Financial Markets

Miskin (2009) Chapter 2,8

Ceccetti and Schoenholtz (2015), Chapter 3

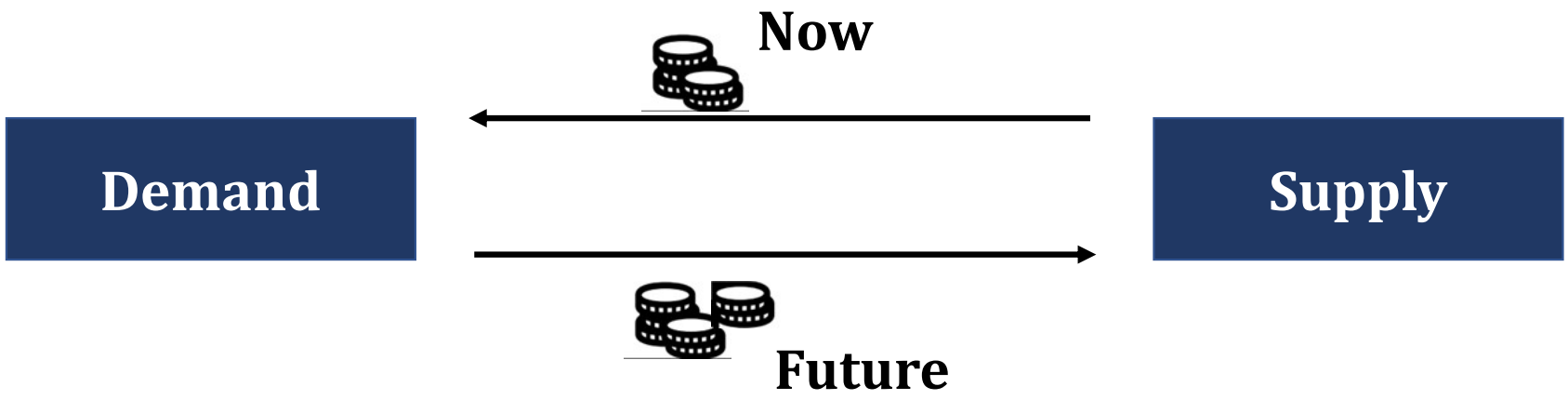
Learning objectives

Understanding…

Why do financial markets exist?	Financial markets and types of financial markets
What types of financial markets are there?	
Why do different financial markets exist?	Financial instruments
Who participates in financial markets?	Participants in financial markets
Why do financial institutions exist?	
Why do different financial institutions exist?	

Why do financial markets exist?

- Financial instrument is the written legal obligation of one party to transfer something of value, usually money, to another party at some future date, ***under specified conditions***
- Financial markets are the places where financial instruments are bought and sold.



To reallocate assets efficiently and support economic growth

Types of financial markets

- **By instruments**
  - Debt market
    - •Debt instruments: retail private debt (credit card, car loan, mortgage), company private debt, corporate bond, government bond, note and bill, asset-backed obligation
  - Equity market
    - •Equity instruments: Shares, listed company common and preferred shares
  - Derivatives market
    - •Options, swaps, forward, and future contracts
  - Foreign currency market
    - •Exchange of currency pairs
- **By maturity**
  - Money market
    - •Fixed income security with maturity less than a year
  - Capital market
    - •Security with maturity equal or greater than a year
- **By order of entry**
  - Primary market
    - •The issuance of a security (=the first time a security is ready for purchase)
    - •Buy from the issuer (or underwriter)
  - Secondary market
    - •After the issuance of a security
    - •Buy from other investors who hold that security

Debt market versus equity market

Debt instruments

- Contractual agreements by the borrowers to pay the holders of instruments fixed amounts at regular intervals (interest and principal payments) until a special date (the maturity date), when a final payment is made.

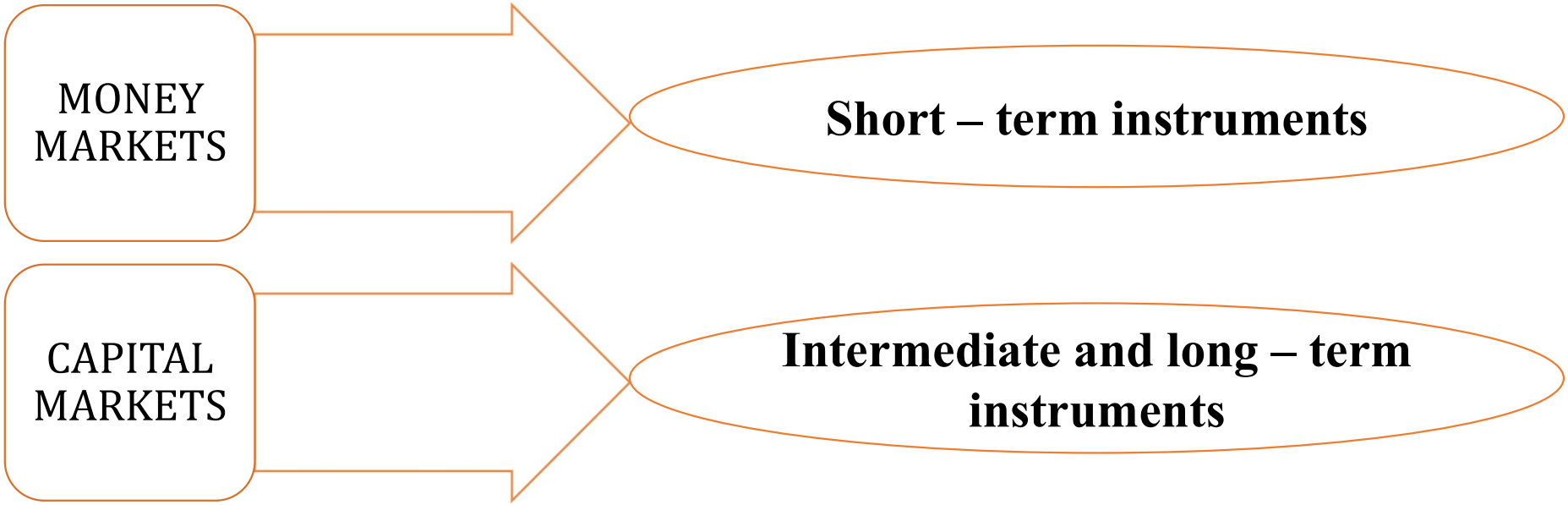
- The maturity of a debt instrument is the time (term) from issuing date to that instrument's expiration date

Equity instruments

- claims to share in the net income (income after expenses and taxes) and the assets of a business

BALANCE SHEET of *Issuers*	
ASSETS	LIABILITIES & EQUITIES
	LIABILITIES
	EQUITIES

Money market versus capital market



A ***money market*** is a financial market in which trades short – term (debt) instruments such as Treasury bill, commercial paper…

A ***capital market*** is a financial market in which longer – term (debt) instruments (and equity instruments) such as common stock, long – term bond… are traded.

