Introduction to financial risk management

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Commodity Price Risk

Commodity Price Risk

- Many risks that firms face arise naturally as part of their business operations.
- For example, the risk from increases in the price of oil is one of the most important risks that faces an airline.
  - Firms can reduce, or *hedge*, their exposure to commodity price movements.
  - Like insurance, hedging involves contracts or transactions that provide the firm with cash flows that offset its losses from price changes.

Hedging with Vertical Integration and Storage

- Vertical Integration - the merger of a firm and its supplier or a firm and its customer.
  - Because an increase in the price of the commodity raises the firm's costs and the supplier's revenues, these firms can offset their risks by merging.
  - Vertical integration can add value if combining the firms results in important synergies.
  - However, vertical integration can lead to lack of strategy focus.

Hedging with Vertical Integration and Storage

- Long-term storage of inventory is another strategy for offsetting commodity price risk.
  - For example, an airline concerned about rising fuel costs could purchase a large quantity of fuel today and store the fuel until it is needed. By doing so, the firm locks in its cost for fuel at today's price plus storage costs.
    - However, storage costs may be too high for this strategy to be attractive.

Hedging with Vertical Integration and Storage

- Long-term storage of inventory also requires a substantial cash outlay upfront.
  - If the firm does not have the required cash, it would need to raise external capital and would suffer issuance and adverse selection costs.

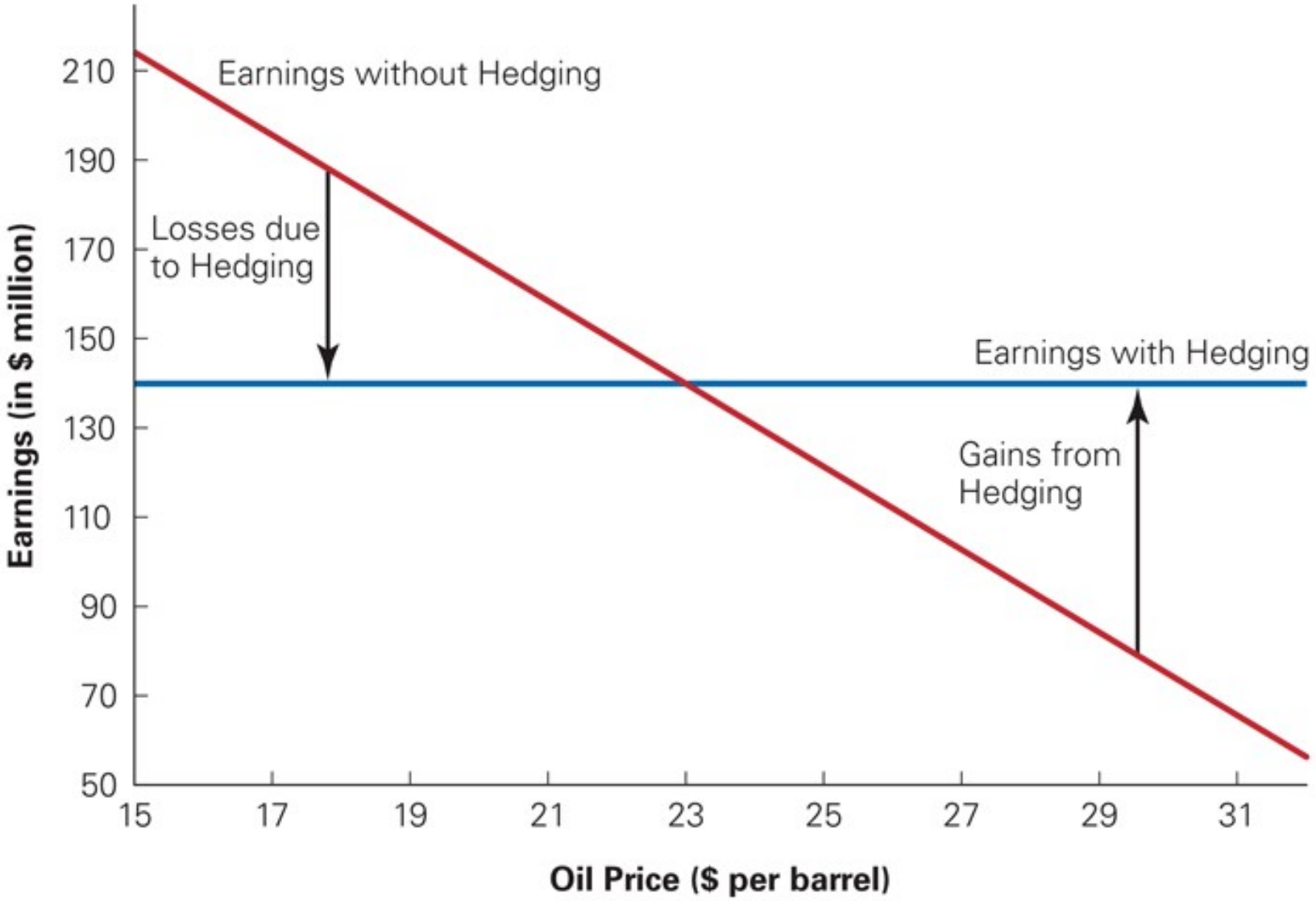
Hedging with Long-Term Contracts

- Consider Southwest Airlines.
  - In early 2000, when oil prices were close to $20 per barrel, the CFO developed a hedging strategy to protect the airline from a surge in oil prices.
  - By the time oil prices soared above $30 per barrel later that year, Southwest had signed contracts guaranteeing a price for its fuel equivalent to $23 per barrel.

Hedging with Long-Term Contracts

- However, had oil prices fallen below $23 per barrel in the fall of 2000, Southwest's hedging policy would have obligated it to pay $23 per barrel for its oil.
- Southwest accomplished its objective by locking in its cost of oil at $23 per barrel, regardless of what the price of oil did on the open market.

Commodity Hedging Smoothes Earnings



BD Figure 30.1

Hedging with long-term contracts

- Consider a cereal manufacturer that will need 20 million bushels of corn next year.
- The current market price of corn is $3 per bushel.
- At $3 per bushel, the firm expects earnings before interest and taxes (EBIT) of $50 million next year.
  - What will the firm's EBIT be if the price of corn rises to $3.50 per bushel?
  - What will EBIT be if the price of corn falls to $2.25 per bushel?
  - What will EBIT be in each scenario if the firm enters into a supply contract for corn for a fixed price of $3.25 per bushel?

Hedging with Long-Term Contracts

- Long-term supply contracts have several potential disadvantages.
  - They expose each party to the risk that the other party may default and fail to live up to the terms of the contract.
    - Thus, while they insulate the firms from commodity price risk, they expose them to credit risk.

