

# **FRM Part 1**

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Book 3 - Financial Markets and Products

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**FUND MANAGEMENT**

# Learning Objectives

**After completing this reading you should be able to:**

- ✓ Differentiate among **open-end mutual funds**, **closed-end mutual funds**, and **exchange-traded funds** (ETFs).
- ✓ Calculate the **net asset value** (NAV) of an open-end mutual fund.
- ✓ Explain the key **differences** between **hedge funds** and **mutual funds**.
- ✓ Calculate the **return on a hedge fund** investment and explain the **incentive fee** structure of a hedge fund including the terms **hurdle rate**, **high-water mark**, and **clawback**.
- ✓ Describe **various hedge fund strategies**, including long/short equity, dedicated short, distressed securities, merger arbitrage, convertible arbitrage, fixed income arbitrage, emerging markets, global macro, and managed futures, and identify the risks faced by hedge funds.
- ✓ Describe hedge fund performance and explain the effect of **measurement biases** on performance measurement.

# Differences between Open-end Mutual, Closed-end Mutual

## What is a Mutual Fund?

- It's a pool of money collected from **many investors** where the funds are used to invest in securities such as stocks and bonds.
- The portfolio of investments is **operated by a manager** whose mandate is to generate income or capital gains for the investors.
- A mutual has **strict investment objectives** which must be followed by the manager at all times.
  - These objectives are laid down in the fund's prospectus.
- **Index funds** are mutual funds designed to **track a particular stock index** such as the S&P 500.
- Tracking can be achieved by:
  - Buying all the shares in the index in amounts that reflect their weight in the index.
  - Choosing a smaller portfolio of representative stocks that have been proven to follow the index.
  - Using index futures.

# Differences between Open-end Mutual, Closed-end Mutual

## What's the Net Asset Value (NAV)?

- In an open-end mutual fund, shares are traded at their **net asset value (NAV)**.
  - The net asset value is the **market value of all assets** the fund owns at the end of each trading day minus liabilities and then divided by the number of shares outstanding., i.e.,

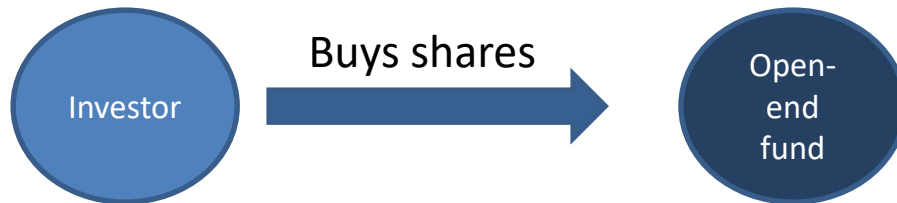
$$NAV = \frac{\text{Market value of assets of assets at close of business} - \text{Liabilities}}{\text{no. of outstanding shares}}$$

- The **NAV changes on a daily basis** to reflect changes in the underlying investments, which are usually stocks and bonds.
- All shares are also purchased or redeemed at approximately the NAV.

# Differences between Open-end Mutual, Closed-end Mutual

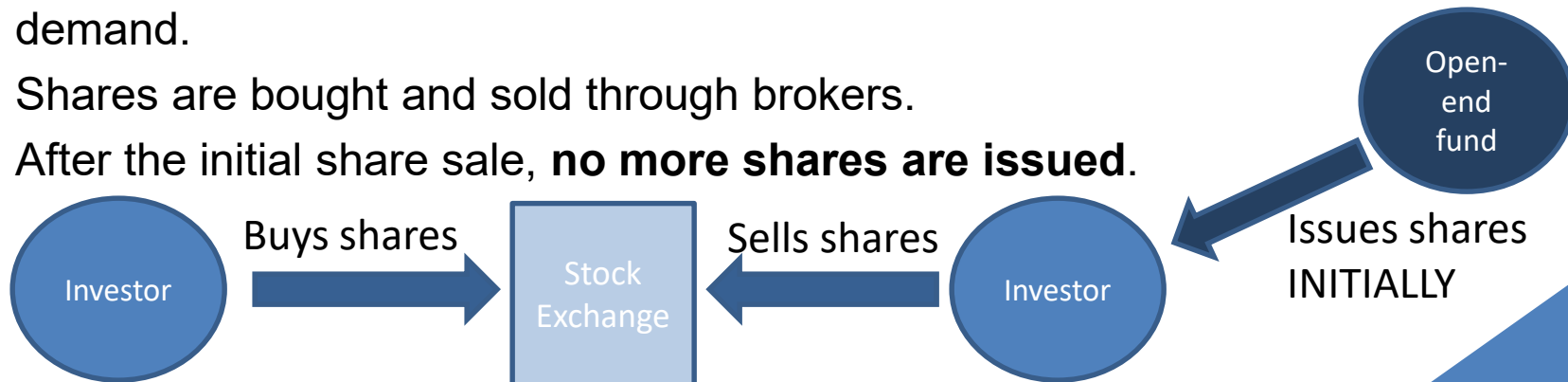
## Differences between open-end and closed-end mutual funds:

