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Comparative study of funding sources for faculty development following COVID-19 in China and the United States

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Abstract

In the post-epidemic era (COVID-19) context, funding university faculty development in China and the United States faces severe challenges. From the perspective of government education grants and social donations from foundations, except for top-ranked universities, most universities have faced increasing difficulties in financing faculty development. In this context, the U.S. government and U.S. universities have promoted university–enterprise cooperation for a long time, and faculty research teams independently seek enterprises' financial support. These efforts have effectively alleviated the problem of insufficient funding for faculty development. In doing so, these cases provide a valuable example for the funding of faculty development in China. Universities, businesses, and local governments should think about “directed cooperation subjects” from the standpoint of funding units. As a result, university instructor growth will be accomplished through a progression from “money” to “win-win cooperation” and ultimately “wisdom.” As a result, long-term collaboration is required between local governments, businesses, and academic institutions. Moreover, there are two aspects to cooperation between local governments, businesses, and academic institutions. First, collaboration tends to be closer when economic conditions are better; conversely, cooperation tends to be lower when conditions are worse. Second, cooperation is more likely when the program has greater influence.

Keywords: University Faculty Development; College Faculty Development; Foundation Funding; Research Funding; Community Development

1. Introduction

Faculty development funds in universities are primarily used for recruitment, training, incentives, research and development (R&D), and improved working conditions, which play key supporting roles in the development of university faculty. The funding sources for university faculty development in China and the United States are relatively similar, covering government appropriation, foundation donations, corporate support, and other funding channels. However, the proportion of these sources differ. Since the COVID-19 pandemic, the faculty development funds in both countries have reduced to various degrees. For various reasons, these funds have stagnated, significantly impacting faculty development.

1.1. Difficulties Facing University Faculty Development Funds in China and the United States: Reduction of Two Important Funding Sources

1.1.1. Comparison of Education Funding by the Chinese and American Governments

Since the COVID pandemic, the U.S. government has introduced a number of bills to support the development of higher education. However, most higher education administrators and researchers have demonstrated that the government's appropriation are yet to meet universities' development needs. Susan Shaman, one of the authors of *The College Stress*

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Test, observes that under the pressure of post-pandemic tax revenue, U.S. state governors may not prioritize higher education. Therefore, due to potential reduction in government revenue, public colleges and universities face higher risks than private institutions. In recent years, the higher education funding bills introduced by the Trump and Biden administrations focused on maintaining universities' daily expenses and subsidizing tuition for students from low-income families. This has resulted in the reduction of funds for university faculty development.

In China, the situation is even more dire: compared to 2019, 75 universities' 2020 budget spending generally decreased. For example, Beijing University of Chemical Technology (BUCA) experienced the most significant spending reduction—38.3%. The following institutions experienced declines of more than 20%: Peking University, Tsinghua University, Central University of Finance and Economics, Shanghai University of Finance and Economics, and Beijing Foreign Studies University. In its 2020 departmental budget report, the Ministry of Education claimed that in the Education Expenditure General Education, the budget for higher education amounted to 105.76 billion yuan, a 10.79% drop from 2019.

1.1.2. Comparison of Endowments Received by University Foundations in China and the United States

Across the United States, more than 1,000 university and college foundations play an essential role in fundraising solicitations, investment, and financial management. At the end of fiscal year 2022, *U.S. News* received 379 U.S. universities' official, cumulative endowment data, which showed massive disparities in endowment revenues among colleges and universities. The 15 colleges and universities with the most endowment income received an average of nearly 21.8 billion USD, with Harvard receiving the highest—almost 50.9 billion USD. The 15 colleges and universities receiving the least endowment income showed an average of nearly 1.9 million USD, with University of California, Merced receiving only 26,373 USD. Thus, the top-ranked U.S. universities rely on social endowments for faculty development funds. However, lower-ranked universities must seek other funding channels.