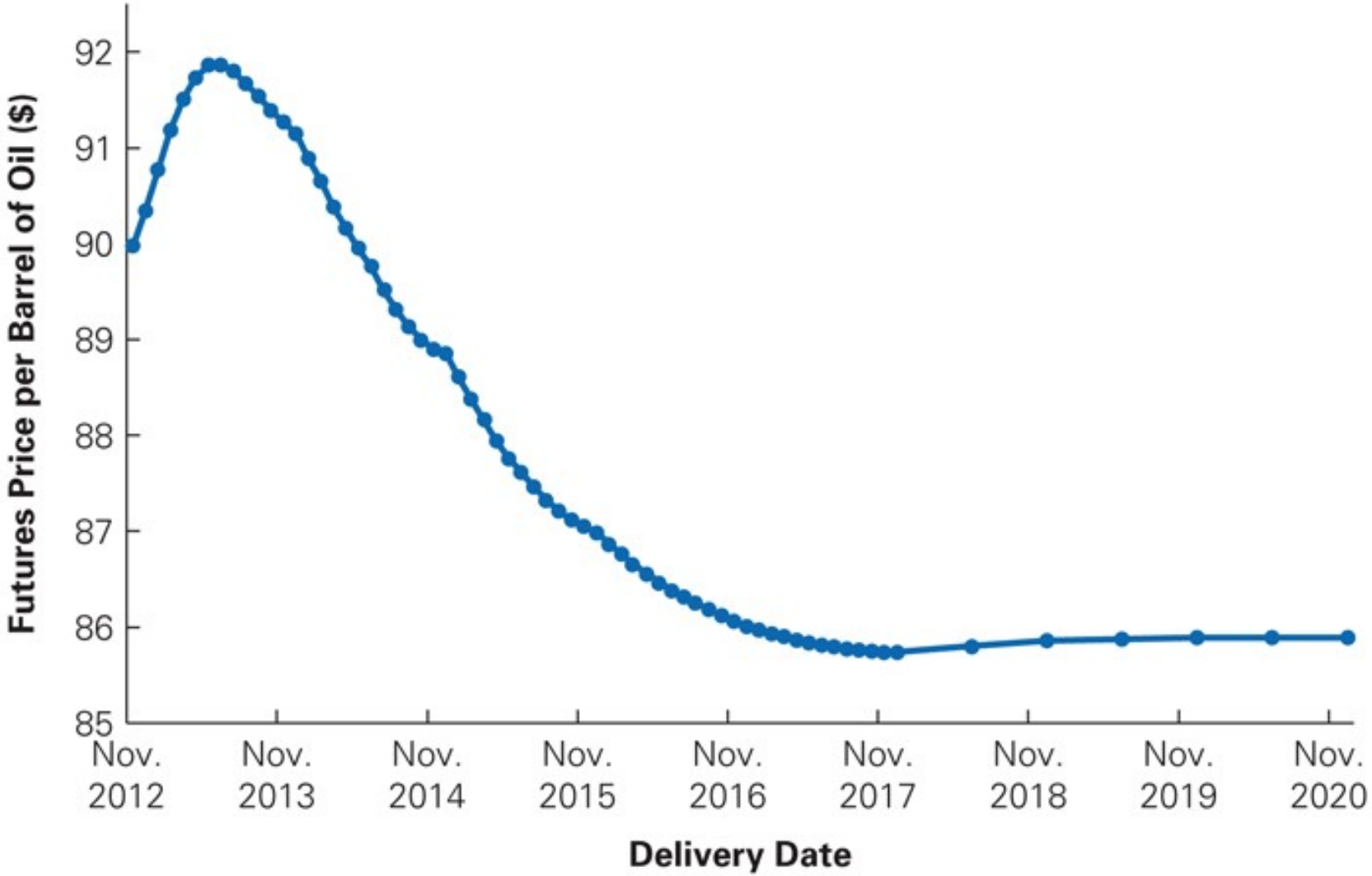
Hedging with Long-Term Contracts

- Long-term supply contracts cannot be entered into anonymously; the buyer and seller know each other's identity.
  - This lack of anonymity may have strategic disadvantages.
- The market value of the contract at any point in time may not be easy to determine, making it difficult to track gains and losses, and it may be difficult or even impossible to cancel the contract if necessary.

Hedging with Futures Contracts

- Futures Contract
  - An agreement to trade an asset on some future date, at a price that is locked in today
    - Futures contracts are traded **anonymously** on an exchange at a publicly observed market price and are generally very liquid.
    - Both the buyer and the seller can get out of the contract at any time by selling it to a third party at the current market price.
    - Futures contracts **eliminate credit/counterparty risk**.

Futures Prices for Light, Sweet Crude Oil, September 2012



BD Figure 30.2

Hedging with Futures Contracts

- Futures prices are not prices that are paid today.
  - Rather, they are prices *agreed* to today, to be paid in the future.
  - The futures prices are based on the supply and demand for each delivery date.

Hedging with Futures Contracts

- Eliminating Credit/Counterparty Risk
  - Futures exchanges use 2 mechanisms to prevent buyers or sellers from defaulting.

  1) Traders are required to post collateral when buying or selling commodities using futures contracts.
    - This collateral, called **margin**, serves as a guarantee that traders will meet their obligations.

  2) Marking to Market
    - Computing gains and losses each day based on the change in the market price of a futures contract.

Marking to market – An example

- Suppose a buyer who enters into the contract has committed to pay the futures price of $87 per barrel for oil.
  - If the next day the futures price is only $85 per barrel, the buyer has a loss of $2 per barrel on her position.
    - This loss is settled immediately by deducting $2 from the buyer's margin account.
  - If the price rises to $86 per barrel on the following day, the gain of $1 is added to the buyer's margin account.

Marking to market – An example

- The buyer's cumulative loss is the sum of these daily amounts and always equals the difference between the original contract price of $87 per barrel and the current contract price.
- If the oil price is ultimately $65 per barrel, the buyer will have lost $22 per barrel in her margin account.
  - Thus her total cost is $65 + $22 = $87 per barrel, the price for oil she originally committed to.
    - Through this daily marking to market, buyers and sellers pay for any losses as they occur, rather than waiting until the final delivery date. In this way, the firm avoids the risk of default.

Marking to market – An example

- Example of Marking to Market and Daily Settlement for the November 2015 Light, Sweet Crude Oil Futures Contract ($/bbl)

	September 2012								November 2015
Trading Day	0	1	2	3	4	. . .	798	799	800
Futures price	87	85	86	84	83	. . .	62	64	65
Daily marked to market profit/loss		−2	1	−2	−1	. . .	. . .	2	1
Cumulative profit/loss		−2	−1	−3	−4	. . .	−25	−23	−22

BD Table 30.1

The Futures Contract

Foreign Currencies	Agricultural	Metals and Energy	Interest Rate Futures	Equity Indexes
British pound	Corn	Copper	Eurodollars	Dow Jones Industrials
Canadian dollar	Oats	Aluminum	Euroyen	S&P Midcap 400
Japanese yen	Soybeans	Gold	Euro-denominated	NASDAQ 100
Euro	Soybean meal	Platinum	bond	NYSE Index
Swiss franc	Soybean oil	Palladium	Euroswiss	Russell 2000 Index
Australian dollar	Wheat	Silver	Sterling	Nikkei 225 (Japanese)
Mexican peso	Barley	Crude oil	British gov't bond	FTSE Index (British)
Brazilian real	Flaxseed	Heating oil	German gov't bond	CAC Index (French)
New Zealand dollar	Canola	Gas oil	Italian gov't bond	DAX Index (German)
	Rye	Natural gas	Canadian gov't bond	All ordinary (Australian)
	Cattle	Gasoline	Treasury bonds	Toronto 35 (Canadian)
	Milk	Propane	Treasury notes	Titans 30 (Italian)
	Hogs	Commodity index	Treasury bills	Dow Jones Euro STOXX 50
	Pork bellies	Electricity	LIBOR	Industry indexes, e.g.,
	Cocoa	Weather	EURIBOR	banking
	Coffee		Municipal bond index	natural resources
	Cotton		Federal funds rate	chemical
	Orange juice		Bankers' acceptance	health care
	Sugar		S&P 500 Index	technology
	Lumber		Interest rate swaps	retail
	Rice			utilities
				telecom

Why Hedge?

- The potential benefits of hedging commodity price risk include
  - Reduced financial distress
  - Reduced issuance costs
  - Tax savings
  - Increased debt capacity
  - Improved managerial incentives
  - Improved risk assessment