- In an open-end fund, one deals with the fund itself when buying shares.



- In a closed-end mutual fund, shares are **traded at a discount/premium to their net asset value (NAV)**.

- The reason behind this is that the shares are **publicly traded on an exchange**, and therefore the price is a function of supply and demand.
- Shares are bought and sold through brokers.
- After the initial share sale, **no more shares are issued**.



# Differences between Open-end Mutual, Closed-end Mutual

Basis for comparison	Open-end funds	Closed-end funds
Subscription	Available for subscription throughout the years	Available for subscription only during a few specified days
Listing	Not listed on a stock exchange. Transactions occur directly through the fund	Listed on an exchange for trading
Transactions	Executed at the end of the day	Executed in real time
Maturity	No fixed maturity	Fixed maturity period, say, 3-5 years
Selling price	NAV	Premium / discount to NAV
Corpus	Variable	Fixed

# Exchange-traded Funds

- Exchange-traded funds (ETF's) are relatively recent investment vehicles that **tracks an index**, a **commodity**, or even a **basket of assets**.
  - Just like closed-end funds, an ETF's shares are **traded on an exchange**.
- However, they differ from closed-end funds in several aspects:
  - The share price trade more **closely to the NAV** than closed-end funds.
    - ✓ Among large ETFs, discounts and premiums stay within 1% of the NAV
  - Institutional investors have the liberty to exchange the ETF's shares for the underlying assets, or even deposit new assets and receive shares in return.
- Unlike open-end funds, ETFs:
  - Can be traded at any time of the day, hence are **more liquid**.
  - Have **lower expense ratios**.

# Mutual Funds vs. Hedge Funds

- Hedge funds and mutual funds both involve the **pooling of funds**, but unlike mutual funds (closed-end), hedge funds are **not listed on an exchange**.
- Hedge funds involve a limited number of investors, mostly **high net worth individuals** or organizations.

Basis for comparison	Mutual funds	Hedge funds
Flexibility	Manager has a lots of constraints to deal with (limited use of leverage)	Manager has fewer constraints. Can use leverage, sell short, or even use derivatives
Paperwork	Offered via prospectus	Offered via a private placement memorandum
Liquidity	Investors can withdraw their money any day	Investors can only get their money periodically
Self-investment	Manager does not have to put some of their capital in the fund	As a sign of a good faith, the manager is expected to put some of their money in the fund
Advertisement	May advertise freely	Not free to advertise in the public
Listing	Maybe listed (closed-end funds)	Cannot be listed on an exchange



# Hedge Fund Fees

- Compared to mutual funds, hedge funds charge investors **higher management/operational fees**.
- These include:
  - An **annual management fee** of 1%-3% of assets; and
  - An **incentive fee** of 15%-30% of realized net profits.
- A typical hedge schedule that reads “2% + 30%” for example indicates that the fund charges 2% per year of assets under management and 30% of net profit.
- These high charges are designed to **attract the best hedge managers**.

# Hurdle Rate, High-Water Mark clause, and Clawback

**As a precondition for imposing high incentive fees, investors may be offered several guarantees. These include:**

- **A hurdle rate** - This is the **minimum return** that should be earned before the incentive fees are imposed.
- **High-water mark clause** - This requires the fund to recoup any prior losses **before the investment manager is allowed to impose an incentive fee**. Prior losses may be comprised of performance losses, management fees, and administrative fees. A proportional adjustment clause may apply so that if the investor suffers a loss and simultaneously withdraws part of their capital, the amount of previous loss to be recouped is adjusted proportionally.
- **Claw back** - A claw back is an action where hedge investors take back the incentive fees previously awarded to the hedge fund manager so as to **offset current losses**. A portion of the incentive fees is held in a recovery account so that when the investor makes a loss, they receive some compensation from that account.