According to the 2022 China College Foundation Large Donation Observation Report, in 2021, domestic college foundations received 254 large donations—no less than 10 million yuan, a 41% year-on-year increase in the number and a new high since 2015. Data from Charity China and Foundation Center Network show that Tsinghua University, Zhejiang University, and Peking University were the top three in total endowment income from 2017–2022. Tsinghua University topped the list with 16.85 billion yuan in endowment revenue, while Zhejiang University and Peking University received more than 5 billion yuan. China's top-ranked universities are highly recognized for their academic achievements, quality of training, and research strengths, attracting large donations from alumni and the community. Similar to the United States, however, most universities' endowments are not that generous; only the top 11 Chinese universities receive more than 1 billion yuan. Thus, to obtain social contributions, most faculty development funds must rely on funding channels other than their foundations.

2. Expanding Funding Sources for Faculty Development in U.S. Universities: The University-Enterprise Cooperation Model

In other words, in China and the United States, government grants and social donations cannot fulfill the needs of most faculty development funds. Notably, for faculty development, U.S. universities and their faculty teams have long insisted on multi-channel financing. For example, U.S. enterprises enthusiastically cooperate with universities on scientific research projects; they have long firmly supported universities' research teams. In fact, the U.S. government and universities constantly promote university-enterprise cooperation, and faculty teams independently seek enterprises' financial support. In the United States, scientific research funding primarily comes from the federal government, state governments, enterprises, higher education, and non-profit organizations of the five central bodies. For total university scientific research funding in 2019, enterprise investment accounted for 70.7%. The federal government ranked second, accounting for 21.2%, mainly providing financial support for basic and applied research. Nonprofit organizations ranked third, at 4.1%.

2.1. University-Enterprise Cooperation Model I: Industry-University Research Cooperation Promoted by Science and Technology Parks

North Carolina's Research Triangle Park (RTP) is the world's largest science and technology park. Other universities and regional industrial chains need to achieve this rising star's synergistic innovation and development. Moreover, RTP, Silicon Valley, and the Texas Research Institute are known as the United States' three major research centers. Even so, RTP is the model for implementing government-led, government, university, and enterprise joint management. RTP achieves joint management through a third-party organization, that is, the Research Triangle Foundation of North Carolina, a nonprofit organization collaboratively established by the government, universities, businesses, and industry leaders. This foundation's management includes 11 representatives from the government, schools, companies, and

other parties to form a board of directors mainly responsible for the park's construction, maintenance, and management, in order to attract and retain businesses. The Foundation organizes the government, universities, and enterprises to discuss and plan RTP's development. This management model not only ensures a stable environment for the park's innovation and entrepreneurship but also provides enterprises and organizations a great deal of autonomy, removing obstacles to cooperation between universities and regional entities. Consequently, RTP generates 24% of the most critical scientific research projects, 29% of all patented technologies, and 21% annually of scientific papers in the world's most important academic journals. The region's university research teams have become an essential funding source for faculty development in cooperation with enterprises, and eight institutions' research teams have annually received more than 1.5 billion U.S. dollars in contracted research grants.

2.2. University–Enterprise Cooperation Model 2: Government-driven Industry–Education Integration

Having paid early attention to university–industry interaction, the United States has developed some efficient mechanisms. For example, the Industry–University Cooperative Research Center (I/UCRC) is a multi-member, ongoing partnership among industry, academia, and government. Established by the U.S. National Science Foundation (NSF), the I/UCRC bridges basic research and technological innovation by focusing on cutting-edge research in science, engineering, technology, and industry-led competitive research. I/UCRC's primary goals are fourfold: (1) to advance the nation's research enterprise through development of long-term partnerships among industry, academia, and government; (2) to leverage industry support for graduate students to conduct industry-relevant, pre-competitive research through NSF funds; (3) to leverage industry support for graduate students to conduct industry-relevant, pre-competitive research through industry–university partnerships and to grow the nation's competitive workforce through collaboration between industry and universities; and (4) to encourage the nation's research to remain competitive through active engagement with academic and industry leaders around the world. Over the past 40 years, the I/UCRC program has supported 140 centers from more than 160 universities, receiving more than 20 million USD annually in research funding.

