

Promoting Scientodiversity through Research Grants

Yoshiaki Shimada, National Graduate Institute for Policy Studies

The promoting diversity of science, or *scientodiversity* (variety, balance, and disparity in research subjects), is a prominent issue in science and technology policy because of their importance to research responsive to a wide range of socio-economic demands. However, resource allocation on science has been carried out on a publication performance-based without considering scientodiversity, given the lack of precise formulations and understandings such as those found in biodiversity studies. As a result, the decline in scientodiversity has emerged as a policy concern in Japan.

This problem on resource allocation is threefold; amount, distribution, and types. How much should we invest in science research as a country? What distribution of resource to research bodies is the optimum as a whole? What type of investment is the most appropriate to the promotion of scientodiversity? To answer these questions, this dissertation investigates the impact of resource allocation on the pattern and process of scientodiversity in three scales, such as country, university, and team, respectively.

First, I investigate the distribution of research subjects in the country-scale to develop a framework analogous to that of biodiversity. The result suggests that scientodiversity has similar statistical characteristics as biodiversity. Second, I evaluated the efficiency of universities in terms of the quantity and diversity of their publication. The results indicate the importance of the external research grant in university's research expenditure in terms of both publication and diversification. Third, I examined the impact of a mission-oriented grant on scientodiversity in the team-scale. The results show that the research subjects are better conserved under the mission-oriented program than the curiosity-driven one, a finding contrary to the conventional expectation.

These results may not only validate the adoption of sophisticated concepts and techniques from biodiversity studies in scientodiversity ones but also imply the possible "diversity-aware" design of science and technology policy.