Background: In 2023, **Global Investments Bank** (GIB) faced significant volatility in the global markets due to geopolitical tensions, fluctuating commodity prices, and changing interest rates. As a result, GIB's portfolio, which consisted primarily of equity, fixed income, and commodity derivatives, experienced substantial fluctuations in value. The risk management team was tasked with rebalancing the portfolio, ensuring regulatory compliance, and mitigating potential losses. --- ### **1. Portfolio Composition and Initial Assessment** At the time of the market turbulence, GIB’s portfolio was highly concentrated in **emerging market sovereign bonds**, **US equities**, and **commodity futures** (specifically crude oil and gold). The portfolio’s **Value at Risk (VaR)** for a 1-day horizon at the 95% confidence level was calculated at $10 million, indicating a potential loss of up to $10 million on the worst day, given the historical volatility and the market conditions. Upon deeper assessment, the risk management team identified several key exposures: - **Interest rate risk**: The bonds in GIB’s portfolio were highly sensitive to interest rate hikes, with a **duration** of 7 years. A 100 basis point increase in interest rates would lead to a 7% decrease in the bond value. - **Commodity price risk**: GIB was heavily exposed to fluctuations in crude oil prices, which were experiencing a high degree of volatility due to OPEC decisions. The **delta** of the crude oil futures position was 0.8, meaning for every $1 change in oil prices, the portfolio’s value changed by $0.80. - **Currency risk**: GIB also held significant positions in emerging market currencies that had depreciated by 5% due to the political instability in certain regions. --- ### **2. Hedging Strategy: Derivatives and Risk Mitigation** Given the identified risks, the team decided to implement a series of **derivatives strategies** to mitigate potential losses and rebalance the portfolio. #### **2.1 Interest Rate Hedging via Swaps** The risk management team used **Interest Rate Swaps (IRS)** to hedge the risk of rising interest rates on their bond holdings. GIB entered into a **payer swap**, where they paid a fixed interest rate of 3% and received floating payments based on the **LIBOR (London Interbank Offered Rate)**. This provided GIB with a hedge against rising rates, as the floating payments would increase if interest rates went up, offsetting the losses on the bond portfolio. - **Outcome**: If interest rates increased by 100 basis points, the value of the bonds would decrease by 7%, but the floating leg of the swap would increase, providing a net gain on the interest rate swap position. #### **2.2 Commodity Hedging with Futures and Options** To hedge against the volatility in the crude oil market, GIB took two approaches: - **Crude Oil Futures**: GIB took a short position in crude oil futures, locking in a price of $75 per barrel. Given the high correlation between crude oil prices and their portfolio’s exposure, the short futures position provided a direct hedge. If oil prices fell below $75, the gains from the futures contract would offset losses from the declining commodity prices in the portfolio. - **Options Strategy**: Additionally, GIB implemented a **protective put** strategy for its gold holdings, which were correlated with crude oil prices. They purchased out-of-the-money **puts** with a strike price of $1,750 per ounce (for gold). This gave them the right to sell the gold at that strike price, thus providing a floor for potential downside risk. - **Outcome**: In a scenario where crude oil prices dropped by 10%, GIB's short futures position would gain, and the protective put on gold would limit downside risk, providing a solid **hedge** against the commodity volatility. #### **2.3 Currency Risk Management Using Cross-Currency Swaps** To mitigate the **currency risk** from the emerging market exposure, GIB used **cross-currency swaps**. By entering into a swap agreement with a counterparty, GIB agreed to exchange cash flows in the emerging market currencies for cash flows in US dollars. This strategy reduced the exposure to currency depreciation, which was an especially high risk due to the political instability in the regions of interest. - **Outcome**: As the emerging market currencies depreciated by 5%, the cross-currency swap helped neutralize the impact on GIB’s portfolio value by offsetting the losses in currency positions with the cash flows from the swap. --- ### **3. Risk Adjusted Performance Evaluation** After implementing the hedging strategies, GIB’s risk management team reassessed the portfolio’s performance using **Sharpe

Ratio** and **Sortino Ratio**. - **Sharpe Ratio**: Before the hedging strategies, the Sharpe ratio was calculated at 0.5, indicating the portfolio was only generating modest returns relative to the risk taken. Post-hedging, the Sharpe ratio increased to 0.8, signifying improved risk-adjusted returns. - **Sortino Ratio**: A more relevant measure given the downside risks, the Sortino ratio, which focuses on negative volatility, increased from 0.4 to 0.7 post-hedging. This demonstrated that the implemented hedges effectively reduced the negative downside risk without sacrificing potential upside. --- ### **4. Regulatory Compliance and Capital Adequacy** As part of the **Basel III** capital requirements, GIB ensured that their hedging activities were fully aligned with the **Capital Adequacy Ratio (CAR)** mandates. The hedges in place not only mitigated risk but also reduced the **risk-weighted assets (RWA)** associated with the portfolio. This allowed GIB to meet its capital adequacy requirements while maintaining sufficient liquidity and solvency. - **Liquidity Coverage Ratio (LCR)**: GIB also ensured their liquidity buffer met the minimum LCR requirement by maintaining high-quality liquid assets (HQLA) such as **Treasury Bills** and **AAA-rated bonds**. --- ### **5. Conclusion: Outcome of the Risk Management Strategy** In the face of significant market volatility, the integration of **derivatives strategies**, such as **interest rate swaps**, **commodity futures**, and **cross-currency swaps**, allowed GIB to effectively hedge its exposures, enhance its portfolio’s risk-adjusted returns, and comply with regulatory standards. By using **advanced risk metrics** such as VaR, **Greeks**, and **Sharpe Ratios**, GIB’s risk management team successfully navigated the turbulent market environment while maintaining the bank’s overall financial health. This case study demonstrates the sophisticated use of derivatives for hedging, the importance of risk metrics in financial decision-making, and the role of regulatory frameworks in ensuring that financial institutions remain resilient during periods of high volatility.