“Impact of 2024–25 US Tariffs on Global Trade, Sector Indices, and Inflation”

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Objective:

To analyze the short-term and emerging long-term effects of the 2024–25 US tariffs on global trade, commodity prices, and sectoral stock market performance — with a focus on electric vehicles (EVs), semiconductors, metals, and green technology supply chains.

The project aims to explore:

- How specific sectors and companies responded to tariff announcements
- The downstream effects on global inflation sentiment and trade flows
- Whether similar trends were observed in related economies (e.g., India, China)

Scope:

This project focuses on:

- The latest US tariff rounds (2024–2025), especially those targeting:
    - Chinese electric vehicles
    - Batteries and rare earth minerals
    - Solar panels and semiconductors
- Tracking pre/post-announcement price movement for related sector indices and stocks
- Observing trends in commodity prices linked to supply chains (e.g., lithium, nickel, copper)
- Analyzing macroeconomic variables such as inflation, import prices, and trade balances
- Studying international spillovers, particularly in India and Southeast Asia

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Timeframe of Analysis:

Tariff Period Covered: January 2024 – Present (live project, updated through 2025)

Data Windows:

- Pre- and post-tariff impact windows (± 7 days, ± 30 days from each event)
- Longitudinal tracking for commodity prices and sectoral indices

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Methodology:

1. **Policy Timeline Construction**
    - Gather official US trade policy announcements from USTR, White House, Bloomberg, Reuters
    - Identify dates, sectors, and countries affected
2. **Stock & Index Performance Tracking**
    - Download stock/index data for impacted sectors (e.g., Tesla, BYD, NIO, Nifty Auto, Nasdaq Tech)
    - Calculate % returns over short-term and medium-term post-announcement windows
3. **Commodity Impact Analysis**
    - Track prices of lithium, copper, nickel, rare earths
    - Map supply chain vulnerabilities and pricing reaction
4. **Macroeconomic Trend Analysis**
    - Compare US import price index, inflation expectations, and Chinese export volumes
    - Track any retaliatory trade measures or diplomatic statements
5. **Visualization**
    - Use **Power BI** for:
        - Interactive charts
        - Time series visualizations
        - Country-wise and sector-wise dashboards
6. **Insights & Reporting**
    - Interpret findings in context of trade war history, inflation cycles, and policy reactions
    - Present a concise summary of results in a final report

Background:

In 2024, the United States announced a new wave of tariffs primarily targeting Chinese exports in strategically sensitive sectors — particularly **electric vehicles (EVs)**, **semiconductors**, **solar panels**, and **critical minerals** used in battery manufacturing. These actions were part of a broader strategy to

protect domestic industries, reduce supply chain dependencies, and limit geopolitical risks stemming from over-reliance on China.

Key Definitions:

Term	Definition
Tariff	A tax imposed by a government on imported goods, often used to protect domestic industries or as a tool in trade negotiations.
Trade Protectionism	An economic policy aimed at restricting imports to protect domestic producers from foreign competition.
EV (Electric Vehicle)	A vehicle powered by one or more electric motors using energy typically stored in rechargeable batteries.
Semiconductors	Materials used to make microchips and processors that power electronics, vehicles, AI, and industrial machines.
Critical Minerals	Raw materials such as lithium, nickel, cobalt, and rare earth elements essential for manufacturing batteries, EVs, and renewable energy systems.
Retaliatory Tariffs	Countermeasures imposed by a country in response to tariffs or trade restrictions levied against it.

Why These Tariffs Matter:

- **High Economic Stakes**
  China is the world's largest producer and exporter of electric vehicles, solar panels, and battery materials. The US's attempt to curb these imports could reshape global supply chains.
- **Inflation Risk**
  Tariffs on imports can lead to **higher input costs**, which may feed into **consumer price inflation**, especially in sectors like electronics, autos, and renewable energy.
- **Market Volatility**
  Tariff announcements often result in **sharp movements in stock prices**, particularly in:
  - Affected sectors (e.g., EV, tech, metals)
  - Global suppliers and importers
  - Emerging markets tied to commodity exports
- **Policy Signalling**
  Tariffs also act as **signals** to markets and foreign governments about a country's economic or geopolitical stance.

