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BA Economics Honours | Semester 1 | Calicut University

Security Trading Practices

Course Code: ECO1FM105 • Module 3

Module III: Portfolio Creation

Investing in individual equity securities exposes an investor to massive company-specific operational risks. Modern portfolio theory demonstrates that constructing a diversified basket of non-correlated assets enables investors to eliminate idiosyncratic risk, maximize expected returns for a given level of risk, and optimize capital allocation across risk-return spectrums.

Unit 10: Theories of Portfolio Creation

1. Harry Markowitz Modern Portfolio Theory (MPT - 1952)

Nobel laureate Harry Markowitz pioneered the mathematical foundation of modern investment analysis by demonstrating that an asset should not be evaluated in isolation, but by how it contributes to the overall risk and return of an integrated portfolio.

The expected return of a portfolio ($E(R_p)$) is the weighted average of individual asset returns: $E(R_p) = \sum w_i E(R_i)$. Crucially, portfolio risk (measured by variance $sigma_p^2$) is NOT the weighted average of individual variances; it depends profoundly on the **covariance (Cov_{ij})** or correlation coefficient (ρ_{ij}) between asset pairs:

Two-Asset Portfolio Variance

$$sigma_p^2 = w_1^2 sigma_1^2 + w_2^2 sigma_2^2 + 2 w_1 w_2 \rho_{12} sigma_1 sigma_2$$

Where: σ_p^2 = Total portfolio variance, w_1, w_2 = Asset weights, σ_1, σ_2 = Asset standard deviations, and ρ_{12} = Correlation coefficient between asset returns.

If two assets exhibit low or negative correlation ($\rho_{12} < 0$), combining them in a portfolio dramatically reduces aggregate variance without sacrificing expected return. By plotting all possible portfolio combinations, Markowitz identified the **Efficient Frontier**—the geometric locus of optimal portfolios that offer the maximum possible expected return for a given level of risk, or minimum risk for a target return.

2. Capital Asset Pricing Model (CAPM - Sharpe, Lintner, Mossin)

The CAPM extends Markowitz theory by introducing a risk-free asset (yielding rate R_f) and decomposing total risk into two distinct structural components:

- **Unsystematic (Idiosyncratic) Risk:** Company-specific risk (strikes, product failure, management scandals). Because unsystematic risk can be completely eliminated through diversification across 20–30 non-correlated stocks, the market provides *zero risk premium* for bearing unsystematic risk.
- **Systematic (Market) Risk:** Economy-wide macroeconomic risk (inflation shocks, interest rate hikes, war, global pandemics) that affects all listed corporations simultaneously. Systematic risk cannot be eliminated through diversification and is measured by **Beta (β)**:

Beta Formula

$$\beta_i = \frac{\text{Cov}(R_i, R_m)}{sigma_m^2}$$

Where: β_i = Systematic risk coefficient of asset i, $\text{Cov}(R_i, R_m)$ = Covariance of asset returns with market returns, and σ_m^2 = Variance of market returns.

$\beta = 1$ indicates stock volatility identical to the market; $\beta > 1$ denotes high-beta aggressive stocks; $\beta < 1$ denotes low-beta defensive stocks.

Under CAPM, the required rate of return on any security is plotted along the **Security Market Line (SML)**:

CAPM Equation

$$E(R_i) = R_f + \beta_i[E(R_m) - R_f]$$

Where: $E(R_i)$ = Expected return on asset i, R_f = Risk-free rate, β_i = Asset beta (systematic market risk), and $E(R_m)$ = Expected return on the broad market portfolio.

Where $[E(R_m) - R_f]$ represents the *Equity Market Risk Premium*.

3. Arbitrage Pricing Theory (APT - Stephen Ross)

Unlike CAPM, which relies on a single market risk factor, APT is a multi-factor linear asset pricing model postulating that asset returns are driven by multiple macroeconomic risk factors: unexpected changes in inflation, industrial production growth, term structure yield spreads, and foreign exchange rates.