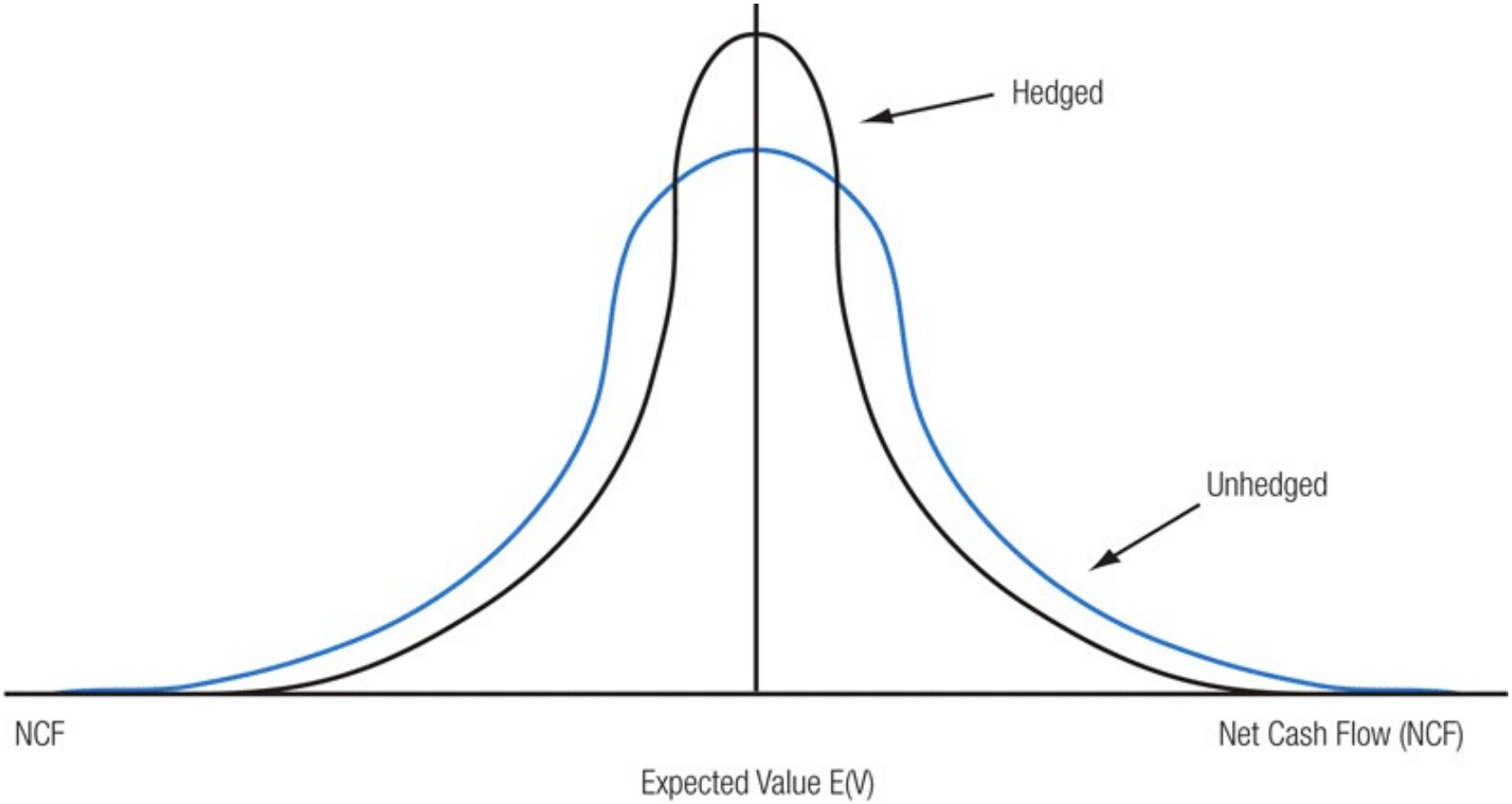
Why Hedge?

- Speculate
  - When investors use futures to place a bet on the direction in which they believe the market is likely to move
    - A firm speculates when it enters into contracts that do not offset its actual risks.
    - Speculating increases the firm’s risk rather than reducing it.

Why Hedge?

- Many companies (especially MNEs) possess a multitude of cash flows that are sensitive to changes in **exchange rates, interest rates, and commodity prices.**
- These 3 financial price risks are the subject of the growing field of *financial risk management*.
- Many firms attempt to manage their currency exposures through hedging.

Hedging's Impact on the Expected Cash Flows of the Firm



Hedging reduces the variability of expected cash flows about the mean of the distribution. This reduction of distribution variance is a reduction of risk.

Eiteman Exhibit 10.2

Why Hedge?

- However, is a reduction in the variability of cash flows sufficient reason for risk management? Opponents of hedging state (among other things):
  - Shareholders are much more capable of diversifying currency risk than the management of the firm
  - Risk management does not increase the expected cash flows of the firm
  - Management often conducts hedging activities that benefit management at the expense of the shareholders (*agency* conflict)
  - Managers cannot outguess the market

Derivatives Instruments

Intro to Derivatives

- A Derivative security derives its value from the price of another (underlying) asset or an interest rate
- Options and futures are examples of derivatives
- Futures and some options are traded on organized exchanges
- Forward contracts, swaps, and some options are custom instruments created by dealers and traded on OTC

Intro to Derivatives

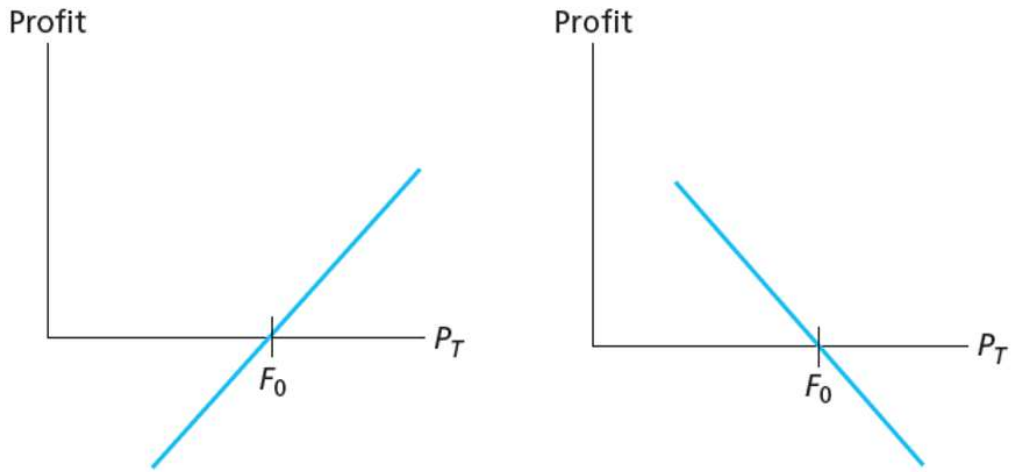
Forward contracts

- *Long position:* The party agrees to buy the underlying financial or physical asset; gains if asset price above forward price
- *Short position:* The party agrees to sell/deliver the asset; gains if asset price below forward price
- Customized: No active secondary market
- Long obligated to buy; short obligated to sell
- Specified asset (currency, stock, index, bond)
- Specified date in the future

Intro to Derivatives

Futures contracts

- Like forward contracts but standardized
- Exchange-traded, active secondary market
- Require margin deposit
- No credit/counterparty risk



A: Long futures profit = $P_T - F_0$

B: Short futures profit = $F_0 - P_T$

Intro to Derivatives

Swaps

- Equivalent to a series of forward contracts
- Simple interest rate swap
  - One party pays a fixed rate of interest
  - One party pays a variable (floating) rate of interest
- Payments can be based on interest rates or stock/portfolio/index returns
- Can involve 2 different currencies

Option Contracts

- A **call option** gives its holder the right to buy an asset:
  - At the exercise or strike price
  - On or before the expiration date
- Exercise the option to buy the underlying asset if market value > strike

- A **put option** gives its holder the right to sell an asset:
  - At the exercise or strike price
  - On or before the expiration date
- Exercise the option to sell the underlying asset if market value < strike

Foreign Exchange Rate Risk

FX Rates and Quotations

- A foreign exchange *rate* is the price of one currency expressed in terms of another currency.
- FX *quotation* (or *quote*) is a statement of willingness to buy or sell at an announced rate.
- Fill in the traditional currency symbols and codes (for electronic communications) of the following currencies.
  - U.S. dollar
  - Euro
  - Great Britain Pound
  - Japanese Yen
  - Thai Baht

FX Rates and Quotations

- FX quotes are described as either *direct* or *indirect*.
  - In this pair of definitions, the home or base country of the currencies being discussed is critical.
  - **A *direct* quote is a home currency price of a unit of foreign currency.**
  - An *indirect* quote is a foreign currency price of a unit of home currency.
  - The form of the quote depends on what the speaker regards as “home.”

FX Rates and Quotations

- Interbank quotations are given as a bid and ask (also referred to as offer).
  - A *bid* is the price (i.e. exchange rate) in one currency at which a dealer will buy another currency.
  - An *ask* is the price (i.e. exchange rate) at which a dealer will sell the other currency.
- Dealers bid (buy) at one price and ask (sell) at a slightly higher price, making their profit from the spread between the buying and selling prices.
- A bid for one currency is also the offer for the opposite currency.

Bid, Ask, and Mid-Point Quotation

In text documents of any kind, the exchange rate may be stated as *mid-point quote*, the average of *bid* and *ask*, of $1.2174/€.