Key Sectors Affected by the 2024–25 US Tariffs:

1. **Electric Vehicles**
    - Tariffs exceeding **100%** on Chinese EV imports
    - Aimed at companies like BYD, NIO, Xpeng
2. **Semiconductors & Chips**
    - Focus on advanced chip manufacturing and AI-related components
3. **Batteries & Rare Earth Materials**
    - Lithium, nickel, cobalt, and graphite-based batteries
4. **Green Tech / Solar Panels**
    - Chinese-made solar modules and energy components
5. **Machinery & Industrial Components**
    - Broader tariffs on manufacturing-related equipment and inputs

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Methodology:

To assess how the May 2024 US tariff changes influenced asset performance across sectors, we followed a multi-layered approach:

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1. Asset Identification and Classification

We selected **11 assets** based on their exposure to the targeted tariff categories:

Category	**Assets**	**Country**
EV Manufacturers	Tesla (TSLA), BYD (BYDDY), NIO	US, China
Semiconductors	Nvidia (NVDA), TSMC (TSM)	US, Taiwan
Lithium/Battery Mining	Albemarle (ALB), LIT ETF	US, Global
Auto & Steel (India)	Tata Motors (TATAMOTORS.NS), JSW Steel (JSWSTEEL.NS)	India
Commodities & Rare Earths	Copper (HG=F), REMX ETF	Global

These companies and commodities were selected to reflect both **producers and beneficiaries** (or victims) of the policy, with global representation.

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2. Data Collection and Time Frames

- We extracted **daily price data** for each asset using yFinance via Python.
- Prices were taken for:
    - **May 13, 2024** (pre-announcement)
    - **May 15, 2024** (1 day after)
    - **May 21, 2024** (7 days after)
    - **June 14, 2024** (30 days after)

Returns were then computed using the standard formula:

$$Return\ (\%)\ =\ ((New\ Price\ -\ Old\ Price)\ /\ Old\ Price)\ *\ 100$$

We compiled all price and return data into a structured Excel workbook and used it as the input source for Power BI.

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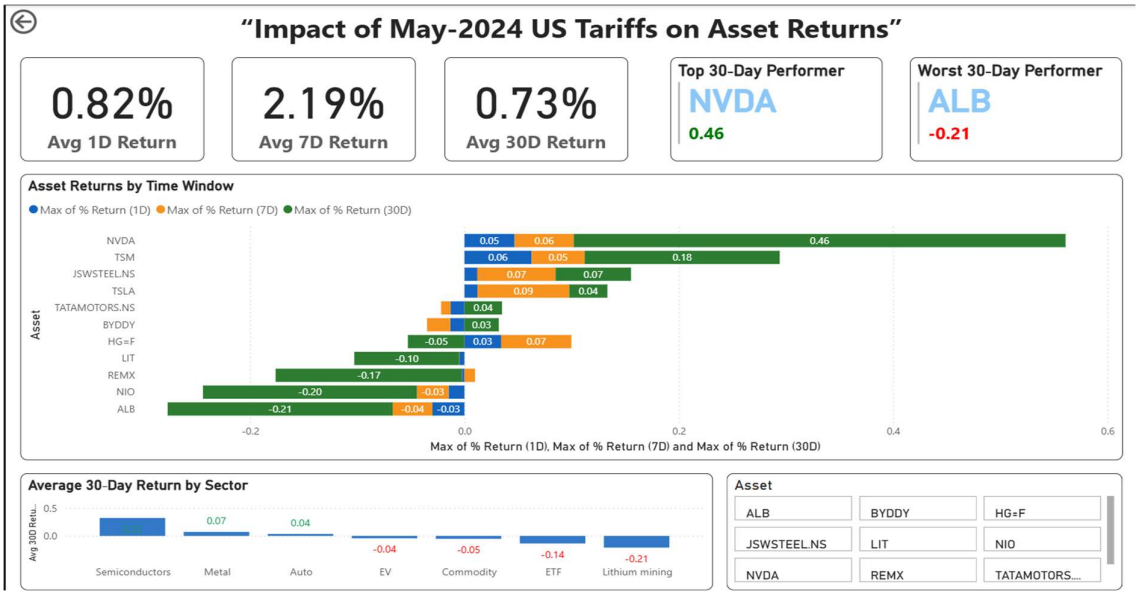
3. Analytical Framework

We focused on the following:

- **Immediate impact**: 1-day return — to reflect initial market reaction
- **Short-term trend**: 7-day return — to gauge speculative or early repositioning
- **Medium-term impact**: 30-day return — to evaluate investor confidence and structural shifts