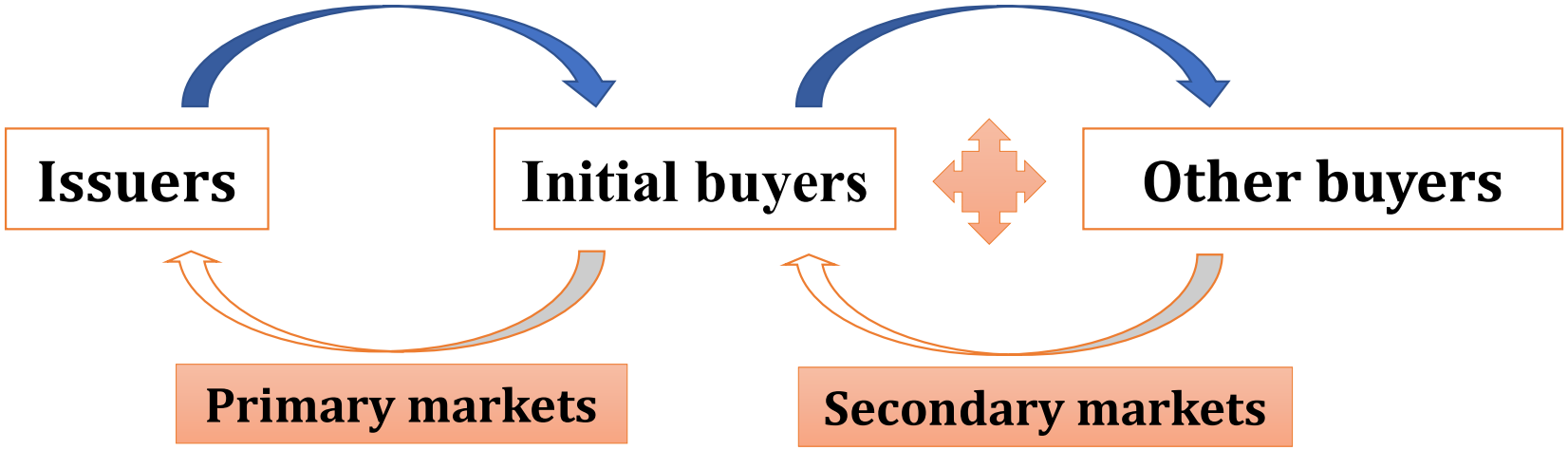
Participants

TABLE 11.2 Money Market Participants

Participant	Role
U.S. Treasury Department	Sells U.S. Treasury securities to fund the national debt
Federal Reserve System	Buys and sells U.S. Treasury securities as its primary method of controlling interest rates
Commercial banks	Buy U.S. Treasury securities; sell certificates of deposit and make short-term loans; offer individual investors accounts that invest in money market securities
Businesses	Buy and sell various short-term securities as a regular part of their cash management
Investment companies (brokerage firms)	Trade on behalf of commercial accounts
Finance companies (commercial leasing companies)	Lend funds to individuals
Insurance companies (property and casualty insurance companies)	Maintain liquidity needed to meet unexpected demands
Pension funds	Maintain funds in money market instruments in readiness for investment in stocks and bonds
Individuals	Buy money market mutual funds
Money market mutual funds	Allow small investors to participate in the money market by aggregating their funds to invest in large-denomination money market securities

Miskin, *Financial Markets and Institutions, Global edition*, chapter 11

Primary market versus secondary market



financial markets in which new issues of a security are sold to initial buyers

financial markets in which securities that have been previously issued can be resold

Liquidity: the relative ease and speed with which an asset can be converted into a medium of exchange/ money.

the degree of which securities can easily be liquidated (sold) without a loss of value

Primary market versus secondary market

A ***Primary market*** is a financial market in which new issues of a security, such as a bond or a stock, are sold to initial buyers

- supply capital for corporations

A ***Secondary market*** is a financial market in which securities that have been previously issued can be resold

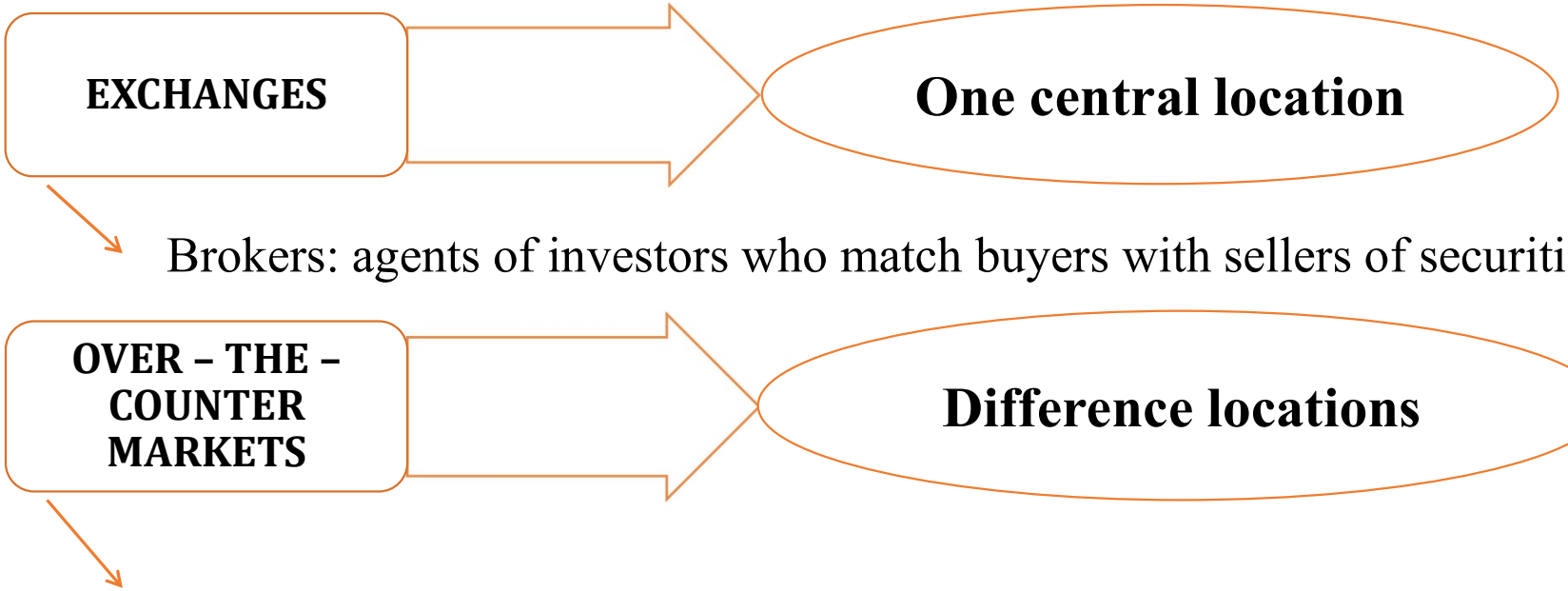
- Allow a change of the ownership of the securities

- an important characteristic of securities that are traded in secondary markets is liquidity, which is the degree to which securities can easily be liquidated (sold)

Some securities have an active secondary market, meaning that there are many willing buyers and sellers of the security at a given point in time

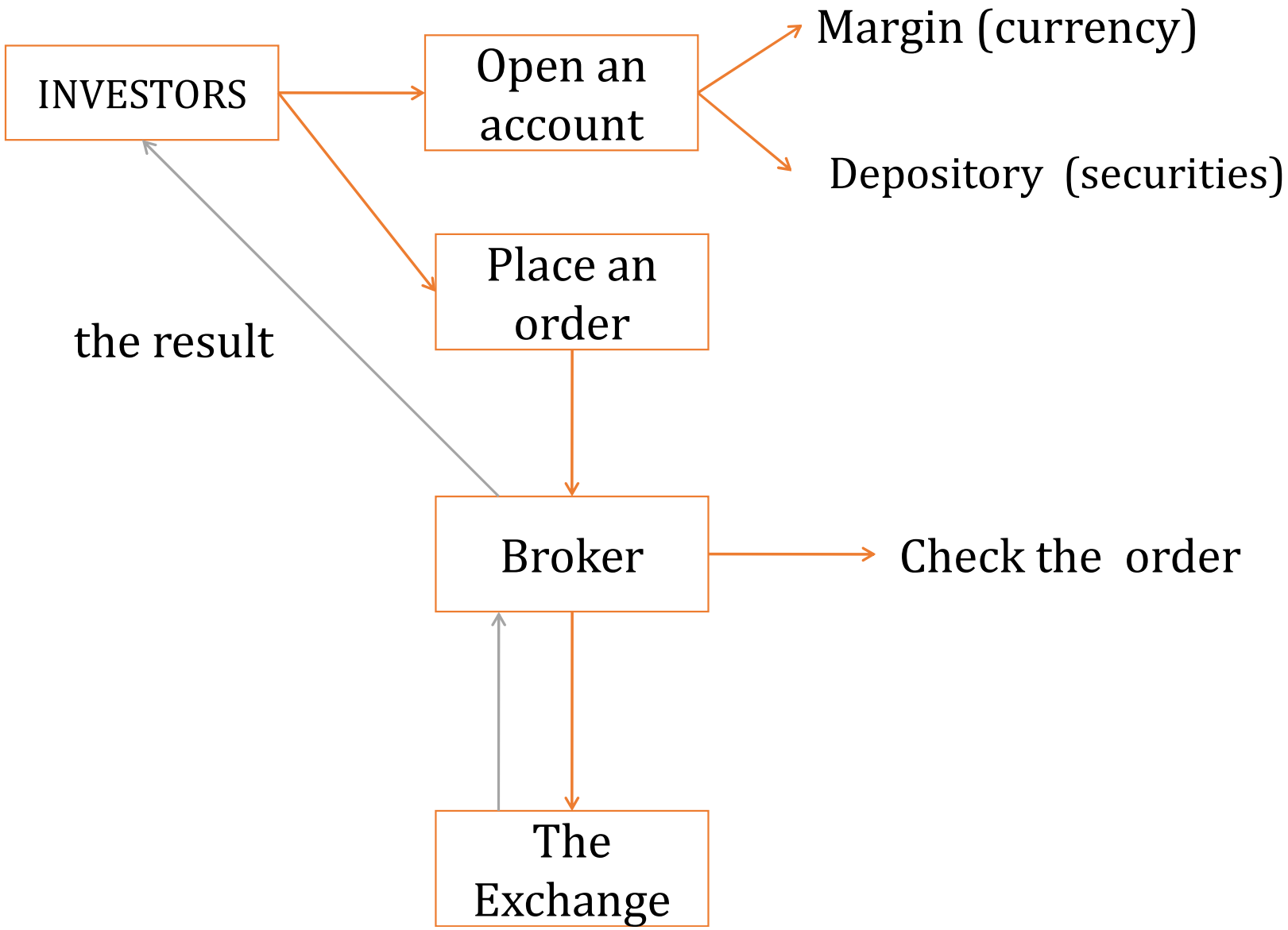
- Determine the price of the security that the issuing firm sells in the primary market

