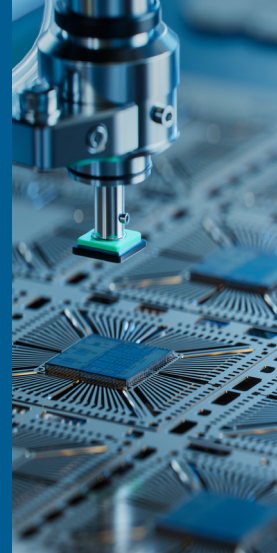


Taiwan's Silicon Shield



TALES FROM THE EMERGING WORLD | EMERGING MARKETS EQUITY TEAM | February 2024

As a global semiconductor powerhouse, Taiwan holds more than 90% of the leading-edge chip manufacturing capacity in the world. This dominance positions Taiwan as the prime indicator for artificial intelligence (AI) investing within emerging markets (EM). Despite a historic victory by the pro-independence Democratic Progressive Party (DPP), the political climate generally has had a negligible impact on market performance, which tends to be more closely aligned with the trajectory of the broader tech sector and the world economic climate.

In January, the ruling DPP, led by William Lai, won the country's presidential election for an unprecedented third term, but only with a modest 40% of the vote. While the opposition's inability to form a coalition played a big part in Lai's success in Taiwan's parliament, the Legislative Yuan, the DPP lost its majority. Instead, the Kuomintang (KMT), keen to lower tensions with China, made gains, potentially dimming the prospects of independence. The DPP now faces policy gridlock and will struggle to find consensus for its more radical plans amid growing public dissatisfaction with its domestic agenda.

Despite the political shifts the Taiwan Strait has remained relatively calm with China focused on fomenting domestic divisions. Responding to the Taiwan election, Beijing dismissed the DPP's victory as not "representing mainstream public opinion," and vowed to keep pushing for "national unification."

Historical analysis of equity markets shows no consistent correlation between market performance and election outcomes. The data indicates a 50:50 chance of markets either outperforming or underperforming.¹ In other words, no better than flipping a coin.

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¹ "Taiwan election preview – Too close to call," HSBC Global Research, December 5, 2023

AI Semiconductor Demand

The chip industry is the shield that protects Taiwan. Geopolitical tensions, namely the degradation of U.S.-China relations and the heating up of a “chip war,” underscore the dominance of Taiwan’s semiconductor sector, which accounts for 40% of the country’s exports and heavily influences the MSCI Taiwan Index (*Display 1*). In fact, as of December 2023, the Information Technology sector represented 73% of the MSCI Taiwan Index. Similar to how crude oil drove the industrial economy, semiconductors are powering the digital economy. The latest advancements in personal computers, smartphones, electric vehicles (EVs) and AI all depend on semiconductor developments.

At the heart of this sector’s success story is the exponential growth driven by Moore’s Law, predicting a doubling of chip transistor density

every 18 months. This technological advancement has paved the way for significant growth in the sector, with market analysts expecting compound annual growth rate (CAGR) of 8.9%. Starting in 2024, this trajectory is set to propel the industry’s value to an impressive \$1 trillion by 2030.

At the same time, AI-related semiconductors are expected to grow at a CAGR of 30-35% until 2027, while the popularity of EVs boosted sales of automotive chips. According to a large, global semiconductor packaging and test services company, the value of chips content of a typical gas-powered car hovers around \$414 compared to \$1,697 for Tesla’s Model 3. The country’s exports in integrated circuits (IC) and diodes have soared from \$1.2 billion in 1989 to \$184 billion in 2022, outpacing the country’s overall export growth (*Display 2* — see following page).

