

Abstract

A Review of Techno-Geopolitics: Semiconductor Supply Chain Restructuring and Strategic Considerations

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Recent changes in the geopolitical order attributable to the U.S.-China rivalry have raised the need to analyze the shifting geopolitical trend from an integrated perspective instead of incorporating fragmentary technological, economic, and security approaches. This study introduces the concept of “techno-geopolitics” and attempts to provide a theoretical description of the term. In South Korea “techno-geopolitics” has mainly been used in the science and technology community and industrial circles rather than for issues regarding foreign affairs,

national security, and international politics. Thus, techno-geopolitics has not been considered a concept that reflects a thorough examination of the geopolitical shift from a macro perspective.

This study critically examines the limitations of the fragmentary approach and suggests that techno-geopolitics can comprehensively explain the close correlations and operating mechanisms between the technological-economic-security attributes. As a representative case, this study focuses on the semiconductor supply chain restructuring.

Today, semiconductors are critical components used for national infrastructure and advanced weapons. In particular, the U.S.-proposed chip alliance between South Korea, the U.S., Japan, and Taiwan, also known as the Fab 4, has presented Seoul with strategic concerns. In addition to issues regarding competitive advantage or labor reshuffling, the South Korean government requires a deeper understanding of technological-economic-security integration in a techno-geopolitical context.

This study also aims to explore the implications of the techno-geopolitics concept in terms of policy usefulness by reviewing the restructuring process of the semiconductor supply chain and deriving the opportunities, challenging factors, and strategic considerations for South Korea.

Keywords

techno-geopolitics, economic security,
semiconductor, Fab 4 (Chip 4), supply chain