Exchanges and over-the-counter markets

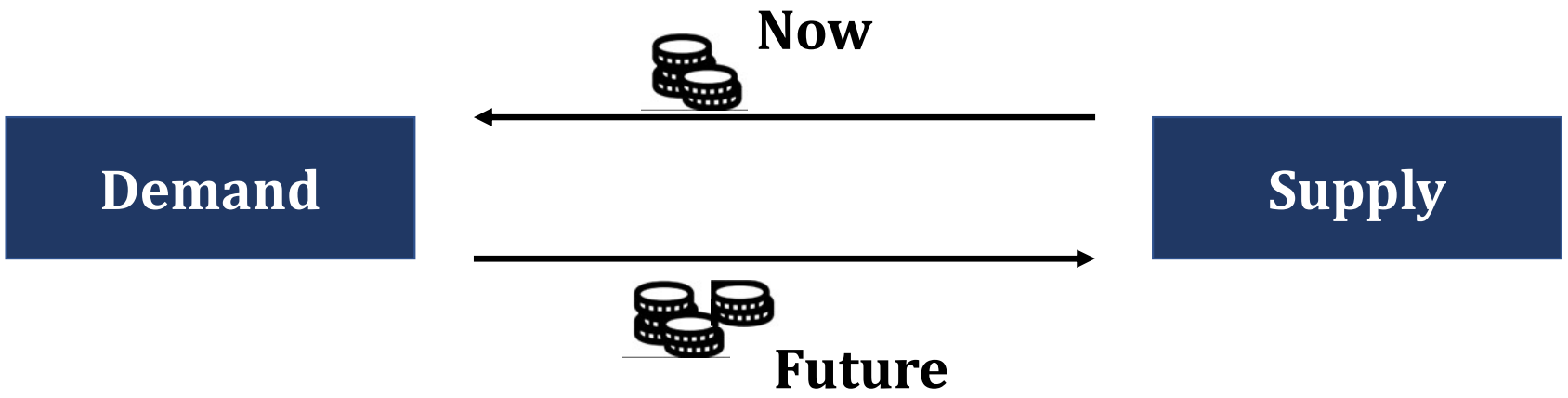


Exchanges: buyers and sellers of securities (or their agents or ***brokers***) meet in one central location to conduct trades

An ***Over – the – counter market:*** dealers at different locations who have an inventory of securities stand ready to buy and sell securities "over the counter" to anyone who comes to them and is willing to accept their prices


INVESTORS
Open an account
Margin (currency)
Depository (securities)
Place an order
the result
Broker
Check the order
The Exchange

Why do different financial markets exist?

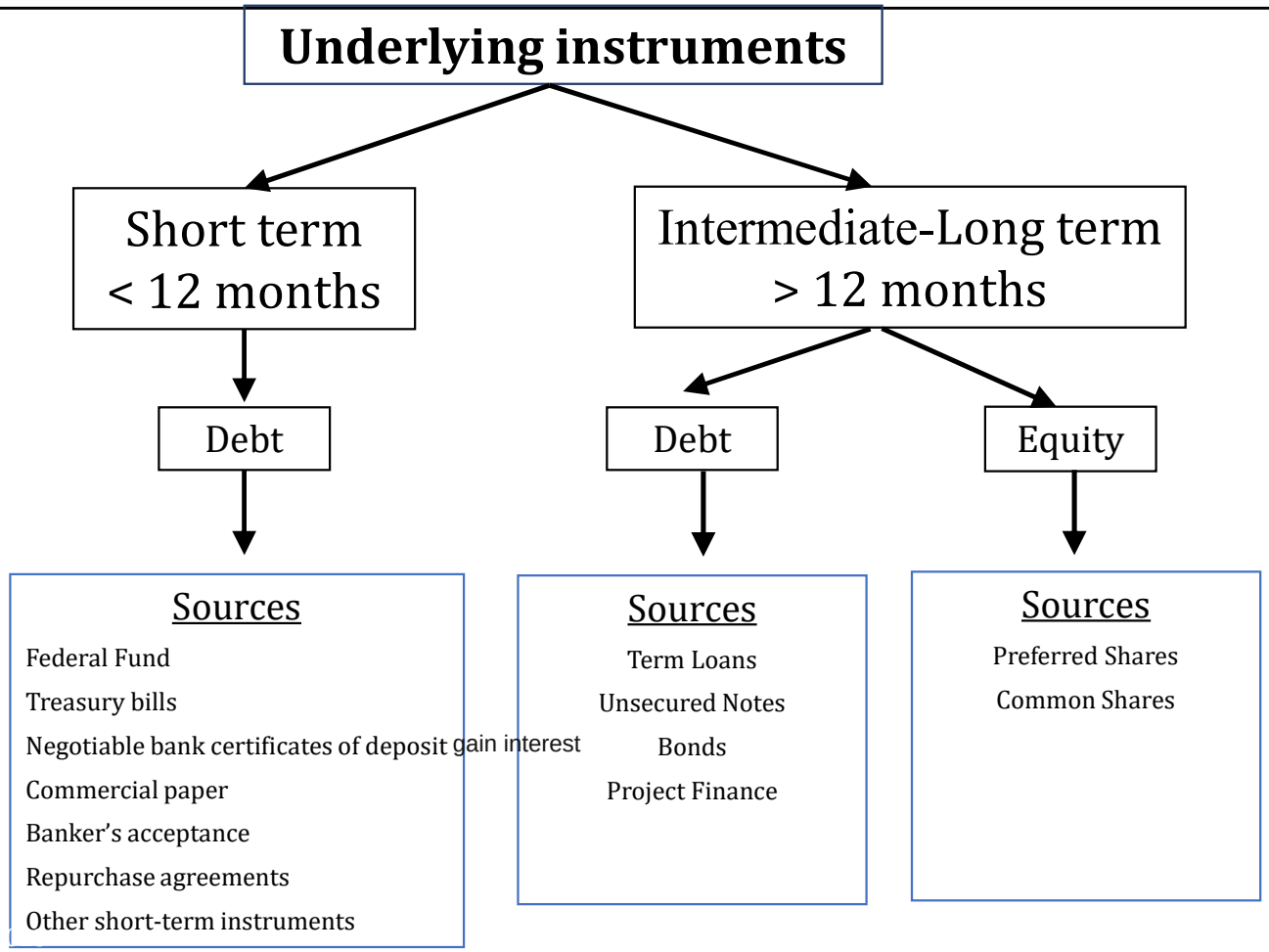


Needs??

Available

- The length of fund usage
- The scale of fund in need
- The risk of funded project

Financial instruments



gain interest

Derivatives

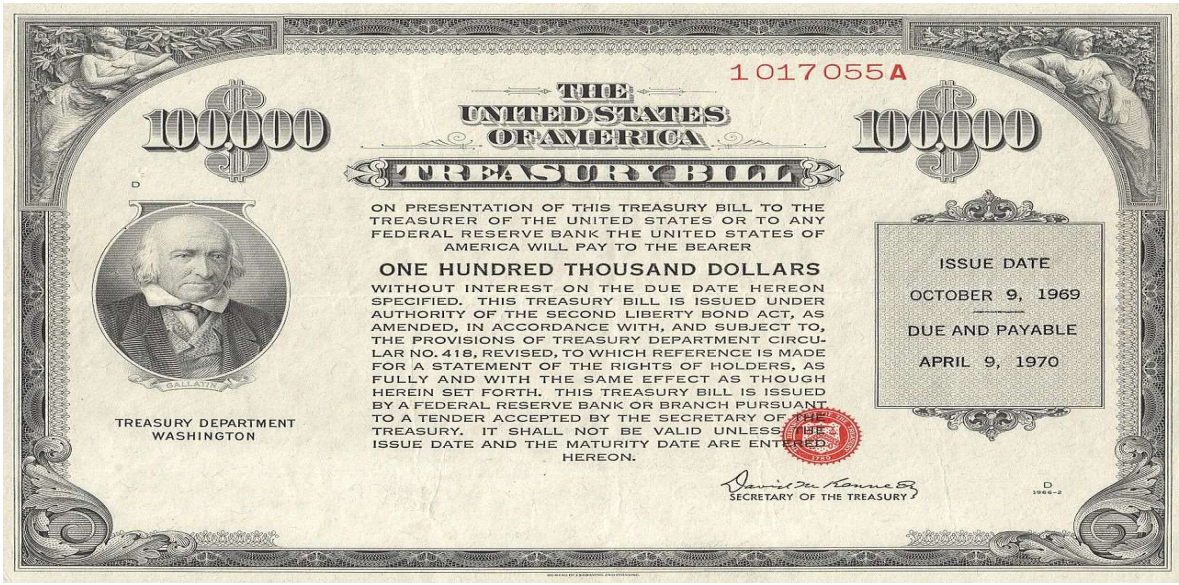
Forwards
Futures
Options
Swaps

Money market instruments – Treasury bill

Treasury bills: short-term debt instruments to finance the government.