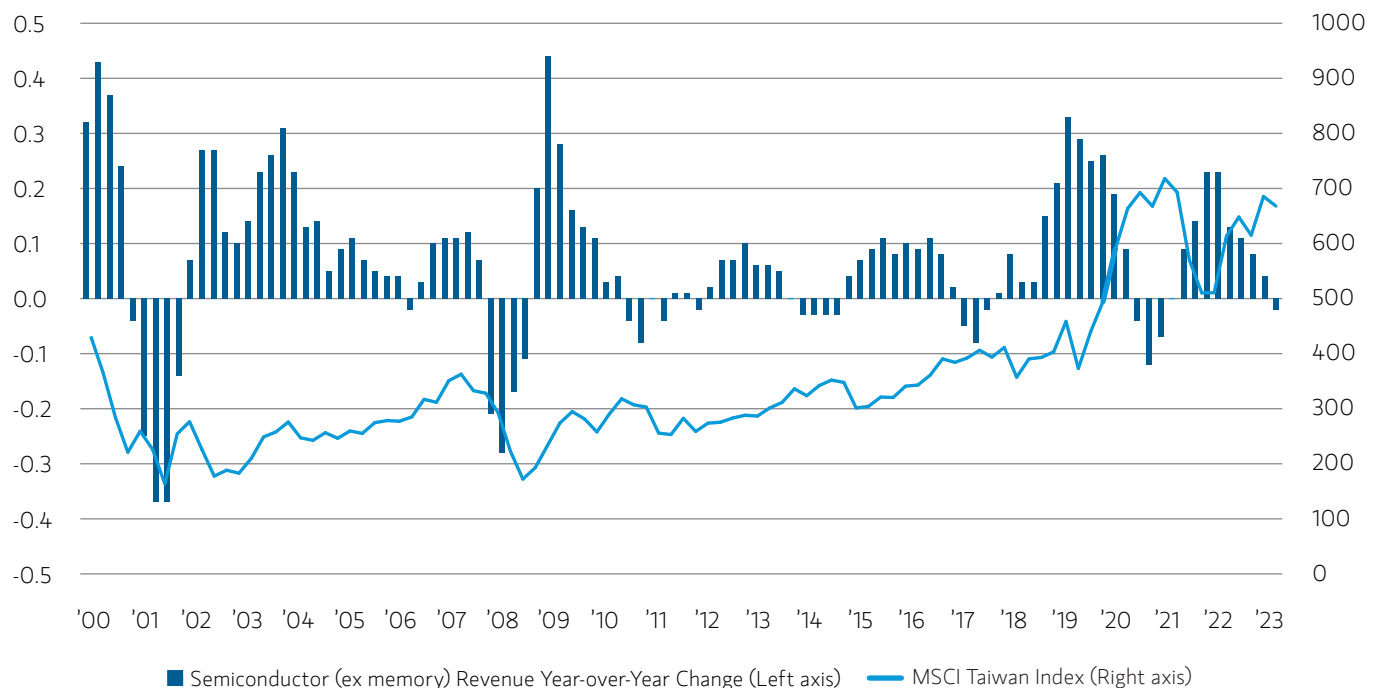
Delays Mar Chip Factories

China Plus One, a corporate strategy used to diversify operations away from China, entered the business lexicon a few years ago. An evolving strategy is Taiwan Plus One, reflecting the desire of Taiwanese companies to diversify their manufacturing bases.

The chip industry was built on globalization, requiring a sophisticated supply chain to support it. Until recently, the most advanced chips were only made in Taiwan. But as tensions with China increased, Taiwan Semiconductor Manufacturing Company (TSMC) ventured to build foundries in the U.S., Japan and Germany. “Re-shoring” global semiconductor supply chains is complicated, going beyond a simple relocation of foundries. This global expansion comes with its own set of challenges. For example, TSMC

