7-Day Research Work

Exploring Market Microstructure, Asset Classes, Corporate Finance, and Multi-Asset Analysis

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Day 1: Market Microstructure – Theory Meets Practice

Market microstructure bridges theory and practice, showing how market rules and participant behavior drive **price formation, liquidity, and volatility**.

At the advanced level, it provides a framework for understanding:

- High-Frequency Trading (HFT)
- Trading costs
- Information asymmetry in modern markets

Day 2: Market Microstructure – Deep Dive

Market microstructure is:

- **A theoretical framework** (models of information, inventory, and execution).
- **A mathematical playground** (stochastic calculus, optimization, queueing, control theory).
- **An empirical lab** (LOB data, metrics, machine learning).
- **A strategic battlefield** (HFT, arbitrage, execution, risk management).

It is the **intersection of math, data, and speed**, where trading strategies are forged in the split seconds that define modern financial markets.

Day 3: Asset Classes Overview

Definition:
An asset class is a group of investments that share similar characteristics and behavior in the marketplace.

Purpose:
Grouping assets enables **diversification**, since different asset classes respond differently under various economic conditions.

Market Context

- **Equities**: IPOs (primary), stock exchanges (secondary).
- **Bonds**: Yield ↔ price inverse relation.
- **Derivatives**: Futures & options (India: Nifty/Bank Nifty).
- **ETFs**: Diversified, low-cost, liquid.
- **FX**: Largest market, currency pairs.
- **Commodities**: Driven by supply/demand, geopolitical risks.
- **Cryptocurrencies**: Decentralized, volatile, correlated with risk assets.

Day 4: Corporate Finance – DCF & Cost of Capital

Corporate finance focuses on how companies manage:

- Funding sources
- Capital structure
- Investment decisions
- Allocation of financial resources

Two cornerstone concepts:

1. **Discounted Cash Flow (DCF) analysis**
2. **Cost of Capital (WACC)**

Day 5: Python Implementation – WACC Calculation

Implementation notebook: **Cost of Equity, Cost of Debt, and WACC**

This script uses the **yfinance** library to fetch live data for Reliance and the Indian market, then applies formulas for the Cost of Equity, Cost of Debt, and WACC.

Sample Results & Interpretation

- **Risk-Free Rate**: Current yield on 10-year Indian Government Bond (e.g., 7.00%)
- **Beta**: Reliance's volatility relative to Nifty 50 (e.g., 1.11)
- **Market Return**: Annualized return of Nifty 50 over 5 years (e.g., 12.00%)

Day 6: Analysis Report – Multi-Asset Normalized Price Trends (2018–2025)

Overview

Objective: Interpret two visualizations of correlations and trend dynamics across selected assets.

Assets analyzed:

- Nifty 50, Nifty Bank, BSE Sensex
- Nifty IT, Nifty Pharma
- USD/INR, Gold, Crude Oil, Bitcoin

Time frame: 2018–2025 (base value = 100).

Visuals Reviewed

1. **Correlation heatmap** – monthly returns.
2. **Interactive line chart** – normalized trends.

Key Interpretations

- Correlation heatmap highlights diversification vs. concentration risks.
- Line chart shows performance trajectories, volatility bursts, leadership shifts among assets.

Day 7: Weekly Review & Wrap-Up

Summary of Outputs

- **Day 1–2**: Foundations and advanced view of market microstructure.

- **Day 3**: Asset class overview and diversification principles.
- **Day 4–5**: Corporate finance focus with Python-based WACC implementation.
- **Day 6**: Multi-asset analysis (2018–2025) using correlation and normalized trends.

Final Notes

This week builds a strong foundation in:

- Market structure theory
- Asset diversification
- Corporate finance metrics
- Practical coding for valuation
- Multi-asset portfolio insights

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