	91	364	91	364	91	364	91
R <sup>2</sup>	0.388	0.487	0.115	0.260	0.206	0.435	0.210	0.311

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ .

**Table 6 Title of talents and research innovation ability: Different ages.**

Variable	Under 45	Over 45	Under 45	Over 45	Under 45	Over 45	Under 45	Over 45
	Papers	Papers	Books	Books	Projects	Projects	Awards	Awards
Title of talents	0.096 (1.073)	-0.361 (1.744)	0.224 (0.478)	0.206 (0.295)	0.383 (0.281)	0.031 (0.259)	1.204*** (0.442)	0.241 (0.377)
Characteristic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	3.348 (5.405)	22.214*** (8.287)	-0.799 (0.846)	-1.738 (1.786)	7.849*** (2.173)	1.400 (2.059)	-3.543 (4.043)	9.080*** (2.005)
Observation	182	273	182	273	182	273	182	273
R <sup>2</sup>	0.466	0.409	0.270	0.154	0.241	0.333	0.253	0.229

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$ .

**Table 7 Title of talents and research innovation ability: Different fields.**

Variable	Sci & Engr	Hum & SS	Sci & Engr	Hum & SS	Sci & Engr	Hum & SS	Sci & Engr	Hum & SS
	Papers	Papers	Books	Books	Projects	Projects	Awards	Awards
Title of talents	-1.276 (1.275)	0.081 (1.260)	-0.509 (0.316)	0.391* (0.221)	-0.196 (0.341)	0.346 (0.223)	1.765** (0.743)	0.512* (0.300)
Characteristic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.048 (3.063)	-7.343* (4.347)	-2.179* (1.096)	0.220 (1.370)	5.724*** (1.227)	0.476 (1.221)	4.676*** (1.375)	6.741*** (1.358)
Observation	91	364	91	364	91	364	91	364
R <sup>2</sup>	0.429	0.316	0.292	0.110	0.326	0.182	0.314	0.176

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , and \*  $p < 0.1$ . Sci & Engr is science and engineering, and Hum & SS is humanities and social sciences.

process of establishing the new-style mechanism, we should pay more attention to the key steps such as project screening, talent selection, achievement evaluation, and market transformation, and focus on projects aimed at key core technology and major realistic demand to continuously perfect the whole system. On one hand, since the title of talents reflects the academic contribution of scholars and the degree of recognition by academic circles to a certain extent, it can be used as a reference for the identification and evaluation of the ability and potential of the candidates. On the other hand, the role of the title of talents as a signal is rather limited since it cannot fully reflect the research and innovation ability and team leadership of those selected project leaders. The fundamental criterion for selecting the best

candidates for the projects should be whether they are capable to make key breakthrough and achieve major innovation. Instead of unilaterally emphasizing some rigid indicators such as the title of talents or the number of published papers, we should adhere to the principle of setting no threshold and establishing a result-oriented multi-dimensional evaluation system, so that those talents who are truly capable and motivated can be precisely selected by the mechanism.

This paper provides evidence that the title of talents cannot fully reflect the research ability and team leadership of the project candidates. A major limitation of our study is that due to the data availability, we only focus on the sample of project leaders selected by the mechanism, without any consideration of those losing

Table 8 Title of talents and research innovation ability: Different organizations.

Variable	985	Non-985	985	Non-985	985	Non-985	985	Non-985
	Papers	Papers	Books	Books	Projects	Projects	Awards	Awards
Title of talents	0.793 (0.932)	-0.489 (1.389)	0.069 (0.301)	0.235 (0.185)	0.364 (0.250)	-0.103 (0.350)	1.100*** (0.342)	0.228 (0.369)
Characteristic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.754 (3.140)	88.034*** (32.544)	-2.271*** (0.812)	-1.167 (4.707)	5.692*** (1.082)	-28.268*** (8.703)	6.053*** (1.351)	25.835** (10.109)
Observation	325	130	325	130	325	130	325	130
R <sup>2</sup>	0.334	0.676	0.140	0.245	0.219	0.352	0.210	0.295

Note: Robust standard errors in parentheses, \*\*\*  $p < 0.01$  and \*\*  $p < 0.05$ .

candidates or those researchers who even did not participate in the open bidding. Such limitation may result in sample selection biases in our estimation. We expect to enrich our dataset through multiple channels and methods such as questionnaire survey or text analysis to enlarge our sample with more detailed information in the future research.

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