DISPLAY 1
Taiwan Markets Are Dominated by the Semiconductor Sector

MSCI Taiwan Index vs. semiconductor (ex memory) revenues

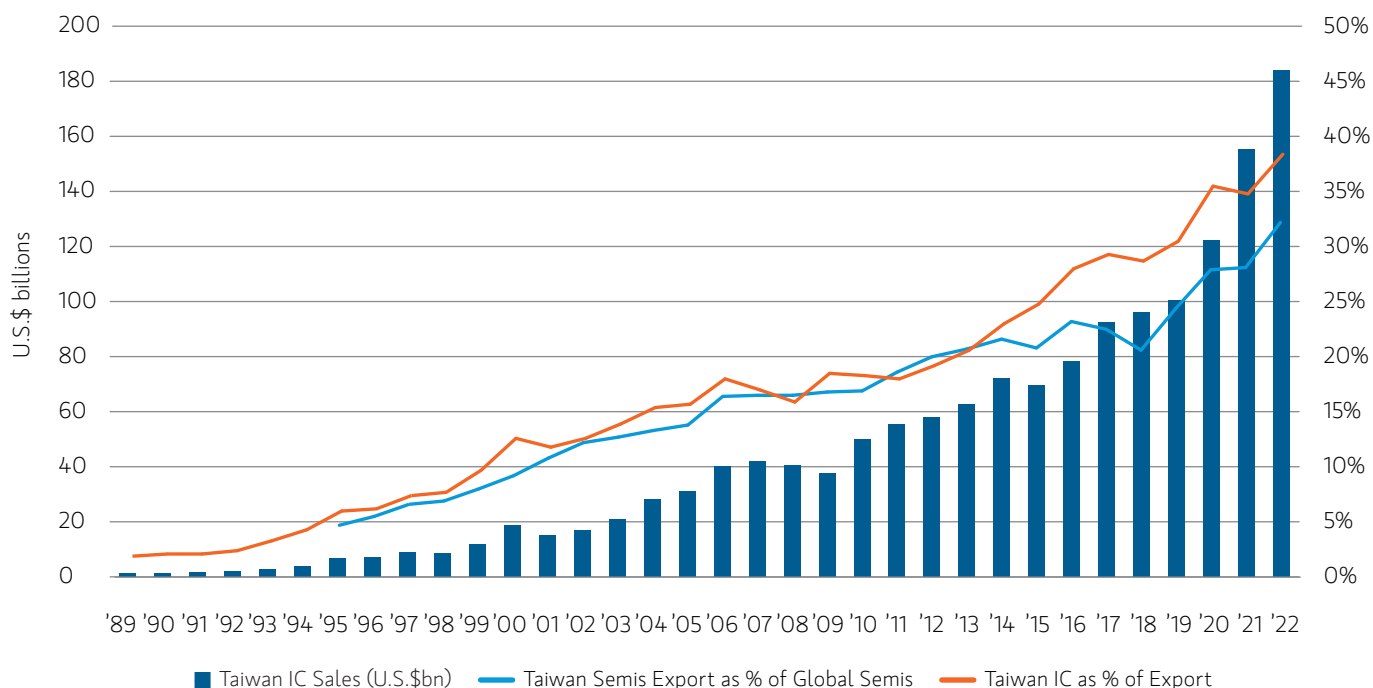


Source: Semiconductor Industry Association, Bloomberg. As of December 2023.

DISPLAY 2

Taiwan's Booming Chip Market

Taiwan's integrated circuits (IC) and diodes exports



Source: Taiwan Ministry of Economic Affairs, Semiconductor Industry Association, MSIM. As of December 2022.

announced plans to build facilities for making 5 nanometer (nm) and even smaller 3nm chips in Arizona, as well as Japan and Germany. However, the Arizona site has been hit by delays, while uncertainties about government subsidies are holding up the German project.

The challenge goes beyond building new foundries. The industry's intricately connected ecosystem, particularly in Asia, cannot be easily replicated elsewhere. Taiwan's dominance also extends to packaging and testing – for example, Advanced Semiconductor Engineering is the

largest semiconductor packaging and testing company, with more than 30% of global market share in 2023.

Taiwan's economic performance stands out within the MSCI EM Index with a per capita GDP of \$33,000. We believe the island is a stable, high-income economy with no major concerns despite its reliance on China, representing 21% of its GDP. (*Display 3 - see following page*).