***Example >>***

# Hedge Fund Fees

## An Example

- High-returns Hedge Fund has **\$100M** in **asset under management** at the start of period 1.
- The Fund grows to **\$120** million at the **end of period 1**. At the **end of period 2**, the Fund's value fell to **\$90M**. **Period 3** final valuation for the Fund's assets is **\$140M**.
- If incentive fees are **not** calculated based net of management fee, calculate the return to investors at the end of each period given a “**2 and 20**” fee structure with a **high-water mark provision for incentive fees**.

### End of period 1

- Fund growth =  $\$120\text{M} - \$100\text{M} = \mathbf{\$20\text{M}}$ 
  - Management fee =  $2\% \times \$120\text{M} = \mathbf{\$2.4\text{M}}$
  - Incentive fee =  $20\% \text{ of growth in fund value} = \$20\text{M} \times 20\% = \mathbf{\$4\text{M}}$
  - Total fees for period 1 =  $\$2.4\text{M} + \$4\text{M} = \mathbf{\$6.4\text{M}}$
- Return to investors =  $(\$20\text{M} - \$6.4\text{M})/\$100\text{M} = \mathbf{13.6\%}$

# Hedge Fund Fees

## An Example

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### End of period 2

- Fund growth =  $\$90\text{M} - \$120\text{M} = \text{\$-30M}$ 
  - Management fee =  $2\% \text{ of assets under management} \times \$90\text{M} = \text{\$1.8M}$
  - No incentive fee since the Fund has not reached the high-water mark of \$120M
  - Total fees for period 2 = **\$1.8M**
- **Return to investors** =  $(-\$30\text{M} - \$1.8\text{M})/\$120\text{M} = -26.5\%$

# Hedge Fund Fees

## An Example

- High-returns Hedge Fund has **\$100M** in **asset under management** at the start of period 1.
- The Fund grows to **\$120** million at the **end of period 1**. At the **end of period 2**, the Fund's value fell to **\$90M**. **Period 3** final valuation for the Fund's assets is **\$140M**.
- If incentive fees are **not** calculated based net of management fee, calculate the return to investors at the end of each period given a “**2 and 20**” **fee structure** with a **high-water mark provision for incentive fees**.

### End of period 3

- Fund growth =  $\$140\text{M} - \$90\text{M} = \$50\text{M}$ 
  - Management fee =  $2\% \times \$140\text{M} = \$2.8\text{M}$
  - Growth over high-water mark =  $\$140\text{M} - \$120\text{M} = \$20\text{M}$
  - Incentive fee = 20% of growth above high-water mark =  $\$20\text{M} \times 20\% = \$4\text{M}$
  - Total fees for the period = **\$6.8M**
- **Return to investors** =  $(\$50\text{M} - \$6.8\text{M})/\$90\text{M} = 48\%$

# Hedge Fund Fees

## An Example

- High-returns Hedge Fund has **\$100M** in **asset under management** at the start of period 1.
- The Fund grows to **\$120** million at the **end of period 1**. At the **end of period 2**, the Fund's value fell to **\$90M**. **Period 3** final valuation for the Fund's assets is **\$140M**.
- If incentive fees are **not** calculated based net of management fee, calculate the return to investors at the end of each period given a “**2 and 20**” fee structure with a **high-water mark provision for incentive fees**.

