



Analysis of Fund Balance of Projects Funded by National Natural Science Foundation of China Which Concluded From 2017 to 2020

Huamei Yan and Li Zhang*

Clinical Research Unit, Tongji Hospital, Tongji University, Shanghai, China

Abstract

Background: National Natural Science Foundation of China (NSFC) is one of the most important channels for the government to fund basic research. The investment has been increasing these years. However, most of the projects have fund balance after conclusion and some even with high proportion.

Methods: The study adopted the stratified sampling method; 17 supporting units were selected from all units that got approved projects in 2019. Questionnaire survey was used to investigate the project leaders from the chosen units who were will to participate in.

Results: A total of 1,053 valid questionnaires were collected from NSFC project leaders who were concluded in 2017 to 2020. Compared with the approved amount of 13.2 to 230 thousand Chinese Yuan (CNY), the 481 to 660 group was more likely to have higher proportion of fund balance. Compared with the top 10 supporting units, others had more risks of high proportion fund balance. In the year of project approved, compared with 2013, the later the approved period, the higher the risk of high proportion balances. Among different departments, Mathematical Sciences, Management Sciences and Earth Sciences were the highest top 3 of fund balance. Those who thought the funds sufficient were more likely to have more fund balance. Overall use of fund balance by supporting units could reduce balance.

The key words of top ten reasons for fund balance were "Uncertainty", "Thrifty", "Not yet reimbursed", "Save", "Restricted", "Inaccurate budget", "Other reasons", "Duplicate funding", "No hurry", and "External interference". The key words of top ten suggestions were "Awareness", "Accurate budget", "Propaganda and education", "Avoid repeatedly applying", "Unified platform", "Supervision", "Other reasons", "Fund management system", "Abolish unreasonable regulations" and "Training supporting units".

Conclusions: By analyzing factors associated with fund balance and considering project leaders' opinion, we identified some measures may help to reduce fund balance.

Keywords: National Natural Science Foundation of China (NSFC); Fund balance; IQR; SD; RMB

Introduction

Over the past 30 years, China's investment in basic research has been increasing. China's Science and Technology Statistical Yearbook (2019) showed that the national R&D expenditure continued to grow from 2013 to 2018 [1]. In 2018, the total amount of NSFC funding increased to 30.7 billion Yuan, which was close to United States and other major developed countries [2]. From 2013 to 2017, the number of highly cited papers supported by NSFC accounted for 14.03% of the world, ranking first among the world's science funding institutions [3].

However, on March 19th, 2020, the national audit office conducted an audit on the budget implementation of the National Natural Science Foundation of China (NSFC) in 2019. The audit team pointed out that 94% of the projects of NSFC in 2017 to 2018 had a balance at the end of the project, with a balance of RMB 12.478 billion, accounting for 26.61% of the total project arrangement funds. The audit work report made by the National Audit Office to the 19th meeting of the Standing Committee of the 13th National People's Congress pointed out that, "Among the 78,000 funded scientific research projects that have been concluded, 74,000 projects have a balance of funding at the end of the project, of which 12,400 projects have a balance of more than 50% (the total balance

OPEN ACCESS

*Correspondence:

Li Zhang, Clinical Research Unit, Tongji Hospital, Tongji University, 389 Xincun Road, Shanghai 200032, China,

E-mail: trudyzhang@163.com

Received Date: 17 May 2022

Accepted Date: 06 Jun 2022

Published Date: 17 Jun 2022

Citation:

Yan H, Zhang L. Analysis of Fund Balance of Projects Funded by National Natural Science Foundation of China Which Concluded From 2017 to 2020. *Ann Med Medical Res.* 2022; 5: 1039.

