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Empirical Analysis of the Relationship between Upgrading and Innovation of Japanese SMEs and Industrial Clustering

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4.1 Introduction

The Japanese economy has been suffering from a long recession since the early 1990s. Since then, countless measures to revitalize the industrial sector have been implemented by all levels of government, from central to local, and a significant amount of public funding has been poured into various projects, such as promoting venture businesses or supporting academia/industry/government collaboration. The reality of the Japanese economy, however, shows that revitalization has not occurred. Thus far, such policy measures have not been successful in promoting Japan’s revitalization; moreover, the gap in economic circumstances between metropolitan and rural areas, and between large companies and SMEs (small and medium-sized enterprises) has been enlarging. It is recognized that the revitalization of regional industries is one way to cope with these issues. In so doing, focus has been placed on upgrading regional industries and SMEs to equip them with higher technology and management. One means to achieving this is the industrial cluster policy, which aims to revitalize regional industries and SMEs by agglomerating firms which are large or new start-ups, research institutions related to high or low technologies, and universities with research of cutting-edge technology. The rationale is provided by Fujita et al. (1999), Krugman (1991), Porter (1980) and Saxenian (1994), for instance. The essence of these theories, in the present context, lies in the flow of information generated by agglomeration; that is, in regions where firms and research institutions cluster, collaboration and competition among those parties and organizations create not chaos, but rather the ‘coherent power’ of vitalization. We refer to this process as the ‘endogenous innovation process’. Once a region develops sufficient power
to create something new, the process can repeat itself to yield another such upgrading and innovation.

The authors have been conducting research so far in order to formulate how industrial clustering occurs mainly in East Asian economies, and the hypothesis we are postulating is referred to as the ‘Flowchart Approach’, initiated by Kuchiki (2007). Based on accumulated studies such as Kuchiki and Tsuji (2005), Tsuji et al. (2006), Tsuji et al. (2007) and Tsuji et al. (2008), the Flowchart Approach has been verifying and elaborating. Industrial clustering itself, however, is not the final aim to vitalize the regional as well as national economies, but it is one effective method to trigger economic activities. One more important role of agglomeration is that it is fundamental basis of innovation or industrial upgrading in industrial clusters. This role of clustering has been emphasized by many authors, such as Porter (1980), Saxenian (1994), and Fujita et al. (1999), as already mentioned. This chapter thus aims to initiate the so-called ‘Flowchart Approach to endogenous innovation process’ inside an industrial cluster, and makes an attempt to postulate how industrial clustering transforms into the upgrading and innovation process. In order to analyse this process, at first we have to clarify how firms inside a cluster are conducting innovation and upgrading and how their activities are different from those outside a cluster.

In so doing, this chapter aims to verify the hypothesis that a relationship exists between innovation and industrial clustering formed by regional SMEs. We conducted an extensive mail survey to 5,000 SMEs which were authorized as ‘innovative’ by the Small and Medium Enterprise Agency, and divided these 5,000 SMEs into two groups, those inside or outside a cluster. By comparing the two groups, we analyse how industrial clusters and regional research institutions influence innovations and the upgrading of SMEs. This is thought to be a preliminary step to postulate the endogenous innovation process.²

The chapter consists of the following sections: Section 4.2 presents the contents of the mail survey conducted in October and November 2007; in Section 4.3, the methodology of the statistical analysis and two models, namely the upgrading and innovation models, are explained; and the results of estimations using the upgrading and innovation models are presented in Sections 4.4 and 4.5 respectively. In the final section, conclusions and suggestions for further research will be briefly presented.

4.2 Results of the mail survey

First, the contents of the mail survey, conducted in October and November 2007, and a summary of the results are presented.

4.2.1 Objectives of the mail survey

The objective of this mail survey was to obtain and analyse data to verify two hypotheses: (1) the relationship between SME upgrading and innovation and