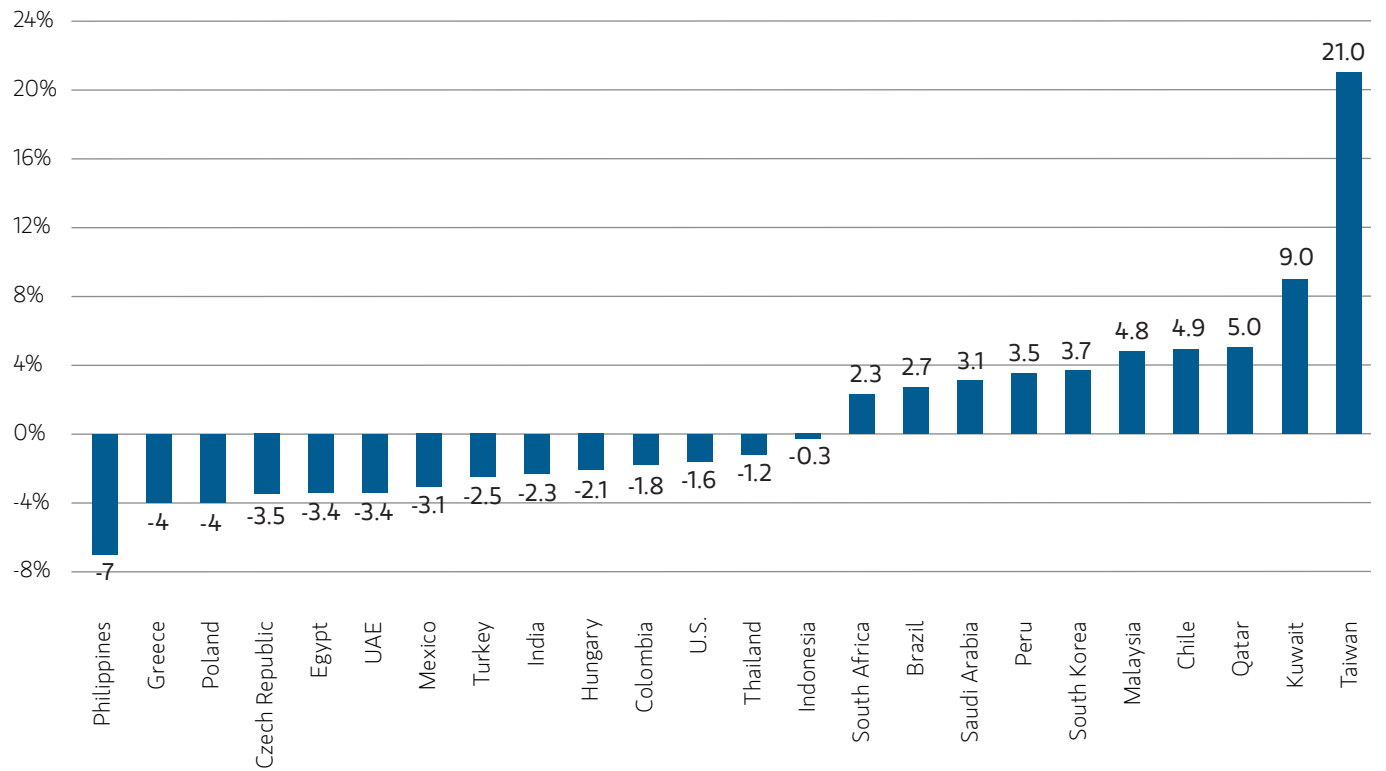
Despite representing only 2% of EM GDP with its \$750 billion economy, Taiwan commands an impressive 16% share in the MSCI EM index,

ranking third behind China and India. Taiwan's economy has shown steady growth, averaging an annual increase of 3% in real GDP over the past decade, slightly under the broader EM average of 4.5%. The country has also maintained low inflation, with a 20-year average of 1.1% and a current rate of 2.5%. Additionally, Taiwan's discipline is evident in its consistently low fiscal deficits, averaging below 2%, and government debt that stands at 30% of GDP.

DISPLAY 3

Taiwan's High Dependence on Chinese Markets

China's foreign trade balance (% of GDP)



Source: IMF, National Sources, CEIC. As of December 2023.

Risk Considerations

There is no assurance that a portfolio will achieve its investment objective. Portfolios are subject to market risk, which is the possibility that the market values of securities owned by the portfolio will decline and that the value of portfolio shares may therefore be less than what you paid for them. Market values can change daily due to economic and other events (e.g. natural disasters, health crises, terrorism, conflicts and social unrest) that affect markets, countries, companies or governments. It is difficult to predict the timing, duration, and potential adverse effects (e.g. portfolio liquidity) of events. Accordingly, you can lose money investing in this portfolio. Please be aware that this portfolio may be subject to certain additional risks. In general, **equities securities'** values also fluctuate in response to activities specific to a company. Investments in **foreign markets** entail special risks such as currency, political, economic, market and liquidity risks. The risks of investing in **emerging market countries** are greater than the risks generally associated with investments in foreign developed countries.

DEFINITIONS

Gross Domestic Product (GDP) is the monetary value of all the finished goods and services produced within a country's borders in a specific time period. It includes all private and public consumption, government outlays, investments and net exports.

INDEX DEFINITIONS

The **MSCI Taiwan Index** is designed to measure the performance of the large and mid cap segments of the Taiwan market. With 90 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in Taiwan.

The **MSCI Emerging Markets Index** is a free float-adjusted market capitalization weighted index that is designed to measure equity market performance of emerging markets.

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