Copyright © 2022 Li Zhang. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Table 1: The project leaders of 17 supporting units participated in the survey.

| Supporting unit | | Sex | | |
|---------------------|---|-------------|------------|------------|
| | | Total | Male | Female |
| | | (n=1053, %) | (n=738, %) | (n=315, %) |
| Top 10 | Shanghai Jiao Tong University | 73 (6.9) | 55 (75.3) | 18 (24.7) |
| | Peking University | 7 (0.7) | 6 (85.7) | 1 (14.3) |
| | Fudan University | 71 (6.7) | 48 (67.6) | 23 (32.4) |
| 10-20 | Tongji University | 109 (10.4) | 75 (68.8) | 34 (31.2) |
| | Nanjing university | 110 (10.4) | 81 (73.6) | 29 (26.4) |
| | University of Science and Technology of China | 100 (9.5) | 83 (83.0) | 17 (17.0) |
| 21-50 | Army Medical University | 65 (6.2) | 43 (66.2) | 22 (33.8) |
| | Jinan University | 27 (2.6) | 20 (74.1) | 7 (25.9) |
| | Hunan University | 31 (2.9) | 24 (77.4) | 7 (22.6) |
| 51-80 | Guangxi University | 53 (5.0) | 33 (62.3) | 20 (37.7) |
| | South China Agricultural University | 199 (18.9) | 137 (68.8) | 62 (31.2) |
| | Zhejiang University of Technology | 83 (7.9) | 61 (73.5) | 22 (26.5) |
| After 80 | Xinjiang University | 79 (7.5) | 46 (58.2) | 33 (41.8) |
| | Hainan University | 9 (0.9) | 8 (88.9) | 1 (11.1) |
| | Qingdao University of Science and Technology | 13 (1.2) | 5 (38.5) | 8 (61.5) |
| Research institutes | Institute of Atmospheric Physics, Chinese Academy of Sciences (Beijing) | 13 (1.2) | 7 (53.8) | 6 (46.2) |
| | Academy of Life Sciences, Chinese Academy of Sciences (Shanghai) | 11 (1.0) | 6 (54.5) | 5 (45.5) |

Note: Proportion of total column calculated by column, sex columns by row

is 4.25 billion Yuan).

Therefore, it is very important to understand the reasons of the fund balance and find possible solutions, so this investigation is carried out.

Methods

The study adopted the stratified sampling method. According to the rank of total amount of approved fund by NSFC in 2019, three universities were chosen from each level of top 10, 11-20, 21-50, 51-80, and after 80, and two other research institutes were also selected including Academy of Life Sciences, Chinese Academy of Sciences (Shanghai) and Institute of Atmospheric Physics, Chinese Academy of Sciences (Beijing). The 17 selected units coming from Beijing, Shanghai, Guangdong, Jiangsu, Zhejiang, Anhui, Chongqing, Hunan, Guangxi, Xinjiang, Hainan and Shandong, covering the economically developed and less developed areas, eastern and western regions, border and ethnic areas, represented Chinese region well. Questionnaire survey was used to investigate the fund project leaders of the above 17 chosen units who were will to reply.

Statistical analysis

R4.0.5 was used for data analysis. Categorical variables were presented as number (%) and continuous variables as mean (SD) when normally distributed or median (IQR) when not. χ^2 tests were used to compare categorical variables. Significance was set at $p < 0.05$. Multinomial logistic regression model was used to identify factors independently associated with fund balance.

Results

A total of 1,057 project leaders of NSFC whose projects concluded from 2017 to 2020 participated in the survey, of which 1,053 valid questionnaires were collected, with an effective rate of 99.6%. The supporting unit of project leader is shown in Table 1. A total of 151

people (14.3%) from the top 10 level, 319 (30.3%) from 11 to 20 level, 123 (11.7%) from 21 to 50 level, 335 (31.8%) from 51 to 80 level, 101 (9.6%) from after 80 level, and 24 (2.3%) from 2 research institutes were participated in there were 738 men (70.1%) and 315 women (29.9%).

Table 2 shows the detailed information about fund balance and related factors. The proportion of fund balance ranged from 0 to 95.0%, with the mean \pm SD and median (IQR) separately equaled to 21.33 ± 18.51 and 17.60 (22.00). According to nodes of quartile, the proportion of fund balance was divided into four groups: 0% to 8.0% ($n=265$), 8.1% to 17.6% ($n=262$), 17.7% to 30.0% ($n=287$) and 30.1% to 95.0% ($n=239$).

