COURSE: INVESTMENTS |CHAPTER 17

FUTURES MARKETS AND RISK MANAGEMENT

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Chapter Purpose

This chapter explains the mechanics, pricing and risk-management uses of futures contracts.

- Forward contracts
- Futures contracts
- Long and short positions
- Futures payoffs
- Margin requirements
- Marking to market
- Futures pricing
- Basis and basis risk

- Short and long hedges
- Optimal hedge ratios
- Stock-index futures
- Interest-rate futures
- Currency futures
- Commodity futures
- Speculation, arbitrage and risk management

BY THE END OF THIS CHAPTER

Learning Objectives

1. Explain forward and futures contracts.
2. Distinguish forwards from futures.
3. Explain long and short positions.
4. Calculate futures profits and losses.
5. Explain contract specifications.
6. Explain margin requirements.
7. Calculate daily marking-to-market gains and losses.
8. Explain the spot–futures relationship.
9. Explain basis and basis risk.
10. Construct long and short hedges.
11. Calculate hedge ratios.
12. Hedge an equity portfolio.
13. Explain interest-rate futures.
14. Explain currency and commodity hedging.
15. Identify futures-market risks.
16. Design basic risk-management controls.

SECTION I

FUTURES FUNDAMENTALS

Agree today on a transaction that will occur later: today → agreed price → future transaction.

DEFINITION

What Is a Derivative?

A derivative is a financial instrument whose value depends on an underlying asset or variable.

Examples of underlying items

- Commodities
- Shares
- Stock indexes
- Bonds
- Interest rates
- Currencies
- Energy products

What Is a Forward Contract?

A forward contract is a private agreement between two parties to buy or sell an asset:

- At a future date
- For a price agreed today

Forward contracts are normally

- Customised
- Privately negotiated
- Traded over the counter
- Exposed to counterparty risk

What Is a Futures Contract?

A futures contract is a standardised agreement to buy or sell an underlying asset:

- At a specified future date
- At a price agreed through a futures exchange

Futures contracts are generally

- Standardised
- Exchange-traded
- Supported by a clearing house
- Settled daily through marking to market

Locking in a Price

A farmer expects to harvest wheat in three months. Today, wheat sells for:

ETB 50 per kilogram

The farmer fears the price may fall. A futures contract may allow the farmer to lock in approximately ETB 50 today for a transaction linked to the future harvest.

The farmer exchanges uncertain future prices for greater price predictability.

Why Use Futures?

Futures may be used to:

- Hedge commodity prices
- Manage currency exposure
- Manage interest-rate risk
- Hedge equity portfolios
- Gain market exposure
- Speculate on price changes
- Support arbitrage
- Improve price discovery
- Reduce transaction uncertainty

Futures-Market Participants

Hedgers

Reduce an existing business or investment risk.

Speculators

Accept futures risk in pursuit of profit.

Arbitrageurs

Trade price inconsistencies across related markets.

Market Makers

Provide bids, offers and liquidity.

COMPARISON

Forwards vs Futures

Forward Contracts	Futures Contracts
Privately negotiated	Exchange-traded
Customised	Standardised
Usually settled at maturity	Settled daily
Higher counterparty exposure	Clearing-house support
Less liquid	Often more liquid
Less transparent	Transparent market prices
Difficult to close early	Often closed using an offsetting trade

Contract Specifications

A futures contract normally specifies:

- Underlying asset
- Contract quantity
- Quality or grade
- Quotation method
- Delivery location

- Expiration month
- Settlement procedure
- Minimum price movement
- Trading hours
- Margin requirements

Physical vs Cash Settlement

Physical Settlement

The underlying asset is delivered.

Cash Settlement

The parties exchange the cash difference between the contract price and settlement value.

Stock-index futures are commonly cash-settled because a market index cannot be physically delivered.

Long Position

The long position agrees to buy the underlying exposure.

A long futures position generally benefits when:

Futures Price Rises

A long hedge may be used by someone who expects to buy an asset later and fears a price increase.

Short Position

The short position agrees to sell the underlying exposure.

A short futures position generally benefits when:

Futures Price Falls

A short hedge may be used by someone who owns or expects to sell an asset and fears a price decline.

PRINCIPLE

Futures Are Zero-Sum Before Costs

For every long position, there is a short position.

If the futures price rises

- The long gains.
- The short loses.

If the futures price falls

- The short gains.
- The long loses.

