Interview Case Study

Data:

You have been provided daily data from **2000–2025** for:

- **Exchange Rates:** Daily spot exchange rates for 8 foreign currencies versus USD (sheet: “exchange_rates”).
- **Spot Interest Rates:** Daily short-term interest rates for the same currencies (sheet: “spot_rates”).
- **Equity Returns:** Daily returns of a broad equity index (sheet: “equity_returns”).
- **U.S. Fed Funds Rates:** Daily Federal Funds Rate (sheet: “fed_funds”).

All series are included in the data file: *verdad_fx_case_study_data.xlsx*

Prompts (What to Do):

- Construct currency excess returns
    - For each currency, compute the daily excess returns time series as the change in the exchange rate plus the spot rate differential relative to the U.S. (see ”info” sheet)
- Is carry risk compensation or a free lunch?
    - Using summary statistics and visuals, discuss whether the carry premium appears to compensate for risk or be a free lunch.
- Build a simple carry strategy (monthly rebalanced)
    - At each month-end, rank the 8 currencies by their interest rate differentials (foreign – U.S.).
    - Go long the 3 highest-yielding currencies and short the 3 lowest-yielding currencies.
    - Use equal weights on the long side and equal weights on the short side.
    - Rebalance monthly.
- Performance evaluation
    - Report the following for the simple carry strategy over the full period 2000–2025:
        - CAGR (Compound Annual Growth Rate)
        - Annualized Standard Deviation (daily std × √252)
        - Sharpe Ratio (use daily mean / daily std × √252; no risk-free subtraction needed if you are already working with excess returns)
        - Maximum Drawdown (largest peak-to-trough decline over the backtest period)
        - Correlation to Equity Market (compute the correlation between the daily returns of your carry strategy and the provided equity index’s daily returns)
- Currency-level relationships
    - Now for each currency, compute its correlation with the equity index.
    - Discuss whether higher-carry currencies tend to have higher or lower correlations to equities.
- Investment view

    - Does an FX carry strategy seem appealing as an investment? Why or why not?
    - Discuss key benefits and risks
- Evaluating a predictive macro signal
    - Suppose you have a macroeconomic signal that might predict when carry performs well or poorly (e.g., volatility, risk appetite, credit spreads).
    - Describe how you would evaluate whether it is a useful predictor or not?

Deliverables

- **Jupyter Notebook:** Include all code and outputs.
- **Short Memo (1–2 pages):** Summarize your results and answer the above questions.
- **Estimated Completion Time:** This case study is intended to take between 4-6 hours to complete