### Total for the 3 periods

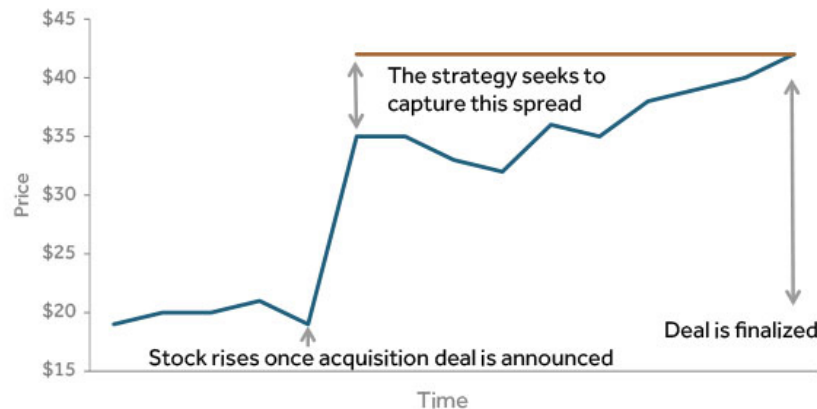
- Fund growth =  $\$140\text{M} - \$100\text{M} = \text{\$40M}$  or **40%**
  - Management fee =  $\$2.4\text{M} + \$1.8\text{M} + \$2.8\text{M} = \text{\$7M}$
  - Incentive fee =  $\$4\text{M} + \$0 + \$4\text{M} = \text{\$8M}$
  - Total fees for the period =  $\$7\text{M} + 8\text{M} = \text{\$15M}$
- **Return to investors =  $(\$40\text{M} - \$15\text{M})/\$100\text{M} = 25\%$**

# Common Hedge Fund Strategies

- **Long/short equity** - As the name suggests, the long/short equity strategy involves maintaining **long and short positions in equity** and equity derivative securities. The fund manager buys the stocks they feel are undervalued while simultaneously selling those they feel are overvalued.
- **Dedicated short bias** - The aim is to earn a return by maintaining a **net short position in the market** through a combination of long and short positions. This means that short positions take the lion's share of the fund's overall positions.
- **Distressed securities** - This is an **event-driven strategy** that tends to focus on **companies in distress** (financial trouble). Positions in bonds or stocks can be both long and short. Funds that employ this strategy impose more stringent lock-up and withdrawal terms.
- **Fixed income arbitrage** - This strategy seeks to profit from **discrepancies in related fixed income instruments**. The manager might buy long a bond that they feel is undervalued and simultaneously sell short a similar bond they think is overvalued.

# Common Hedge Fund Strategies

- **Convertible arbitrage** - This strategy seeks to profit from **discrepancies in a company's convertible securities** relative to the company's stock. It might involve taking a long position in a company's convertible securities and simultaneously taking a short position in that company's stock.
- **Merger arbitrage** - The strategy entails taking **opposing positions in two firms that are about to merge**. The goal is to exploit price inefficiencies that may occur before and after a merger. In most cases, a merger announcement is followed by a spike in the stock of the acquiring company and a dip in the stock of the target. Here is a graph for the **acquired firm**:





# Common Hedge Fund Strategies

- **Emerging markets** - This involves debt/equity **investing in emerging markets**. It's a strategy that aims to identify emerging market shares that are overvalued or undervalued.
- **Global macro** - This is a general investment strategy that involves making investment decisions **guided by the economic/political outlook of a country**. In other words, the strategy reflects global macroeconomic trends. They look for countries where the market seems not to be in equilibrium and place bets that the market will adjust and attain equilibrium once again.
- **Managed Futures** - The manager invests in financial and commodities futures markets. They make directional bets with **long/short positions**.

# Risks Face by Hedge Funds

## Liquidity risk

- It occurs when the fund invests in illiquid assets. Liquidity is a function of (I) the size of the position, and (II) intrinsic liquidity of the instrument.

## Pricing risk

- Some of the assets can be quite difficult to price, e.g., derivatives.

## Counterparty risk

- The manager gets into contracts with dealers, brokers, and clearing agents. There's always a risk that these parties will renege on their obligations, putting the fund on the path of unprecedented losses.

## Short squeeze risk

- The fund manager may be forced to purchase a security they had sold short sooner than anticipated when the investor from whom the security was borrowed comes calling early.

## Settlement risk

- One or more parties in a transaction may fail to deliver securities as per the contract.

# Survivorship Bias

- The **Tass hedge fund database** on which most market analysts rely **excludes small hedge funds** and also those that have had a **poor track record** over the years.
    - Poor performers tend to **drop out** while strong performers march on.
    - Therefore, only the good funds are included in the database.
    - The resulting performance analysis is thus inherently biased.
  - This type of bias is known as **survivorship bias**.
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