- paying a set amount at maturity (the face value)
- no interest payments (paying interest by initial selling at a discount)

⇒Sold at a discount



The government does not actually pay interest on T- bills. Instead, they are issued at a discount from par (their value at maturity). The investor's yield comes from the increase in the value of the security between the time it was purchased and the time it matures

Treasury Bill Interest Rates Treasury bills are very close to being risk-free.

Money market instruments – Treasury bill

You submit a bid to purchase a 28-day $1,000 Treasury bill, and you find that you are buying the bond for $999.81333. What are the discount rate and the investment rate?

Face value/ par value:

$100,000

T-bill discount

$$i_{discount} = \frac{F - P}{F} \times \frac{360}{n}$$

T-bill yield/ T-bill investment rate

$$yield/i_{investment} = \frac{F - P}{P} \times \frac{365}{n}$$

TABLE 11.3 Recent Bill Auction Results

Security Term	Issue Date	Maturity Date	Discount Rate	Investment Rate	Price per $100	CUSIP
28 day	5/19/2016	6/16/2016	0.240	0.243	99.981333	912796HX0
91 day	5/19/2016	8/18/2016	0.275	0.279	99.930486	912796HA0
182 day	5/19/2016	11/17/2016	0.370	0.376	99.812944	912796JU4
28 day	5/12/2016	6/9/2016	0.245	0.248	99.980944	912796HW2
91 day	5/12/2016	8/11/2016	0.240	0.243	99.939333	912796JF7

Source: http://www.treasurydirect.gov/RI/OFBills.

Miskin, *Financial Markets and Institutions, Global edition*, chapter 11

Money market instruments – Repurchase agreement

Repurchase agreement is an agreement:

- the borrower agree to sell an amount of securities (usually T-bills) to the lender and
- commit to repurchase them at a specified date and price

⇒***Short – term loans*** (normally, a maturity of less than two weeks) ***;***

Treasury bills: collateral ***(***an asset that the lender receives if the borrower does not pay back the loan)

Money market instruments – Fed fund- Fed fund rate FFR

- ***Federal funds are short-term funds transferred (loaned or borrowed) between financial institutions, usually for a period of one day.***
- Purpose of Fed Funds The Federal Reserve has set minimum reserve requirements that all banks must maintain. To meet these reserve requirements, banks must keep a certain percentage of their total deposits with the Federal Reserve.
- Fed funds are usually overnight investments. Banks analyze their reserve position on a daily basis and either borrow or invest in fed funds, depending on whether they have deficit or excess reserves.
- Federal Funds Interest Rates (FFR) The forces of supply and demand set the fed funds interest rate. This is a competitive market that analysts watch closely for indications of what is happening to short-term rates. The fed funds rate reported by the press is known as the effective rate , which is defined in the Federal Reserve Bulletin as the weighted average of rates on trades through New York brokers.

Money market instruments – Negotiable bank certificates of deposit

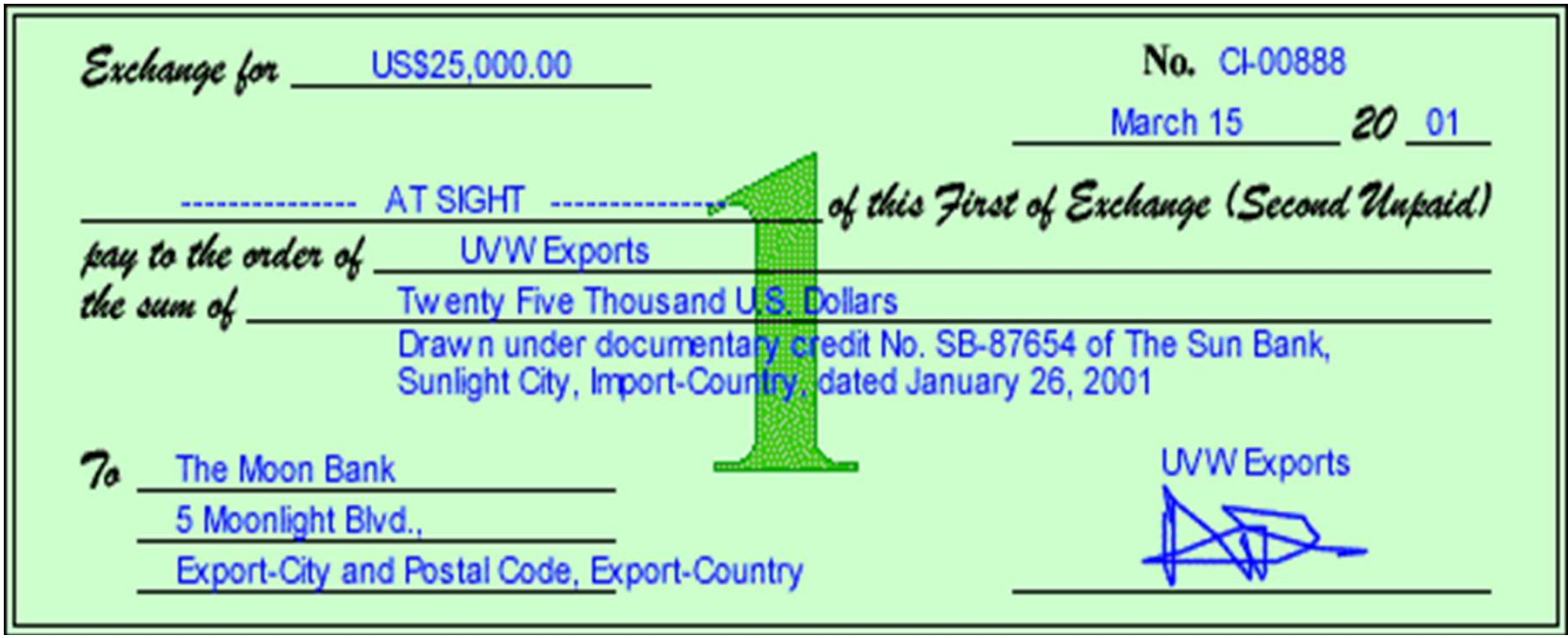
Negotiable bank certificates of deposit:

- short-term debt instruments/ a time deposit
- issuer: banks
- paying periodic interest
- paying the principal at maturity
- being resold in a secondary market