Before transaction costs, one party's futures gain equals the other party's futures loss.

SECTION II

FUTURES PAYOFFS

Long and short positions respond in opposite directions.

Long Futures Profit

For a contract held from initiation to expiration:

$$\text{Long Futures Profit} = (S(T) - F(0)) \times Q$$

Where

- $S(T)$ = spot or settlement price at expiration
- $F(0)$ = initial futures price
- Q = contract quantity

Short Futures Profit

$$\text{Short Futures Profit} = (F(0) - S(T)) \times Q$$

The short position benefits when the final price is below the initial futures price.

- $F(0)$ = initial futures price
- $S(T)$ = settlement price at expiration
- Q = contract quantity

Futures Example — Inputs

Suppose:

- Initial futures price = ETB 100
- Contract quantity = One unit
- Position held to expiration

Calculate long and short profits at different expiration prices.

WORKED EXAMPLE

Futures Payoff Table

Expiration Price	Long Profit	Short Profit
ETB 80	−20	20
ETB 100	0	0
ETB 120	20	−20
ETB 140	40	−40

The long payoff rises in a straight line with price; the short payoff falls symmetrically.

Closing a Futures Position

A trader normally closes a futures position by taking an equal and opposite position.

Close a Long Position

Sell the same futures contract.

Close a Short Position

Buy the same futures contract.

Most financial futures positions are closed before physical delivery.

KEY DISTINCTION

Futures Price vs Contract Value

At initiation, a futures contract is normally entered at a value close to zero.

After initiation

- The futures price changes.
- Gains and losses arise.
- Daily settlement transfers those gains and losses.
- Margin balances change.

The quoted futures price is not the same as the amount initially paid.

SECTION III

FUTURES MARGIN

Margin supports contract performance — it is not a purchase deposit.

What Is Futures Margin?

Futures margin is money deposited to support the trader's contractual obligations.

It helps protect

- The clearing house
- Brokers
- Other market participants

Unlike purchasing shares on margin, futures margin does not represent borrowed money used to buy the underlying asset.

Initial and Maintenance Margin

Initial Margin

Amount required when opening the position.

Maintenance Margin

Minimum balance that must be maintained.

Margin Call

A request to deposit additional funds when the account falls below the maintenance level.

Marking to Market

Futures positions are normally settled daily. At the end of each trading day:

1. A settlement price is determined.
2. Gains are added to margin accounts.
3. Losses are deducted.
4. Accounts below maintenance margin receive margin calls.

This process is called Marking to Market

Margin Example — Inputs

Suppose:

- Long futures price = ETB 50
- Contract quantity = 1,000 units
- Initial margin = ETB 6,000
- Maintenance margin = ETB 4,500

WORKED EXAMPLE

Day 1 Settlement

Suppose the settlement price rises from ETB 50 to ETB 52.

$$\text{Daily Gain} = (52 - 50) \times 1{,}000 = \text{ETB } 2{,}000$$

New margin balance:

$$6{,}000 + 2{,}000 = \text{ETB } 8{,}000$$

Day 2 Settlement

Suppose the settlement price falls from ETB 52 to ETB 48.

$$\text{Daily Loss} = (48 - 52) \times 1{,}000 = -\text{ETB } 4{,}000$$

New balance:

$$8{,}000 - 4{,}000 = \text{ETB } 4{,}000$$

This is below the ETB 4,500 maintenance margin.

WORKED EXAMPLE

Margin Call

The account may need to be restored to the initial margin level.

Required Deposit = 6,000 − 4,000 = ETB 2,000

Important

A hedger may face a margin call before receiving the offsetting gain from the underlying business transaction.

Futures Leverage

The futures contract controls a large exposure using a relatively small margin deposit.

Contract Exposure = 50 × 1,000 = ETB 50,000

Initial margin:

ETB 6,000

This creates substantial leverage.

Leverage Risk

Leverage magnifies:

- Percentage gains
- Percentage losses
- Margin volatility
- Liquidity requirements

A small adverse price movement can generate a large loss relative to the deposited margin.

SECTION IV

SPOT AND FUTURES PRICES

Futures prices are linked to spot prices through carrying costs and benefits.

Spot Price

The spot price is the price for immediate purchase or sale of an asset.

Examples

- Current commodity price
- Current currency exchange rate
- Current stock-index level
- Current bond price

Futures Price

The futures price is the agreed price for exposure or settlement at a future date.

