China Benefits Enormously from the 33-Fold Increase in Research Expenditure

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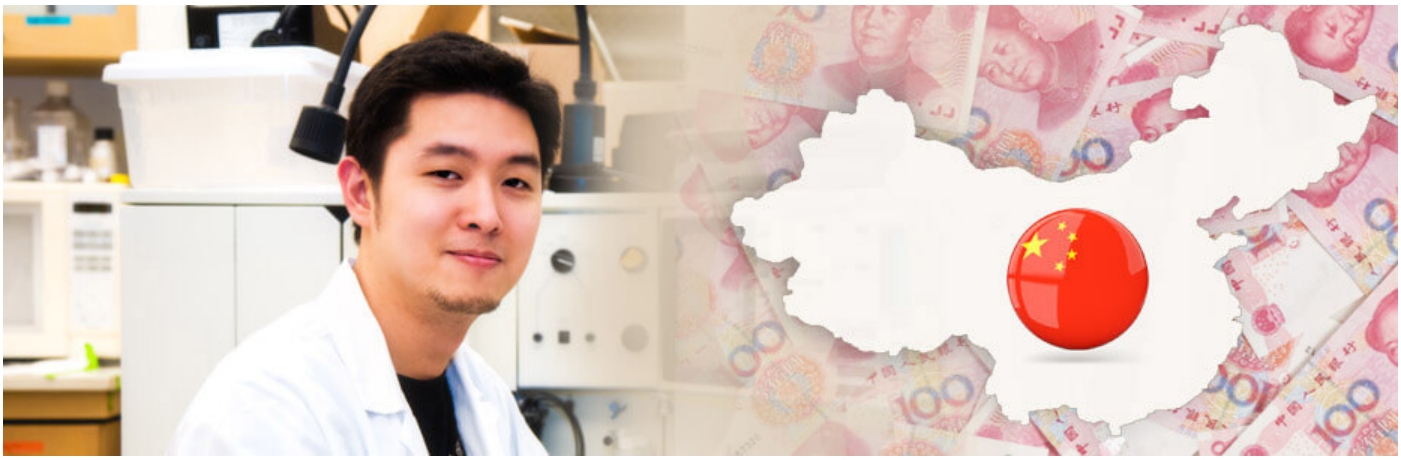

Recognition for your accomplishments is indeed the most desirable reward in the realm of scientific research. Publishing your research and getting recognition from your peers in accordance with the “publish or perish” model, validate your expertise and provide you with the impetus to continue your research. At the same time, would it be just as satisfying—or even more satisfying—if you were to be paid for every research article that you publish?

In the West, scientists usually are not given financial rewards for publishing their research. Besides grants for the research itself, there is no other monetary incentive. However, the picture in China is drastically different. In the 1990s, China introduced researchers to a cash-based reward system for publishing. The new system was initiated mainly in their research institutions. It was seen as an incentive for Chinese researchers to continue publishing research in good journals.

Scientific research in China has grown significantly because of China’s economic growth. Its expenditures in research have increased by more than 3,000% in the last 20

years! During this period, the Web of Science (WoS) indexed more than 232,000 published papers from that country. This is an important fact because WoS is used as a tool for evaluating the scientific contributions of researchers from around the world. Many are required to publish WoS-indexed manuscripts to get promoted and funded.

Earlier this year, Sichuan Agricultural University paid $2 million to a team of 27 scientists who had published in *Cell,* a prestigious scientific journal with a worldwide readership. Although the money was divided among the authors, it was still a hefty amount, considering the fact that most scientists generally don't get paid well.

Is the incentive-based system heavily contributing to China's growth in research and publishing? Are there downsides to the program? The outcomes have recently been investigated.

The Study

To investigate this monetary reward system and its influence on the scientific community, Wei Quan (School of Information Management, Wuhan University, Wuhan, China), Bikun Chen (School of Economics and Management, Nanjing University of Science and Technology, Nanjing, China), and Fei Shu (School of Information Studies, McGill University, Montreal, Canada) conducted a study of 100 Chinese universities in 2016. These 100 universities were chosen as a representative sample from 1,236 universities spread across China. The results showed that the cash awards ranged from $30 to $165,000. Authors were rewarded for papers published in the most prestigious journals. These authors were classified according to their citation frequencies. The "Journal Impact Factor (JIF)" and a modified version of the "Journal Citation Report (JCR) Quartiles" were used during evaluation. The resulting award levels were as follows (number of policies in parentheses for each):

- **One-price (31):** The amount paid was the same for all WoS papers.
- **JIF-based (49):** Different amounts based on JIF; some paid higher for high grades. Some universities also used different subject indices (e.g., Engineering Index).
- **JCR quartiles (99):** Amounts based on the modified JCR quartile, in accordance with the policies of the Chinese Academy of Science.
- **Citation-based (15):** Awards based on the number of citations in a given citation period. Awards are given to papers over a specific threshold (e.g., topic or citations).