Among the approved NSFC projects, there were 475 General projects (45.1%), 403 Youth projects (38.3%) and 175 others (16.6%).

Among different departments of supporting unit, the Life Science Department had the lowest fund balance; however the Department of Management Science, Mathematical Science, Earth Science and Information Science seemed to be much higher. There was a significant difference in the balance proportion of different departments ($\chi^2=59.79$, $p < 0.001$).

417 projects (39.6%) were partial to theory and 636 (60.4%) to experiment. The fund balance of theory partial projects was higher, and the difference was statistically significant ($\chi^2=12.58$, $p < 0.001$).

The total amount of approved direct funds ranged from 13.2 to 67,850 thousand Chinese Yuan (CNY), with the mean of 626.8 (SD=2204.3) thousand and the median of 480.0 (IQR=430.0) thousand CNY. The approved amount was divided into four groups according to quartile nodes, namely, group with approved amount of 13.2 to 230 thousand CNY ($n=268$), 231 to 480 thousand CNY ($n=274$), 481 to 660 thousand CNY ($n=256$) and 661-67,850 thousand CNY ($n=255$). There was no significant difference between fund balance

Table 2: The fund balance of NSFC and related factors.

| Variables | Total (n=1053, %) | Fund balance proportion | | | | p value | |
|--------------------------------------|-----------------------------------|-------------------------|------------|-------------|-------------|------------|------------------|
| | | 0%-8.0% | 8.1%-17.6% | 17.7%-30.0% | 30.1%-95.0% | | |
| | | (n=265, %) | (n=262, %) | (n=287, %) | (n=239, %) | | |
| Sex | | | | | | 0.428 | |
| | Female | 738 (70.1) | 186 (25.2) | 181 (24.5) | 194 (26.3) | 177 (24.0) | |
| | Male | 315 (29.9) | 79 (25.1) | 81 (25.7) | 93 (29.5) | 62 (19.7) | |
| Age group (year old) | | | | | | | 0.03 |
| | ≥ 45 | 376 (35.8) | 85 (22.6) | 105 (27.9) | 114 (30.3) | 72 (19.1) | |
| | <45 | 675 (64.2) | 180 (26.7) | 157 (23.3) | 172 (25.5) | 166 (24.6) | |
| Title when approved | | | | | | | 0.027 |
| | Senior | 363 (34.5) | 89 (24.5) | 108 (29.8) | 103 (28.4) | 63 (17.4) | |
| | Deputy-senior | 406 (38.6) | 104 (25.6) | 95 (23.4) | 112 (27.6) | 95 (23.4) | |
| | Medium-grade | 232 (22.0) | 57 (24.6) | 45 (19.4) | 64 (27.6) | 66 (28.4) | |
| | Primary | 11 (1.0) | 1 (9.1) | 5 (45.5) | 2 (18.2) | 3 (27.3) | |
| | Post-doctoral | 41 (3.9) | 14 (34.1) | 9 (22.0) | 6 (14.6) | 12 (29.3) | |
| Supporting units | | | | | | | 0.094 |
| | Top 10 | 151 (14.3) | 47 (31.1) | 40 (26.5) | 32 (21.2) | 32 (21.2) | |
| | Nov-20 | 319 (30.3) | 83 (26.0) | 65 (20.4) | 96 (30.1) | 75 (23.5) | |
| | 21-50 | 123 (11.7) | 27 (22.0) | 29 (23.6) | 38 (30.9) | 29 (23.6) | |
| | 51-80 | 335 (31.8) | 85 (25.4) | 97 (29.0) | 81 (24.2) | 72 (21.5) | |
| | After 80 | 101 (9.6) | 17 (16.8) | 29 (28.7) | 33 (32.7) | 22 (21.8) | |
| | 2 Research institutes | 24 (2.3) | 6 (25.0) | 2 (8.3) | 7 (29.2) | 9 (37.5) | |
| Category of approved NSFC project | | | | | | | 0.211 |
| | General project | 475 (45.1) | 112 (23.6) | 128 (26.9) | 139 (29.3) | 96 (20.2) | |
| | Youth project | 403 (38.3) | 112 (27.8) | 96 (23.8) | 97 (24.1) | 98 (24.3) | |
| | Others | 175 (16.6) | 41 (23.4) | 38 (21.7) | 51 (29.1) | 45 (25.7) | |
| Approved year of projects | | | | | | | 0.038 |
| | 2013 | 75 (7.1) | 27 (36.0) | 18 (24.0) | 16 (21.3) | 14 (18.7) | |
| | 2014 | 167 (15.9) | 47 (28.1) | 51 (30.5) | 46 (27.5) | 23 (13.8) | |
| | 2015 | 224 (21.3) | 58 (25.9) | 64 (28.6) | 60 (26.8) | 42 (18.8) | |
| | 2016 | 333 (31.6) | 75 (22.5) | 76 (22.8) | 100 (30.0) | 82 (24.6) | |
| | 2017 | 201 (19.1) | 41 (20.4) | 45 (22.4) | 55 (27.4) | 60 (29.9) | |
| | Others | 53 (5.1) | 17 (32.1) | 8 (15.1) | 10 (18.9) | 18 (34.0) | |
| Project execution period | | | | | | | 0.189 |
| | 3 years | 460 (43.7) | 131 (28.5) | 109 (23.7) | 109 (23.7) | 111 (24.1) | |
| | 4 years | 557 (52.9) | 125 (22.4) | 144 (25.9) | 167 (30.0) | 121 (21.7) | |
| | Others | 36 (3.4) | 9 (25.0) | 9 (25.0) | 11 (30.6) | 7 (19.4) | |
| the project belongs to department of | | | | | | | <0.001 |
| | Life Science | 271 (25.7) | 91 (33.6) | 81 (29.9) | 58 (21.4) | 41 (15.1) | |
| | Engineering and Materials Science | 181 (17.2) | 53 (29.3) | 39 (21.5) | 51 (28.2) | 38 (21.0) | |
| | Chemical Science | 140 (13.3) | 26 (18.6) | 41 (29.3) | 42 (30.0) | 31 (22.1) | |
| | Mathematics Science | 132 (12.5) | 18 (13.6) | 33 (25.0) | 36 (27.3) | 45 (34.1) | |
| | Medical Science | 117 (11.1) | 37 (31.6) | 23 (19.7) | 34 (29.1) | 23 (19.7) | |
| | Earth Science | 96 (9.1) | 14 (14.6) | 23 (24.0) | 34 (35.4) | 25 (26.0) | |
| | Information Science | 76 (7.2) | 19 (25.0) | 16 (21.1) | 19 (25.0) | 22 (28.9) | |
| | Management Science | 40 (3.8) | 7 (17.5) | 6 (15.0) | 13 (32.5) | 14 (35.0) | |
| Project partial to | | | | | | | 0.006 |
| | Theory | 417 (39.6) | 87 (20.9) | 100 (24.0) | 115 (27.6) | 115 (27.6) | |

