Resilience and Vulnerability:
Taiwan's Semiconductor Industry Amid U.S.–China Tariff Conflicts

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Introduction

The semiconductor industries inside of East Asia are some of the most robust and efficient in the entire world. Particularly in the case of Taiwan, the semiconductor supply chain is the largest pillar of the modern economy. Over the last 60 years, multiple big-ticket manufacturing companies made their strides in Taiwan, and their industry became responsible for a large bulk of chip-manufacturing processes (Diamond et al., 2023). With this much influence in the semiconductor industry, many look to Taiwan when it comes to industry predictions and overall health for manufacturing. These suppliers have been hugely successful and have played a tremendous role in export-led growth for Taiwan. For a long time, the Taiwan Semiconductor Manufacturing Company (TSMC) strong-armed the industry. However, researchers and experts have looked to more medium-sized firms (SMEs) to measure impact due to their adaptability and critical inputs. Recent tariff struggles within the U.S.-China trade war have introduced new uncertainties into the semiconductor supply chain. It is imperative that experts, despite the uncertainty, are able to reliably anticipate market changes.

Research Puzzle

Unlike other East Asian tech giants that have relied on large conglomerates, Taiwan's reliance on SMEs made them truly unique in innovation and supplier network density. Trade policy and international affairs play a huge role in the well-being of this industry. For instance, the previous Trump administration predominantly targeted Huawei and China and placed a lot of pressure on Taiwan's TSMC due to Huawei's customer status (Shattuck, 2021). This created some strain in the form of millions of dollars for Taiwan. Recently, Tariff policies placed against China by the new Trump administration have raised a lot of red flags for economists and international market experts. The goal of this research is to enhance the efficiency of market

predictions related to Taiwan's SME-orisemiconductor industry among the glooming uncertainty of tariff impacts. This research could have significant implications for Taiwan in a developmental state framework, the power of Global Value Chains (GVCs), and international economic policy. This combines the scholarly applications of Alice Amsden (1989) and Robert Wade (1990) with the GVC framework of Gary Gereffi (2013).

Research Question

This study will explore the following:

In what ways has Taiwan's SME-oriented industrial structure shaped its ability to adapt to recent tariff struggles in the global semiconductor supply chain?

Hypotheses

H1: SME networks enhance resilience through flexibility and adaptability.

H2: SME reliance hinders adaptation due to capital and scale constraints.

Data/Methodology

This project utilizes a mixed-method strategy, combining descriptive trade data with process tracing qualitative approaches to evaluate the degree to which Taiwan's SME-led industrial structure affected its ability to adapt to tariff pressures in the semiconductor sector. Quantitatively, the study applies trade data from the United Nations Comtrade Database (United Nations, 2023) and the World Bank's World Integrated Trade Solution (WITS) (World Bank, 2019). Taiwan's exports of semiconductors (HS codes 8541 and 8542) will be examined for the period between 2010 and 2023. They are utilized to plot trends in Taiwan's exportation to the United States and China, taking special care to changes around the U.S.–China tariff war and the

2022 export control provisions. In order to demonstrate structural differences, Taiwan's patterns of trade will be compared alongside South Korea, where the semiconductor industry is dominated by large conglomerates, not SMEs (Mathews & Cho, 2000). Instead of using a high-strung, complicated econometric gravity model, descriptive comparisons will be made here, using graphs and simple growth estimates to identify any changes associated with tariff shocks.

To place trade flows in perspective, the project will trace SME data in Taiwan's Small and Medium Enterprise and Startup Administration (SMESA) that releases annual White Papers on Small and Medium Enterprises (SMESA, 2023). These White Papers provide figures for SME quantities, SME contributions to production and exports, and manufacturing positions. The project will juxtapose SME performance metrics with trace data from semiconductors to evaluate whether SMEs were resilient or vulnerable amid tariff disruption.

The qualitative component applies process tracing to uncover adaptation mechanisms. This will involve analysis of Taiwanese government policy reports, SMESA White Papers, and industry witness testimony. Firm-level sources like TSMC and UMC company reports will provide insights into how SMEs were adapting strategies, such as shifting markets, broadening reliance on larger anchor firms, or accessing government support programs.

These approaches will be blended in a sequential explanatory design: quantitative data drives the macro-level effect of tariffs, whereas qualitative process tracing explains the why and how of the identified patterns. This design strikes a balance between analytics and feasibility without endangering the methodological challenges of advanced econometric models. This design can still permit meaningful perspectives into Taiwan's political economy.

Contributions, Challenges, and Potential Limitations

This project focuses on three contributions. Theoretically, this project bridges the developmental state scholarship and GVC research by illustrating how earlier industrial organization predetermines current exposure to trade shocks. On the empirical level, it draws attention to SMEs' mediating role between Taiwan's exposure to tariffs and export restrictions. In terms of policy, it speaks to debates on whether Taiwan should continue SME-driven growth or accelerate reliance on large national champions to fend off external shocks. The project is faced with multiple tough challenges. First, firm-level SME data may be limited, constraining the scope to conduct high-fidelity quantitative analysis. Gravity models tend to be specification-sensitive as well, which is robustness issue for this research. Last, disentangling the tariff effect from other shocks—e.g., from COVID-19 disturbances and chronic export controls—will be methodologically demanding. However, the combination of quantitative and qualitative methods improves overall confidence in the findings.

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