Bachelor of Economics
THAMMASAT UNIVERSITY

FN 211 Financial Markets

Class 2:
Determinants of Interest Rates

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Today’s Outline

1. Time Value of Money (Review)
2. Measuring Interest Rates
3. Interest Rates and 2 Theories
   - The Liquidity Preference Theory
   - The Loanable Funds Theory
4. Determinants of Interest Rates for Individual Securities
5. Term Structure of Interest Rates

Time Value of Money and Interest Rates

Present Value of a Single Cash Flow

$$PV = \frac{FV}{(1+r)^t}$$

where:

PV = present value

FV = future value (lump sum) received in t years

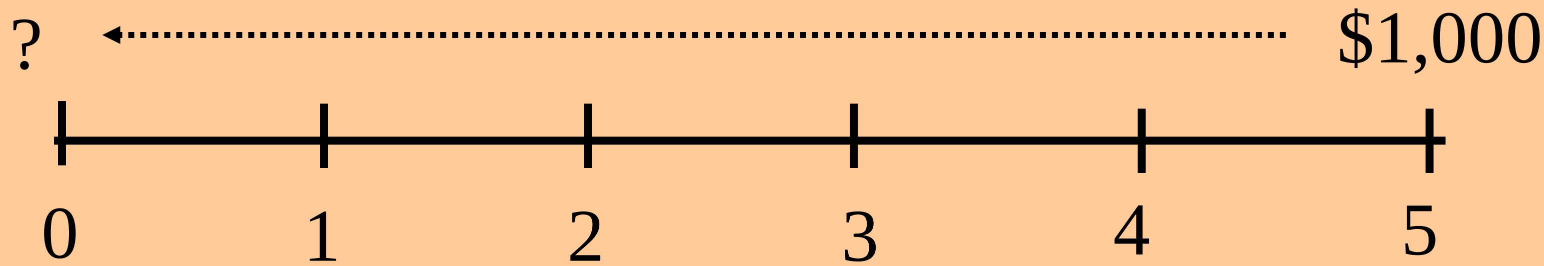
r = simple interest rate earned per period

t = total number of compounding periods

Time Value of Money and Interest Rates

Present Value of a Single Cash Flow

Find PV of a $1,000 cash flow to be received in five years, given a discount rate of 9%.



$$PV = \frac{1{,}000}{(1+0.09)^5}$$

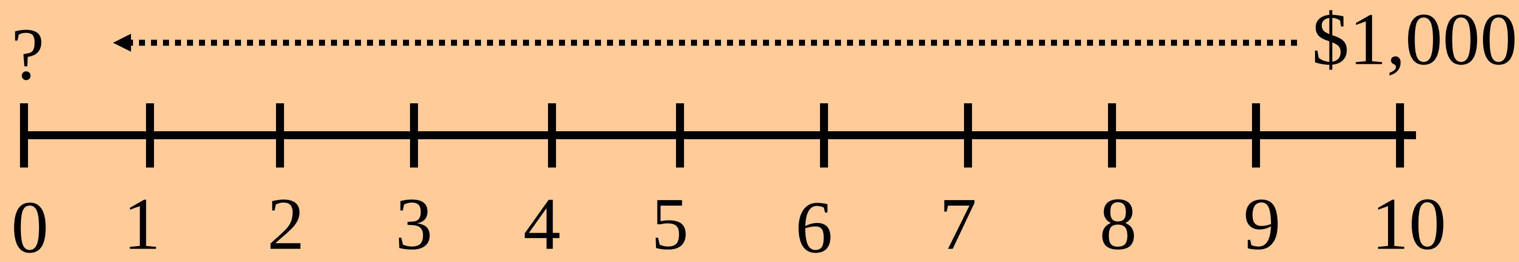
$$= 649.93$$

INPUT	5	9		0	1,000
	N	I/Y	PV	PMT	FV
OUTPUT			-649.93		

Time Value of Money and Interest Rates

PV of a Single Cash Flow: Semiannual Compounding

Find PV of a $1,000 cash flow to be received in five years, given a discount rate of 9%, semiannual compounding.



INPUT

N	I/Y	PV	PMT	FV

OUTPUT

Time Value of Money and Interest Rates

Future Value of a Single Cash Flow

$$FV = PV * (1 + r)^t$$

where:

PV = present value

FV = future value (lump sum) received in t years

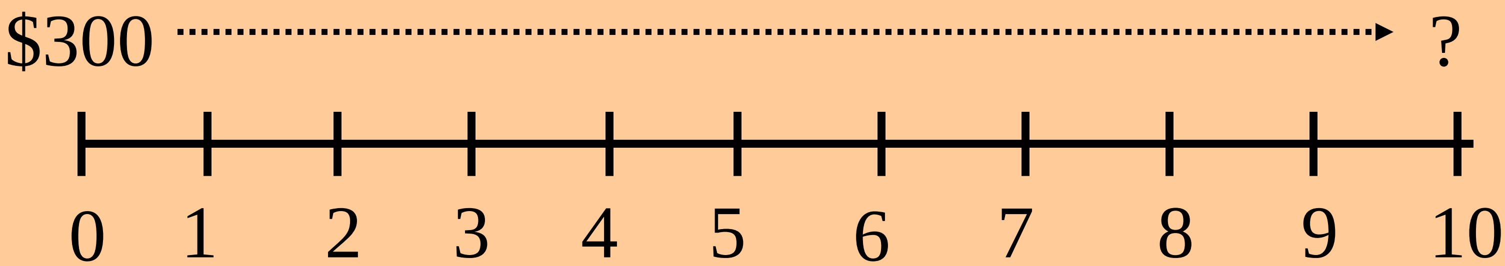
r = periodic rate earned on investments

t = total number of compounding periods

Time Value of Money and Interest Rates

Future Value of a Single Cash Flow

Find FV of a $300 investment, given you can earn a compound rate of return of 8% over a 10 year period of time.



INPUT

N	I/Y	PV	PMT	FV

OUTPUT

Time Value of Money and Interest Rates

Annuity is a stream of equal cash flows that occur at equal intervals over a period of time.

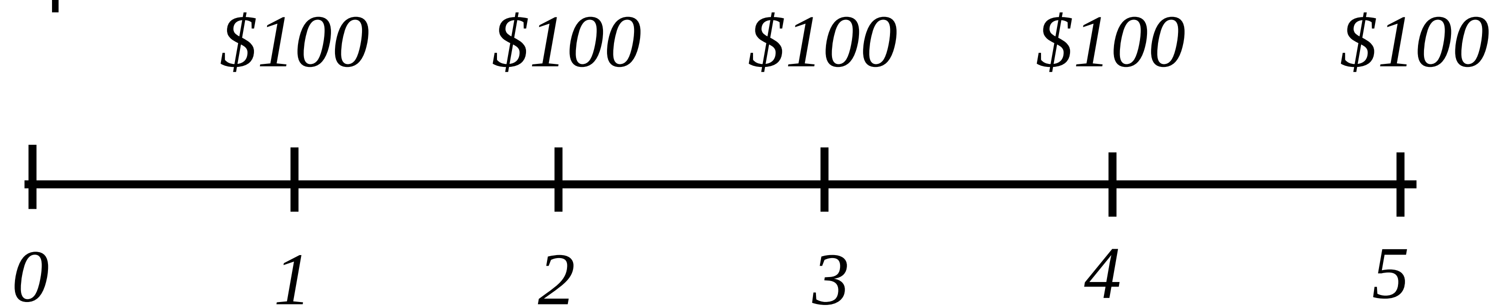
- Receiving $100 per year at the end of each year of the next eight years is an example of an annuity.

There are 2 types of annuities.

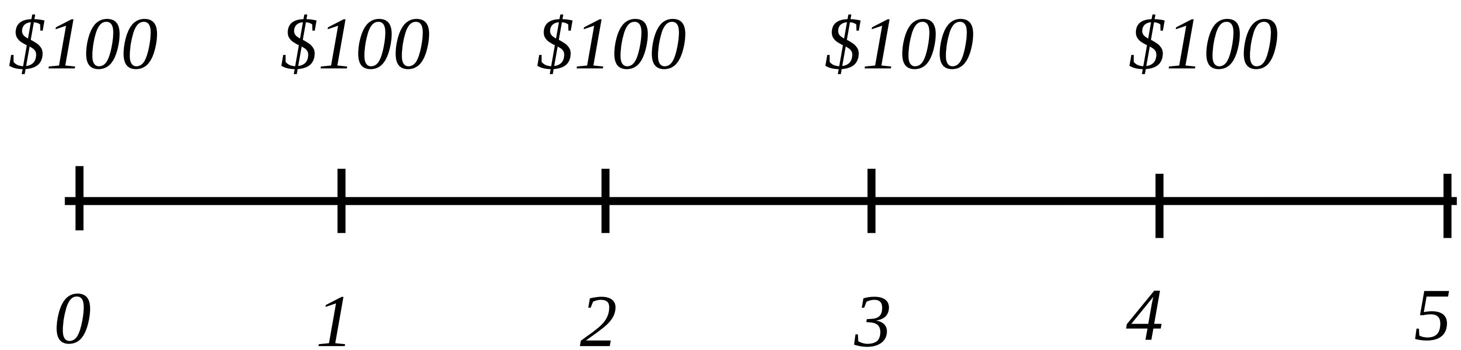
1. Ordinary Annuity – cash flows occur at the <u>end</u> of each period.
2. Annuity Due – cash flows occur at the <u>beginning</u> of each period.

Time Value of Money and Interest Rates

1. Ordinary Annuity – cash flows occur at the <u>end</u> of each period.



2. Annuity Due – cash flows occur at the <u>beginning</u> of each period.



PV an Ordinary Annuity

$$PV = PMT * \left(1 - \frac{1}{(1+r)^t}\right) * \frac{1}{r}$$

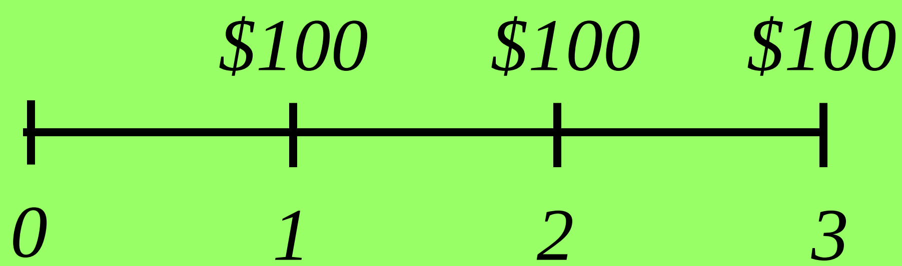
PV an Annuity Due

$$PV = PMT + PMT * \left(1 - \frac{1}{(1+r)^{t-1}}\right) * \frac{1}{r}$$

Time Value of Money and Interest Rates

Present Value of an Ordinary Annuity

What is the PV of an annuity that will pay $100 per year at the <u>end</u> of each of the next 3 years given a 10% rate of return?



Time Value of Money and Interest Rates

Present Value of an Ordinary Annuity

What is the PV of an annuity that will pay $100 per year at the end of each of the next 3 years given a 10% rate of return?

INPUT

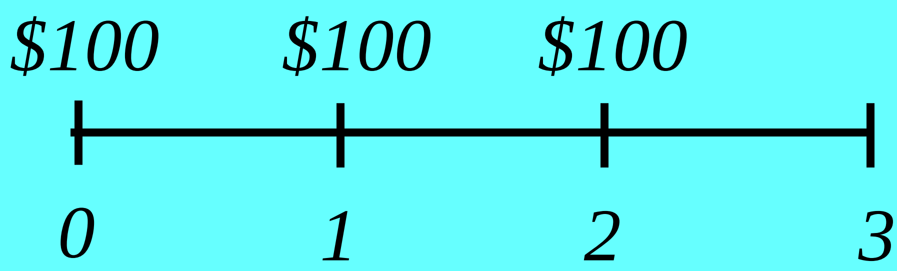
N	I/Y	PV	PMT	FV

OUTPUT

Time Value of Money and Interest Rates

Present Value of an Annuity Due

What is the PV of an annuity that will pay $100 per year at the <u>beginning</u> of each of the next 3 years given a 10% rate of return?



Time Value of Money and Interest Rates

Present Value of an Annuity Due

What is the PV of an annuity that will pay $100 per year at the beginning of each of the next 3 years given a 10% rate of return?