The spot-futures relationship depends on

- Financing costs
- Income from the asset
- Storage costs
- Insurance costs
- Convenience yield
- Time to expiration

Cost-of-Carry Model

For a non-income-producing investment asset:

$$F(0) = S(0) \times (1 + r)^T$$

Where

- F(0) = futures price
- S(0) = spot price
- r = financing rate
- T = time to maturity

Futures-Pricing Example

Suppose: spot price = ETB 100; annual interest rate = 10%; time to maturity = six months.

$$F(0) = 100 \times (1.10)^{0.5}$$

$$F(0) \approx \text{ETB } 104.88$$

The difference reflects the financing cost of carrying the asset.

Income-Producing Assets

If the underlying asset provides income, that income reduces the net cost of carrying it.

Examples include

- Dividends from shares
- Coupon income from bonds
- Rental or leasing income

Futures Price = Spot + Carrying Costs − Carrying Benefits

Commodity Carrying Costs

Commodity carrying costs may include:

- Storage
- Insurance
- Transportation
- Financing
- Spoilage
- Security
- Quality deterioration

These costs may cause futures prices to exceed current spot prices.

Convenience Yield

Convenience yield is the non-cash benefit of physically possessing a commodity.

Examples include

- Maintaining production
- Meeting unexpected customer demand
- Avoiding shortages
- Reducing supply disruptions

A high convenience yield may reduce the futures price relative to the spot price.

Contango and Backwardation

Contango

Longer-dated futures prices are above the spot price or nearer contracts.

Backwardation

Longer-dated futures prices are below the spot price or nearer contracts.

These patterns may reflect

- Carrying costs
- Shortages
- Convenience yield
- Expectations
- Risk premiums

Convergence at Expiration

As expiration approaches:

Futures Price → Spot Price

If the prices did not converge, traders could potentially exploit the difference through delivery or offsetting transactions.

Spot and futures price lines meet at expiration.

Cash-and-Carry Arbitrage

If futures are substantially overpriced relative to carrying costs, a trader may attempt to:

1. Borrow money.
2. Buy the underlying asset.
3. Store or hold the asset.
4. Sell futures.
5. Deliver or close the positions at expiration.

Transaction costs and trading restrictions must be considered.

Reverse Cash-and-Carry

If futures are substantially underpriced, a trader may attempt to:

1. Short-sell the underlying asset.
2. Invest the short-sale proceeds.
3. Buy futures.
4. Obtain the asset at expiration.
5. Return the borrowed asset.

This strategy may be restricted by short-selling and borrowing constraints.

SECTION V

BASIS

The difference between spot and futures prices.

Basis Formula

A common definition is:

$$\text{Basis} = \text{Spot Price} - \text{Futures Price}$$

Suppose spot price = ETB 48 and futures price = ETB 50.

$$\text{Basis} = 48 - 50 = -\text{ETB } 2$$

Basis Convergence

At expiration:

$$\text{Spot Price} \approx \text{Futures Price}$$

Therefore:

$$\text{Basis} \approx 0$$

Before expiration, basis may be positive or negative and may change unpredictably.

Strengthening and Weakening Basis

Basis = Spot − Futures

Strengthening Basis

Basis becomes more positive or less negative.

Weakening Basis

Basis becomes less positive or more negative.

Changes in basis affect hedge results.

What Is Basis Risk?

Basis risk is the risk that the spot price and futures price do not move by exactly the same amount.

It arises when

- The hedge is closed before expiration.
- The hedged asset differs from the futures asset.
- Locations differ.
- Quality grades differ.
- Contract dates do not match.
- Supply-and-demand conditions differ.

SECTION VI

FUTURES HEDGING

Use futures gains to offset adverse changes in the underlying exposure.

Short Hedge

A short hedge involves selling futures. It is suitable when an investor or business:

- Owns an asset
- Expects to produce an asset
- Plans to sell an asset later
- Fears the price will fall

Examples

- Farmer
- Commodity producer
- Bond portfolio manager
- Exporter expecting foreign currency

Long Hedge

A long hedge involves buying futures. It is suitable when an investor or business:

- Plans to purchase an asset
- Has a future payment obligation
- Fears the price will rise

Examples

- Manufacturer purchasing raw materials
- Airline purchasing fuel
- Importer requiring foreign currency
- Investor planning a future asset purchase

WORKED EXAMPLE

Farmer's Short Hedge — Inputs

Suppose a farmer expects to sell:

- 10,000 kilograms
- Current futures price = ETB 50 per kilogram
- Each contract = 1,000 kilograms

Required contracts:

$$N = 10{,}000 \div 1{,}000 = 10$$

The farmer sells 10 futures contracts.