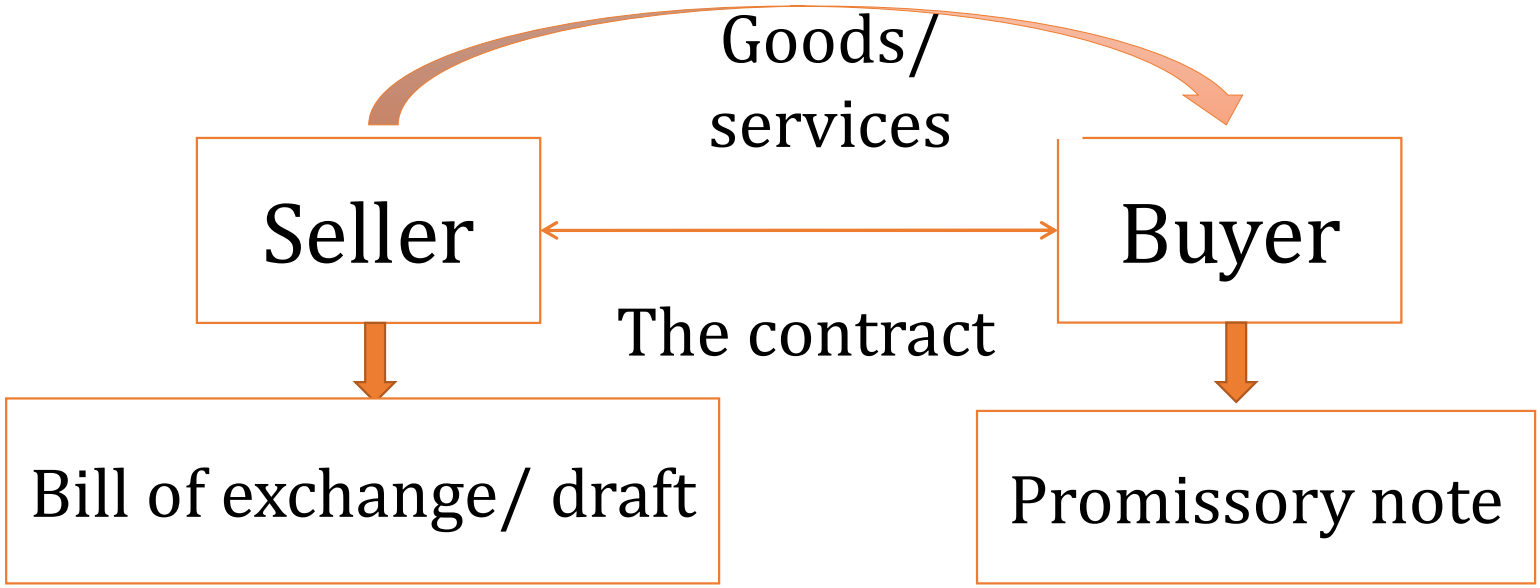
Money market instruments – Commercial paper

Commercial paper is a short – term debt instrument issued by large banks and well – known corporations to acquire funds:

> ***paying a set amount*** at maturity (the face value)
>
> having ***no interest payments***



Money market instruments – Commercial paper



a request of unconditional payment for a definite amount of money to beneficiary

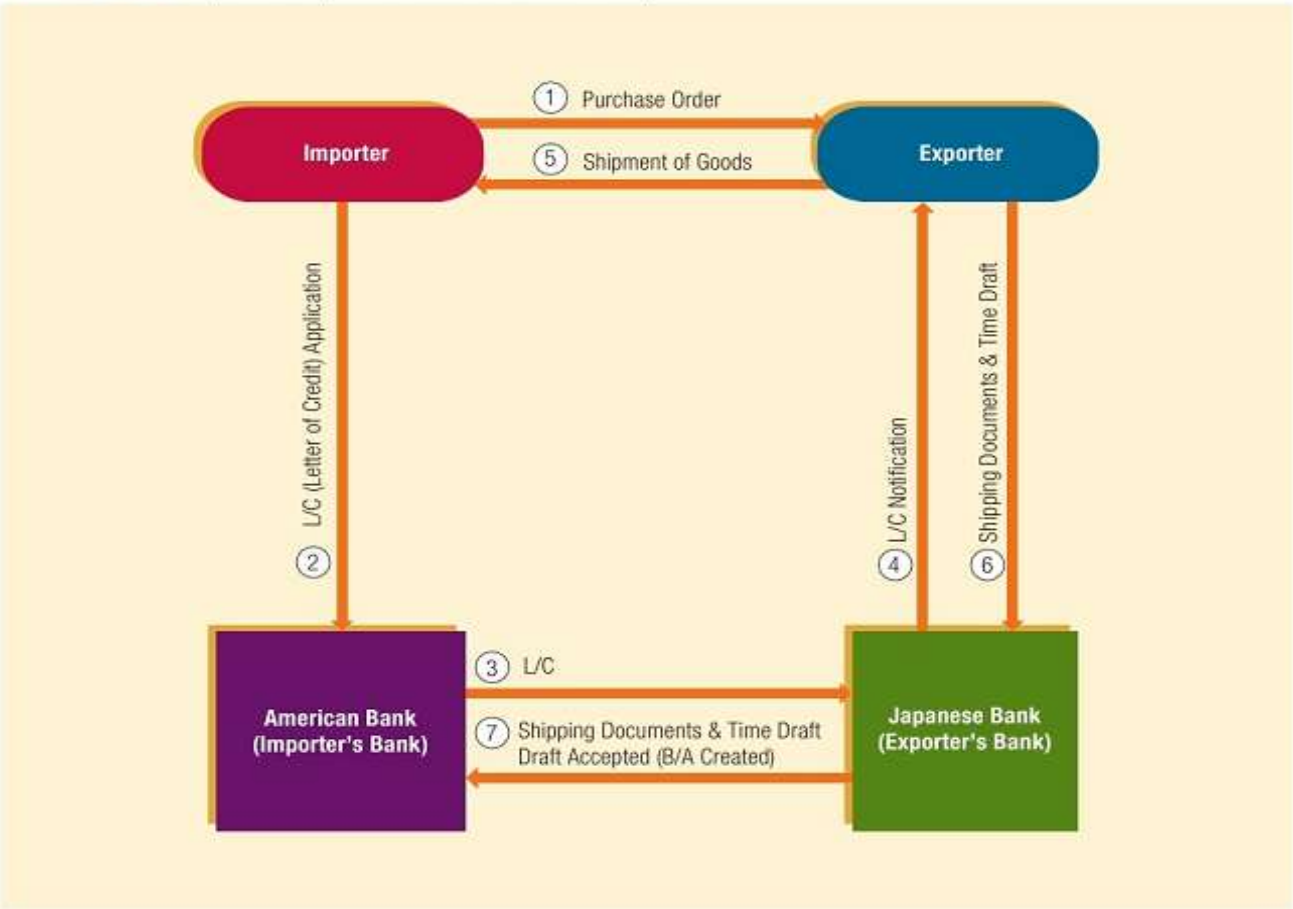
an unconditional promise of the issuer in writing to pay a determinate amount of money to beneficiary

Money market instruments – Banker's acceptance

- Banker's acceptance is a bank draft issued by a firm, payable at some future date, and guaranteed for a fee by the bank that stamps it "accepted"

- The firm issuing the instrument is required to deposit the required funds into its account to cover the draft

Exhibit 6.3 Sequence of Steps in the Creation of a Banker's Acceptance



Money market instruments – Comparing

Miskin, *Financial Markets and Institutions, Global edition*, chapter 11

TABLE 11.4 Money Market Securities and Their Markets

Money Market Security	Issuer	Buyer	Usual Maturity	Secondary Market
Treasury bills	U.S. government	Consumers and companies	4, 13, 26, and 52 weeks	Excellent
Federal funds	Banks	Banks	1 to 7 days	None
Repurchase agreements	Businesses and banks	Businesses and banks	1 to 15 days	Good
Negotiable certificates of deposit	Large money center banks	Businesses	14 to 120 days	Good
Commercial paper	Finance companies and businesses	Businesses	1 to 270 days	Poor
Banker's acceptance	Banks	Businesses	30 to 180 days	Good
Eurodollar deposits	Non-U.S. banks	Businesses, governments, and banks	1 day to 1 year	Poor

https://www.federalreserve.gov/releases/H15/default.htm

Capital market instruments – Bond

Bonds are long-term debt securities:

- issued by corporations and government agencies to support their operations
- which the issuers promise to repaid to bondholders in some date in the future

Maturity: The period from the date of issuing to expired date

Par value/ face value: the amount that the issuer must pay to maturity

> By issuer: Corporate bonds & Treasury bonds
>
> By interest payment: Coupon bonds & Zero-coupon bonds
>
> By coupon rate: Plain – vanilla bonds & floating rate bonds

Capital market instruments – Coupon bond

Coupon bond: bond that the issuer promises:

- to make periodic payments of interest – called ***coupon payments*** * – to the bondholder for the life of the bond,
- to pay the face value of the bond when the bond matures

** Coupon payments: at **coupon rate –** the interest rate applied to the face value*

E.g. A bond with a face value of $1.000 that makes annual coupon payment at a coupon rate of 10% and its maturity is 10 years.

⇒ The issuer has to pay (every year)

⇒ At the end of 10 years, the issuer pays

Capital market instruments – Coupon bond

E.g. To raise fund, on March 10th, 2022 company A issues 1000 bonds which promise to repay the holder $1000 at the date of March 10th, 2032 and pay $100 every six months. The company sells them at the price of $950.