For example, the *Wall Street Journal* would quote the following currencies as follows:

	Last Bid		Last Bid
Euro (EUR/USD)	1.2170	Brazilian Real (USD/BRL)	1.6827
Japanese Yen (USD/JPY)	83.16	Canadian Dollar (USD/CAD)	0.9930
U.K. Pound (GBP/USD)	1.5552	Mexican Peso (USD/MXN)	12.2365

Eiteman Exhibit 6.8

Exchange Rates: New York Closing Snapshot

U.S.-dollar foreign-exchange rates in late New York trading, Tuesday, January 3, 2012

Country	Currency	Symbol	Code	USD equivalent	Currency per USD
Americas					
Argentina*	peso	Ps	ARS	0.2321	4.3085
Brazil	real	R$	BRL	0.5338	1.8733
Canada	dollar	C$	CAD	0.9895	1.0107
Chile	peso	$	CLP	0.001932	517.5
Colombia	peso	Col$	COP	0.0005158	1938.85
Ecuador	US dollar	$	USD	1	1
Mexico*	new peso	$	MXN	0.0733	13.6455
Peru	new sol	S/.	PEN	0.3708	2.697
Uruguay†	peso	$U	UYU	0.05024	19.904
Venezuela	boliviar fuerte	Bs	VND	0.22988506	4.35
Asia-Pacific					
Australia	dollar	A$	AUD	1.0378	0.9636
1-month forward				1.03415886	0.97
3-months forward				1.02711686	0.97
6-months forward				1.01881586	0.98
China	yuan	¥	CNY	0.1589	6.294
Hong Kong	dollar	HK$	HKG	0.1288	7.7668
India	rupee	Rs	INR	0.01876	53.30545
Indonesia	rupiah	Rp	IDR	0.0001101	9082
Japan	yen	¥	JPY	0.01303271	76.73
1-month forward				0.01303863	76.7
3-months forward				0.01305577	76.59
6-months forward				0.01308558	76.42
Malaysia §	ringgit	RM	MYR	0.3173	3.1513
New Zealand	dollar	NZ$	NZD	0.79	1.2658
Pakistan	rupee	Rs.	PKR	0.01112	89.9
Philippines	peso	*P*	PHP	0.0228	43.954
Singapore	dollar	S$	SGD	0.779	1.2837
South Korea	won	W	KRW	0.0008725	1146.15
Taiwan	dollar	T$	TWD	0.03298	30.317
Thailand	baht	B	THB	0.03188	31.369
Vietnam	dong	d	VND	0.00005	21032

Eiteman Exhibit 6.8

Exchange Rates: New York Closing Snapshot

U.S.-dollar foreign-exchange rates in late New York trading, Tuesday, January 3, 2012

Country	Currency	Symbol	Code	USD equivalent	Currency per USD
Europe					
Czech Republic**	koruna	Kc	CZK	0.05076	19.7
Denmark	krone	Dkr	DKK	0.1755	5.6977
Euro area	euro	€	EUR	1.3051	0.7662
Hungary	forint	Ft	HUF	0.00412594	242.37
Norway	krone	NKr	NOK	0.1691	5.9124
Poland	zloty	—	PLN	0.2919	3.426
Romania	leu	L	RON	0.2987	3.3475
Russia ‡	ruble	R	RUB	0.03147	31.78
Sweden	krona	SKr	SEK	0.1465	6.8246
Switzerland	franc	Fr.	CHF	1.0728	0.9321
1-month forward				1.0734	0.9316
3-months forward				1.0749	0.9303
6-months forward				1.0775	0.928
Turkey **	lira	YTL	TRY	0.5338	1.8735
United Kingdom	pound	£	GBP	1.5651	0.6389
1-month forward				1.5647	0.6391
3-months forward				1.5638	0.6395
6-months forward				1.5622	0.6401
Middle East/Africa					
Bahrain	dinar	—	BHD	2.6526	0.377
Eqypt*	pound	£	EGP	0.1657	6.0348
Israel	shekel	Shk	ILS	0.2615	3.8236
Jordan	dinar	—	JOD	1.4084	0.7101
Kenya	shilling	KSh	KES	0.01177	84.989
Kuwait	dinar	—	KWD	3.5891	0.2786
Lebanon	pound	—	LBP	0.0006642	1505.65
Saudi Arabia	riyal	SR	SAR	0.2667	3.7499
South Africa	rand	R	ZAR	0.124	8.0627
United Arab Emirates	dirham	—	AED	0.2722	3.6732

Note: *Floating rate †Financial §Government rate and ‡Russian Central Bank rate **Commercial rate ‡ Special Drawing Rights (SDR); from the International Monetary Fund; based on exchange rates for U.S., British and Japanese currencies.Note: Based on trading among banks of $1 million and more, as quoted at 4 P.M. ET by Reuters. Rates are drawn from *The Wall Street Journal* for January 4, 2012.

Eiteman Exhibit 6.9

FX Rates and Quotes

- Many currency pairs are only inactively traded, so their exchange rate is determined through their relationship to a widely traded third currency (cross rate).
- Cross rates (next slide) can be used to check on opportunities for intermarket arbitrage.
- This situation arises because one bank's (Dresdner) quotation on €/£ is not the same as the calculated cross rate between $/£ (Barclay's) and $/€ (Citibank).

Key Currency Rate Calculations for January 3, 2012

		Calculated					
	Dollar	**Euro**	**Pound**	**SFranc**	**Peso**	**Yen**	**CdnDlr**
Canada	1.0107	1.3191	1.5819	1.0843	0.07407	0.01317	. . .
Japan	76.73	100.144	120.10	82.32	5.6231	. . .	75.918
Mexico	13.646	17.809	21.358	14.6395	. . .	0.17784	13.501
Switzerland	0.9321	1.2165	1.4589	. . .	0.06831	0.01215	0.92223
U.K.	0.6389	0.8339	. . .	0.6854	0.04682	0.00833	0.63214
Euro	0.7662	. . .	1.1992	0.8220	0.05615	0.00999	0.75809
U.S.	. . .	1.3051	1.5652	1.0728	0.07328	0.01303	0.9894

Note: Cross rates are calculated from quotes presented in Exhibit 6.9.