| | | | | | | |
|---|-------------|------------|------------|------------|------------|--------|
| Experiment | 636 (60.4) | 178 (28.0) | 162 (25.5) | 172 (27.0) | 124 (19.5) | |
| Approved amount (thousand CNY) | | | | | | 0.099 |
| 13.2-230 | 268 (25.5) | 80 (29.9) | 62 (23.1) | 61 (22.8) | 65 (24.3) | |
| 231-480 | 274 (26.0) | 61 (22.3) | 62 (22.6) | 78 (28.5) | 73 (26.6) | |
| 481-660 | 256 (24.3) | 58 (22.7) | 69 (27.0) | 71 (27.7) | 58 (22.7) | |
| 661-67850 | 255 (24.2) | 66 (25.9) | 69 (27.2) | 77 (30.2) | 43 (16.9) | |
| Are the approved funds sufficient | | | | | | <0.001 |
| No | 169 (16.0) | 88 (52.1) | 41 (24.3) | 25 (14.8) | 15 (8.9) | |
| Yes | 884 (84.0) | 177 (20.0) | 221 (25.0) | 262 (29.6) | 224 (25.3) | |
| The method of fund receipt is | | | | | | 0.718 |
| Appropriation by year | 980 (93.1) | 244 (24.9) | 246 (25.1) | 265 (27.0) | 225 (23.0) | |
| Appropriation by one-time | 73 (6.9) | 21 (28.8) | 16 (21.9) | 22 (30.1) | 14 (19.2) | |
| Dose the supporting unit has supporting funds | | | | | | 0.895 |
| Yes | 73 (6.9) | 20 (27.4) | 16 (21.9) | 19 (26.0) | 18 (24.7) | |
| No | 980 (93.1) | 245 (25.0) | 246 (25.1) | 268 (27.3) | 221 (22.6) | |
| Whether the supporting unit has issued internal management measures for fund balance | | | | | | 0.905 |
| Yes | 964 (91.5) | 240 (24.9) | 240 (24.9) | 265 (27.5) | 219 (22.7) | |
| No | 89 (8.5) | 25 (28.1) | 22 (24.7) | 22 (24.7) | 20 (22.5) | |
| Whether supporting units deals with fund balance in an overall use way | | | | | | 0.007 |
| Yes | 603 (57.3) | 170 (28.2) | 131 (21.7) | 158 (26.2) | 144 (23.9) | |
| No | 450 (42.7) | 95 (21.1) | 131 (29.1) | 129 (28.7) | 95 (21.1) | |
| Whether the supporting unit conducts regular supervision and inspection on the use of fund | | | | | | 0.754 |
| Yes | 998 (94.8) | 253 (25.4) | 245 (24.5) | 273 (27.4) | 227 (22.7) | |
| No | 55 (5.2) | 12 (21.8) | 17 (30.9) | 14 (25.5) | 12 (21.8) | |
| Whether the supporting unit stipulates that there must be certification materials issued by the financial department in the final settlement of funds | | | | | | 0.811 |
| Yes | 1025 (97.3) | 258 (25.2) | 253 (24.7) | 280 (27.3) | 234 (22.8) | |
| No | 28 (2.7) | 7 (25.0) | 9 (32.1) | 7 (25.0) | 5 (17.9) | |
| Whether the supporting unit suggests to use other science and technology program funds first, finally, the NSFC | | | | | | 0.168 |
| Yes | 70 (6.6) | 25 (35.7) | 13 (18.6) | 16 (22.9) | 16 (22.9) | |
| No | 983 (93.4) | 240 (24.4) | 249 (25.3) | 271 (27.6) | 223 (22.7) | |

Note: Proportion of total column calculated by column, fund balance proportion columns by row