INPUT

******At BEGIN mode******

N	I/Y	PV	PMT	FV

OUTPUT

Time Value of Money and Interest Rates

To set your calculator for BEGIN mode

2nd **PMT** **2nd** **ENTER** **2nd** **CPT**

To go back to END mode, simply repeat the same sequence

2nd **PMT** **2nd** **ENTER** **2nd** **CPT**

Time Value of Money and Interest Rates

FV of an Ordinary Annuity

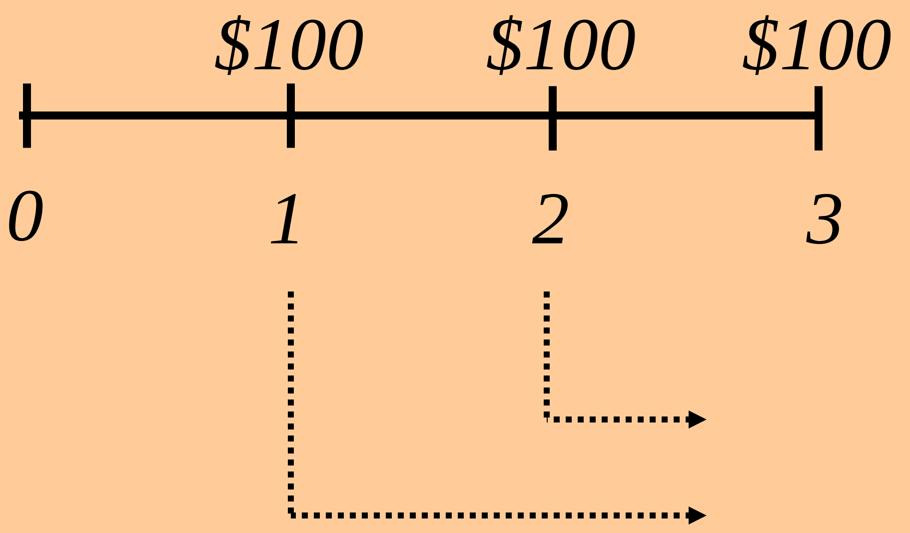
$$\mathrm{FV} = \mathrm{PMT} * \left[(1+r)^{t} - 1\right] * \frac{1}{r}$$

FV of an Annuity Due

$$\mathrm{FV} = \left[\mathrm{PMT} * \left[(1+r)^{t+1} - 1\right] * \frac{1}{r}\right] - \mathrm{PMT}$$

Future Value of an Ordinary Annuity

What is the FV of an annuity that will pay $100 per year at the end of each of the next 3 years given a 10% rate of return?



Time Value of Money and Interest Rates

Future Value of an Ordinary Annuity

What is the FV of an annuity that will pay $100 per year at the end of each of the next 3 years given a 10% rate of return?

INPUT

N	I/Y	PV	PMT	FV

OUTPUT

Future Value of an Annuity Due

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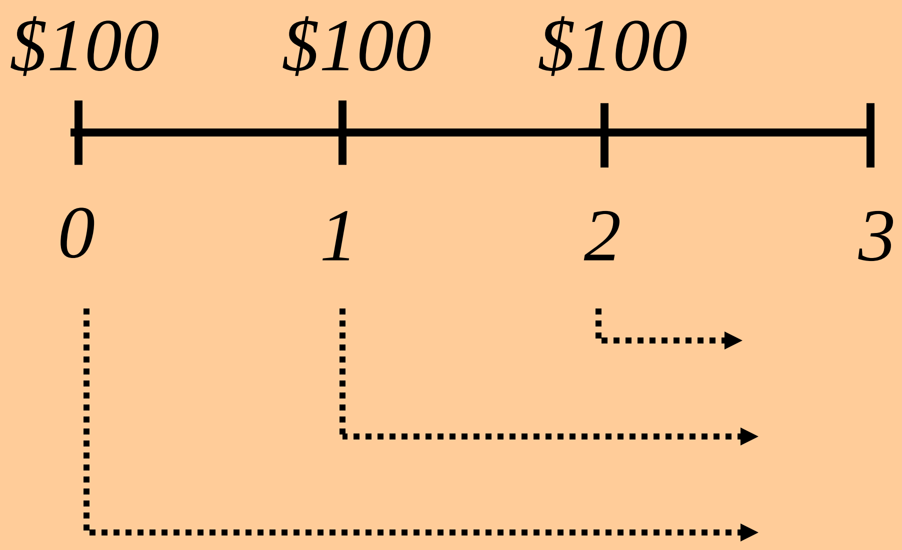

Time Value of Money and Interest Rates

Future Value of an Annuity Due

What is the FV of an annuity that will pay $100 per year at the beginning of each of the next 3 years given a 10% rate of return?

INPUT

******At BEGIN mode******

N	I/Y	PV	PMT	FV

OUTPUT

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Measuring Interest Rates

Equivalent Annual Return (EAR)

For investments with maturities other than annually or investments with compounding frequencies other than annually, we may need to calculate an equivalent annual return (EAR) in order to compare rates among investments.

Measuring Interest Rates

Equivalent Annual Return (EAR)

$$EAR = \left(1 + \frac{i_{nom}}{n}\right)^{n} - 1$$

$$EAR = \left(1 + \frac{i_{nom}}{(365/d)}\right)^{(365/d)} - 1$$

where:
i_{nom} = nominal or quoted interest rate per year
n = number of compounding periods per year
d = number of days to maturity

Measuring Interest Rates

Equivalent Annual Return (EAR)

Compute EAR of 12% interest rate, compounded quarterly.

$$
\begin{aligned}
\text{EAR} &= \left(1+\frac{0.12}{4}\right)^4 - 1 \\
&= 1.1255 - 1 \\
&= 12.55\%
\end{aligned}
$$

This means investor is indifferent between…

1. Investing for one year at 12%, compounded quarterly and…
2. Investing for one year at 12.55%, compounded annually

Measuring Interest Rates

Equivalent Annual Return (EAR)

Compute EAR of 12% interest rate that matures in 60 days.

This means investor is indifferent between…

1. Investing for 60 days at 12% per year and…
   (assuming reinvestments are possible at the same rate until end of year)
2. Investing for one year at ……. , compounded annually

Measuring Interest Rates

An investment with monthly payments is different from one with quarterly payments. We can us each return on an EAR basis to compare rates of return. See following values of EAR rates at various compounding levels.

EAR_{ANNUAL}	10.00%
$EAR_{QUARTERLY}$	10.38%
$EAR_{MONTHLY}$	10.47%
$EAR_{DAILY\ (365)}$	10.52%

Measuring Interest Rates

Home Mortgage Interest Rate

- Each monthly payment of a *home mortgage* loan first covers in full the monthly interest on the outstanding principal. The remainder is then applied to the principal of the loan, such that the amount owed is reduced progressively.

Measuring Interest Rates

Home Mortgage Interest Rate

You agree to take out a 3,000,000 Baht loan for 10 years at an interest rate of 6% per year to buy your new home. Calculate the monthly payment and construct a mortgage table.

INPUT

N	I/Y	PV	PMT	FV

OUTPUT

Measuring Interest Rates

Total monthly payment = interest + principal repayment

1st Month Payment:

Interest = beginning balance x interest rate per month
= 3,000,000 x 0.005
= 15,000

Principal = total monthly payment – interest
= 33,306.15 – 15,000
= 18,306.15

Monthly payment = 15,000 + 18,306.15
= 33,306.15

Measuring Interest Rates

Total monthly payment = interest + principal repayment

2nd Month Payment:

Interest = beginning balance x interest rate per month

Principal = total monthly payment – interest

Monthly payment =

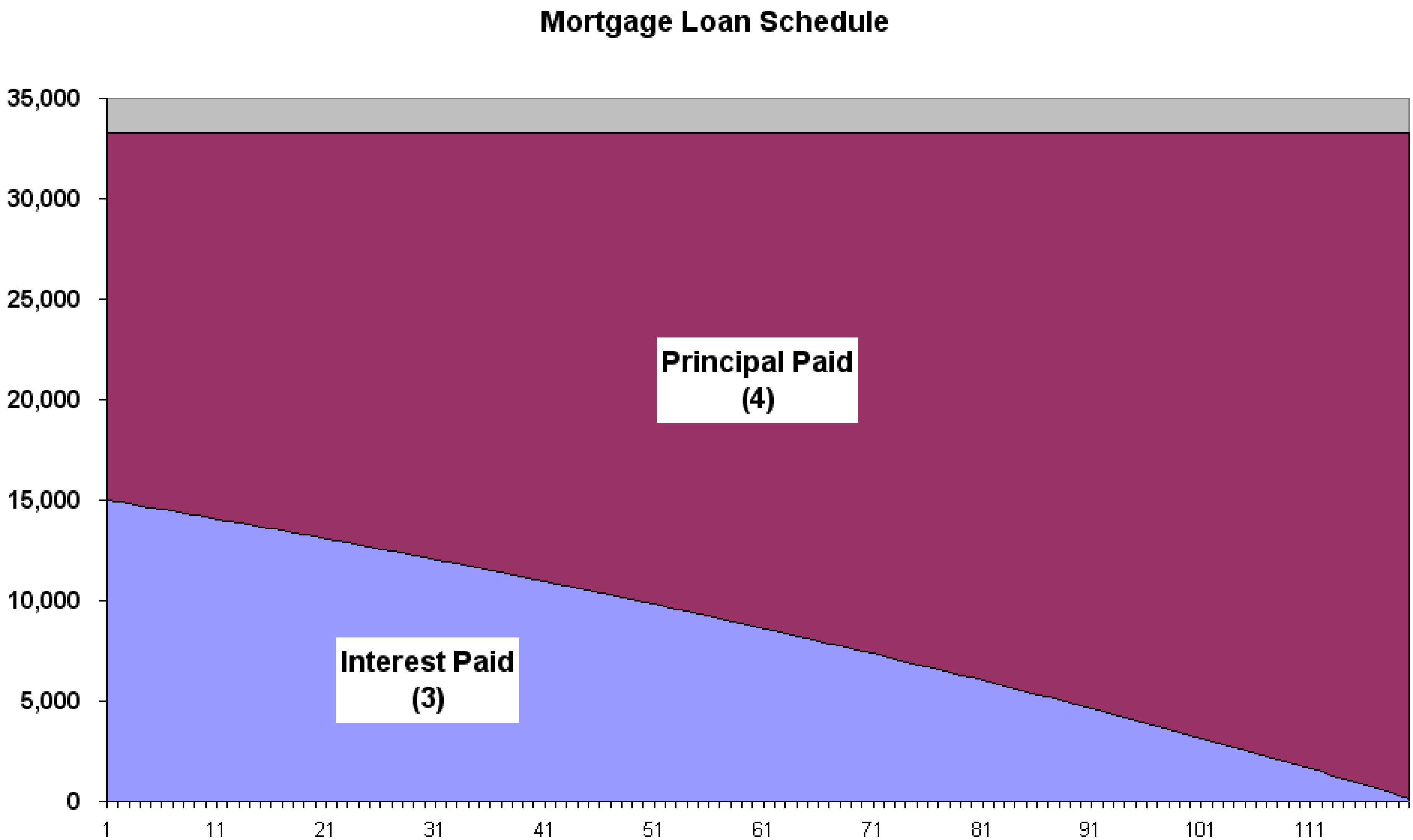
Mortgage Loan Schedule

Mortgage Loan: **Principal = 3,000,000 Baht, Interest Rate = 6% per year, Maturity = 10 years, Down Payment = 0**

Monthly Payment = 33,306.15 Baht

Month	Beginning Balance (1)	Monthly Payment (2) = (3) + (4)	Interest Paid (3)	Principal Paid (4)	Ending Balance (5) = (1) - (4)	Effective Rate per year (6) = [(3)/(1)]*12
1	3,000,000.00	33,306.15	15,000.00	18,306.15	2,981,693.85	6.00%
2	2,981,693.85	33,306.15	14,908.47	18,397.68	2,963,296.17	6.00%
3	2,963,296.17	33,306.15	14,816.48	18,489.67	2,944,806.50	6.00%
4	2,944,806.50	33,306.15	14,724.03	18,582.12	2,926,224.38	6.00%
5	2,926,224.38	33,306.15	14,631.12	18,675.03	2,907,549.35	6.00%
118	98,927.62	33,306.15	494.64	32,811.51	66,116.11	6.00%
119	66,116.11	33,306.15	330.58	32,975.57	33,140.54	6.00%
120	33,140.54	33,306.15	165.70	33,140.45	0.10	6.00%

Mortgage Loan Schedule



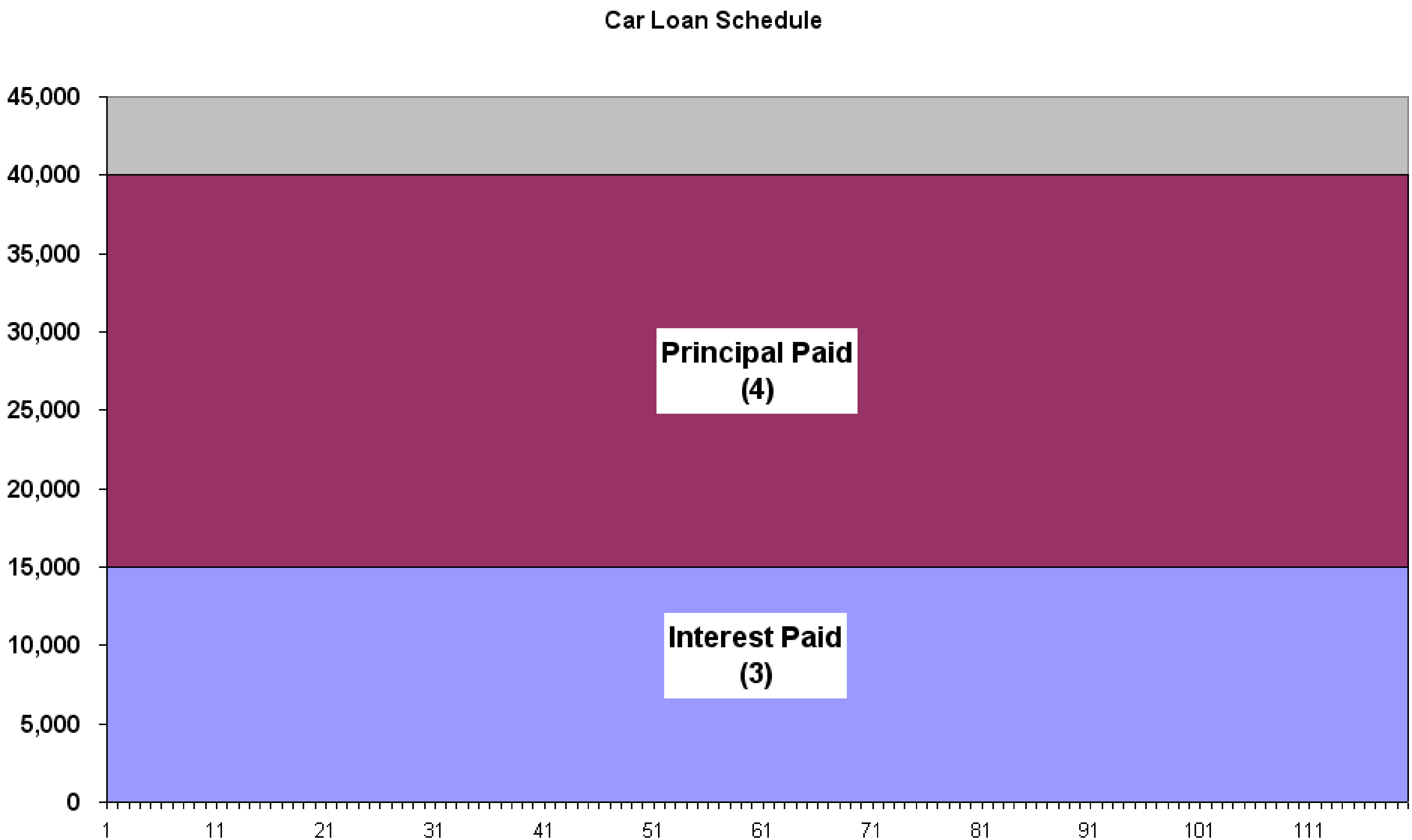
Car Loan Schedule

<u>Car Loan:</u> Principal = 3,000,000 Baht, Interest Rate = 6% per year, Maturity = 10 years, Down Payment = 0

