Measuring the level of participation of semiconductor industry in Japan and Taiwan in Global Value Chains

Topic: Trade and Global Value Chains Policies
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The rapid expansion of global trade volumes since the 1990s has been driven by the division of production between processes, in which the production of a single good is divided into multiple processes, each located across national borders. Developing countries have been incorporated into global value chains (GVCs) by participating in the processes appropriate to their capital-labor conditions within the segmented processes, thereby providing them with opportunities for economic growth.

ã€€East Asian countries have achieved economic growth through participation in GVCs. In particular, the semiconductor industry in Taiwan has shown remarkable growth, while Japan's has been in decline.

ã€€This study attempts to clarify why Taiwan's semiconductor industry grew sufficiently, and in contrast, what happened to the Japanese semiconductor industry and how this affected the Japanese economy.

ã€€The study uses a Japan-Taiwan bilateral input-output table, in which the domestic input-output table for Japan and Taiwan covering the year 2016 is used to create an original 87-sector Japan-Taiwan international input-output table, and the created table is divided into production sectors by trade mode using data from the Census of Economic Activity Survey. This Japan-Taiwan table by mode of trade has independent sector classifications for semiconductors and semiconductor production equipment, allowing a more detailed semiconductor industry analysis. The analysis uses the Trade in Value Added (TiVA) indicator to reveal the characteristics of the Taiwanese and Japanese semiconductor industries.

ã€€The results of the analysis show that the forward participation of the Japanese semiconductor industry in GVCs is lower than that of Taiwan. If the heterogeneity of firms is considered, Japan's forward participation rate is even lower than Taiwan's.