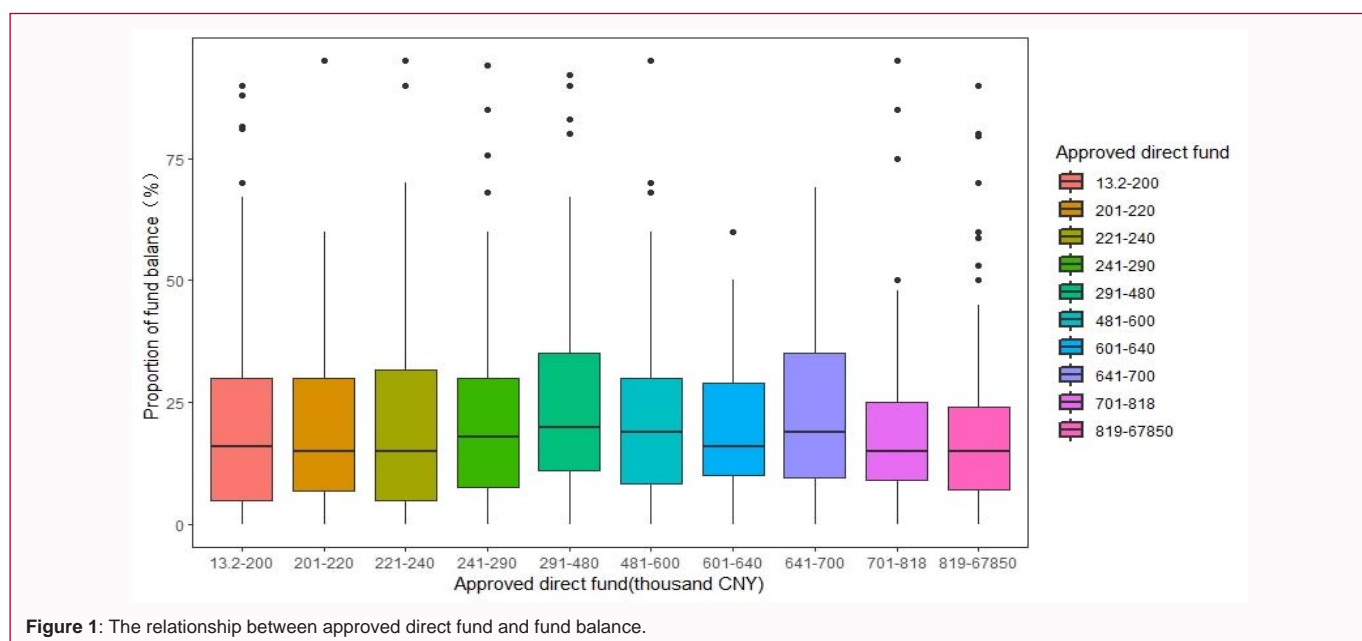


Figure 1: The relationship between approved direct fund and fund balance.