Monthly Payment = 40,000 Baht

Month	Beginning Balance	Monthly Payment	Interest Paid	Principal Paid	Ending Balance	Effective Rate per year
	(1)	(2)	(3)	(4)	(5) = (1) - (4)	(6) = [(3)/(1)]*12
1	3,000,000.00	40,000.00	15,000.00	25,000.00	2,975,000.00	6.00%
2	2,975,000.00	40,000.00	15,000.00	25,000.00	2,950,000.00	6.05%
3	2,950,000.00	40,000.00	15,000.00	25,000.00	2,925,000.00	6.10%
4	2,925,000.00	40,000.00	15,000.00	25,000.00	2,900,000.00	6.15%
5	2,900,000.00	40,000.00	15,000.00	25,000.00	2,875,000.00	6.21%
118	75,000.00	40,000.00	15,000.00	25,000.00	50,000.00	240.00%
119	50,000.00	40,000.00	15,000.00	25,000.00	25,000.00	360.00%
120	25,000.00	40,000.00	15,000.00	25,000.00	0.00	720.00%

Car Loan Schedule



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Interest Rate

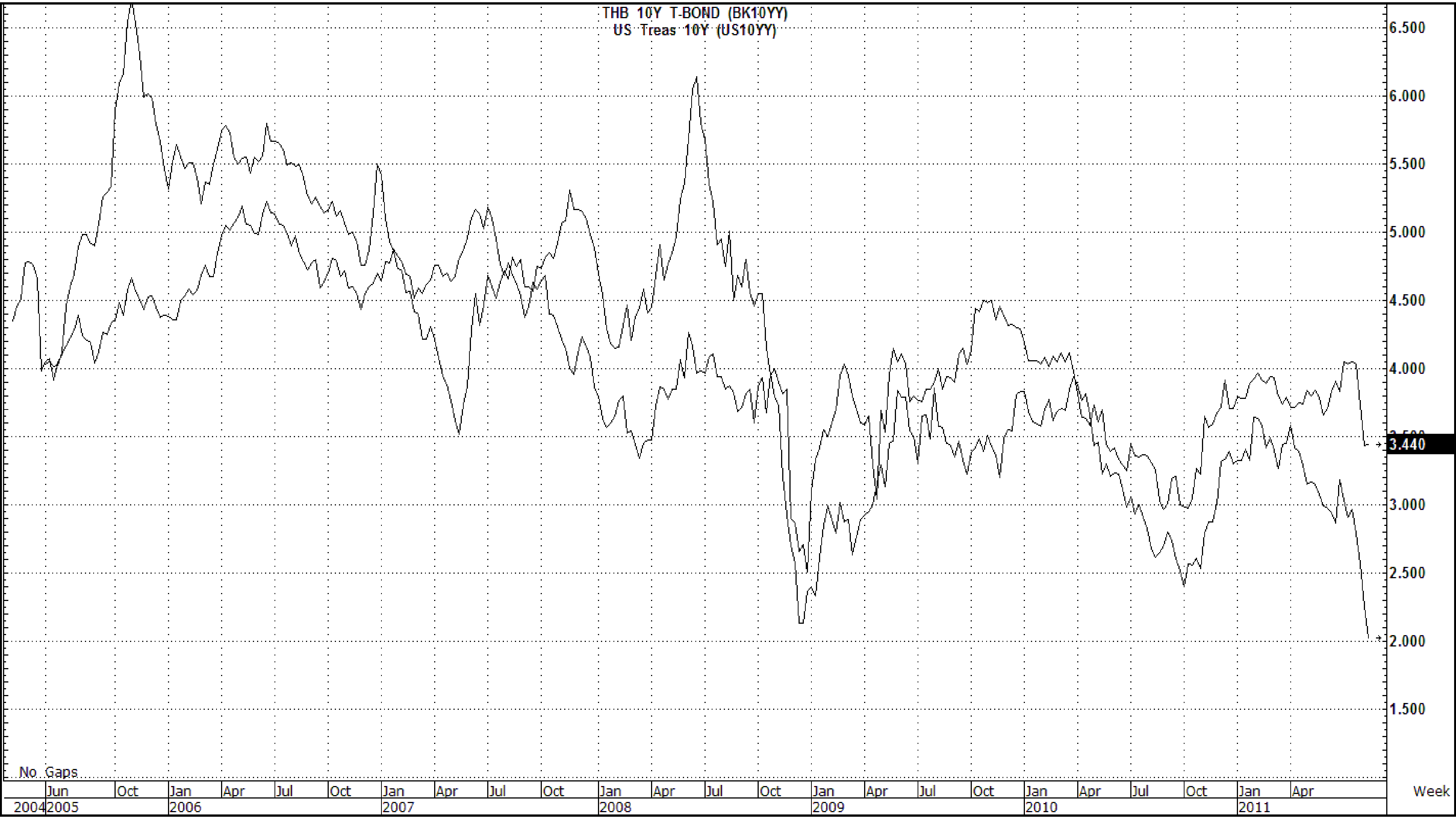
- The acts of saving and lending, and borrowing and investing, are significantly influenced by and tied together by the *interest rate*.
- The interest rate is the price a borrower must pay to secure scarce loanable funds from a lender for an agreed-upon time period. So, it can be referred to as the *price of credit*.
- Interest rates send *price signals* to borrowers, lender, savers, and investors.
  - Higher interest rates provide incentives to increase the supply of funds, but at the same time they reduce the demand for those funds.

Functions of the Interest Rate in the Economy

1. The interest rate helps guarantee that current savings will flow into investment to promote economic growth.
2. It allocates the available supply of credit, generally providing loanable funds to those investment projects with the highest expected return.
3. It brings the supply of money into balance with the public's demand for money.
4. The interest rate serves as an important tool for government policy through its influence on the volume of savings and investment.

Movements of the Actual Interest Rates

Movements of the Actual Interest Rates



The Liquidity Preference Theory of Interest Rates

- The *liquidity preference theory of interest rates* is a short-term theory that was developed by John Maynard Keynes for explaining near-term changes in interest rates, and hence, is more relevant for policymakers.
- This theory suggests that the rate of interest is really a payment for the use of money which is a scarce resource.

John Maynard Keynes*,*
(1883 –1946)
a British economist who advocated interventionist government policy

The Liquidity Preference Theory of Interest Rates

Investors have 2 choices

- Holding Money – provides perfect liquidity for carrying out daily transactions and also a precaution against future cash needs even though it provides low or even zero yield. Money has no interest rate risk.
- Holding Bonds – pay interest to induce money holders to surrender a perfectly liquid asset but bonds are illiquid and subject to interest rate risk

To *classical theorists*, it's irrational to hold money because it provides little or no return.

To *Keynes*, the holding of money is rational if rates were expected to rise because bond investors will suffer from falling bond prices.

The Liquidity Preference Theory of Interest Rates

The demand for liquidity stems from:

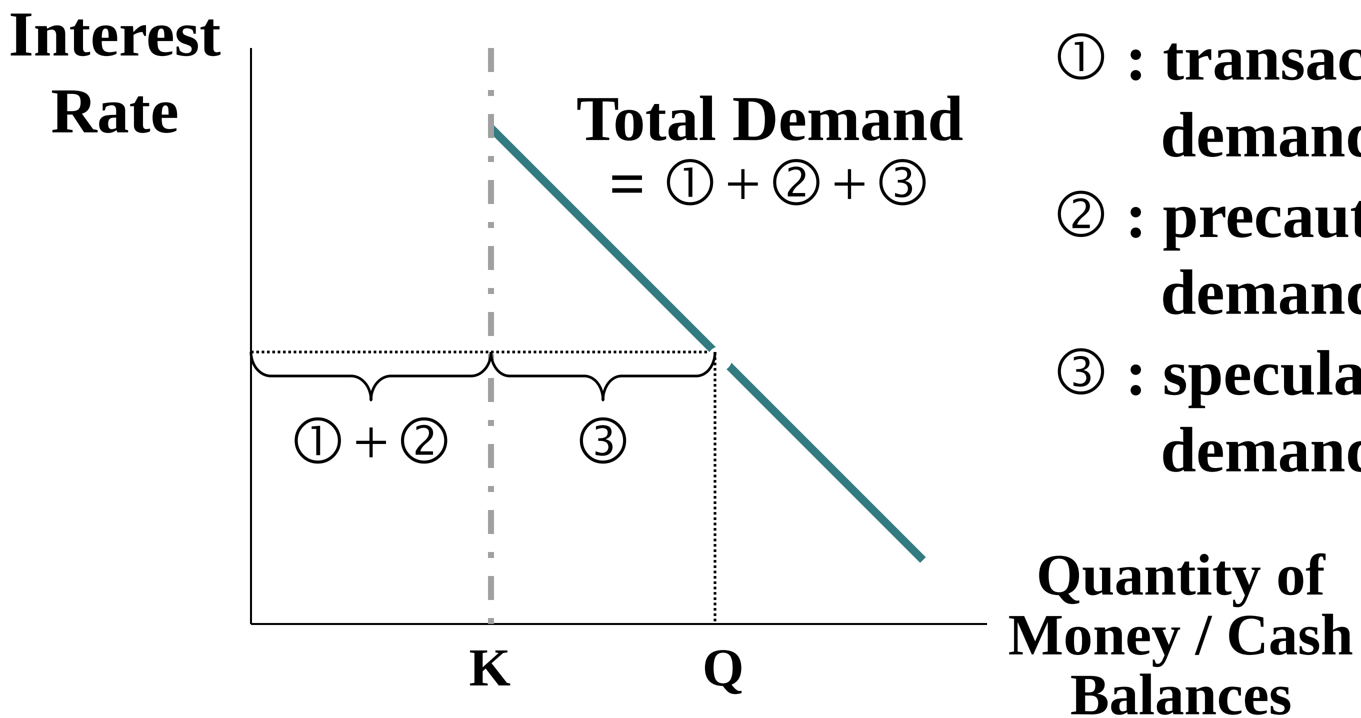
1. the transactions motive - the purchase of goods and services, simply to meet daily expenses.
2. the precautionary motive - to cope with future emergencies and extraordinary expenses

    (1) and (2) depend on the level of national income, business sales, and prices (but not interest rates).
    So, demand due to (1) and (2) is fixed in the short term.

3. the speculative motive - a rise in interest rates results in lower bond prices.
    - At low rates, investors believe rates will rise (and bond prices will fall), and investors will stay away from bonds to avoid losses. Therefore more money is demanded instead of bonds.
    - At high rates, investors believe rates will fall and bond prices will rise. Investors will buy bonds and demand less cash.