4. Behavioural Portfolio Theory (BPT - Shefrin and Statman)

Behavioral finance challenges neoclassical rationality by demonstrating that real-world investors suffer from systematic psychological biases:

- **Mental Accounting:** Investors mentally segregate wealth into separate, non-fungible compartments (e.g., safe retirement bucket vs speculative trading bucket) rather than optimizing across their total wealth.
- **Loss Aversion (Prospect Theory - Kahneman & Tversky):** The psychological pain of an investment loss is approximately twice as intense as the joy of an equivalent gain ($|DeltaU_{\text{loss}}|approx2 \times |DeltaU_{\text{gain}}|$). This leads to the *Disposition Effect*: investors prematurely sell winning stocks to lock in psychological gains, while irrationally holding losing stocks for years hoping to break even.
- **Herding Behaviour and FOMO:** Blindly mimicking popular retail trends during speculative asset bubbles.

Advanced Theoretical Formulations and Empirical Frameworks (Analytical Division 1)

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Empirical Methodology, Identification Strategies, and Econometric Estimation

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Consider the structural estimation of policy impacts across decentralized economic agents. When evaluating macroeconomic interventions or microeconomic regulatory changes, parameters estimated from observational datasets must account for expectations formation and structural parameter stability in accordance with the Lucas Critique. Consequently, contemporary applied economics bridges micro-foundations with aggregate macroeconomic phenomena through dynamic stochastic general equilibrium (DSGE) modeling and micro-econometric panel estimations.

Comparative Institutional Analysis, Market Failures, and Policy Governance

Economic outcomes are fundamentally mediated by institutional architectures, legal property rights regimes, and regulatory governance. In emerging market economies such as India, market imperfections—including asymmetric information, transaction costs, infrastructural bottlenecks, and credit constraints—often necessitate nuanced policy interventions that differ substantially from textbook laissez-faire predictions.

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Market Efficiency	Markets clear instantaneously; price mechanism allocates resources optimally without systemic friction.	Markets are prone to structural failures, information asymmetry, and coordination coordination failures.	Targeted regulatory oversight, public investment in infrastructure, and social safety nets.
Behavioral Motivation	Hyper-rational agents maximizing expected utility with complete cognitive computational capacity.	Bounded rationality, behavioral heuristics, loss aversion, and institutional anchoring effects.	Choice architecture, behavioral nudges (NITI Aayog initiatives), and consumer financial protection mandates.
State Intervention	State role restricted to core public goods, contract enforcement, and national defense (minimalist state).	State acts as developmental catalyst, risk-absorber of last resort, and promoter of equitable distribution.	Strategic industrial policy (PLI schemes), counter-cyclical fiscal intervention, and universal public services.
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	distribution is secondary to allocative efficiency.	historical wealth accumulation shape distribution.	human capital investments.
Technological Progress	Exogenous technological shocks arriving randomly (Solow neoclassical growth model).	Endogenous technological innovation driven by R&D, human capital, and intellectual property institutions.	National Innovation Foundation, Startup India, and public digital infrastructure (India Stack / UPI).

Comprehensive Empirical Analysis: The Kerala Model and Sub-National Development

In the context of the Indian economy and sub-national development paradigms, the Kerala Model of Development provides a seminal empirical case study illustrating the complex trade-offs between social development and economic growth. Characterized by high physical quality of life indicators—including near-universal adult literacy, high life expectancy, and low infant mortality rates comparable to advanced Western economies—achieved despite historically modest per capita state domestic product, Kerala demonstrates the transformative power of public social expenditure, agrarian land reforms, and decentralized local governance (Panchayati Raj institutions).

However, contemporary economic analysis also highlights structural challenges confronting this development paradigm: high educated unemployment, fiscal constraints stemming from escalating public debt servicing and pension obligations, and heavy reliance on external remittance inflows from migrant workers in the Persian Gulf. Sustaining this high-welfare equilibrium necessitates transitioning toward a knowledge-driven economy, incentivizing high-tech manufacturing, and mobilizing sustainable sub-national fiscal resources.

Policy Synthesis and Analytical Evaluation

Policy formulation in dynamic economic environments must therefore synthesize foundational deductive reasoning with robust inductive empirical inquiry. Economists must continuously evaluate the balance between market incentives and regulatory governance, ensuring that institutional frameworks promote both productive efficiency and distributive social justice.

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