Farmer's Hedge — Outcome

At harvest: spot price = ETB 45; futures price when closed = ETB 46.

Cash revenue: 45 × 10,000 = ETB 450,000

Futures gain: (50 − 46) × 10,000 = ETB 40,000

Total: 450,000 + 40,000 = ETB 490,000

Effective price: ETB 49 per kilogram

Why Not Exactly ETB 50?

The farmer locked in a futures price of ETB 50 but realised an effective price of ETB 49. The difference arose because:

- Spot price at closing = ETB 45
- Futures price at closing = ETB 46
- Basis did not fully converge at hedge termination

This is Basis Risk

Airline's Long Hedge — Inputs

Suppose an airline expects to purchase:

- 100,000 litres of fuel
- Futures price = ETB 60 per litre
- Contract size = 1,000 litres

Required contracts:

$$N = 100{,}000 \div 1{,}000 = 100$$

The airline buys 100 contracts.

Airline's Hedge — Outcome

At purchase: spot fuel price = ETB 68; futures price = ETB 67.

Cash cost: 68 × 100,000 = ETB 6.8 million

Futures gain: (67 − 60) × 100,000 = ETB 700,000

Net effective cost: 6.8 − 0.7 = ETB 6.1 million

Effective price: ETB 61 per litre

What Is a Cross Hedge?

A cross hedge uses a futures contract on an asset different from — but related to — the exposure being hedged.

It may be necessary when

- No exact futures contract exists.
- The exact contract lacks liquidity.
- A related asset has a strong price relationship.

Risk

Correlation may change, increasing basis risk.

SECTION VII

HEDGE RATIOS

How many futures contracts are needed?

Naïve Hedge Ratio

If the exposure and futures contract are identical:

Number of Contracts = Quantity Exposed ÷ Contract Quantity

This assumes:

Hedge Ratio = 1

Minimum-Variance Hedge Ratio

When spot and futures prices do not move identically:

$$h^* = \rho(S,F) \times (\sigma S \div \sigma F)$$

Where

- h^* = optimal hedge ratio
- $\rho(S,F)$ = correlation
- σS = spot-price volatility
- σF = futures-price volatility

Hedge-Ratio Example

Suppose correlation = 0.80; spot volatility = 12%; futures volatility = 10%.

$$h^* = 0.80 \times (0.12 \div 0.10)$$

$$h^* = 0.96$$

The minimum-variance hedge covers approximately 96% of the exposure.

Number of Contracts

Suppose exposure = 100,000 units; contract size = 5,000 units; optimal hedge ratio = 0.96.

$$N^* = h^* \times (Q(A) \div Q(F))$$

$$N^* = 0.96 \times (100{,}000 \div 5{,}000) = 19.2$$

The hedger may use approximately 19 contracts, subject to judgment and contract indivisibility.

Under-Hedging and Over-Hedging

Under-Hedging

Futures position is smaller than the exposure.

- Leaves some risk unhedged
- Reduces the risk of overcompensation

Over-Hedging

Futures position exceeds the exposure.

- May create a new speculative position
- Can increase rather than reduce risk

Dynamic Hedging

The appropriate hedge may change because:

- Exposure quantity changes.
- Futures prices change.
- Correlations change.
- Volatility changes.
- Contract expiration approaches.
- Business timing changes.

Therefore, hedges must be monitored and adjusted.

SECTION VIII

STOCK-INDEX FUTURES

Manage broad equity-market exposure.

Stock-Index Futures

Stock-index futures reference a market index. They may be used to:

- Hedge an equity portfolio
- Change portfolio beta
- Gain temporary market exposure
- Manage cash inflows and outflows
- Implement tactical allocation
- Support arbitrage

They are commonly cash-settled.

Portfolio Hedge Formula

To reduce portfolio beta toward zero:

$$N = (\beta(P) \times V(P)) \div (F(0) \times \text{Multiplier})$$

Where

- $\beta(P)$ = portfolio beta
- $V(P)$ = portfolio value
- $F(0)$ = futures index level
- Multiplier = currency value per index point

Equity-Hedge Example

Portfolio value = ETB 10 million; beta = 1.20; futures index = 2,000; multiplier = ETB 100.