The Liquidity Preference Theory of Interest Rates

The Total Demand for Money or Cash Balances in the Economy



① : transactions demand

② : precautionary demand

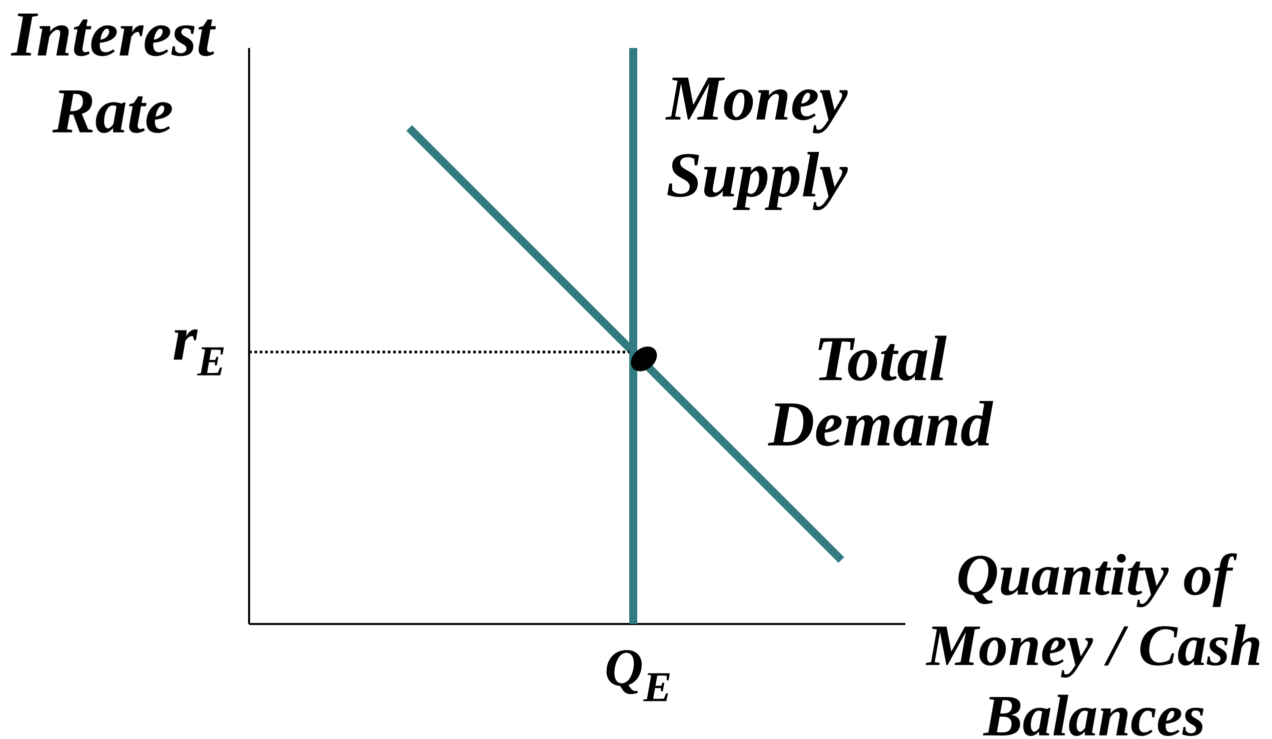
③ : speculative demand

The Liquidity Preference Theory of Interest Rates

- In modern economies, the money supply is controlled, or at least closely regulated, by the government.
- The supply of money is often assumed to be *inelastic* with respect to interest rates, since government decisions concerning the size of the money supply should presumably be guided by public welfare.

The Liquidity Preference Theory of Interest Rates

The Equilibrium Interest Rate
In the Liquidity Preference Theory



The Liquidity Preference Theory of Interest Rates

- Above equilibrium – supply of money exceeds quantity demanded; households + businesses + government units will try to dispose unwanted cash by purchasing bonds. Bond prices increase and rates fall toward equilibrium.
- Below equilibrium – quantity of money demanded exceeds supply, sell bonds to raise cash. Bond prices fall and rates rise toward equilibrium.
- This theory illustrates how central banks can influence interest rates in the markets. If higher rates are desired, central bank can contract the size of money supply and rates will rise.

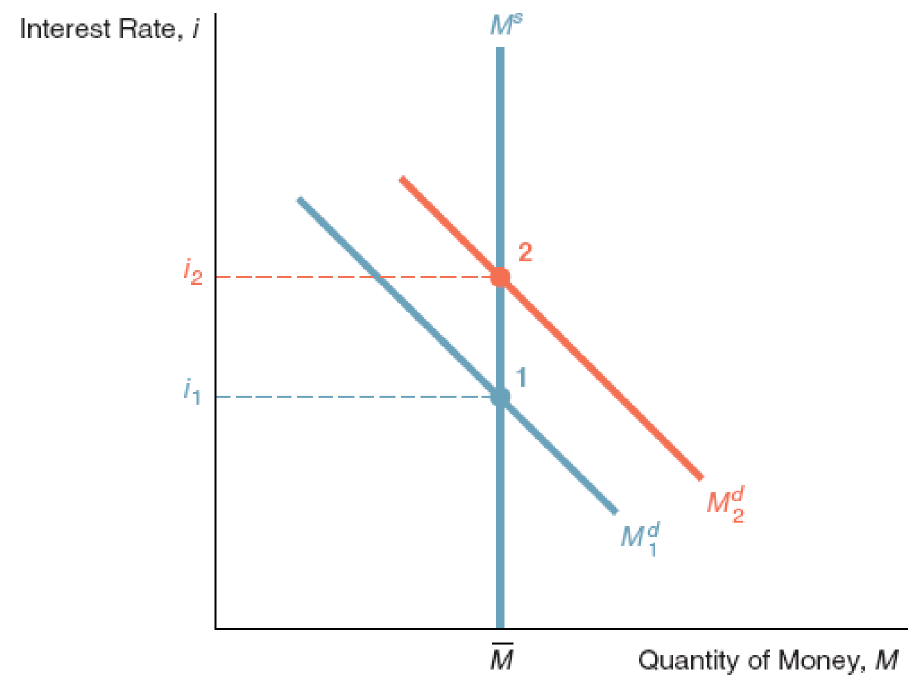
The Liquidity Preference Theory of Interest Rates

Limitations

- The liquidity preference theory is a short-term approach because it assumes that income remains stable. In the longer term, this assumption does not hold and interest rates are affected by changes in the level of income.
- Only the supply and demand for money is considered. A more comprehensive view that considers the supply and demand for *credit* by *all* actors in the financial system - businesses, households, and governments - is needed.

Case 1: Business Cycle Expansion

- As an economy expands and income rises, wealth increases and people will want to hold more money as a store of value.
- So, a higher level of income causes the demand for money to increase and the demand curve to shift to the right.
- As a result, equilibrium interest rate increases.



Case 1: Business Cycle Expansion

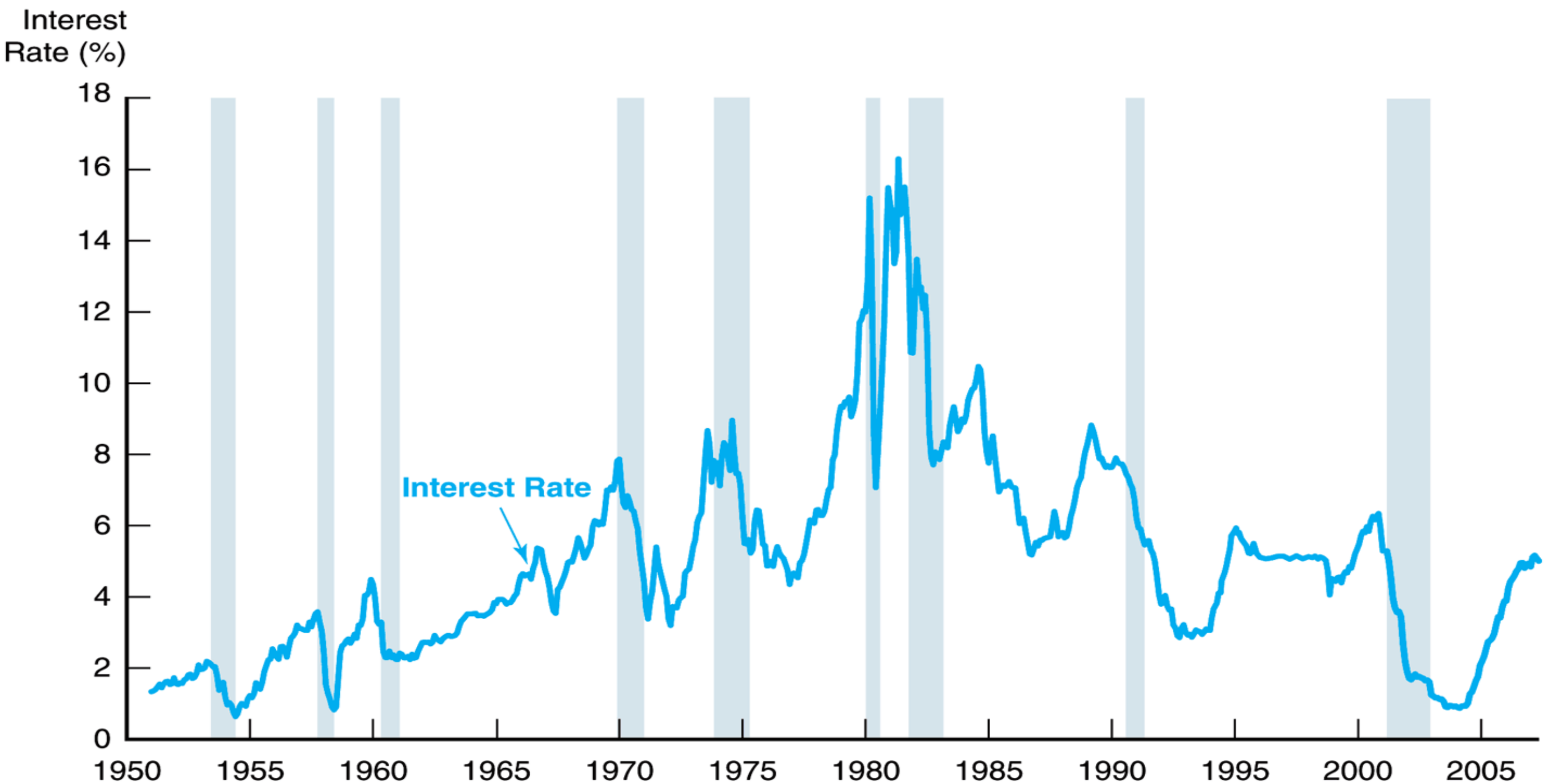


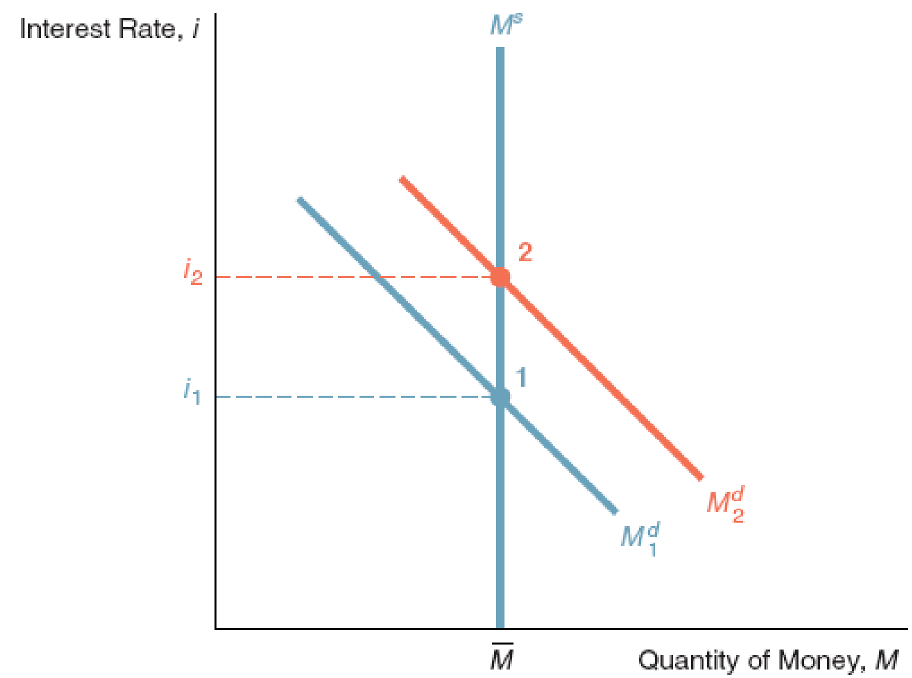
Figure 4.7 Business Cycle and Interest Rates (Three-Month Treasury Bills), 1951–2007

Shaded areas indicate periods of recession. The figure shows that interest rates rise during business cycle expansions and fall during contractions, which is what Figure 4.6 suggests would happen.

Source: Federal Reserve: www.federalreserve.gov/releases/H15/data.htm.

Case 2: Changes in Price Level

- When price level rises, the same nominal quantity of money is no longer as valuable.
- To restore their holding of money in real terms, people will want to hold a greater nominal quantity of Money.
- This causes the demand curve to shift to the right.
- As a result, equilibrium interest rate increases.



