



Financial Risks at a Mexican Petrochemical Company

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This problem situation was written by Aleida González Cueto Longres (aleida.glezcueto@tec.mx), and translated by Laura Elena Morales Garza of Global Words, with the purpose of serving as discussion material in the classroom; it does not intend to illustrate good or bad administrative practices. The story on this document is based on different people's experiences; some data has been modified at the request of the people and institutions involved.

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The Company

Alpek, S.A.B. de C.V. is a Mexican petrochemical company in the Alfa conglomerate. It specializes in the production of chemical products like PTA (purified terephthalic acid), PET (polyethylene terephthalate), polyester, polypropylene, and other plastics. Their products are used in packaging, textile, automotive, and electronics industries (Alpek website, 2025).

It is one of the main producers of petrochemicals in America, with operations in several countries; they operate plants in Mexico, USA, Brazil, Argentina, etc., and it is one of the largest PET integrated producers in the American continent. Belonging to the chemical and energy transformation sectors, ALPEK is exposed to several financial risks derived from raw materials' prices volatility and international markets fluctuations, specifically from the PARAXYLENE commodity, strongly correlated to the OIL commodity (Alpek website, 2025).

According to Duncan Seddon (2013), an expert in chemical engineering, recent data analysis reveals a coefficient of determination ($R^2 \approx 0.95$) between the Paraxylene prices and other isomers, like orthoxylene, and a R^2 of 0.88, specifically against the oil price.

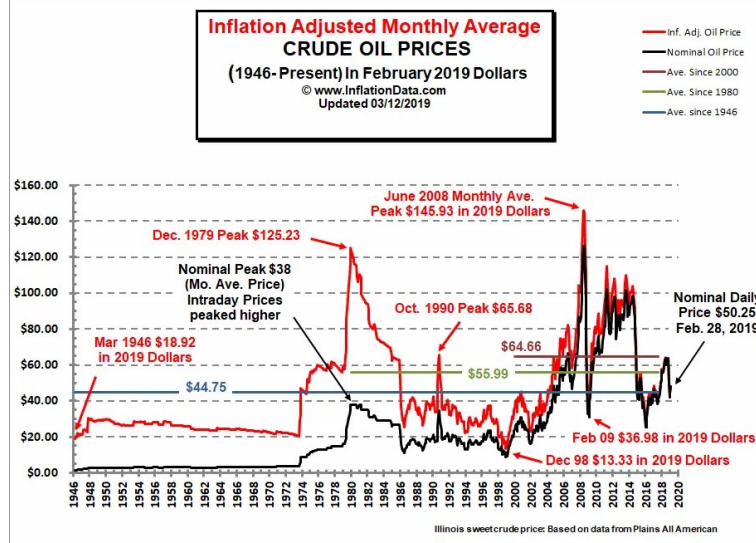
Both commodities list in different markets, as shown next:

Table 1. Oil and Paraxylene Futures Tickers.

Commodity	Exchange	Symbol	Detail
WTI Crude Oil	NYMEX/CME	CL	Contract for 1,000 barrels, tick of USD 0.01/bbl
Brent Crude	ICE	B	Contract for 1,000 barrels, global benchmark
Paraxylene	Platts (futuros)	PCA	CFR Taiwan/China, cash payment liquidación en efectivo
Paraxylene	SGX	PX, PXF, PXN, PXNF	Futures contracts in SGX

Source. Own elaboration with information from CME Group, Intercontinental Exchange, S&P Global Platts and Singapore Exchange, 2025.

Image. Inflation Adjusted Monthly Average / Crude Oil Prices.



Source. Inflation Data, 2019.

Financial Situation

Alpek depends largely on oil prices. Many of their raw materials, like Paraxylene, derive from it. In 2023, the company reported pressures in their margins due to an environment of lower oil international prices, and a lower global demand for plastic products, especially in the packaging sector (Alpek, 2023).

In 2023, Alpek experienced an over 20% sharp decrease in their consolidated EBITDA compared to 2022, and their net income fell by over 15%. One of their greatest challenges has been to maintain positive margins in an environment where the price for finished products has declined, while raw material prices do not always drop in the same proportion (Alpek, 2023).