2.3. University–Industry Collaboration Model 3: University-driven University–Industry Collaboration

A key strategic goal of the University of Wisconsin-Madison Strategic Framework (2020–2025) is, in partnership with the local community and the state government, to sustain the Wisconsin Idea by expanding and applying the university's knowledge of research, education, and practice to promote and support Wisconsin's innovation and prosperity. The better to achieve that goal, empowering faculty to serve local communities and social development needs has been important for promoting faculty development. For instance, the University's Morgridge Center for Public Service annually organizes varied training and exchange activities to encourage faculty in conducting community-oriented research. These activities include community engagement workshops, the Wisconsin Idea Exchange, and community engagement credit courses. On the one hand, faculty members can improve their overall quality by participating in these training activities, learning skills to work with local communities, and disseminating knowledge. On the other hand, by encouraging instructors to use knowledge innovation to meet industrial development's needs in several ways, for instance, in technology transfer and industry–university research collaboration, the institution enhances its ability to serve the community. Improvement of instructors' social service ability creates a win-win situation by meeting the requirements of the university's strategic development goals and promoting instructors' long-term development.

3. Opportunities for Funding Faculty Development in Chinese Universities

3.1. The Country's Steadily Improving Economic Situation

In 2023, China launched an economic policy-measure package to stabilize employment, prices, and growth. After bottoming out in the second quarter (2023), the annual economy showed a V-shaped recovery trend. With a generally solid industrial supply chain, employment improved, prices stabilized, and the balance of payments maintained equilibrium. China's macroeconomic policy is rich in regulatory tools, favorably promoting sustainable economic recovery. With steady progress and various policy measures' implementation, China's economy will likely continue to rebound and operate within a reasonable range.

3.2. Increased Willingness to Cooperate among Government, Enterprises, and Universities

After the COVID-19 pandemic, the Chinese government and universities have frequently collaborated to restore China's economy. On the one hand, some local governments need university experts and professors to provide advice and intellectual support for local governments' economic development. On the other hand, some local governments—to adapt to the new economic environment—have forwarded a number of proposals to accelerate economic recovery and formulated a number of initiatives to restore economic development. These proposals need university experts and

professors for their validation processes. Similarly, during the post-pandemic period's growth, economic cooperation between higher education and enterprises has continually drawn closer, as reflected in scientific research projects. Rapid scientific and technological achievements and their transformations into economic benefits not only highlight universities' scientific research abilities but also provide economic benefits to enterprises and society.

4. Innovation in the New Era of China's University Faculty Development Funding

After the end of the pandemic, development of local governments, state-owned enterprises, alumni enterprises, and other private enterprises has steadily trended upward. Although significant pressure remains, the willingness to "join together for warmth" has become vital. Indeed, universities' official websites reveal that since the beginning of the 2023 academic year, some universities have signed memoranda of understanding (MOU) and cooperation agreements with numerous organizations, providing an important opportunity for financing university faculty development. However, thus far, difficulties of financing faculty development remain unchanged. Even so, these opportunities offer solutions through innovative ideas and concepts.

4.1. Industrial Think-tank Cooperation Supported by "Targeted Cooperation Projects"

Before and during the pandemic, many local governments and state-owned enterprises continuously released demands for research topics, hoping that universities could provide technical and intellectual support for industrial development. For example, development of local economies and state-owned enterprises cannot be separated from finance and economics colleges' advice and guidance—the main reason for entities to cooperate with universities. Conversely, universities should play the role of "think tanks" and provide intellectual support for these entities. Although contributing financial resources directly to faculty development is difficult for local governments and state-owned enterprises, they can establish "targeted cooperation projects." That is, considering their research needs, local governments and state-owned enterprises can focus on universities' relevant disciplines to support instructors' development through selection of appropriate topics. Like local governments and state-owned enterprises, universities should also play a research role in alumni and other private enterprises. In the post-epidemic context, for example, private enterprises will need more assistance from financial institutions to solve practical problems such as risk prevention and control and tax planning. Additionally, private enterprises will need to rely on university faculty to plan enterprise development or to cooperate with university experts and professors to study and express an entrepreneur's understanding of a particular issue to increase enterprises' influence in a particular industry. Faculty development funding can still begin as project cooperation and strive for "targeted cooperation projects" from enterprises.