Case 2: Changes in Price Level

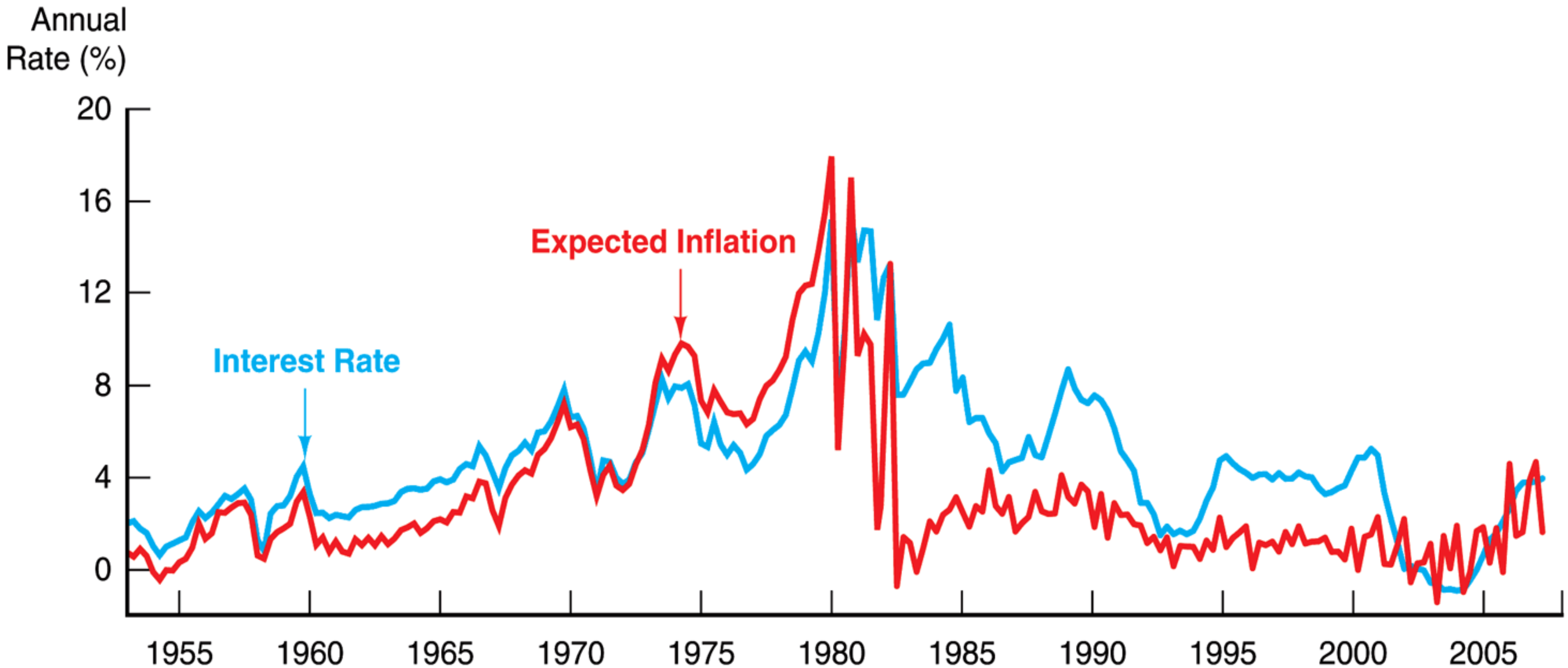
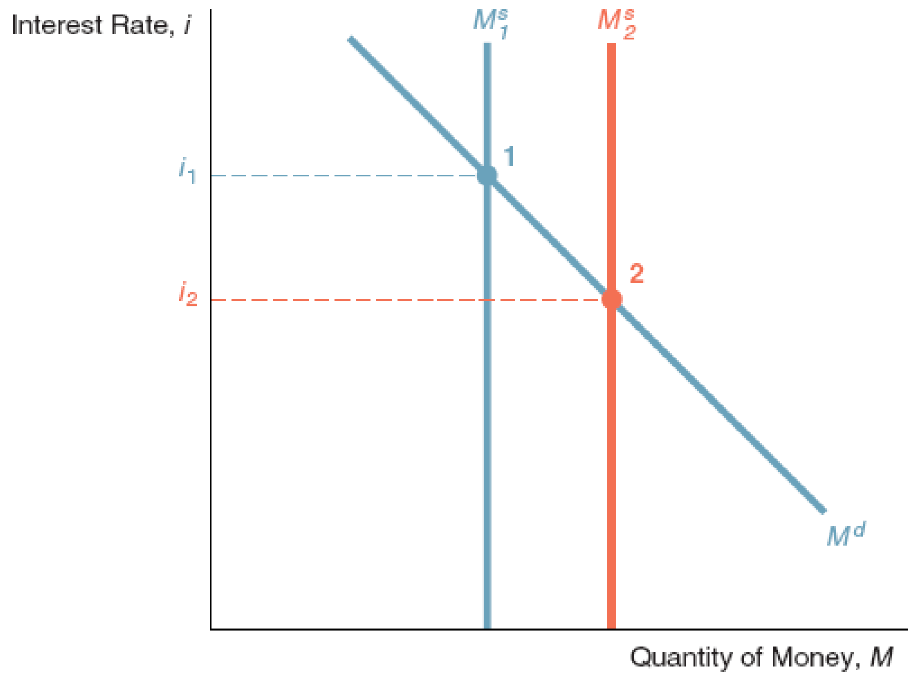


Figure 4.5 Expected Inflation and Interest Rates (Three-Month Treasury Bills), 1953–2007

Source: Expected inflation calculated using procedures outlined in Frederic S. Mishkin, "The Real Interest Rate: An Empirical Investigation," *Carnegie-Rochester Conference Series on Public Policy* 15 (1981): 151–200. These procedures involve estimating expected inflation as a function of past interest rates, inflation, and time trends.

Case 3: Changes in Money Supply

- An increase in money supply due to expansionary monetary policy implies that the supply curve for money shifts to the right.
- As a result, equilibrium interest rate decreases.



The Loanable Funds Theory of Interest

The popular *loanable funds theory* argues that the risk-free interest rate is determined by the interplay of two forces:

1. the demand loanable funds (credit) by domestic businesses, consumers, and governments, as well as foreign borrowers
2. the supply of loanable funds from domestic savings, disposing of money balances, money creation by the banking system, as well as foreign lending

The Loanable Funds Theory of Interest

The Demand for Loanable Funds

- *Consumer (household) demand* is relatively *inelastic* with respect to the rate of interest.
  - A substantial change in the rate of interest must occur before the quantity of consumer demand for funds changes significantly.
  - They tend to focus instead on non-price terms of a loan such as down payment, maturity and size of installment payments.
- *Domestic business demand* increases as the rate of interest falls because more projects will be more profitable. *Negative relationship*.

The Loanable Funds Theory of Interest

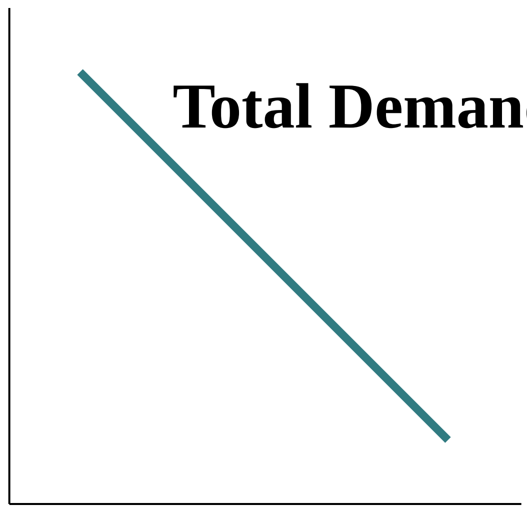
The Demand for Loanable Funds (Cont.)

- *Government demand* is relatively ***inelastic*** with respect to changes in interest rates because decisions to borrow depend mostly on social needs and public welfare, not the interest rates.
- *Foreign demand* is sensitive to the spread between domestic and foreign interest rates. *Negative relationship*
  - *If Thai interest rates decline relative to foreign interest rates, foreign borrowers will be inclined to borrow more in Thailand and less abroad.*

The Loanable Funds Theory of Interest

Total Demand for Loanable Funds (Credit)

Interest Rate



Total Demand = $\mathbf{D_{consumer} + D_{business} + D_{government} + D_{foreign}}$

Amount of Loanable Funds

The Loanable Funds Theory of Interest

The Supply of Loanable Funds

- *Domestic Household Savings*. The net effect of income, substitution, and wealth effects is a relatively interest-*inelastic* supply of savings curve.
  - Income Effect – Household saving may be goal-oriented, if you want 1 million by next 10 year, higher rates help you achieve that will lower saving. If rate is 5%, you need to save 613,913 Baht. If rate is 10%, you need to save only 385,543. Negative relationship.
  - Substitution Effect – Higher interest rates encourage people to save more. Positive relationship
  - Wealth Effect – a rise in interest rates leads to decrease in wealth (value of financial assets such as bonds), forcing individuals to save more to protect his/her wealth position. Positive relationship

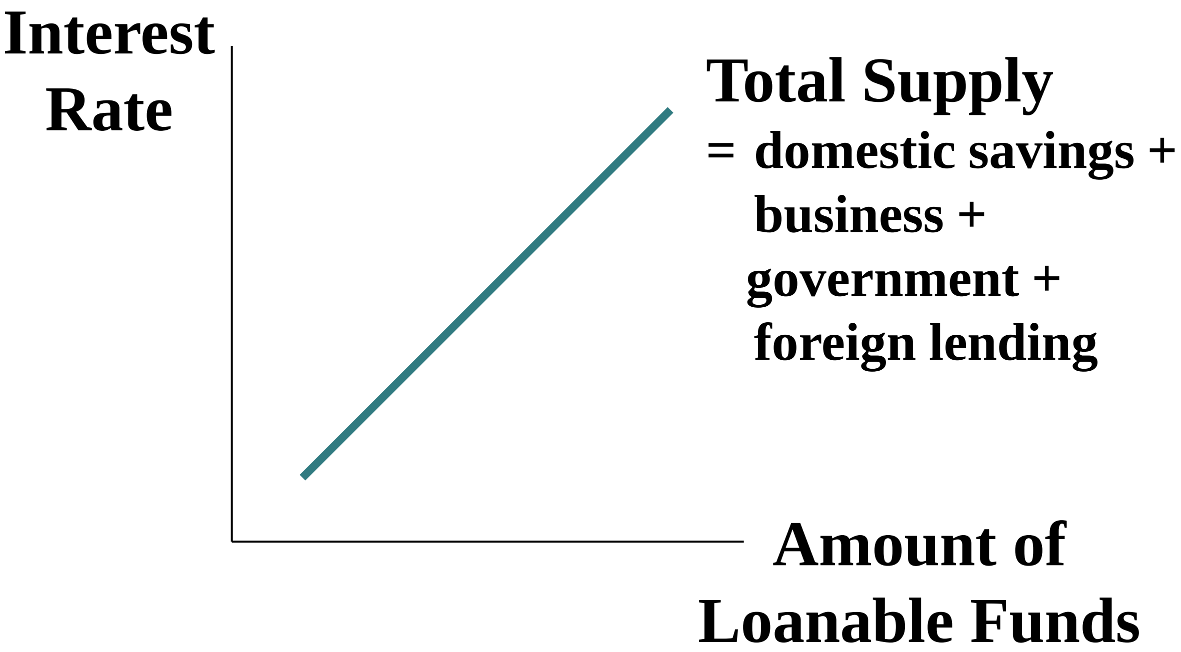
The Loanable Funds Theory of Interest

The Supply of Loanable Funds

- *Domestic Business Supply.* Higher interest rates will result in higher supplies of funds from the business sector. Positive relationship
- *Government Supply* is relatively *inelastic* with respect to changes in interest rates because some governments may temporarily generate more cash inflows than they have budgeted to spend.
- *Foreign Lending* is sensitive to the spread between domestic and foreign interest rates. Positive relationship
  - *If domestic rates rise, foreign lenders will find it more attractive to make loans to domestic borrowers or invest in domestic bonds.*

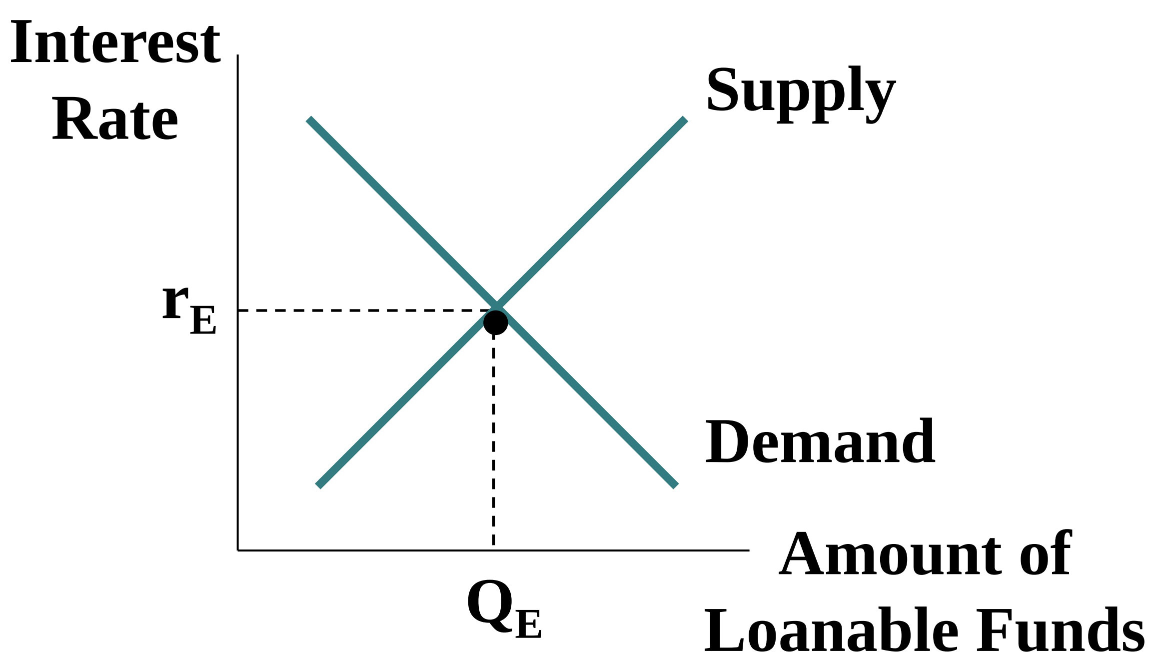
The Loanable Funds Theory of Interest

Total Supply of Loanable Funds (Credit)



The Loanable Funds Theory of Interest

The Equilibrium Interest Rate



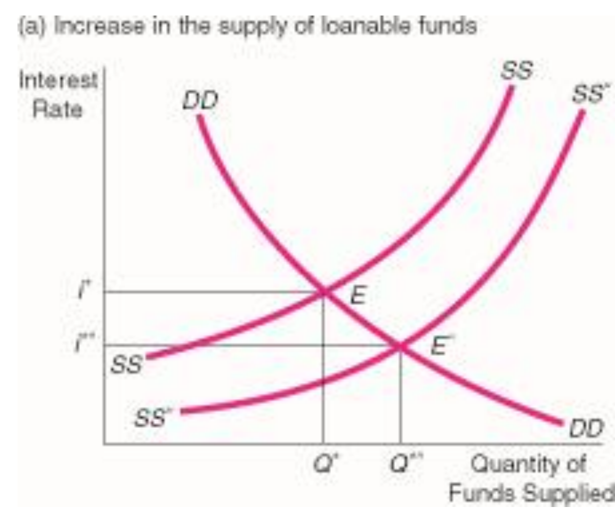
The Loanable Funds Theory of Interest

- Above equilibrium - supply of loanable funds exceeds demand for loanable funds; the rate of interest will bid down.
- Below equilibrium – demand for loanable funds exceeds supply for loanable funds; the interest rate will bid up by borrowers until it settles at equilibrium again.