Eiteman Exhibit 6.10

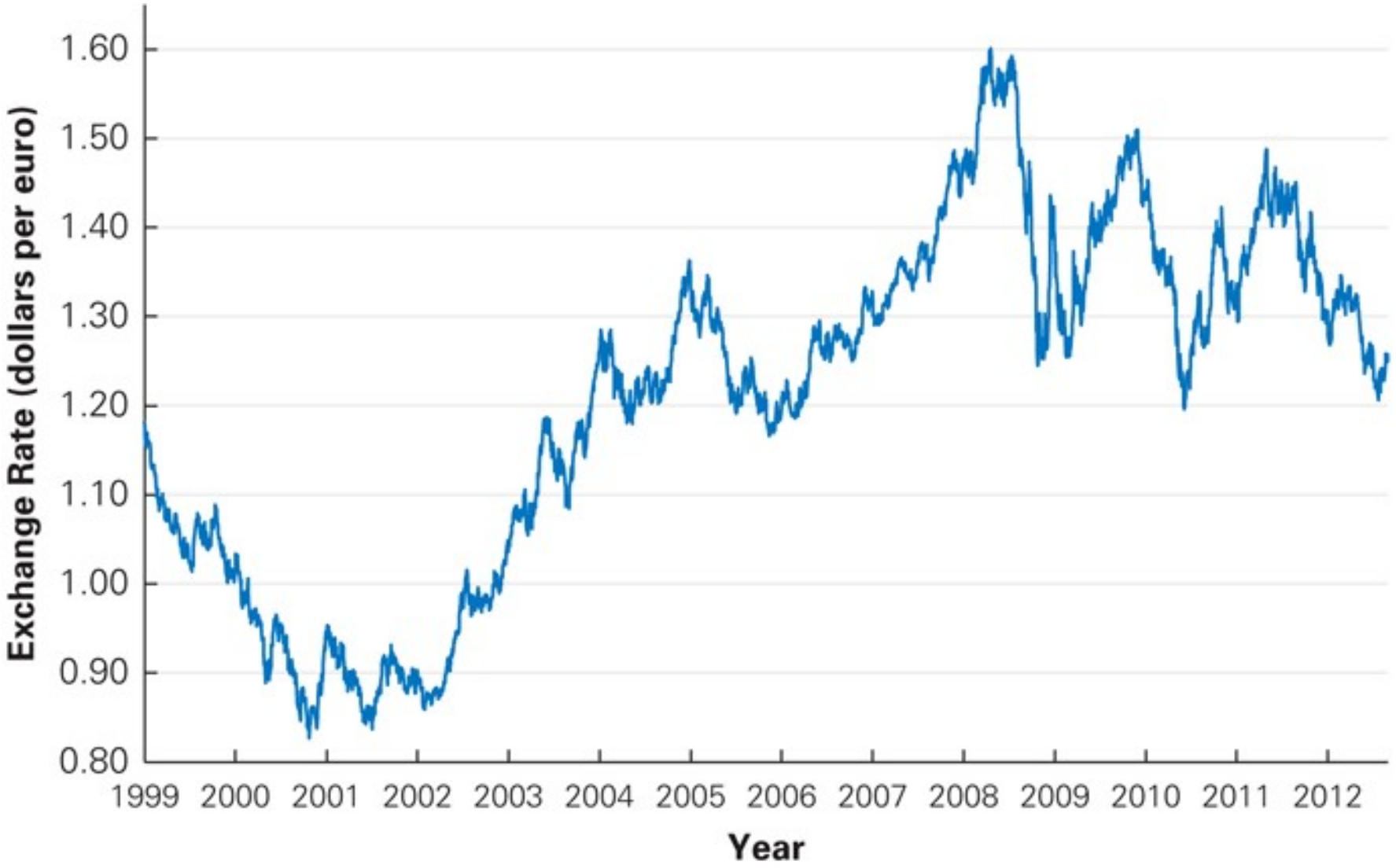
Exchange Rate Risk

- Exchange Rate Fluctuations
  - An exchange rate that changes depending on supply and demand in the market → floating rate
  - The supply and demand for each currency is driven by
    - Firms trading goods
    - Investors trading securities
    - The actions of central banks in each country
  - Most foreign exchange rates are floating rates.

Exchange Rate Risk

- Exchange Rate Fluctuations
  - Fluctuating exchanges rates cause a problem known as the importer–exporter dilemma.
    - Consider a Thai firm that imports parts from Italy.
      - If the supplier sets the price of its parts in euros, then the Thai firm faces the risk that the Baht may fall, making euros, and therefore the parts, more expensive.
      - If the supplier sets its prices in Baht, then the supplier faces the risk that the Baht may fall and it will receive fewer euros for the parts it sells to the Thai firm.

Dollars per Euro ($/€), 1999-2012



BD Figure 30.3

Exchange rate - Example

The Effect of Exchange Rate Risk

Problem

In December 2002, when the exchange rate was $1 per euro, Manzini ordered parts for next year's production from Campagnolo. They agreed to a price of 500,000 euros, to be paid when the parts were delivered in one year's time. One year later, the exchange rate was $1.22 per euro. What was the actual cost in dollars for Manzini when the payment was due? If the price had instead been set at $500,000 (which had equivalent value at the time of the agreement), how many euros would Campagnolo have received?

Hedging with Forward Contracts

- By entering into a currency forward contract, a firm can lock in an exchange rate in advance and reduce or eliminate its exposure to fluctuations in a currency's value.
- A currency forward contract specifies
  - An exchange rate
  - An amount of currency to exchange
  - A delivery date on which the exchange will take place
- Forward Exchange Rate
  - The exchange rate set in a currency forward contract: it applies to an exchange that will occur in the future.

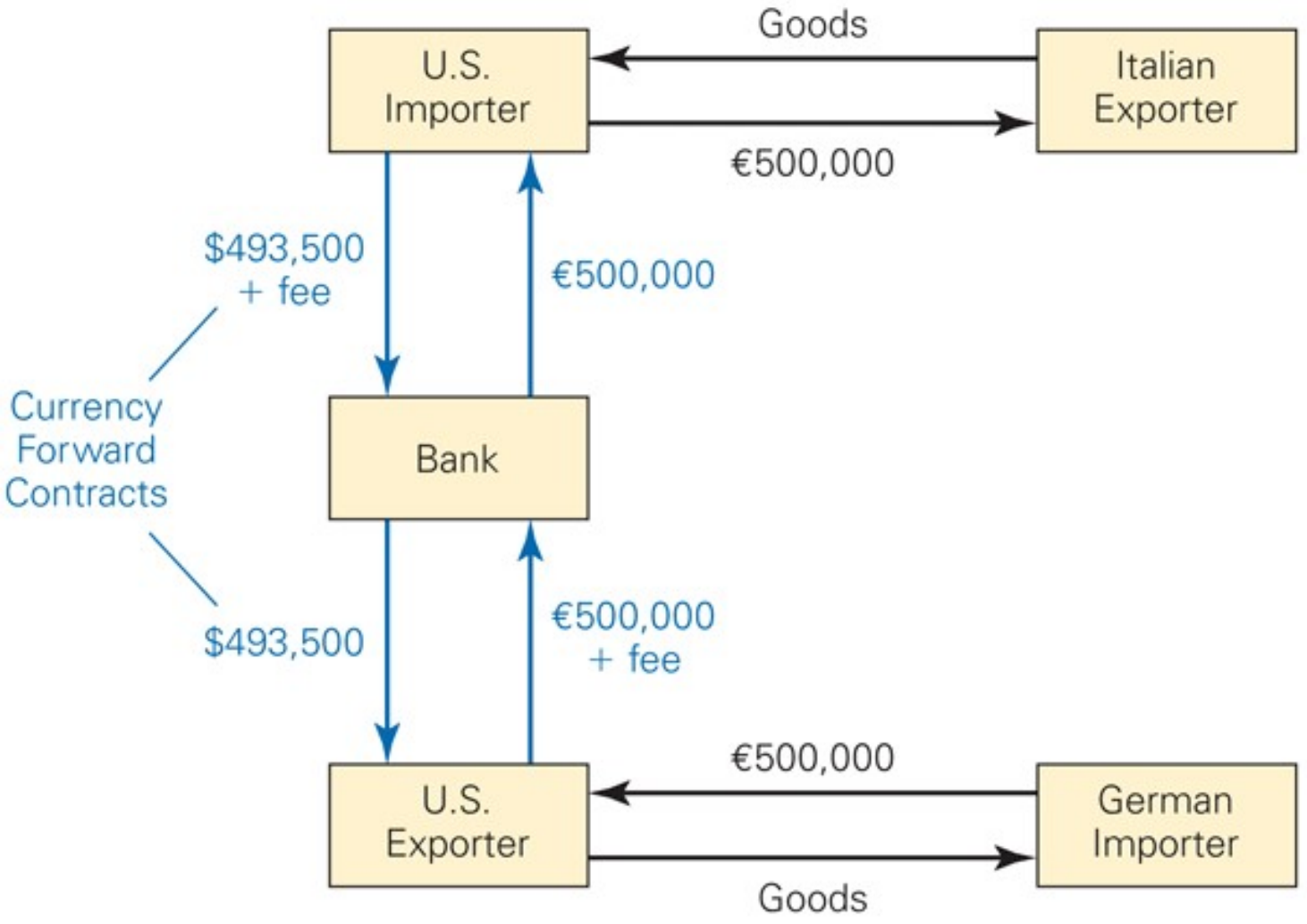
Forward Contract - Example

Using a Forward Contract to Lock In an Exchange Rate

Problem

In December 2002, banks were offering one-year currency forward contracts with a forward exchange rate of \$0.987/€. Suppose that at that time, Manzini placed the order with Campagnolo with a price of 500,000 euros and simultaneously entered into a forward contract to purchase 500,000 euros at a forward exchange rate of \$0.987/€ in December 2003. What payment would Manzini be required to make in December 2003?