We used:

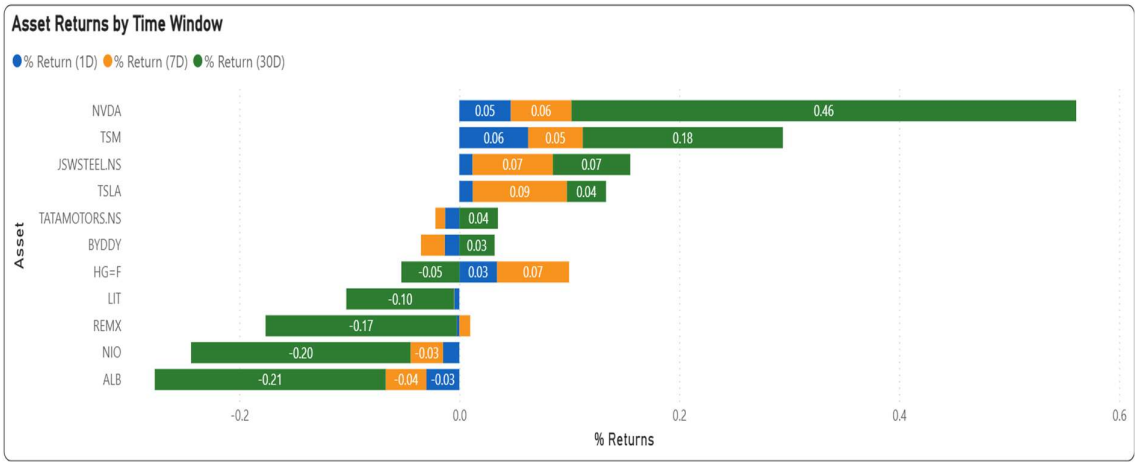
- **KPI cards** for quick average return metrics
- **Clustered bar charts** for comparing asset-wise return behaviour
- **Bookmark-based navigation** for managing screen real estate and toggling between sections



Analysis:

A. Asset-Wise Market Response

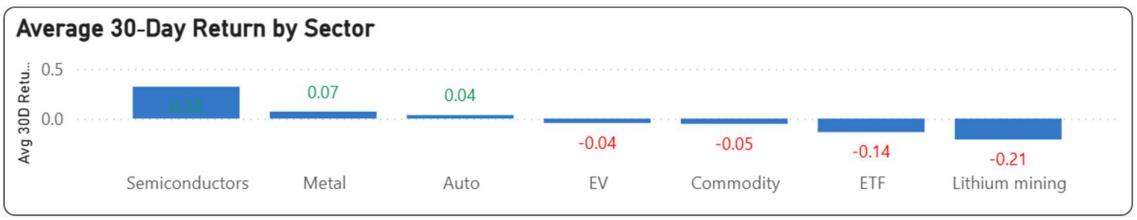
From the dashboard analysis, we observe the following:



- **Nvidia (NVDA)** gained the most with a **+46% return over 30 days**, likely due to expected domestic demand shift and subsidy optimism.
- **TSMC and JSW Steel** also saw moderate gains, possibly due to stable global positioning.
- **ALB (Albemarle)** fell **–21%**, reflecting fears of price control, demand loss, and overcapacity fears in lithium supply chains.
- ETFs like **REMX and LIT** also underperformed, indicating broader sectoral sentiment.

B. Sector-Wise Sensitivity

To understand macro-level trends, we grouped assets into sectors and compared **average 30-day return by sector**.



Sector	Average 30D Return
Semiconductors	+32%
Metal & Steel	+7%
Auto	+4%
EV Manufacturers	−4%
Lithium mining	−21%
ETFs/Commodities	−14%

Insight:

- Tariffs created **clear divergence** — semiconductors benefited, lithium miners and commodity ETFs dropped.
- EV producers (especially Chinese firms) were negatively affected, but **US-based Tesla** remained largely neutral.

C. Cross-Market and Geographic Observations

- **US firms** with domestic demand exposure (Nvidia, Tesla) benefited or stayed resilient.
- **Chinese firms** (BYD, NIO) saw **minor to negative** reactions, reflecting pricing disadvantage.
- **Indian firms** (Tata Motors, JSW Steel) showed **stable or positive** returns, possibly from perceived neutral position in trade war.
- **Commodities (REMX, LIT)** dropped due to likely demand contraction fears and supply disruption concerns.