The Loanable Funds Theory of Interest

Factors that shift the Supply Curve

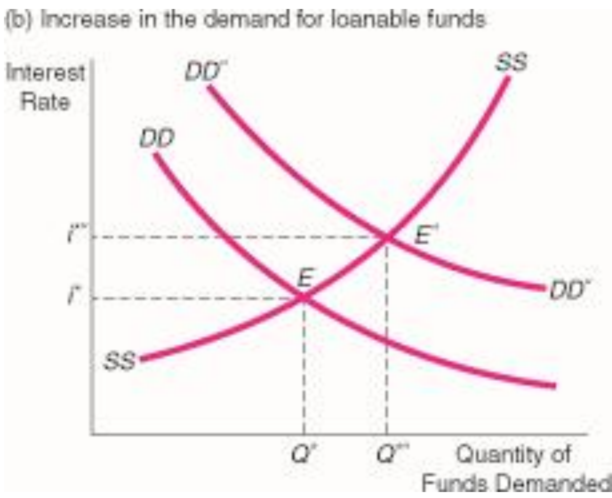
- **Wealth –** as total wealth of financial market participants increases, the absolute dollar value available for investment purposes increases.
- **Risk –** as risk of financial security decreases, it becomes more attractive to suppliers of funds.
- **Near-Term Spending Needs –** if they are few, the absolute dollar value available for investment purposes increases.
- **Monetary Expansion –** increases the supply of funds available.
- **Economic Conditions** – a crisis will decrease supply of funds available.



The Loanable Funds Theory of Interest

Factors that shift the Demand Curve

- Utility – a move to urban area increases utility to purchase a condo, the individual's demand for funds increases.
- Loan Restrictions – the lack of restrictions makes loan more desirable.
- Economic Conditions – during an expansion, market participants are willing to borrow more heavily.



Today's Outline

1. Time Value of Money (Review)
2. Measuring Interest Rates
3. Interest Rates and 2 Theories
    - The Liquidity Preference Theory
    - The Loanable Funds Theory
4. Determinants of Interest Rates for Individual Securities
5. Term Structure of Interest Rates

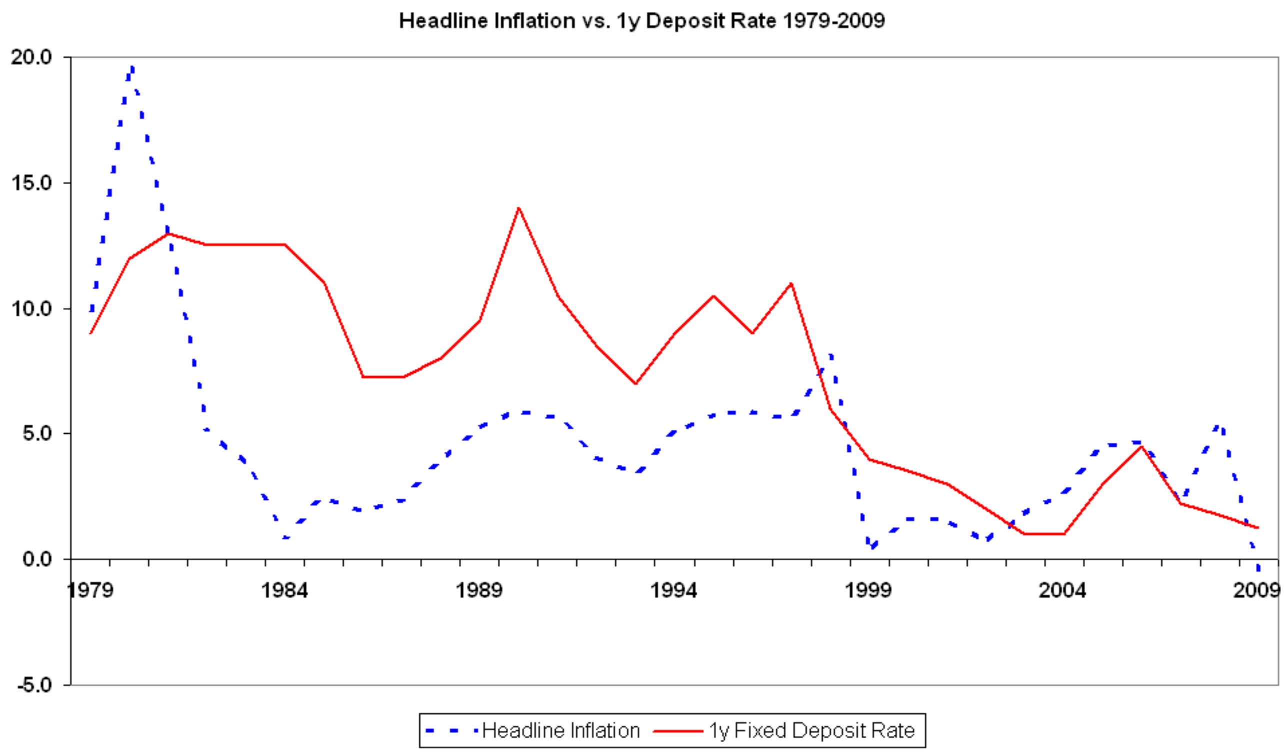
Determinants of Interest Rates for Individual Securities

$$i_j^* = f(IP, RIR, DRP_j, LRP_j, SCP_j, MP_j)$$

- Inflation Premium (IP) – Investor who buys a financial asset must earn a higher interest rate when inflation increases to compensate for the increased cost of forgoing consumption of real goods and services.
- Default Risk Premium (DRP) – the higher the default risk, the higher interest rate demanded by investor for compensation.
- Liquidity Risk Premium (LRP) – if a security is illiquid, investors add a liquidity premium to the interest rate.
- Special Provisions or Covenants Premium (SCP) – if they provide benefits for issuer, investors demand premium for compensation.
- Maturity Premium (MP) – the difference b/w yield on short or long-term securities of the same characteristics can be positive, negative, or zero.

Inflation and Interest Rates

- *Inflation* refers to the rise in the average level of prices for all goods and services.
- In recent years, the Thai inflation and interest rates appear to be fairly correlated.



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Inflation and Interest Rates

Nominal and Real Interest Rates

- In general, lenders will attempt to charge *nominal* rates of interest that give them their desired *real* rates of return on their loanable funds based upon their expectations regarding inflation.
  - nominal rate = published or quoted rate
  - real rate = rate measured in terms of the actual purchasing power

Inflation and Interest Rates

The Fisher Effect

- In a 1896 classic article, economist Irving Fisher argued that expected nominal interest rate

  = expected real rate + expected inflation

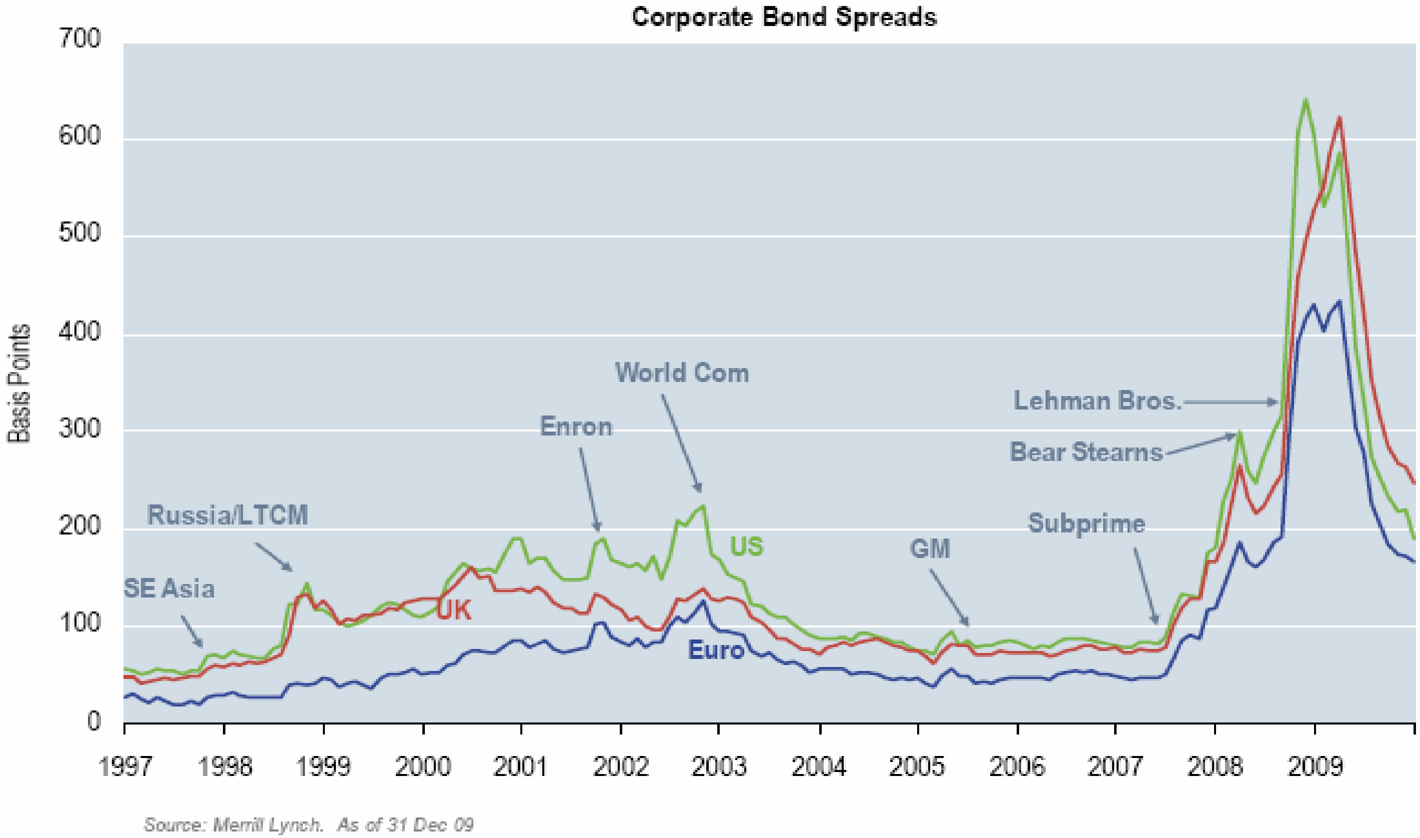
  + (expected real rate $\times$ expected inflation)

- The second term is the Inflation Premium for the loss of purchasing power on the promised nominal interest rate payments due to inflation. This term are assumed to be small, so we can use an approximation.

  $\approx$ expected real rate + inflation premium

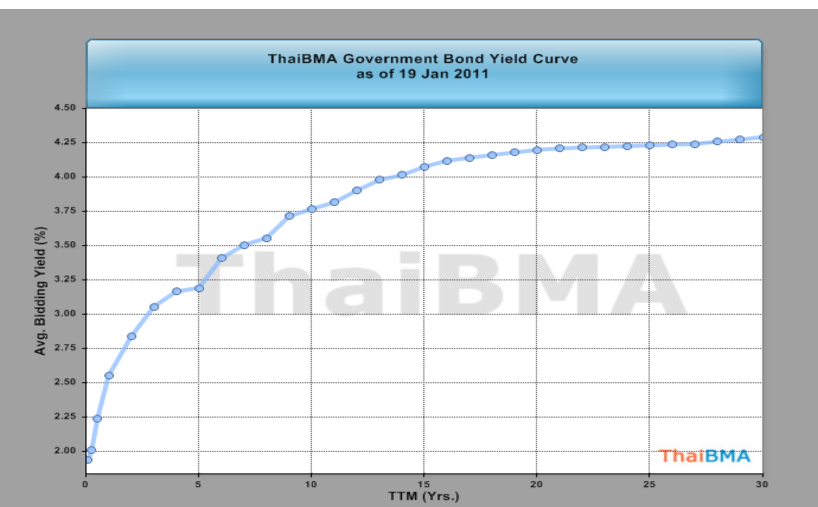
Default Risk Premium

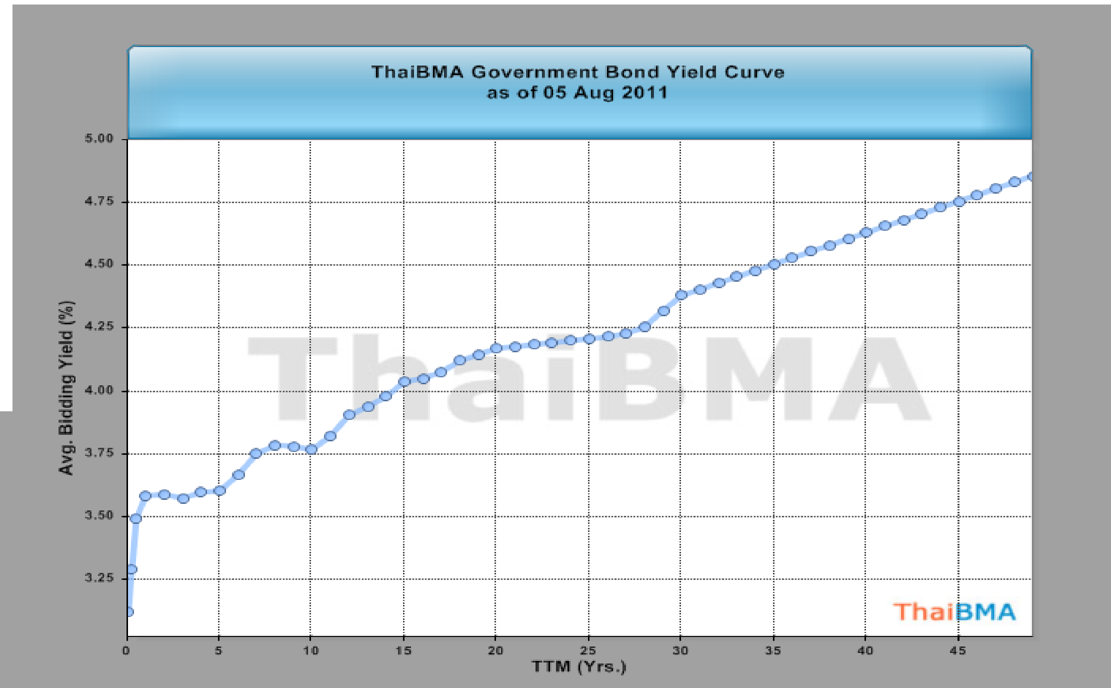
Default Risk Premium (DRP) – the higher the default risk, the higher interest rate demanded by investor for compensation.