The Use of Currency Forwards to Eliminate Exchange Rate Risk



BD Figure 30.4

Foreign Currency Options

- A *foreign currency option* is a contract giving the option purchaser (the buyer) the right, but not the obligation, to buy or sell a given amount of foreign exchange at a fixed price per unit for a specified time period (until the maturity date).
- There are two basic types of options, *puts* and *calls*.
  - A call is an option to buy foreign currency
  - A put is an option to sell foreign currency

Foreign Currency Options

- The buyer of an option is termed the *holder*, while the seller of the option is referred to as the *writer*.
- Every option has 3 different price elements:
  - The *exercise* or *strike* price – the exchange rate at which the foreign currency can be purchased (call) or sold (put)
  - The *premium* – the cost, price, or value of the option itself
  - The underlying or actual spot exchange rate in the market

Foreign Currency Options

- An *American* option gives the buyer the right to exercise the option at any time between the date of writing and the expiration or maturity date.
- A *European* option can be exercised only on its expiration date, not before.
- The premium, or option price, is the cost of the option.

Foreign Currency Options

- An option whose exercise price is the same as the spot price of the underlying currency is said to be *at-the-money* (ATM).
- An option that would be profitable, excluding the cost of the premium, if exercised immediately is said to be *in-the-money* (ITM).
- An option that would not be profitable, again excluding the cost of the premium, if exercised immediately is referred to as *out-of-the money* (OTM).

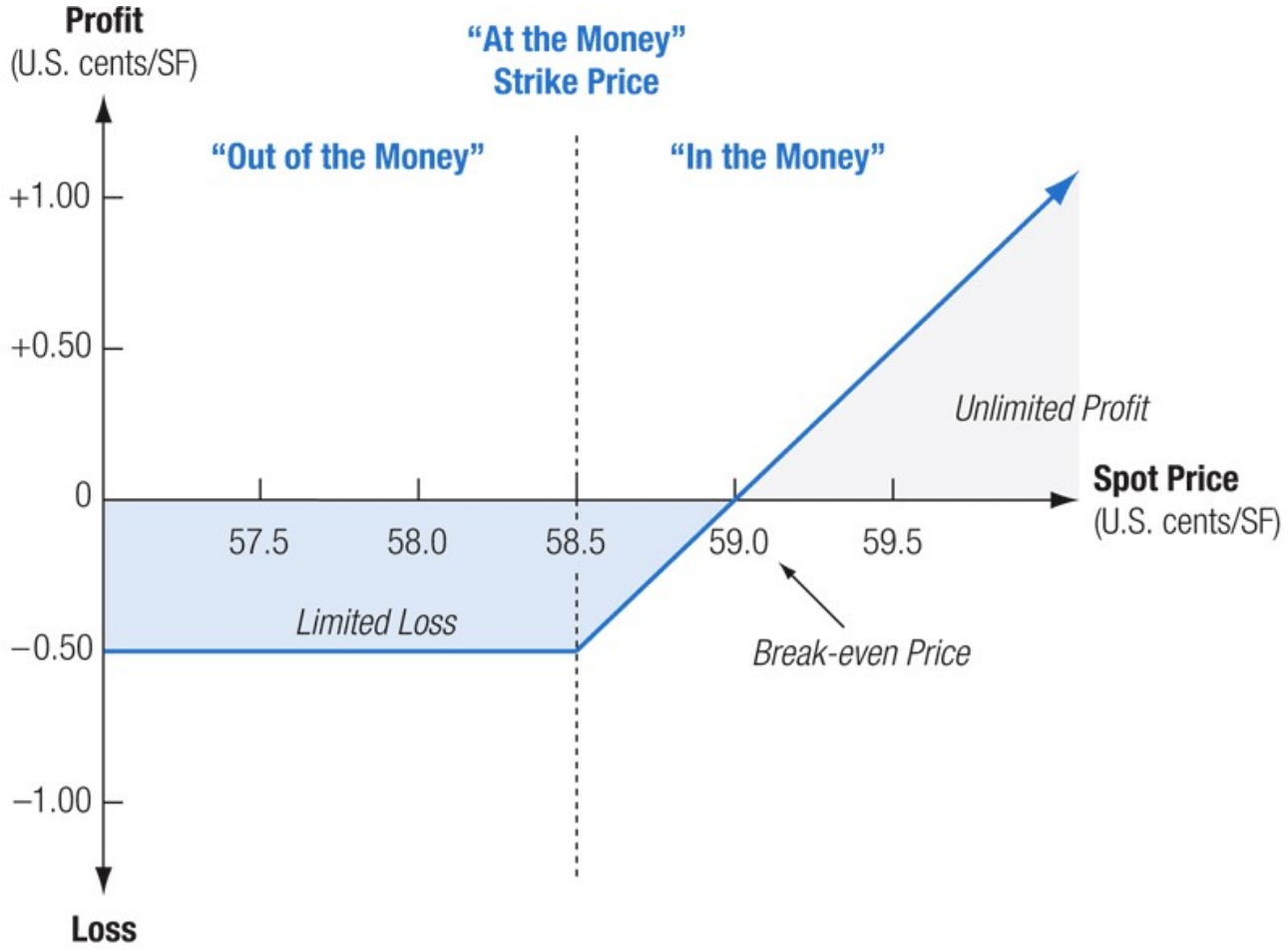
Swiss Franc Option Quotations (U.S. cents/SF)

Option and Underlying	Strike Price	Calls—Last			Puts—Last		
		Aug	Sep	Dec	Aug	Sep	Dec
58.51	56.0	—	—	2.76	0.04	0.22	1.16
58.51	56.5	—	—	—	0.06	0.30	—
58.51	57.0	1.13	—	1.74	0.10	0.38	1.27
58.51	57.5	0.75	—	—	0.17	0.55	—
58.51	58.0	0.71	1.05	1.28	0.27	0.89	1.81
58.51	58.5	0.50	—	—	0.50	0.99	—
58.51	59.0	0.30	0.66	1.21	0.90	1.36	—
58.51	59.5	0.15	0.40	—	2.32	—	—
58.51	60.0	—	0.31	—	2.32	2.62	3.30

Each option = 62,500 Swiss francs. The August, September, and December listings are the option maturities or expiration dates.

Eiteman Exhibit 8.2

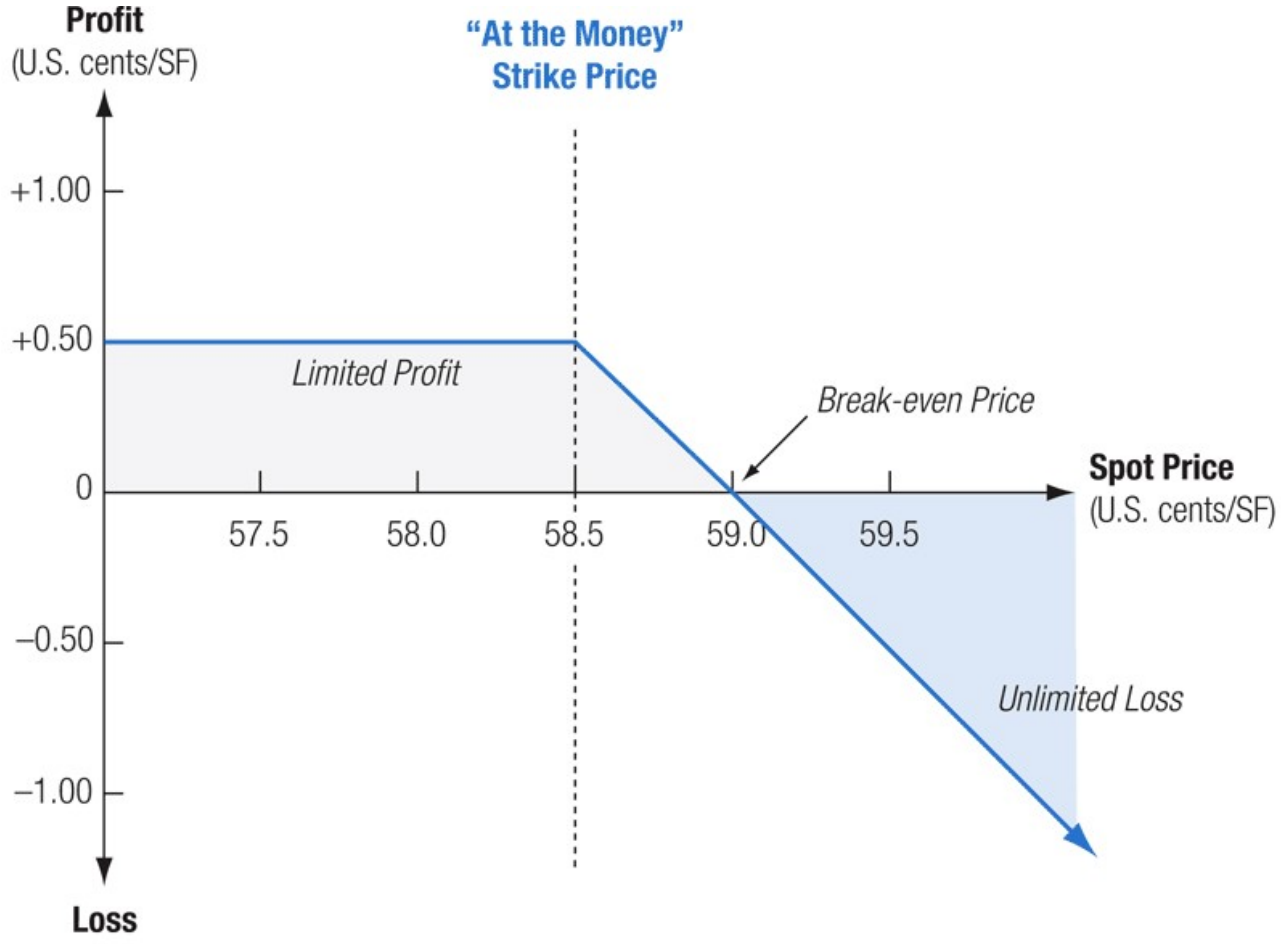
Profit and Loss for the Buyer of a Call Option