1. The face value is

a. $1000
b. $100
c. $950
d. All of above are wrong

2. The maturity is

a. 1 year
b. 2 years
c. 3 years
d. All of above are wrong

3. The coupon rate is

a. 10%/year
b. 10%/6months
c. 10,52%/6months
d. All of above are wrong

Capital market instruments – Discount bond (zero-coupon bond)

(Pure) discount bonds (zero – coupon bonds): bonds that promise a single payment of cash at some date in the future, called the maturity date.

$\Rightarrow$ The interest earned by investors:

the face value – the price

E.g. A pure discount bond with a face value of \$1000 maturing in one year and a purchase price of \$950

$\Rightarrow$ During this 1 year, it does not make any payment

$\Rightarrow$ At the end of 1 year, the holder receives the amount of \$1000 (face value)

Capital market instruments – Bond

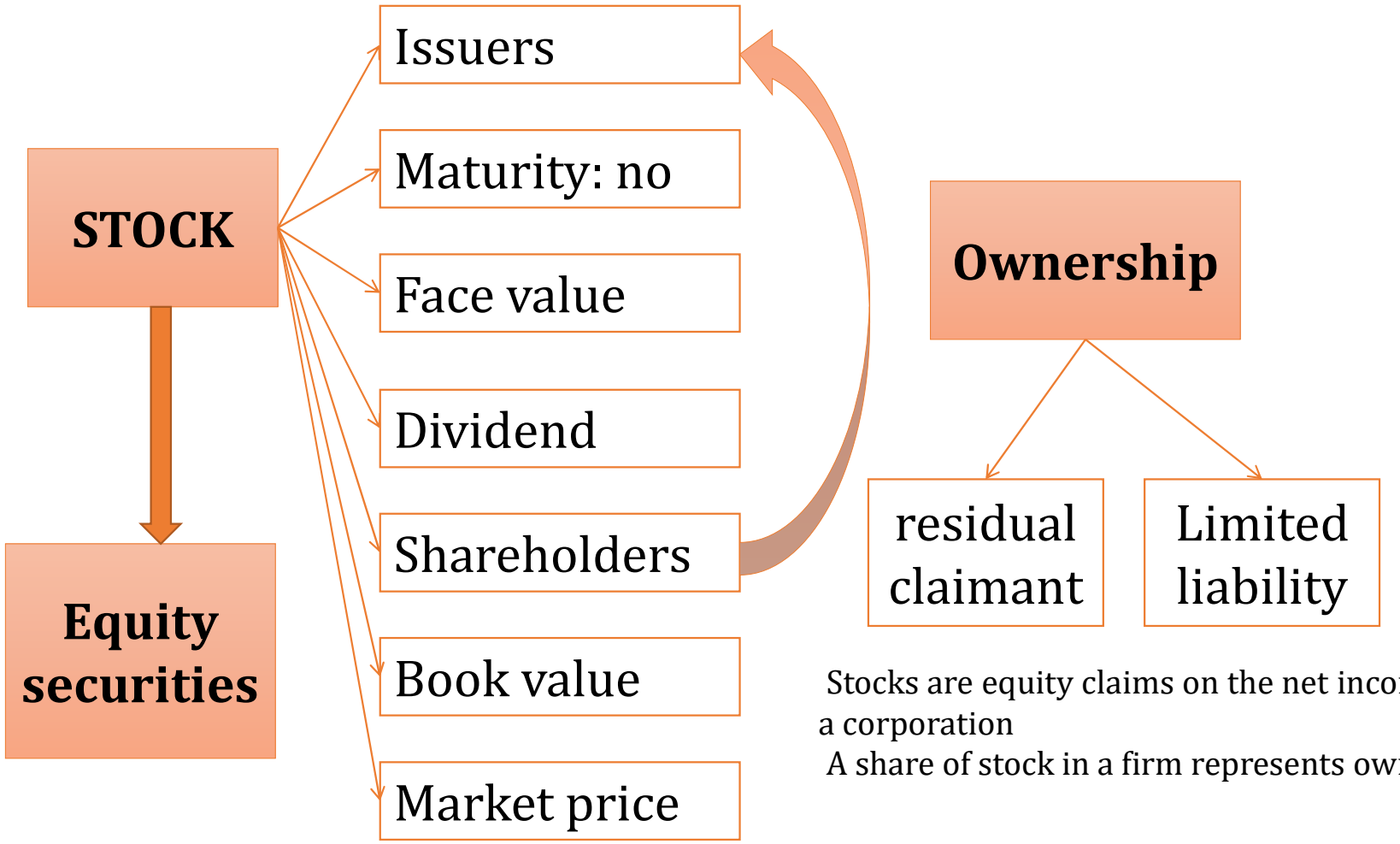
Callable — The issuer → The right to redeem bonds before the final maturity date

Callable bond

Convertibility — The holder → The right to convert the bond into a pre-specified number of shares of common stock

Convertible bond

Capital market instruments – Stock



Stocks are equity claims on the net income and assets of a corporation

A share of stock in a firm represents ownerships

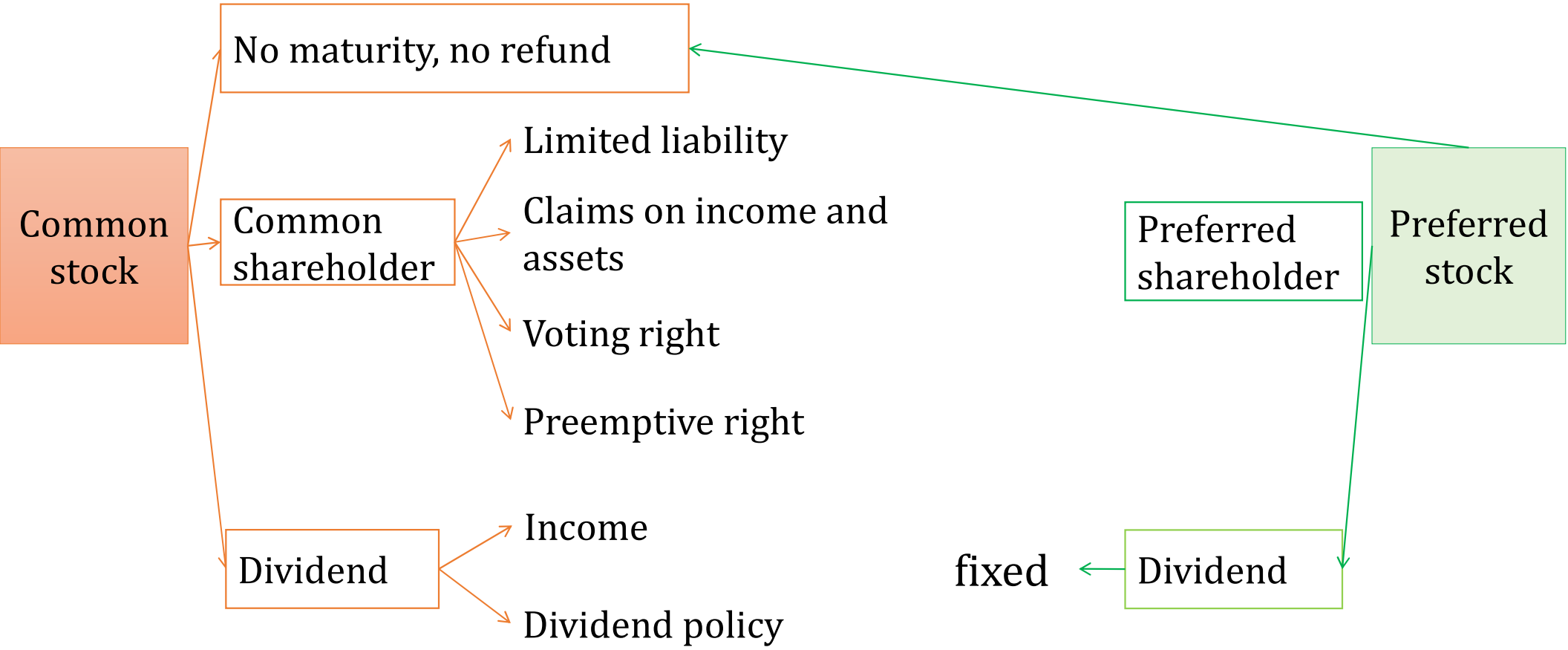
TABLE 2-1 Allied Food Products: December 31 Balance Sheets (Millions of Dollars)

ASSETS	2001	2000	LIABILITIES AND EQUITY	2001	2000
Cash and marketable securities	$ 10	$ 80	Accounts payable	$ 60	$ 30
Accounts receivable	375	315	Notes payable	110	60
Inventories	615	415	Accruals	140	130
Total current assets	$1,000	$ 810	Total current liabilities	$ 310	$ 220
Net plant and equipment	1,000	870	Long-term bonds	754	580
			Total debt	$1,064	$ 800
			Preferred stock (400,000 shares)	40	40
			Common stock (50,000,000 shares)	130	130
			Retained earnings	766	710
			Total common equity	$ 896	$ 840
Total assets	$2,000	$1,680	Total liabilities and equity	$2,000	$1,680

Capital market instruments – Stock

- ***Stockholders***: who hold stock in a corporation owns a percentage interest in a firm, consistent with the percentage of outstanding stock held. This ownership is in contrast to a bondholder, who holds no ownership interest but is rather a creditor of the firm
- ***Residual claim*** means that stockholders are the last in line of all those who have a claim on the assets and income of the corporation.
- **Dividends:** stockholders are paid dividends from the net earnings of the corporation. They are paid periodically, usually every quarter
- ***Limited liability*** means that the most shareholders can lose in the event of failure of the corporation is their original investment.