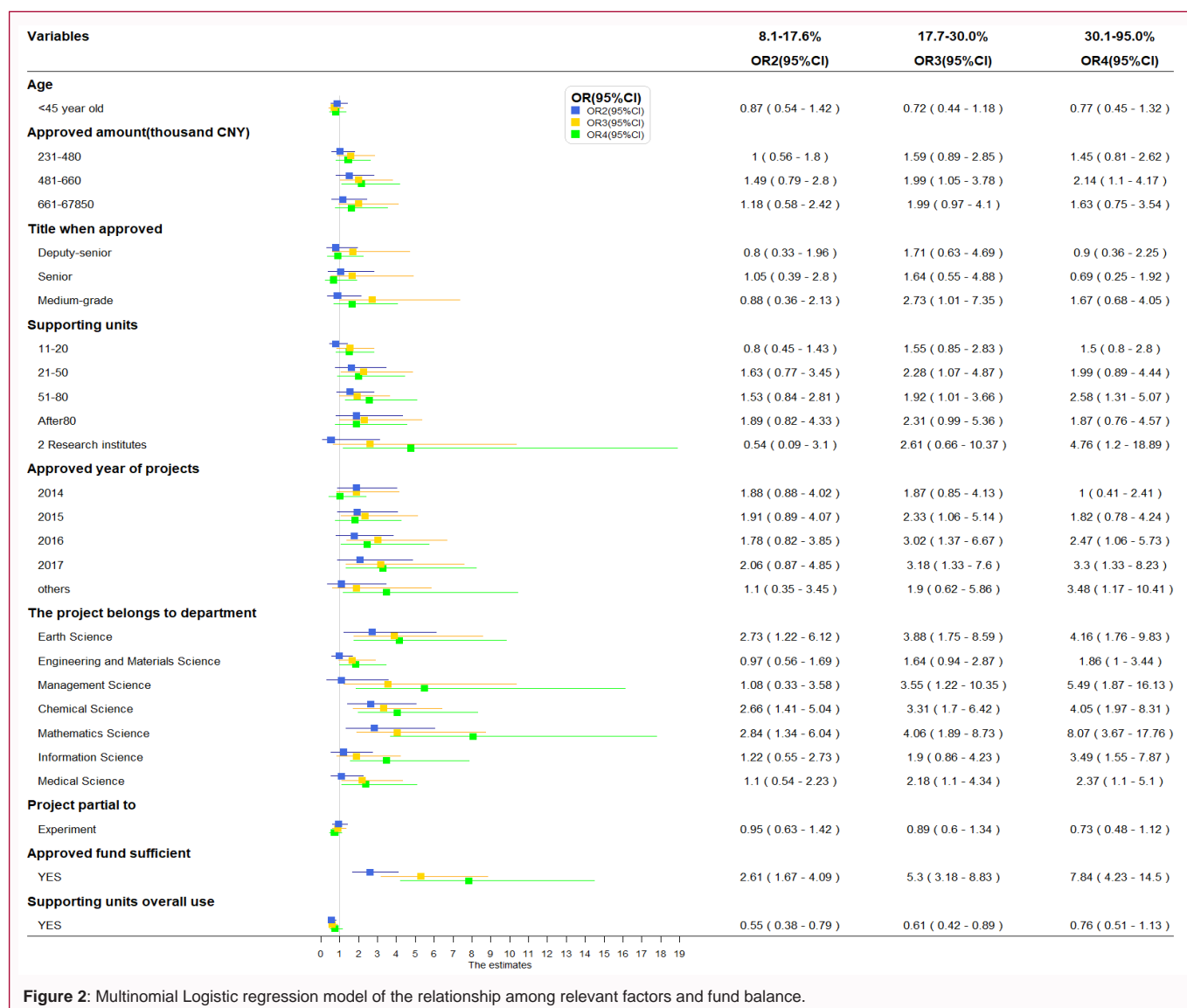


Figure 2: Multinomial Logistic regression model of the relationship among relevant factors and fund balance.

and approved fund. To more sufficiently show their relationship, the approved direct fund was divided into ten groups according to the decile, as illustrated in Figure 1.

84.0% of project leaders believed the fund met the needs, and the balance proportions of them accounted for 29.6% and 25.3% in the 17.7% to 30.0% and 30.1% to 95.0% group, which were much more than the ones who thought the fund insufficient, the difference was statistically significant ($\chi^2=86.35, p<0.001$).

More detailed information about the management of fund by supporting units was showed in Table 2.

Factors with p value ≤ 0.1 in Table 2 and approved amount of direct fund were put into the multinomial logistic regression model. As show in Figure 2, after controlling other relevant factors, compared with the approved amount of 13.2 to 230 thousand CNY group, the 481 to 660 group was more likely to have higher proportion of fund balance with statistically significant. Compared with the top 10 supporting unit level, other levels were riskier of high proportion fund balance, among them, the level of 21 to 50, 51 to 80 and Research Institute were statistically significant.

In the year of project approved, compared to 2013, the later the approved period, the higher the risk of high proportion balances. Among 2015, 2016 and 2017, some high proportion balance groups were significantly different.

Among different departments, compared with Life Sciences, other departments had higher proportion of fund balance, among which the top 3 were Mathematical Sciences, Management Sciences, and Earth Sciences. The Department of Information Science, Medical Science, Engineering and Materials Science were slightly lower. Some high proportion balance groups were statistically significant.

In terms of funding intensity, compared to project leaders who thought funds were insufficient, those sufficient were more likely to have high proportion of fund balance, with statistically significant.