4.2. Establishing a Long-term Mechanism for University–Enterprise Cooperation with Industrial Research Centers as a Platform

In building university–enterprise cooperation, Chinese universities can refer to the successful experience of the U.S. I/UCRC. In doing so, they can actively strive for industrial research centers jointly established with domestic and foreign enterprises. Universities can provide intellectual and technical support, while enterprises provide financial support to cutting-edge research technologies in related industries. In the process of helping enterprises reform and develop, we can finance university instructors' development. Despite many domestic universities having established relevant cooperation mechanisms with enterprises, the following three problems remain. First of all, cooperation on the industrial research center platform is relatively meager; more often than not, it consists only of signing a memorandum of understanding. What's more, cooperation between universities and enterprises involves "loud thunder but little rain," indicating a mere formality. Universities often cooperate with famous enterprises at home and abroad to highlight their level of collaboration, but most well-known enterprises have relevant R&D organizations. Last but not least, university–enterprise cooperation is not close enough, and, after making the connection, university leadership often cannot help enterprises solve practical problems through adequate grass-roots implementation. First then, we should look for enterprises willing to cooperate with universities, tilting toward small- and medium-sized enterprises likely to encounter development bottlenecks. This choice aims to help solve practical problems encountered in their development. Second, we should actively establish an industrial research center platform and give its role full play. By so doing, we can ensure the platform's long-term effectiveness and sustainability. Finally, universities should encourage their faculty members to undertake this active work by providing policy support that allows them the developmental time and energy to construct a platform and work within it; the platform itself should support instructors' professional development.

5. Conclusion

From a funding-unit perspective, local governments, enterprises, and universities should consider “directed cooperation subjects.” Consequently, university instructor development will be realized—from “money” to “win-win cooperation” and finally to “wisdom.” Such a platform’s sustainability will be more robust than current one-time contributions, mainly for the following three reasons. First, local governments and enterprises’ development does not occur overnight but over the longer term, especially because restoration of pre-epidemic funding levels takes time. Next, establishing a funding platform with both immediate and long-term effects is difficult, generally occurring amid dynamic adjustments. Therefore, cooperation among local governments, enterprises, and universities must be long-term. Furthermore, collaboration among local governments, enterprises, and universities involves two points. First, the better the economic situation, the closer the cooperation; the worse the economic situation, the lower the willingness to cooperate. Second, the more influential the program, the higher the willingness to cooperate. Even in a program already working, the desire to cooperate grows significantly higher. From these observations, we can analyze the Chinese economy’s future development. Clearly, if university research teams can provide adequate intellectual and technical support to local governments and enterprises, all three entities will establish effective long-term cooperation. If all the above conditions can be realized, it will effectively alleviate the problem of insufficient funds for teachers’ development, improve the funds for university teachers’ research teams, and provide effective support for scientific and technological innovation.

In today’s globalization, exchanges and cooperation in university faculty development between China and the United States are particularly important. By sharing their respective experiences and practices, the two countries can learn from each other, complement each other’s strengths, and work together to promote the continuous advancement of university faculty development. We expect that in the future, China and the U.S. can carry out more in-depth exchanges and cooperation in this field, and make greater contributions to the cultivation of more excellent higher education talents. To summarize, the comparative study on the sources of funding for university faculty development in China and the United States not only helps us to deeply understand the current situation and characteristics of faculty development in the two countries, but also provides us with valuable insights and lessons. In the future development, we should continue to explore and innovate, and strive to build a more perfect and efficient faculty development funding system to provide strong support for faculty growth and academic prosperity.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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