Capital market instruments – Common Stock vs Preferred stock



Capital market instruments – Preferred stock

- Some types of preferred stock:
  - Cumulative preferred stock (CPS)/accumulative p.s.
  - Non-cumulative preferred stock/ Non APS
  - Participating preferred stock
  - Convertible preferred stock
  - Callable preferred stock

Derivative instruments

Derivative instruments are financial contracts whose values are derived from the values of underlying assets (such as debt instruments or equity securities)

Many derivative instrument enable investors to engage in speculation and risk management

Speculation: allow an investor to speculate on movements in the value of the underlying assets without having to purchase those assets. Allowing investors to benefit from an increase in the value of the underlying assets, whereas others allow investors to benefit from a decrease in the assets' value.

Risk management: they can be used in a manner that will generate gains if the value of the underlying assets declines. Consequently, financial institutions and other firms can use derivative securities to adjust the risk of the existing investments in securities.

Derivative instruments - Forwards/ forward contracts

Forwards are contract that obligate the holder to buy or sell a specified amount of a specified financial instrument (underlying assets) for a predetermined delivery price at a predetermined future date

- The buyer of the underlying asset takes a long position
- The seller takes a short position
- The transaction does not take place until after the expiration date
- Traded on the over-the-counter market

$\Rightarrow$ Obligation of buying and selling

Spot contracts: agreements to buy or sell an asset today

$\Rightarrow$ **Spot price**: the price for immediate delivery of the asset

Derivative instruments - Forwards/ forward contracts

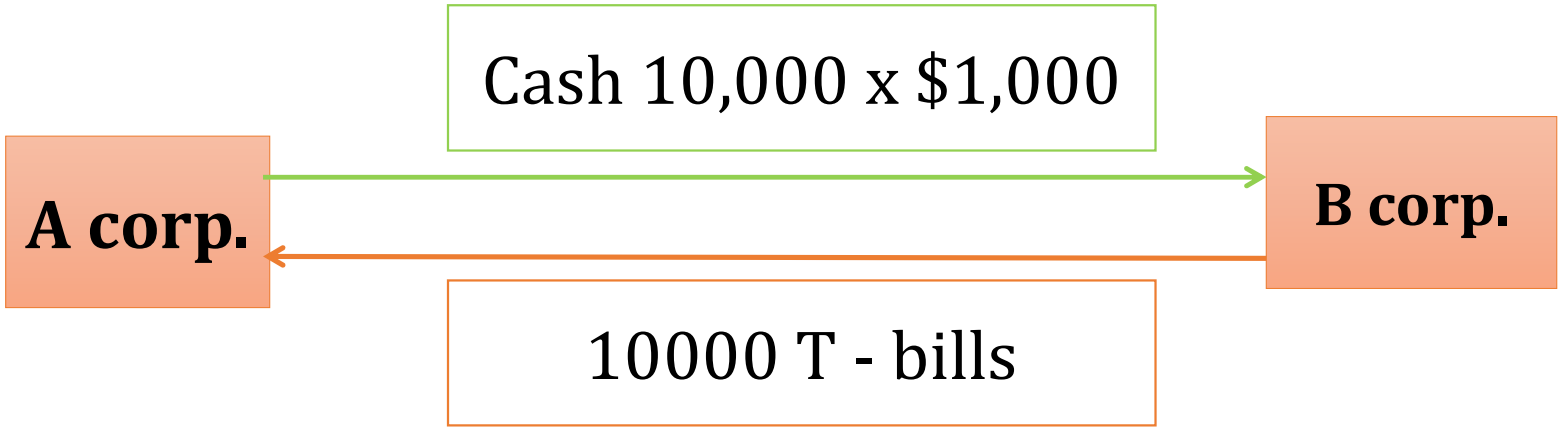
Today

A corp. buys forward

Contract that obligates B to deliver 10000 T – bills at a price of $1,000 per T – bill in 3 months

B corp. sells forward

At the end of the 3 months



Derivative instruments - Forwards/ forward contracts

- Delivery price/ forward price: $1,000/T-Bill

Spot price	Long position ($1,000)	Short position (1,000)
$1,200	– 1 + 1.2 = + 0.2	– 1.2 + 1 = – 0.2
$1,000	– 1 + 1 = 0	– 1 + 1 = 0
$800	– 1 + 0.8 = – 0.2	– 0.8 + 1 = + 0.2

Derivative instruments - Futures/ future contracts

- Futures/ future contracts: standardized agreements to buy or sell an asset at a certain time in the future for a certain price
- Like forward contracts
- Traded on organized exchanges – standardizing certain features of the contract

Derivative instruments – Options- Call option vs put option

*An option represents the **right** to buy (call) or sell (put) a specific asset (underlying) at a certain price (strike or exercise price) during (American) or at the end of (European) a specified duration*

- A call option gives the holder the right to buy the underlying asset by a certain date for a certain price (strike price)
- A put option gives the holder the right to sell the underlying asset by a certain date for a certain price.
- American options can be exercised at any time up to the expiration date or maturity.
- European options can be exercised only on the expiration date itself.

Sellers of call options receive an up – front fee (***the premium***) from the purchaser as compensation

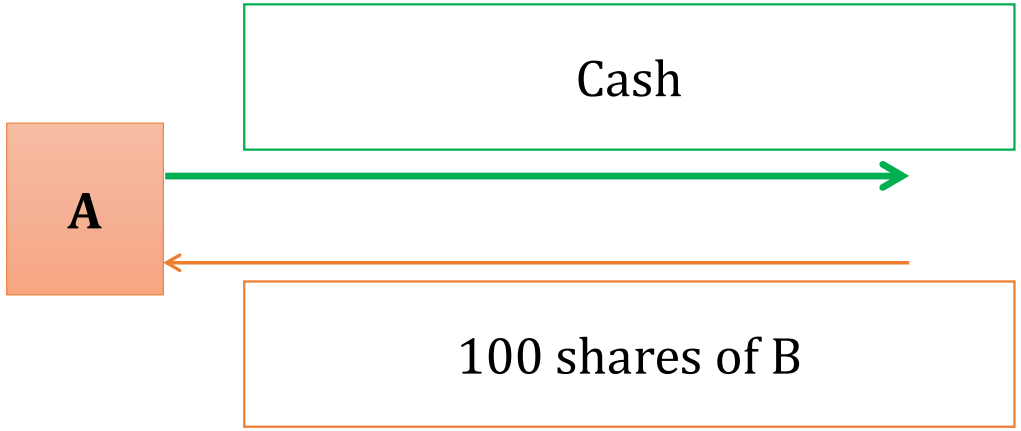
Derivative instruments – Call option versus Put option

Today

A purchases a ***call option*** on B stock

the strike price: $50
the premium: $1/ share
The volume: 100 shares
The maturity: 90 days