Default Risk Premium

Maturity Premium (MP) – the difference b/w yield on short or long-term securities of the same characteristics can be positive, negative, or zero.





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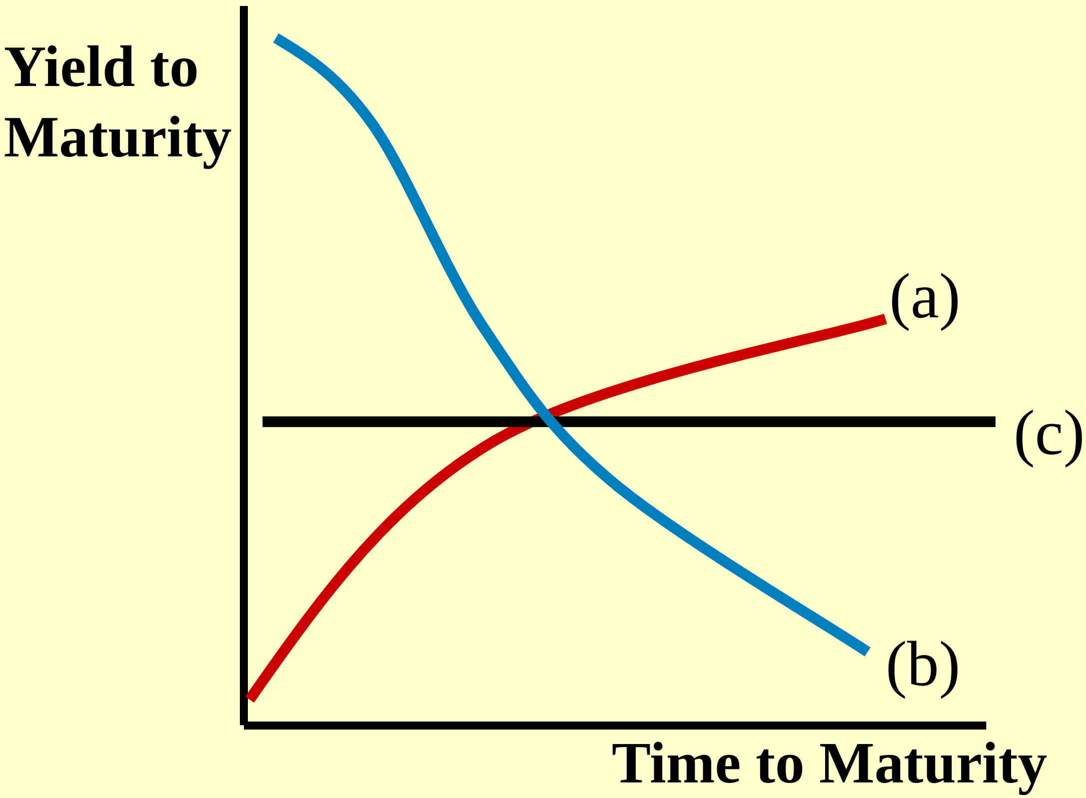
Term Structure of Interest Rates

- One important factor causing interest rates to differ from one another is differences in the *maturity* (or term) of securities and loans.
- The relationship between the rates of return on financial instruments and their maturity at one moment in time is called the *term structure of interest rates*.
- This term structure may be represented visually by drawing a *yield curve* for all securities having the same credit quality.

Term Structure of Interest Rates



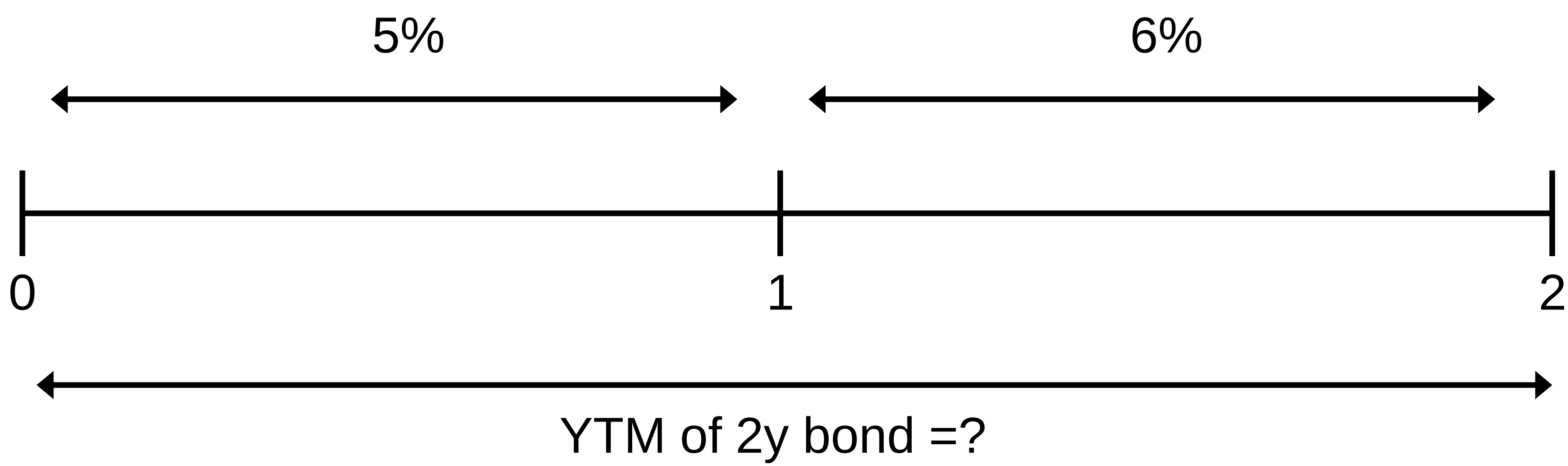
(a) Upward sloping
(b) Inverted or downward sloping
(c) Flat

Term Structure of Interest Rates

- The *unbiased expectations hypothesis* argues that investor expectations regarding future changes in short-term interest rates determine the shape of the curve.
- So, an upward-sloping yield curve indicates that investors expect short-term interest rates to rise above the current rates in the future.
- This hypothesis assumes that long-term interest rate is a geometric average of a series of current and future short-term interest rates.

Term Structure of Interest Rates

- For example, if YTM of a 1-year bond today is 5% and investors believe that YTM of 1-year bond will be 6% one year from now. What should be YTM of a 2-year bond today?

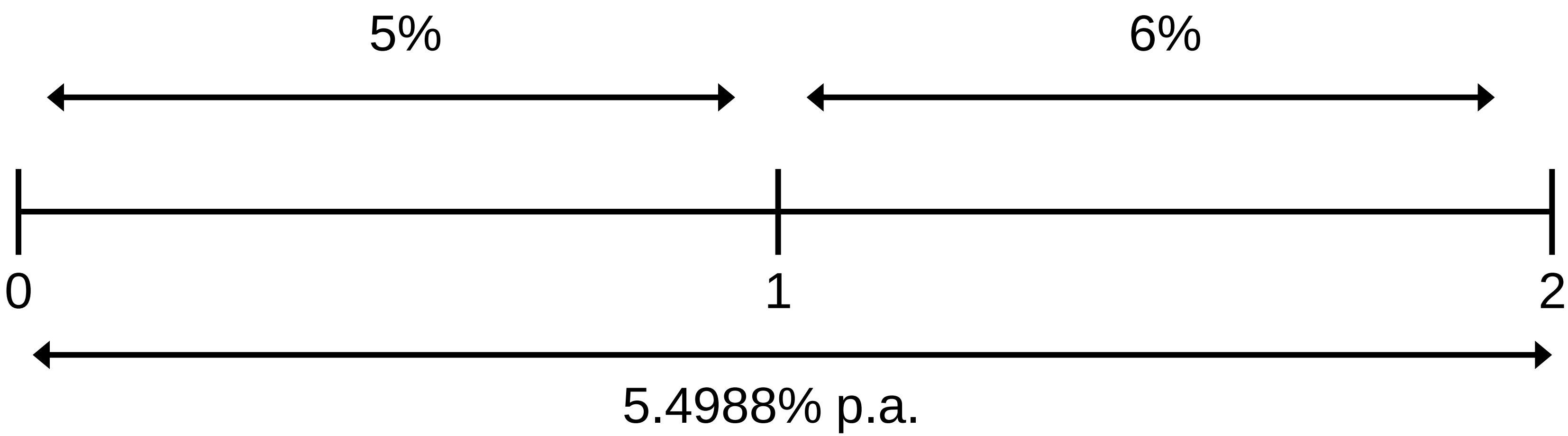


Term Structure of Interest Rates

$$(1+x)^2 = (1+0.05)(1+0.06)$$
$$= 1.113$$
$$x = 5.4988\%$$

So, investors should be indifferent b/w two alternatives

- Buy 2-year bond today, or
- Buy 1-year bond today, and when it matures buy another 1-year bond

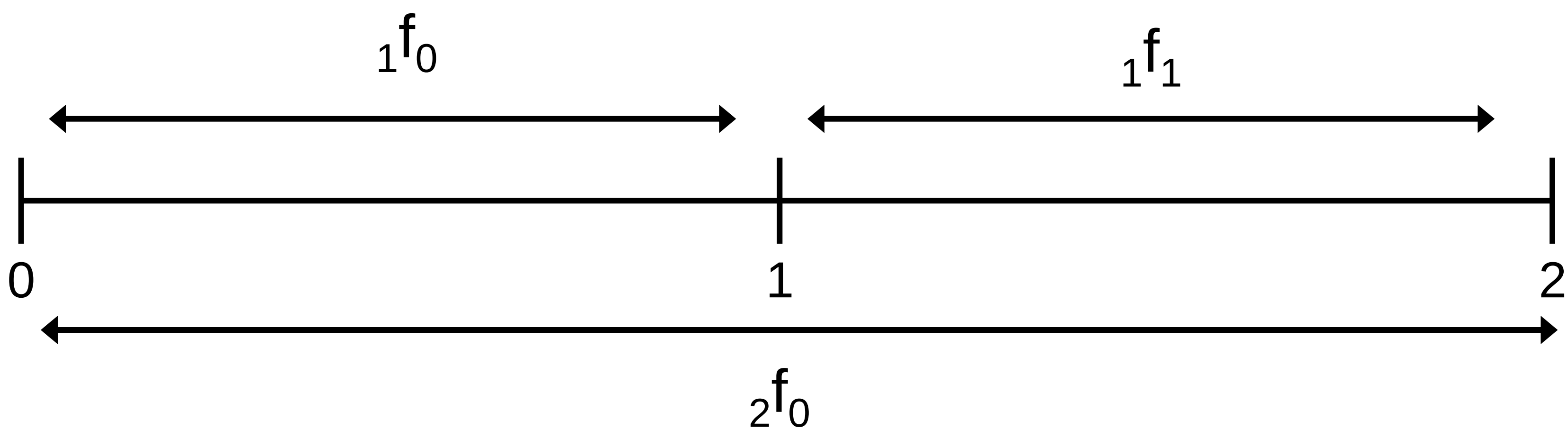


Term Structure of Interest Rates

The expected 6% rate, one year from today, is called a forward rate. It can be viewed as the market's consensus of future interest rate.