D. Return Timeline Consistency

- Many firms showed **low 1D impact**, but larger changes by 30D — indicating **longer-term narrative building** rather than short-term panic.
- This reinforces that policy impact pricing can be **delayed**, especially in sectors like semiconductors and commodities.

Key Insights:

1. **Tariff policy outcomes are not symmetrical** — some industries gain, others lose.
2. Semiconductors showed **strong positive reaction**, supporting US strategic objectives.
3. Lithium supply chain assets (ALB, LIT) showed **strong negative reaction**, highlighting dependence and volatility.
4. ETFs and rare earth indexes dropped sharply, likely from **sectoral uncertainty** and demand/supply friction.
5. **Geopolitical neutrality (India)** appears to insulate certain firms from volatility.

Conclusion:

The May 2024 U.S. tariff hikes targeting Chinese exports — particularly electric vehicles, semiconductors, and critical battery components — have demonstrated clear and measurable impacts on global financial markets. Our analysis, grounded in real-time asset returns and structured across three-time windows (1D, 7D, 30D), reveals **significant sectoral divergence** and underscores the role of **policy-driven market behaviour**.

By tracking the performance of equities and commodities directly linked to the tariffed sectors, we observed that:

- **Semiconductor companies** such as Nvidia and TSMC emerged as the **primary beneficiaries**, signalling investor optimism around domestic production incentives and future profitability.
- **EV manufacturers**, particularly those based in China like NIO and BYD, experienced **negative to muted reactions**, likely reflecting reduced U.S. market accessibility and pricing disadvantages.
- **Lithium-exposed assets** (ALB, LIT, REMX) declined considerably, revealing sensitivity to policy uncertainty and concerns about input costs and supply chain volatility.
- Indian equities such as Tata Motors and JSW Steel showed **relative stability**, possibly benefiting from their geopolitical neutrality and diversified market exposure.
- **Commodities** and ETFs closely tied to rare earths and critical minerals displayed **declining medium-term returns**, highlighting broader concerns over future demand disruptions and trade bottlenecks.

Importantly, the analysis also uncovered that **market response wasn't immediate**. While the 1-day and 7-day returns remained largely muted, significant divergence was visible by the 30-day window — suggesting that institutional repositioning and investor consensus **took time to develop**, especially as the market absorbed the full scope of policy implications.

The dashboard we built using Power BI serves as a **dynamic analytical tool**, offering real-time comparisons, filtering by asset and sector, and seamless navigation across themes. This project exemplifies how policy analysis can be combined with financial data analytics to derive actionable investment insights.

Future Impacts and Strategic Considerations:

While this study focuses on the immediate and short-term market impacts, the **true influence of these tariffs is likely to unfold over the coming quarters and years**. A few key projections and strategic implications include:

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1. Supply Chain Realignment

- U.S. companies may accelerate the **reshoring of semiconductor manufacturing** and diversify sourcing for critical minerals like lithium, nickel, and rare earths.
- China may seek **alternative export destinations**, invest in downstream processing, or double down on domestic consumption incentives.

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2. Cost Pass-Through and Inflation

- Industries dependent on imported components (especially in EVs and solar infrastructure) could face **cost inflation**, which may be **passed on to consumers**, influencing adoption rates and demand dynamics.

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3. Trade Retaliation Risks

- China may respond with **counter-tariffs**, potentially affecting U.S. agricultural, tech, or automotive exports.
- This could reignite broader **trade tensions**, introducing volatility across multiple sectors and asset classes.

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4. Sectoral Investment Rotation

- Institutional investors may continue rotating toward **domestic U.S. semiconductor plays**, while reducing exposure to **battery metals and global mining ETFs**, particularly those reliant on Chinese sourcing.

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5. ESG and Strategic Materials

- Global policy focus may shift toward **strategic stockpiling**, **ESG-compliant mining practices**, and the **localization of clean energy manufacturing** — shaping long-term trends in industrial policy and equity valuation.

In summary, this project not only captures a pivotal moment in global trade policy but also emphasizes the **importance of sectoral context, geographical positioning, and time horizon** in

understanding financial market reactions. Through data-driven storytelling, interactive dashboards, and forward-looking commentary, we present a comprehensive blueprint for how **financial analysts can use public data to decode policy impact with real-world implications**.

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