Contract value: 2,000 × 100 = ETB 200,000

N = 1.20 × 10,000,000 ÷ 200,000 = 60

The manager sells approximately 60 futures contracts.

Market Decline Example

Suppose the market falls by 8%.

Estimated portfolio decline: 1.20 × 8% = 9.6%

Portfolio loss: 10,000,000 × 9.6% = ETB 960,000

If the futures index falls from 2,000 to 1,840:

Futures gain: 160 × 100 × 60 = ETB 960,000

The futures gain approximately offsets the portfolio loss.

Changing Portfolio Beta

To move from a current beta to a target beta:

$$N = ((\beta \text{ Current} - \beta \text{ Target}) \times V(P)) \div (F(0) \times \text{Multiplier})$$

Sell Futures

To reduce beta.

Buy Futures

To increase beta.

Equity-Hedge Limitations

The hedge may be imperfect because:

- Portfolio beta changes.
- The portfolio differs from the index.
- Dividends differ.
- Futures and spot prices may not move identically.
- The contract number must be rounded.
- The hedge period may not match expiration.

SECTION IX

INTEREST-RATE FUTURES

Manage risk arising from changing interest rates.

Interest Rates and Futures Prices

Bond prices and yields move inversely.

Interest Rates Rise

Bond and bond-futures prices generally fall.

Interest Rates Fall

Bond and bond-futures prices generally rise.

This relationship determines the hedge direction.

Interest-Rate Hedge Direction

Fear Interest Rates Will Rise

Sell interest-rate futures. This may protect:

- Bond portfolios
- Future borrowers
- Institutions holding fixed-income assets

Fear Interest Rates Will Fall

Buy interest-rate futures.

This may protect a planned future investment in bonds.

Duration-Based Hedge

A simplified duration hedge is:

$$N = (V(P) \times D(P)) \div (V(F) \times D(F))$$

Where

- V(P) = portfolio value
- D(P) = portfolio duration
- V(F) = futures contract value
- D(F) = duration of the futures-linked instrument

Duration-Hedge Example

Bond portfolio value = ETB 20 million; portfolio duration = 6; futures contract value = ETB 500,000; futures duration = 5.

$$N = (20{,}000{,}000 \times 6) \div (500{,}000 \times 5)$$

$$N = 48$$

The manager sells approximately 48 futures contracts to reduce interest-rate exposure.

Interest-Rate Hedge Risks

Potential problems include:

- Duration changes
- Yield-curve shifts
- Basis risk
- Cheapest-to-deliver uncertainty
- Convexity differences
- Contract mismatch
- Changing credit spreads

A duration hedge is an approximation, not a guarantee.

SECTION X

CURRENCY FUTURES

Manage exchange-rate uncertainty.

Importer and Exporter Exposure

Importer

Needs foreign currency in the future.

Risk: foreign currency appreciates.

Typical response: Long Currency Futures

Exporter

Will receive foreign currency.

Risk: foreign currency depreciates.

Typical response: Short Currency Futures

Importer's Currency Hedge

Suppose an importer must pay:

- USD 100,000
- Futures rate = ETB 160 per USD
- Contract size = USD 10,000

Required contracts:

$$N = 100{,}000 \div 10{,}000 = 10$$

The importer buys 10 futures contracts.

Importer's Hedge Outcome

At payment: spot rate = ETB 170 per USD; futures rate = ETB 169 per USD.

Cash cost: 170 × 100,000 = ETB 17,000,000

Futures gain: (169 − 160) × 100,000 = ETB 900,000

Net cost: 17,000,000 − 900,000 = ETB 16,100,000

Effective rate: ETB 161 per USD

WORKED EXAMPLE

Exporter's Currency Hedge

Suppose an exporter expects to receive USD 100,000 and sells futures at ETB 160. At receipt: spot rate = ETB 150; futures rate = ETB 151.

Cash receipt: 150 × 100,000 = ETB 15,000,000

Futures gain: (160 − 151) × 100,000 = ETB 900,000

Total receipt: ETB 15,900,000

Effective rate: ETB 159 per USD

Commodity Futures

Commodity futures may reference:

- Agricultural products
- Energy
- Metals
- Livestock
- Industrial materials

They allow producers and users to manage price risk.

