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**EMPIRICAL STUDY ON THE RELATIONSHIP BETWEEN
TECHNOLOGICAL CONVERGENCE AND INDUSTRY CONVERGENCE
IN KOREA**

Abstract:

“Convergence” is one of the most frequently heard keywords in recent economic development discussions. Convergence between technologies (technological convergence) is now widely known to be an effective strategy for Science and Technology (S&T) innovation. Industry convergence is also recognized as a promising mechanism for creating new markets.

Many researchers have been trying to measure and analyze the convergence phenomena. Though some successfully describe the current status of technological and/or industry convergence, the relationship between technological convergence and industry convergence has not yet been empirically and comprehensively studied.

In this study, we empirically analyzed recent cases of technological and industry convergence in South Korea and the relationships between them. Patent data were used to analyze technological convergence. If more than two different classification codes (subclass of the IPC code) appeared in one patent, we considered it a new case of convergence between the two (or more) technologies. Thus, the degree of convergence between two technologies is represented by the number of patent having two different classification codes related to the technologies. All patent applications in Korea from 2009 to 2011 were surveyed and the results were visualized and analyzed using the social network analysis (SNA) method.

This study used the production inducement coefficients (more specifically, the forward linkage effect) from the input-output analysis (I/O analysis) as a proxy for the degree of industry convergence, for the lack of a more widely-accepted methodology in the literature. From structural changes in the production inducement effect, we infer the convergence between industries (industry convergence from the economic point of view).

In order to analyze the relationship between technological convergence and industry convergence, the technological convergence network obtained from patent analysis was converted into a

technology-mediated industry convergence network (industry convergence from the technological point of view) using a patent-industry concordance table. The network of the technology-mediated industry convergence was compared to the industry convergence network deduced from the I/O analysis.

The results show that technological convergence is active in the electrical engineering and chemistry fields. Across technology fields, however, convergence is limited. The convergence between electronics/electrical engineering industries was active from both the technological and economic point of view. However, the technology-mediated industry convergence network between electronics/electrical engineering industries and general/special industrial machinery industries does not indicate convergence in the economic point of view.

More detailed results will be presented in the conference.

Keywords:

technology convergence, industry convergence, convergence

JEL Classification: O32, O33