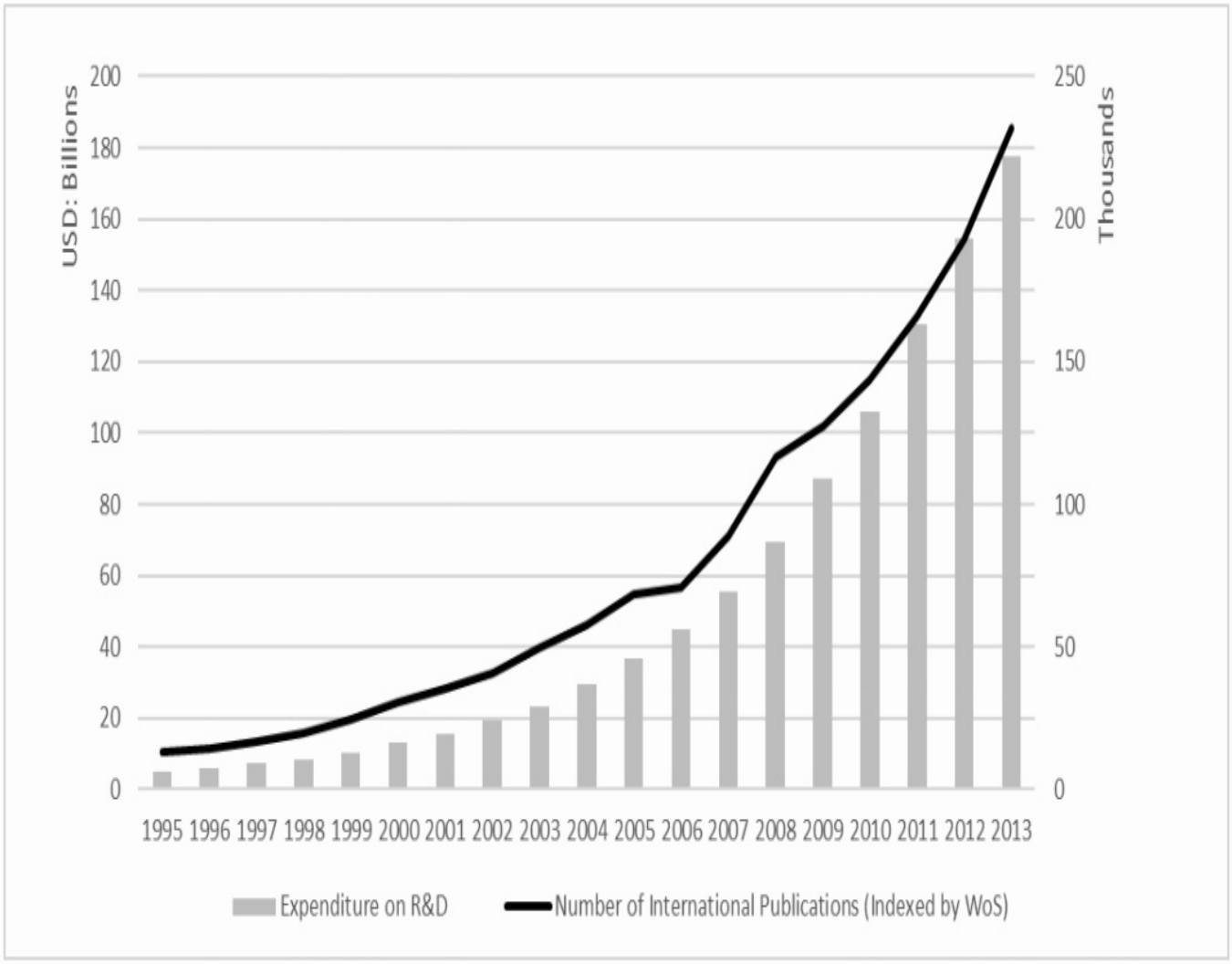

Figure 1: Research Inputs and Outputs in China (1995-2013) [Wei Quan, Bikun Chen, Fei Shu]

Only those journals indexed in WoS were considered eligible. Journals such as *Nature* and *Science* have the highest JIFs. Researchers publishing in these journals received a higher cash reward than those publishing in some other journals or conference proceedings.

Impact of Being Paid To Publish

It is clear that Chinese researchers continue to benefit greatly from this reward system. In many cases, the cash awards far exceed the annual salaries of research scholars. The reward system has significantly increased the number of published papers from China over the years. Although the reward program might have had some positive results for China, it has had some major drawbacks as well.

Some believe that the “publish and flourish” reward system perpetrates the trend that scientists might take an easier route in research or simply fabricate data just to get something published faster and in high-impact-factor journals. There have been reports of dishonesty, plagiarism, and even fake peer reviews from all over China. The study also found that the number of mistakes that needed to be corrected in submitted manuscripts rose dramatically between 1996 and 2016. In addition, the race to publish changed the research goal to that of getting published as often as possible. This overshadowed the necessary long-term goals that are the foundation of scientific research.

Experts believe that indices such as JIF are not valid measures of the importance of published research. Although JIF was created to indicate the importance of a specific journal, it does not imply the importance of published research. Because of the Chinese reward system, studies were conducted more haphazardly and more than 50% of these studies could not be duplicated. The reproducibility of Chinese research continues to be a major concern even today.

The Bottom Line

The academic misconduct cited here has been discovered and is, at best, very discouraging to the profession. In addition, the problem of not being able to duplicate or reproduce the results of a research study is extremely concerning. Experts tend to believe that China’s reward system for publishing has created more negatives than positives. Although China has become one of the leaders in research publishing, its “publish and flourish” model has, unfortunately, resulted in a large number of questionable research publications.

Will Chinese researchers continue publishing dubious research in order to get cash awards? Will the “publish and flourish” model work in other countries? Please share your opinion by commenting in the section below.

References

Figure 1: Research Inputs and Outputs in China (1995-2013). Adapted from “Publish or impoverish: An investigation of the monetary reward system of science in China (1999-2016),” by Wei Quan, Bikun Chen, Fei Shu, 2017, Retrieved from https://arxiv.org/ftp/arxiv/papers/1707/1707.01162.pdf. Copyright (2017) by Aslib Journal of Information Management.

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