Compared with the supporting units without overall use, those with overall use were less likely to have high proportion of fund balance, and the difference was statistically significant.

The top ten reasons of project leaders for fund balance are shown in Figure 3. First: Uncertainty, the uncertainty of basic research, the progress was not completely consistent with the plan, the cost was



Figure 3: Project leaders' opinion about reasons of fund balance.



Figure 4: Project leaders' suggestions about improving the efficiency use of fund.

reduced due to the change or adjustment of the research (n=552, 52.4%). Second: Thrift, the project team members calculated carefully and reduced the expenditure (n=544, 51.7%). Third: Not yet reimbursed, expenses such as paper publication, scientific research achievement registration and recognition were failed to submit before conclusion (n=487, 46.2%); Fourth: Save, in order to keep the research work uninterrupted and continuously promote talent training, the project leader specially "saved" part of the funds before the next project is approved (n=384, 36.5%); Fifth: Restricted, the adjustment of relevant management policies or regulations restricted part of the expenditure (n=284, 27.0%); Sixth: Inaccurate budget: Inaccurate budget resulted in budget structural surplus (n=158, 15.0%); Seventh: Other reasons (n=131, 12.4%); Eighth: Duplicate funding, the person in charge could apply for similar research from different channels, so the research was supported by other channels (n=121, 11.5%). Ninth: No hurry, the current fund management regulations of the NSFC allowing the balance to continue to be used for two years after conclusion, resulted in lack of hurry of scientific researchers (n=96, 9.1%); Tenth: External interference, external interference such as the collaborative unit's product technology did not meet expectations and failed to complete the project on schedule (n=80, 7.6%).

