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ADVANCED FINANCIAL INSTRUMENTS AND MARKETS
Lecture No. 04
Portfolio Diversification and
Supporting Financial Institutions

Hammad Hassan Mirza
Assistant Professor (Finance)
Department of Business Administration
University of Sargodha

Today's Discussion

* Portfolio Diversification
* Institution of Mutual Fund
  * Open Ended
  * Close Ended
* Asset Pricing Models
  * Sharpe
  * Fama and French

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Portfolio and Diversification

* **A Portfolio of a Risky and Riskless Asset**
* United East India Company 1602 (Evolution of Share)
* Amsterdam Stock Exchange
* The Equity Premium Puzzle
* Harry Markowitz and the Origins of Portfolio Analysis
* Efficient Portfolio Frontiers

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A Portfolio of a Risky and Riskless Asset

- Put x dollars in risky asset 1, $1-x$ dollars in the riskless asset earning sure return r_f
- Portfolio expected value $\quad r = xr_1 + (1-x)r_f$
- Portfolio variance $= \quad x^2 \text{var}(return_1)$
- Portfolio standard deviation $\sigma =$ $|x|\sigma(return_1)$, $x=(r-r_f)/(r_1-r_f)$
- $\sigma = |\frac{r-r_f}{r_1-r_f}|\sigma(return_1)$

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A Portfolio of Two Risky Assets

- Put x_1 dollars in risky asset 1 and $(1- x_1)$ dollars in risky asset 2 .
- Portfolio expected value $\quad r=x_1r_1+(1-x_1)r_2$
- Portfolio variance $=$

$$x_1^2\text{var}(return_1)+ (1- x_1)^2\text{var}(return_2)+ 2x_1(1- x_1)\text{cov}(return_1, \varkappa$$

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Efficient Portfolio Frontier with Two Assets

- Frontier expresses portfolio standard deviation in terms of portfolio expected return r rather than in terms of x_1.
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$$x_1 = \frac{r - r_2}{r_1 - r_2}$$

$$\sigma^2 = (\frac{r-r_2}{r_1-r_2})^2\sigma_1^2 + (\frac{r_1-r}{r_1-r_2})^2\sigma_2^2$$
$$+ 2\frac{(r-r_2)(r_1-r)}{(r_1-r_2)^2}\sigma_{12}$$

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Portfolio Variance, Three Risky Assets

- Portfolio variance =

$$x_1^2 \operatorname{var}(return_1) + x_2^2 \operatorname{var}(return_2) + x_3^2 \operatorname{var}(return_3)$$
$$+ 2x_1x_2 \operatorname{cov}(return_1, return_2) + 2x_1x_3 \operatorname{cov}(return_1, return_3)$$
$$+ 2x_2x_3 \operatorname{cov}(return_2, return_3)$$
$$(\text{where} \sum_{i=1}^{3} x_i = 1)$$

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Sharp Ratio

$$SharpeRatio = \frac{R(portfolio) - R_f}{\sigma(portfolio)}$$

- The Sharpe Ratio is constant along the tangency line
- A portfolio manager is outperforming only if her portfolio has a greater Sharpe ratio

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Beta

- The CAPM implies that the expected return on the ith asset is determined from its beta.
- Beta (β_i) is the regression slope coefficient when the return on the ith asset is regressed on the return on the market.
- Fundamental equation of the CAPM:
$$r_i = r_f + \beta_i (r_m - r_f)$$

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Session II

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Types of Investment Companies

* Open-End Funds

* Closed-End Funds

* Unit Trusts

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Mutual Fund Expenses

* Types of Costs
  * Shareholder fee or sales charge
  * Operating expense or expense ratio

* Types of Loads
  * Front end load
  * Back end load
  * Level load

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Economic Functions of Funds

* Risk Reduction via Diversification
* Lower Costs of Contracting and Information Processing
* Professional Portfolio Management
* Liquidity
* Variety
* Payments Mechanism

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Fund Investment Objectives

* Equity Funds
  * Income
  * Aggressive Growth
  * Growth
  * Income and Growth

* Money Market Mutual Funds

* Bond Funds
  * U.S. Government Bonds
  * Corporate Bonds
  * Convertible Securities
  * Municipal Bonds

* Others

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Family of Funds

* Group of different funds with a variety of investment objectives managed by an investment advisory company.
* Economic Benefits:
  * Flexibility
  * Lower costs
  * Wider Choices

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Taxation of Mutual Funds

* Distributions of income are taxable at the investor level, not the fund level.
  * Ordinary income tax
  * Capital gains tax
* Capital gains distributions
  * Long-term capital gains
  * Short-term capital gains

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Federal Regulation of Funds

* Securities Acts of 1933 and 1934
* Investment Company Act of 1940
* Investment Advisors Act of 1940
* Insider Trading and Securities Fraud Enforcement Act of 1988

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Recent SEC Priorities Concerning Mutual Funds

* Reporting fund returns on after-tax basis
* More complete reporting of fees charged
* More accurate and consistent reporting of investment performance
* Greater consistency between fund practices and investment objective
* Disclosure of portfolio practices
* Requiring fund managers to list their security holdings more frequently
* Rules to increase effectiveness and independence of boards of directors

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Structure of Funds

* Board of Directors
* Mutual Fund
* Distributor
* Other Service Providers
  * External (independent public accountant, custodian, transfer agent)
  * Internal (marketing, legal, reporting, etc.)

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Recent Changes in the Mutual Fund Industry

* Distribution Channels
  * Supermarkets
  * Wrap Programs
  * Fee-Based Financial Advisors
  * Variable Annuities
* Purchase Cost of Mutual Funds
* Mix and Match
* Mergers and Acquisitions in the U.S. Fund Market
* Internationalization of Business by U.S. Funds

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Alternatives to Mutual Funds

* Exchange-traded funds, or ETFs, are investment companies that are legally classified as <u>open-end companies</u> or <u>Unit Investment Trusts (UITs)</u>, but that differ from traditional open-end companies and UITs in the following respects:
* ETFs do not sell individual shares directly to investors and only issue their shares in large blocks (blocks of 50,000 shares, for example) that are known as "Creation Units."

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Exchange Traded Funds

* Investors generally do not purchase Creation Units with cash. Instead, they buy Creation Units with a basket of securities that generally mirrors the ETF's portfolio. Those who purchase Creation Units are frequently institutions.

* After purchasing a Creation Unit, an investor often splits it up and sells the individual shares on a secondary market. This permits other investors to purchase individual shares (instead of Creation Units).

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Exchange Traded Funds

* Investors who want to sell their ETF shares have two options: (1) they can sell individual shares to other investors on the secondary market, or (2) they can sell the Creation Units back to the ETF. In addition, ETFs generally redeem Creation Units by giving investors the securities that comprise the portfolio instead of cash. So, for example, an ETF invested in the stocks contained in the Dow Jones Industrial Average (DJIA) would give a redeeming shareholder the actual securities that constitute the DJIA instead of cash. Because of the limited redeemability of ETF shares, ETFs are not considered to be—and may not call themselves—mutual funds.

Commercial Banks and Mutual Funds

* Dual Relationship with Mutual Funds
    * Distributing Funds
    * Managing Funds

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Economic Functions

* Maturity Intermediation
* Risk Reduction
* Lower Costs
* Payments Mechanism

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Thank You!

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