The buyer of a call option on SF, with a strike price of 58.5 cents/SF, has a limited loss of 0.50 cents/SF at spot rates less than 58.5 ("out of the money"), and an unlimited profit potential at spot rates above 58.5 cents/SF ("in the money").

Eiteman Exhibit 8.3

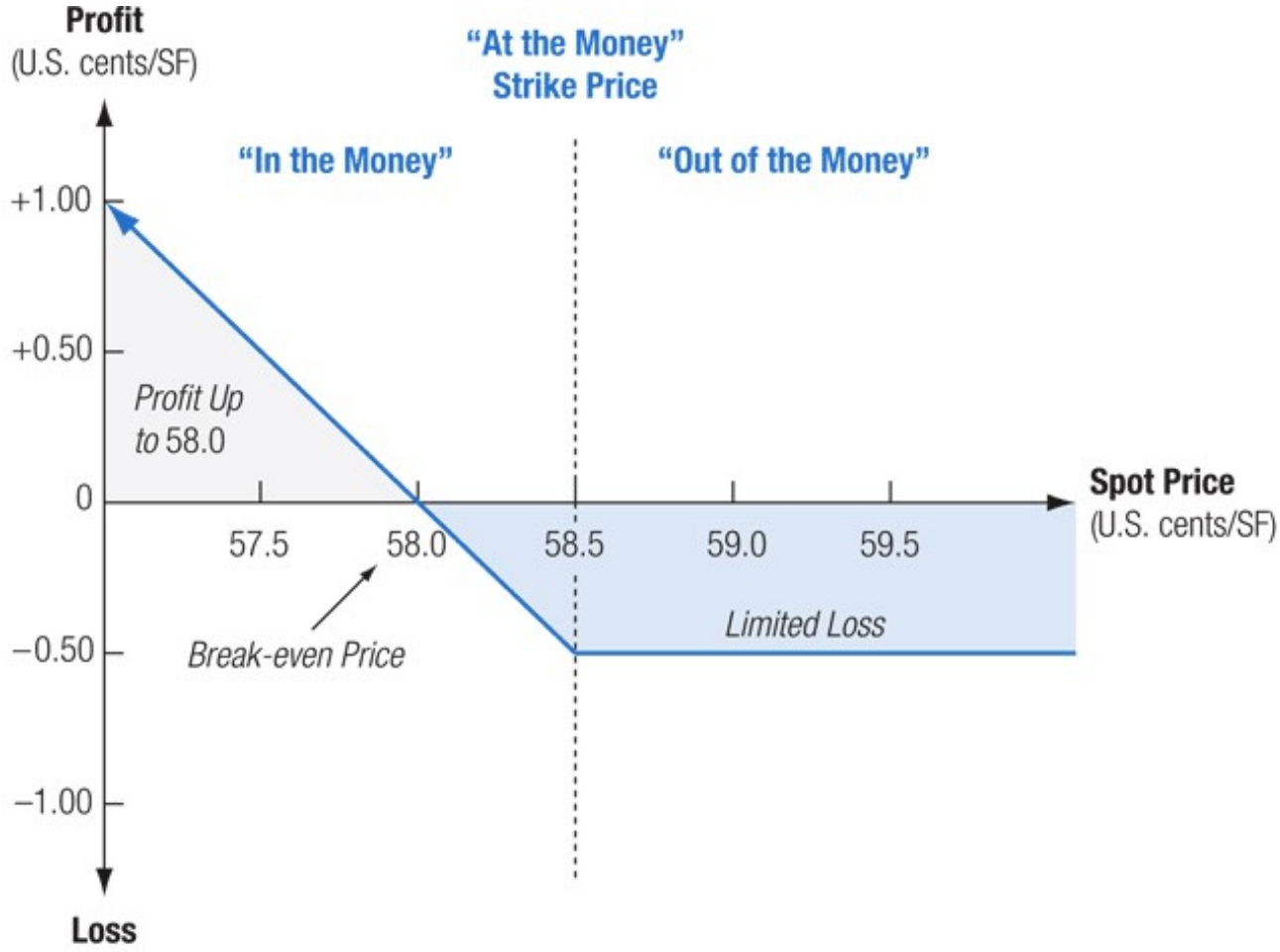
Profit and Loss for the Writer of a Call Option



The writer of a call option on SF, with a strike price of 58.5 cents/SF, has a limited profit of 0.50 cents/SF at spot rates less than 58.5, and an unlimited loss potential at spot rates above (to the right of) 59.0 cents/SF.

Eiteman Exhibit 8.4

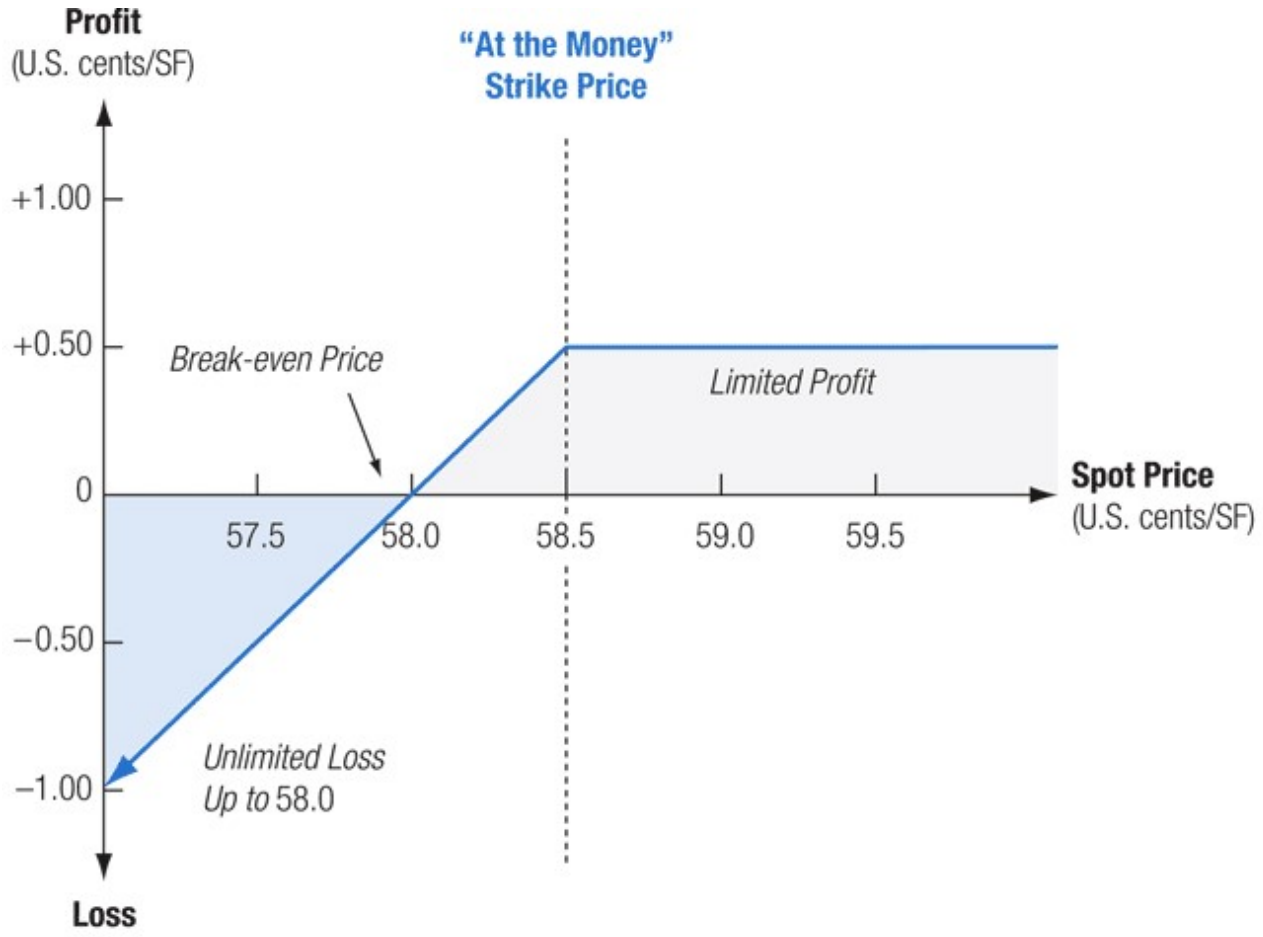
Profit and Loss for the Buyer of a Put Option