The top ten suggestions of NSFC project leaders on improving the efficiency of fund use are shown in Figure 4. First: Awareness, the project team should raise the awareness of paying attention to the progress of fund use (n=430, 40.8%); Second: Accurate budget, the project leader shall accurately and reasonably prepare the budget (n=347, 33.0%); Third: Propaganda and education, the supporting unit should strengthen propaganda and training, and guide researchers to make rational and efficient use of funds (n=330, 31.3%); Fourth: Avoid repeatedly applying, the project leader should avoid repeatedly applying for projects with similar content (n=320, 30.4%); Fifth: Unified platform, the science and technology funds from central and local channels should be incorporated into the unified platform for effective management, so as to avoid repetitive funding (n=205, 19.5%); Sixth: Supervision, the supporting unit shall conduct regular supervision and inspection on the use of funds (n=195, 18.5%); Seventh: Other reasons (n=165, 15.7%); Eighth: Fund management system, improving the construction of fund management system to strengthen the supervision of fund by NSFC (n=137, 13.0%); Ninth: Abolish unreasonable regulations, abolish some unreasonable internal regulations by the supporting units, such as trying out the funds funded by other science and technology plans first, and finally using the NSFC (n=131, 12.4%); Tenth: Training supporting units, the NSFC should strengthen training of the supporting units, and guided them to pay close attention to the use and management of funds (n=114, 10.8%).

Projects leaders with different proportion of fund balance almost had the same proportion of first five reasons and suggestions, as illustrated in Figure 3, 4.

Discussion

With the increase of approved amount, we have not seen the increase of fund balance proportion, and there was no obvious

linear relationship between them, which shows that only reducing the amount of subsidy may not necessarily reduce the balance risk. Among the supporting units, the balances of the top 10 were less than others, suggesting that they might be more active and reasonable in the management and usage of NSFC funds. The fund balances of different departments were various, maybe because of their unique characteristics in the expenditure of fund on such as equipment, consumables and manpower, suggesting that the fund structure needs to be further adjusted according to departments. In terms of funding intensity, those who thought fund sufficient had a higher proportion of fund balance. Maybe they had completed parts of research in the early stage, or maybe they had other funding support. The overall use could reduce balance risk, suggesting that loose of the time limit on fund can reduce balance to a certain extent.

Combined with the reasons and suggestions that project leaders believed, the following five points need to be paid attention to: First: Strengthen the construction of information system, bringing the central, local and other channels of science and technology funds into a unified platform for effective management, reducing and avoiding repeated funding, and establish a fund management system to facilitate the real-time supervision by NSFC and supporting units. Second: Project leaders should pay attention to the implementation of funds in the whole process, use funds and submit reimbursement in time; Third: Project leaders should plan the budget reasonably, the NSFC and supporting units should strengthen relevant training and education; Fourth: The NSFC and supporting units should relax restrictions on the use of fund, such as time limit and structural adjustment; Fifth: Improve the credit system construction of supporting units and project leaders, and compact the responsibilities on them.

Conclusion

To ease the problem of fund balance, NSFC and supporting units can reduce repeated funding, improve the flexibility of fund use, strengthen training and process management, and improve supervision. The project leaders can do better in project budget and implementation, and avoid repeated applying.

Funding

Supported by the special program funds of National Natural Science Foundation of China (No: J2024002).

References

1. Ministry of Science and Technology. China Bureau of Statistics. 2014.
2. National Science Foundation. FY 2019 Agency Financial Report.
3. Jinghai L. Building a science funding system for a new paradigm shift in science [J]. Bulletin of national natural science foundation of China. 2018;32(4):345-50.