In 90 days

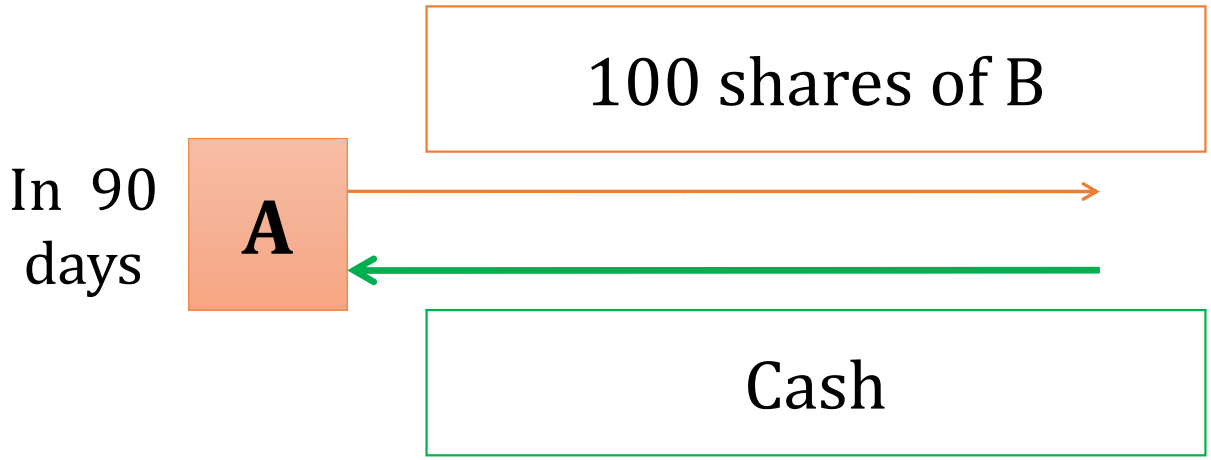


Derivative instruments – Put option

Today

A purchases a ***put option*** on B stock

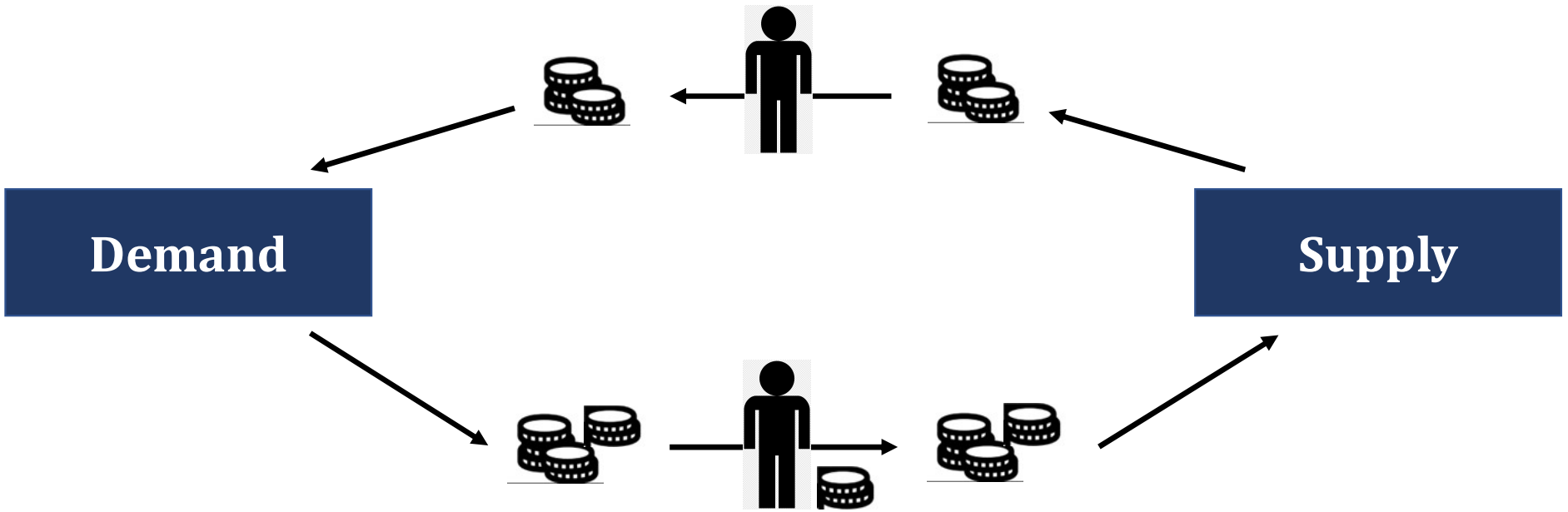
the strike price: $50
the premium: $1/ share
The volume: 100 shares
The maturity: 90 days



Derivative instruments – Swap

- Swap is an arrangement by two counterparties to exchange one stream of cash flows for another

Why do financial institutions exist?



Why do financial institutions exist?

Basic puzzles about Financial Structure throughout the World

1.Stocks are not the most important source of external financing for businesses.

2.Issuing marketable debt and equity securities is not the primary way in which businesses finance their operations.

3.Indirect finance, which involves the activities of financial intermediaries, is many times more important than direct finance, in which businesses raise funds directly from lenders in financial markets.

4.Banks are the most important source of external funds used to finance businesses.

5.The financial system is among the most heavily regulated sectors of the economy.

6.Only large, well-established corporations have easy access to securities markets to finance their activities.

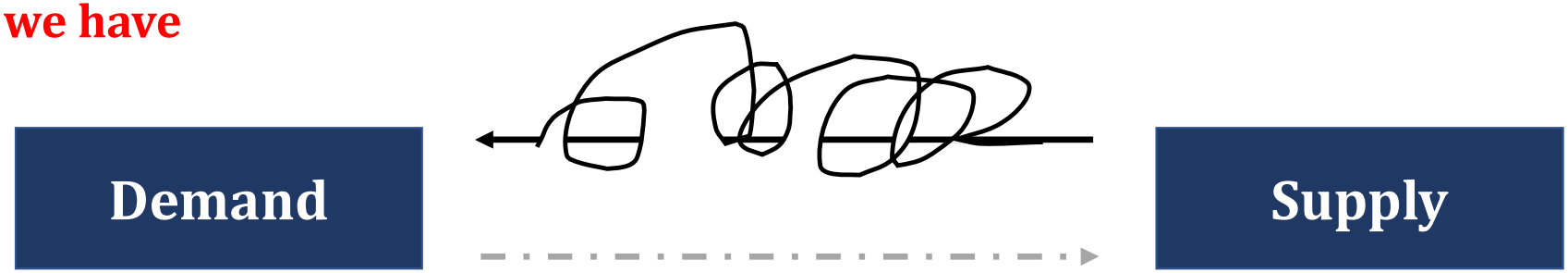
7.Collateral is a prevalent feature of debt contracts for both households and businesses.

8.Debt contracts typically are extremely complicated legal documents that place substantial restrictions on the behavior of the borrower.

Why do financial institutions exist?

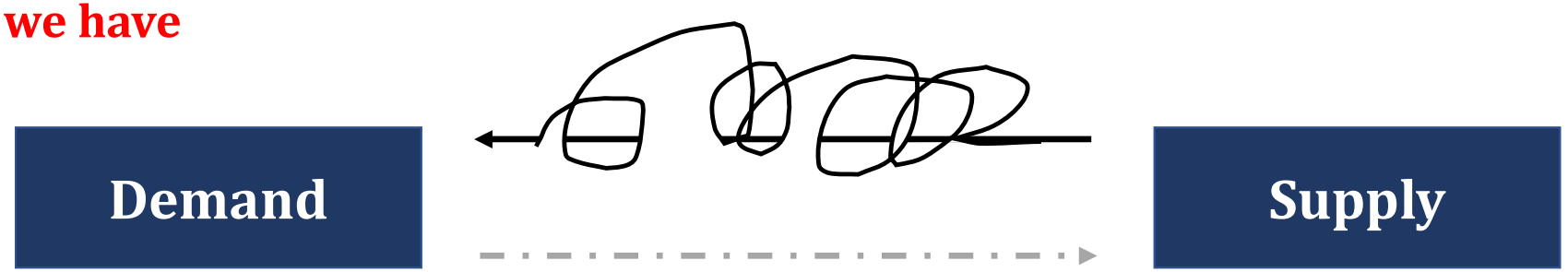
What we want

What we have



Why do financial institutions exist?

What we have



Information asymmetry
- Adverse selection
- Moral hazard

Transaction cost

Individuals tend to be significantly less risk averse when they make decisions over another person's money compared to decisions that they make over their own money. (Chakravarty, el at, 2011)

Chakravarty, S., Harrison, G. W., Haruvy, E. E., & Rutström, E. E. (2011). Are you risk averse over other people's money?. Southern Economic Journal, 77(4), 901-913.

Why do financial institutions exist?

Asymmetric information—one party's insufficient knowledge about the other party involved in a transaction to make accurate decisions.
The presence of asymmetric information leads to adverse selection and moral hazard problems

Adverse selection is an asymmetric information problem that occurs before the transaction occurs. Adverse selection in financial markets occurs when the potential borrowers who are the most likely to produce an undesirable (adverse) outcome—the bad credit risks—are the ones who most actively seek out a loan and are thus most likely to be selected.

Moral hazard arises after the transaction occurs: Moral hazard in financial markets is the risk (hazard) that the borrower might engage in activities that are undesirable (immoral) from the lender's point of view, because they make it less likely that the loan will be paid back.