The company reported the impact that fluctuation in raw materials prices has had on their profits. In their 2023 annual report, the company emphasized a net loss of \$636 million dollars (USD) attributable to the controlling interest, in contrast to the net profit of \$679 million dollars (USD) in 2022, representing a significant 194% decrease. This loss is mainly due to a lower gross profit because of global oversupply, lower reference margins, and an increase in operating costs because of assets deterioration (Alpek, 2023).

Moreover, Alpek's total income in 2023 was \$7,759 million dollars (USD), a 26% decrease compared to the previous year. This fall was mainly due to average lower prices in general, negatively affecting income (Alpek, 2023).

See Report (2023) [HERE](#).

See Report (2024) [HERE](#).

Hedging

Alpek has used financial derivatives to mitigate exposure to exchange rates, and at times, to cover the prices of specific raw materials. Their derivatives policy allows only for operations with hedging purposes.

In 2023-2024, Alpek continued using swaps over raw materials like PX, PP, EPS, propylene, and styrene, as effective hedging, with positive results reflected in favorable stock adjustments, improvement of operation cash flow, and margin stability, despite prices' volatility.

The sequence of reports points to solid management and positive results attributable to those derivatives.

Table 2. Impact of applied hedging.

Period / Quarter	Applied hedging	Financial impact
4T-2024	Swaps over raw materials	Negative adjustment of stock of 12 M USD
2T-2024	Management over PP/EPS via derivatives	Improvement of CNW of 34 M USD → Comparable Flow +20 %
1T-2024	Hedging stabilized margins in Paraxylene	Avoiding greater impacts despite price increase

Source. Alpek, 2023 y 2024.

Objective Price guaranteed: \$1,057 USD per ton of Paraxylene; set in swaps in 2018. Continuous coverage has been conducted on a significant part of consumption, approximately 50-60%, valid at least until 2024 (Alpek, 2023 y 2024). There are no public updates in 2023-2024 of the set prices, although the strategy is robust and active.

In the second quarter of 2024, the PX price in the US reached \$1,032 (USD)/ton (June 2024). Recent reports foresee that PX's global market will grow with a 6-8% CAGR until 2032, suggesting a progressive prices upturn (Alpek, 2024).

In this hypothetical scenario, Alpek hires a financial consultant to design a hedging strategy that will enable them to reduce their exposure to the Paraxylene price in 2025, while engaging in other hedging strategies like futures and options.

The aim is to guarantee an objective price of \$950 USD per ton, which would represent a 13% improvement compared to the current price of \$842 USD per ton. There may be variations in the market going from \$800 USD to \$1,100 USD per ton.

Required Strategy

The strategy proposal must allow managing, mitigating, or reducing one of the identified threats, using the different alternatives with derivative instruments and projecting the result of their implementation in different scenarios of future prices. The aim is to propose an optimal strategy that will determine how much to cover and the right strategy, or their combinations.

The starting point should analyze the company's situation regarding risk exposure, the goals and their impact on the company, the company's experience with hedging activities, and the market's current conditions to use financial derivatives over the selected underlying.

Additionally, as a basis for the analysis and projection of the expected prices, it is necessary to consider that for that sector the different methods of forecasting expectations that allow the projection of prices would have the following probability of occurrence:

- *Forward* valuation: 5 %
- Futures valuation: 20 %
- Future price: 25 %
- Support price (lowest price): 5 %
- Resistance value (highest price): 10 %
- Experts' criteria: 35 %

It is important for the company to know whether the proposed instrument is overvalued, so the analysis must give arguments for each option and consider derivatives valuation as well as hedging costs. Moreover, as they have had references that there are complex strategies, they are open to explanations should there be a strategy that could be implemented.

In essence, the proposal must include:

- Analysis of current exposure to the commodity price risk.
- Evaluation of financial derivatives.
- Simulation of future scenarios.
- Evaluation of hedging costs.
- Analysis of derivatives valuation.

Alpek wonders which coverage strategy with derivatives they should use to reduce exposure to prices volatility of petrochemical consumables like Paraxylene, different from the SWAPS commodities used so far.

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