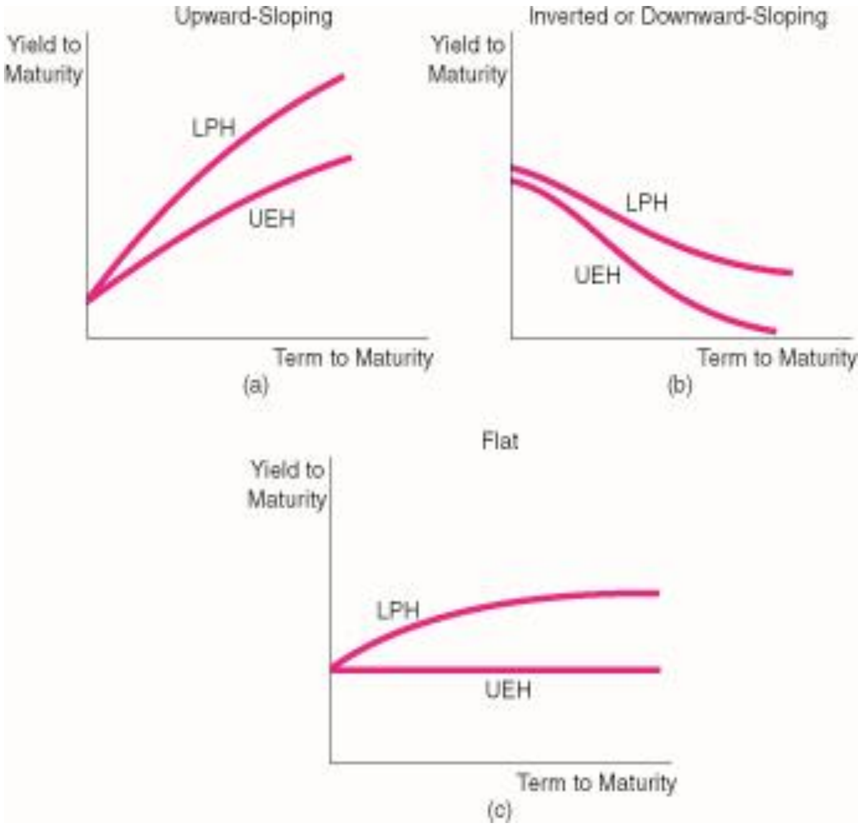
Define ${}_1f_m$ = 1-period forward rate beginning m periods from now, then

- ${}_1f_1$ indicates 1-year forward rate beginning 1 year from now
- ${}_1f_2$ indicates 1-year forward rate beginning 2 years from now
- ${}_1f_3$ indicates 1-year forward rate beginning 3 years from now
- …
- ${}_1f_0$ indicates 1-year rate today, also called spot rate
- ${}_2f_0$ indicates 2-year rate today, also called spot rate



Term Structure of Interest Rates

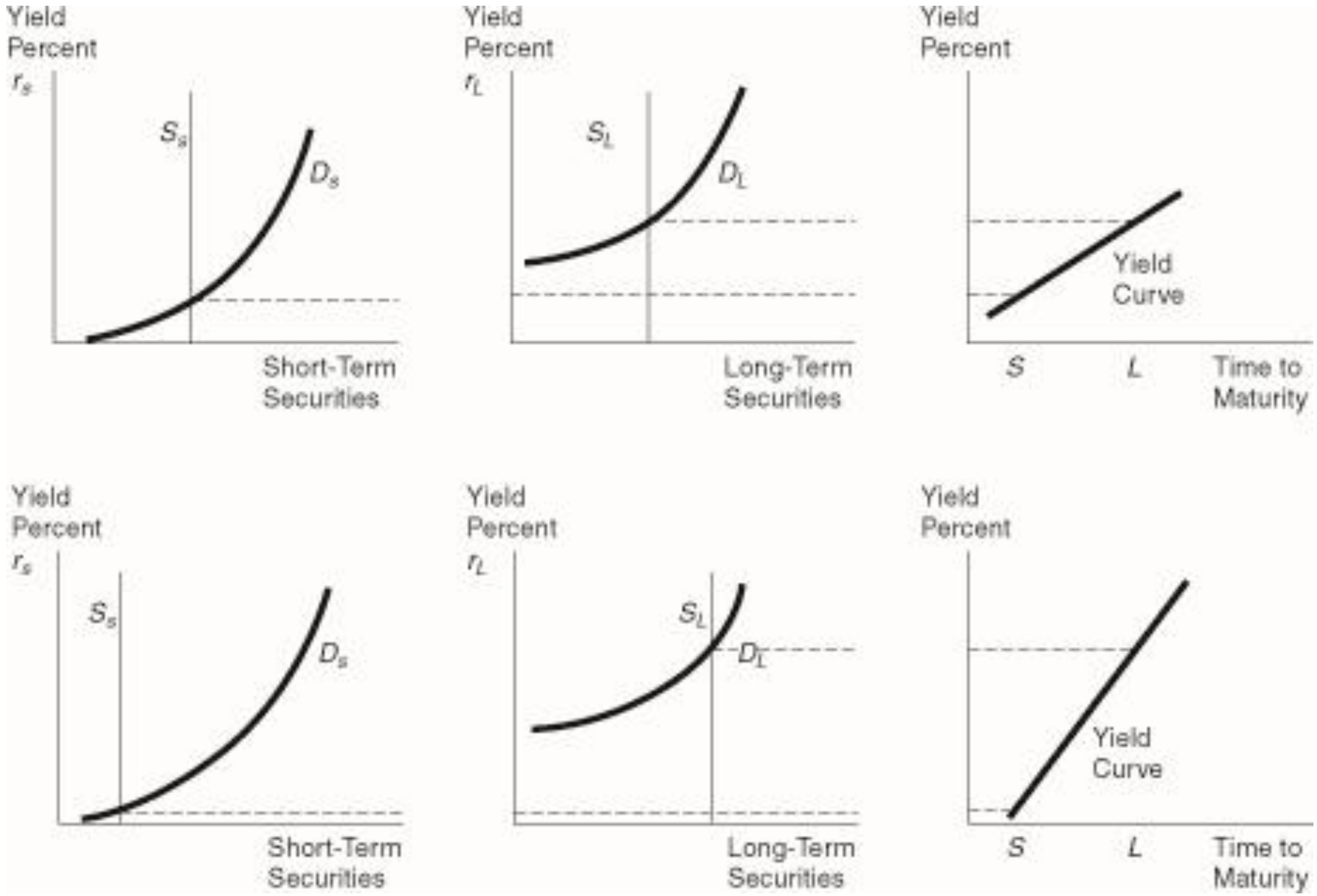
- The *liquidity premium theory* of the yield curve suggests that there is a bias toward positively-sloped yield curves.
- This is because longer-term securities tend to have more volatile market prices and hence, greater risk of capital loss.
- So, investors must be paid an interest rate premium (the liquidity premium) to encourage them to purchase long-term securities.



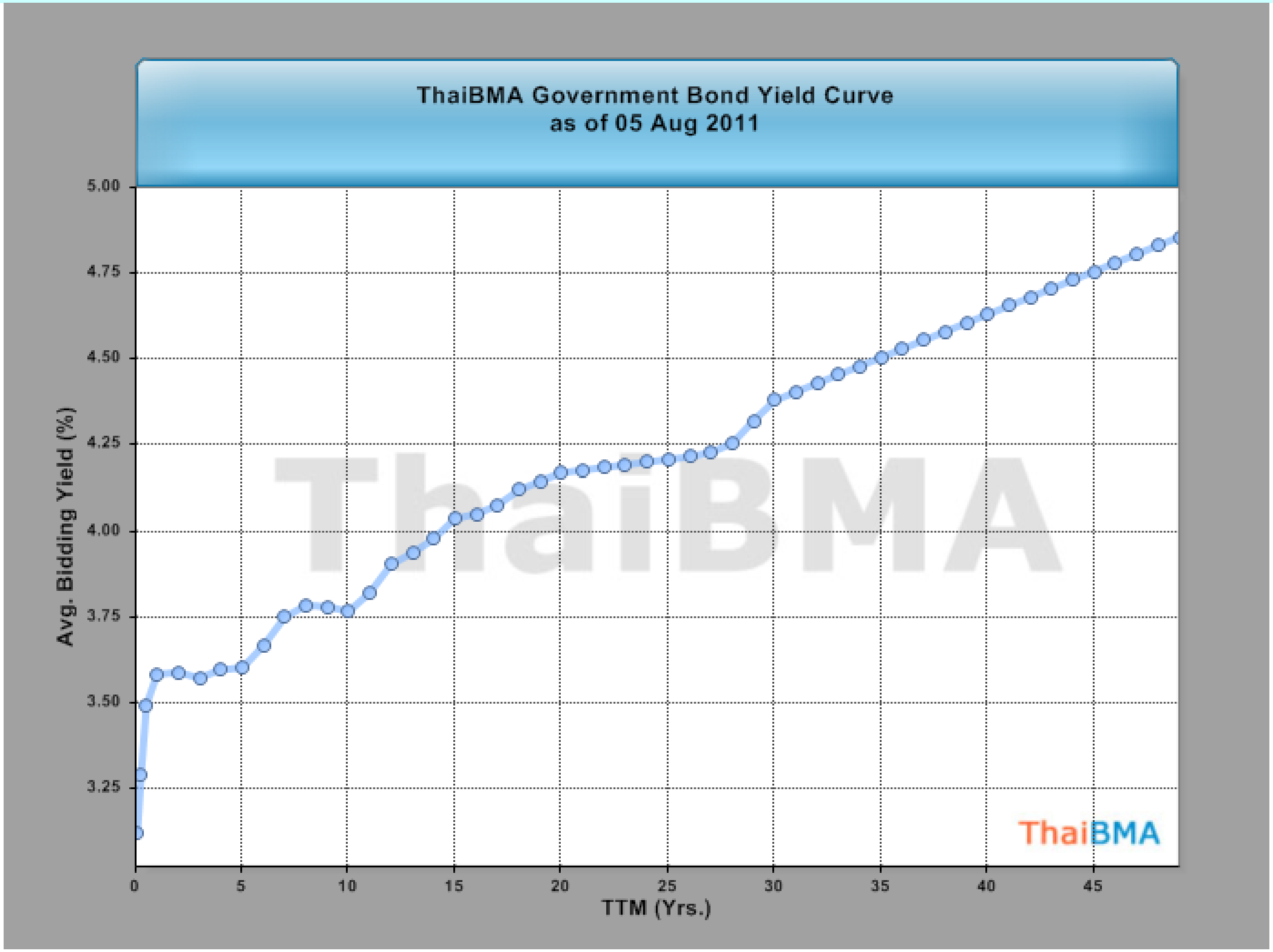
Term Structure of Interest Rates

- The market segmentation argument of the yield curve separates the financial markets into several distinct markets according to the maturity preferences of the investors.
- It assumes that all financial assets are not perfect substitutes in the minds of investors. Maturity preference exist among some investor groups and they will not stray from their desired maturity range unless induced to do so by higher yields or other favorable terms.
  - *For example, pension funds prefer long-term bonds.*
- The implication is that governments can alter the shape of the yield curve by shifting the available supplies of securities relative to the demand for those securities in each distinct market.

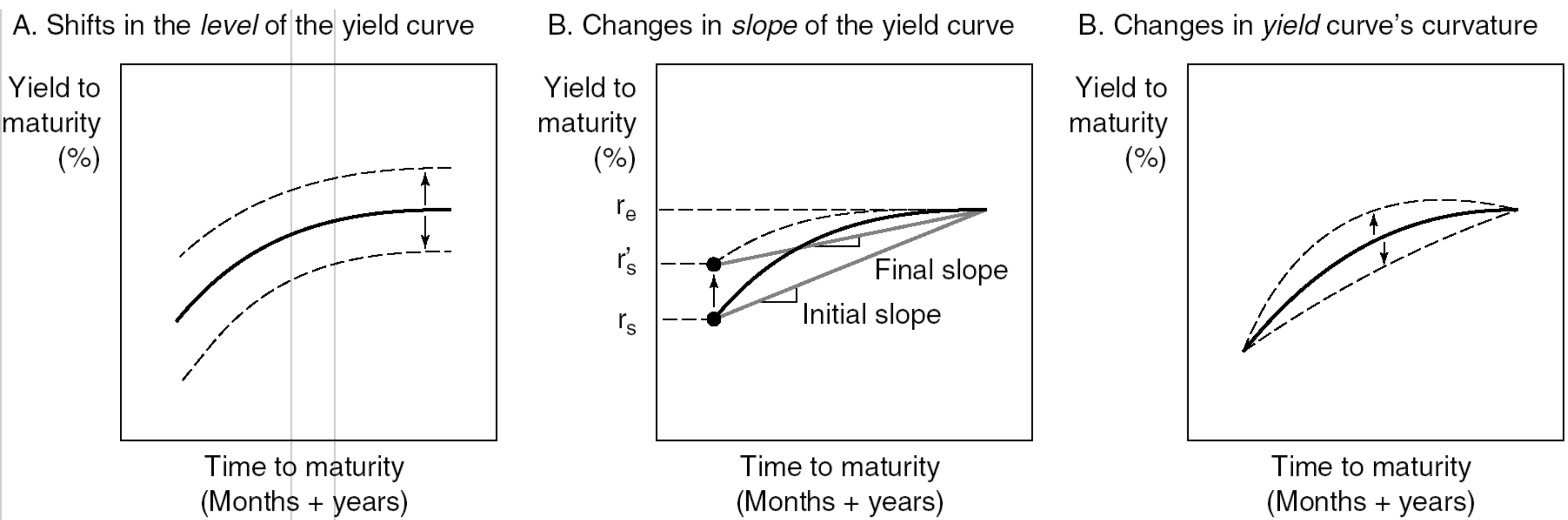
Term Structure of Interest Rates



Thailand's Government Bond Yield Curves



Changes in Yield Curves



The Uses of Yield Curves

- The yield curve is a useful tool for …
  - forecasting interest rates – a downward-sloping yield curve suggests near-term declines in short-term interest rates
  - identifying portfolio management strategies – a rising yield curve favors short-term borrowing and long-term lending
  - detecting over- and under-priced financial assets
  - indicating trade-offs between maturity and yield
  - “riding” the yield curve – active investors may gain by timely portfolio switching