Producer vs Commodity User

Producer

Fears price decline.

Typical hedge: Sell Futures

Commodity User

Fears price increase.

Typical hedge: Buy Futures

Hedging stabilises price exposure but may sacrifice favourable price movements.

Speculation with Futures

A speculator may:

Buy Futures
When expecting prices to rise.

Sell Futures
When expecting prices to fall.

Speculators support liquidity but face leveraged losses and margin calls.

Futures Spreads

A futures spread involves simultaneous long and short positions in related contracts.

Examples

- Different expiration months
- Related commodities
- Different markets
- Processing spreads

The trader focuses on changes in the price difference rather than the outright price.

Major Futures-Market Risks

- Price risk
- Leverage risk
- Margin-call risk
- Basis risk
- Liquidity risk
- Model risk

- Operational risk
- Legal risk
- Counterparty risk
- Delivery risk
- Rollover risk
- Hedge-accounting risk

ORGANISATIONS SHOULD ESTABLISH

Futures Risk-Management Controls

- Approved hedging policies
- Clear exposure limits
- Authorised instruments
- Position limits
- Segregation of duties
- Independent valuation

- Daily position reconciliation
- Margin-liquidity planning
- Counterparty controls
- Stress testing
- Management reporting
- Prohibition of unauthorised speculation

Integrated Practical Case

Equity Portfolio

- Value = ETB 12 million
- Beta = 1.10
- Index futures = 2,500
- Multiplier = ETB 100

Foreign-Currency Receipt

- USD 200,000
- Futures rate = ETB 165
- Contract size = USD 25,000
- Final spot = ETB 155
- Final futures = ETB 156

Commodity Purchase

- 50,000 units
- Futures price = ETB 40
- Final spot = ETB 47
- Final futures = ETB 46

Student Tasks

1. Calculate stock-index futures contract value.
2. Determine the number of contracts needed to hedge the portfolio.
3. Identify whether the currency hedge should be long or short.
4. Calculate the number of currency contracts.
5. Calculate the exporter's effective exchange rate.
6. Identify the appropriate commodity hedge direction.
7. Calculate the commodity futures gain.
8. Calculate the effective commodity price.
9. Explain the remaining basis risk.
10. Identify potential margin-liquidity requirements.

Instructor Answer Check

Equity Portfolio

Contract value = 2,500 × 100 = ETB 250,000

N = 1.10 × 12,000,000 ÷ 250,000 = 52.8

Approximately 53 short contracts.

Currency Receipt

N = 200,000 ÷ 25,000 = 8 (short eight contracts)

Total = 155(200,000) + (165 − 156)(200,000) = ETB 32.8 million

Effective rate: ETB 164 per USD.

Commodity Purchase

Long futures gain = (46 − 40) × 50,000 = ETB 300,000

Net cost = 47(50,000) − 300,000 = ETB 2.05 million

Effective price: ETB 41 per unit.

Key Takeaways and Discussion

Key Takeaways

- Futures lock in exposure to a future transaction price.
- Long positions benefit from rising prices.
- Short positions benefit from falling prices.
- Futures are marked to market daily.
- Margin creates leverage and liquidity requirements.
- Spot and futures prices converge at expiration.
- Basis risk prevents many hedges from being perfect.
- Short hedges protect future sales or existing assets.
- Long hedges protect future purchases.
- Hedge ratios determine the appropriate contract number.
- Stock-index futures can adjust portfolio beta.
- Interest-rate futures manage duration exposure.
- Currency futures manage exchange-rate risk.
- Futures reduce one risk while potentially creating other risks.

Discussion Questions

1. How do futures differ from forwards?
2. Why is futures margin not a purchase deposit?
3. What causes a margin call?
4. Why may a hedge fail to lock in the exact futures price?
5. When should a business use a long hedge?
6. Why can an over-hedge become speculative?
7. How do stock-index futures change portfolio beta?
8. Why is liquidity planning essential for futures users?

CHAPTER 17 ENDS HERE

Next Chapter and Closing

NEXT CHAPTER

Chapter 18: International Investing and Diversification

- International investment opportunities
- Global equity and bond markets
- Currency risk
- Country and political risk
- International diversification
- Correlation across markets
- Depositary receipts
- International funds and ETFs
- Developed and emerging markets
- Home-country bias
- Hedged and unhedged returns
- Global portfolio construction

THANK YOU

Questions and Discussion

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