The buyer of a put option on SF, with a strike price of 58.5 cents/SF, has a limited loss of 0.50 cents/SF at spot rates greater than 58.5 ("out of the money"), and an unlimited profit potential at spot rates less than 58.5 cents/SF ("in the money") up to 58.0 cents.

Eiteman Exhibit 8.5

Profit and Loss for the Writer of a Put Option



The writer of a put option on SF, with a strike price of 58.5 cents/SF, has a limited profit of 0.50 cents/SF at spot rates greater than 58.5, and an unlimited loss potential at spot rates less than 58.5 cents/SF up to 58.0 cents.

Eiteman Exhibit 8.6

Hedging with Options

- *Currency options* are another method to manage exchange rate risk.
  - Assume that in December 2005, the one-year forward exchange rate was $1.20 per euro. A firm that will need euros in one year can buy a call option on the euro, giving it the right to buy euros at a maximum price.
- Suppose a one-year European call option on the euro with a strike price of $1.20 per euro trades for $0.05 per euro.
  - The table on the following slide shows the outcome from hedging with a call option.

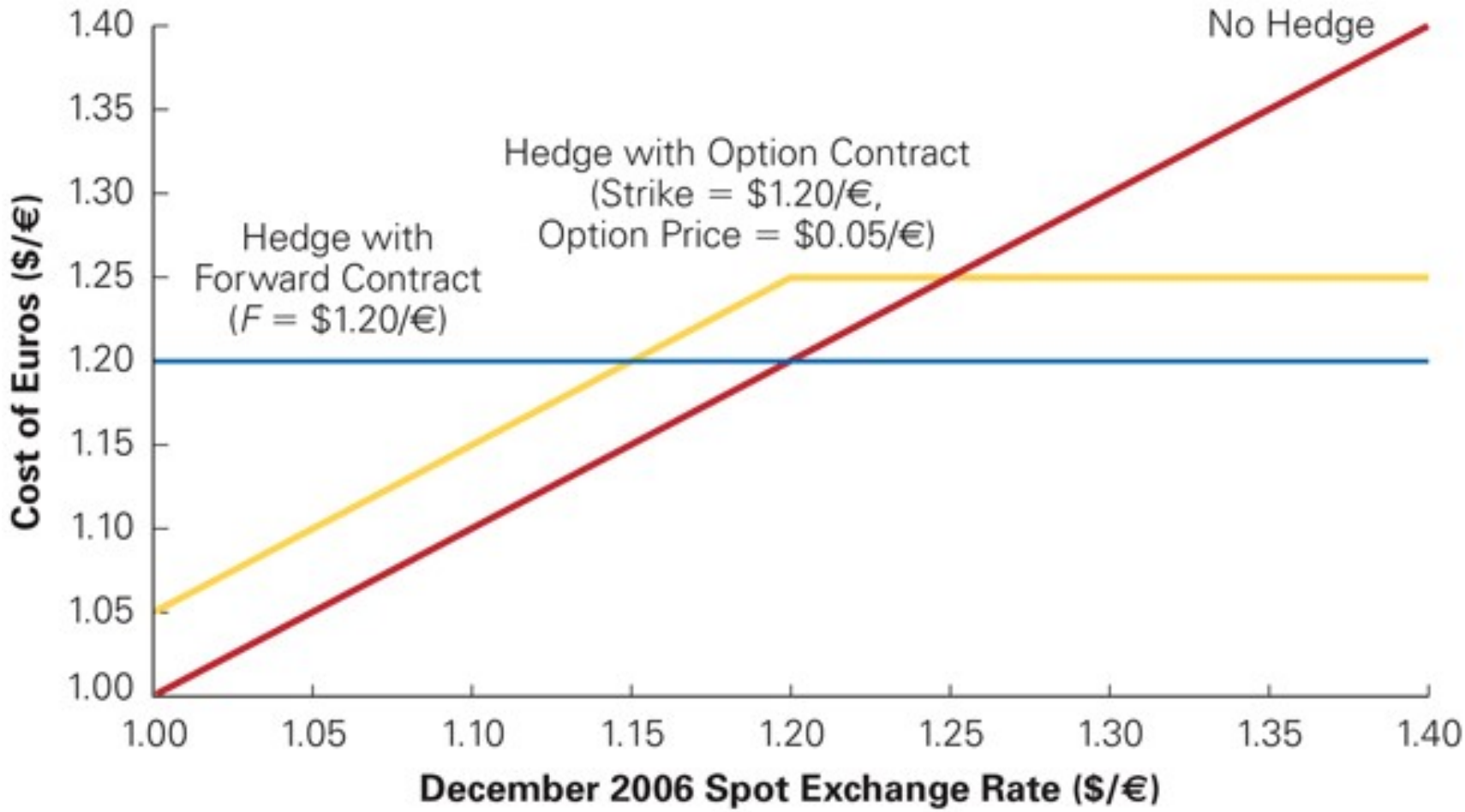
Cost of Euros ($/€) When Hedging with a Currency Option with a Strike Price of $1.20/€ and an Initial Premium of $0.05/€

Dec. 2006 Spot Exchange Rate	Exercise Option?	Exchange Rate Taken	+	Cost of Option	=	Total Cost
1.00	No	1.00		0.05		1.05
1.15	No	1.15		0.05		1.20
1.30	Yes	1.20		0.05		1.25
1.45	Yes	1.20		0.05		1.25

Hedging with Options

- If the spot exchange rate is less than the $1.20 per euro strike price of the option, then the firm will not exercise the option and will convert dollars to euros at the spot exchange rate.
- If the spot exchange rate is more than $1.20 per euro, the firm will exercise the option and convert dollars to euros at the rate of $1.20 per euro. Adding in the initial cost of the option gives the total dollar cost per euro paid by the firm.

Comparison of Hedging the Exchange Rate Using a Forward Contract, an Option, or No Hedge



BD Figure 30.6

Hedging with Options

- If the firm does not hedge at all, its cost for euros is simply the spot exchange rate.
- If the firm hedges with a forward contract, it locks in the cost of euros at the forward exchange rate and the firm's cost is fixed.
- If the firm hedges with options, it puts a cap on its potential cost, but will benefit if the euro depreciates in value.

Hedging with Options

- Options vs. Forward Contracts
  - A firm may use options instead of forward contract:
    - So the firm can benefit if the exchange rate moves in their favor and not be stuck paying an above-market rate
    - If the transaction they are hedging might not take place