R

1. Rainbow Option

An option that has a payoff based on the maximum or minimum of two (or more) risky assets and cash. For example, the payoff to a rainbow call is max (S_t, Q_t, K), where S_t and Q_t are risky asset prices. This kind of option is often called two-color rainbow option, because the maximum and the minimum prices of two assets look very much like the shape of rainbow in a two-dimensional diagram, with two asset prices as the two axes.

2. Random Equation (Itô Equation)

The *Itô* equation as defined in equation A is a random equation. The domain of the equation is $[0, \infty) \times \Omega$ with the first argument t denoting time and taking values continuously in the interval $[0, \infty)$, and the second argument w denoting a random element taking values from a random set Ω. The range of the equation is the real numbers or real vectors. For simplicity, only the real numbers, denoted by R, are considered as the range of equation.

$$dS(t.w) = \mu[t, S(t, w)]dt + \sigma[t, S(t, w)]dZ(t, w). \qquad (A)$$

3. Random Walk

Theories that stock price changes from day to day are at random; the changes are independent of each other and have the same probability distribution. Mathematically, it is a stochastic process, $X(t)$, in which increments, $e(t)$, are independent and identically distributed:

$$X(t) = X(t - h) + e(t), \qquad (A)$$

where $e(t)$ is the random error. Under the weak-form efficient market, the relationship between stock prices per share in period t (P_t) and that in period $t-1$ (P_{t-1}) can be defined as:

$$P_t = P_{t-1} + expected\ return + (e_t). \qquad (B)$$

If the stock prices follow equation (B), they are said to follow random walk.

4. Range-Forward Contract

Range-forward contract consists of a long forward contract combined with a long position in a put and a short position in a call. The strike prices are chosen so that the initial value of the call equals the initial value of the put. Since the value of the forward contract is zero initially, the value of the whole package is also zero. A range forward contract has a similar type of payoff pattern to a bull spread. [See also **Bull spread**]

5. Rank Order

A quality of data often found across credit rating categories where values consistently progress in one direction, never reversing direction. Mathematicians term this property of data, *monotonicity*.

6. Rate Anticipation Swap

A switch made in response to forecasts of interest rates.

7. Rate Sensitive

Classification of assets and liabilities that can be repriced within a specific time frame, either because they mature or carry floating or variable rates.

8. Rating

System of assigning letters to security issues indicating the perceived default risks associated with that class of issues. Rating agencies include Standard &Poor's and Moody's etc. [See also **Bond rating**]

9. Ratings Transitions

A change in the credit rating of a bond from one value to another. For example, a rating downgrade is from AAA to AA by Standard and Poor's.

10. Ratio Analysis

Ratio analysis is another means by which to gain insight regarding a firm's strengths and weaknesses. Ratios are constructed by dividing various financial statement numbers into one another. The ratios then can be examined to determine trends and reasons for changes in the financial statement quantities. Ratios are valuable tools, as they standardize balance sheet and income statement numbers; thus, differences in firm size will not affect the analysis.

Three basic categories of ratio analysis typically are used, **time series analysis**, **cross-sectional analysis**, and **benchmark analysis**. [See also **Time series analysis**, **Cross-sectional analysis**, and **Benchmark analysis**]

There are also many categories of financial ratios. The following list represents the most basic categories:

1. Liquidity ratios
2. Asset management ratios
3. Capital structure ratios
4. Profitability ratios
5. Market value ratios.

11. Ratio Spread

Buying m calls at one strike price and selling n calls at a different strike price, with all options having the same time to maturity and same underlying asset.

12. Real Assets, Financial Assets

Real assets are land, buildings, and equipment that are used to produce goods and services. *Financial assets* are claims such as securities to the income generated by real assets.

13. Real Cash Flow

A future cash flow of capital budgeting decision is expressed in real terms if the current, or date 0, purchasing power of the cash flow is given. In other words, it is the nominal cash flow divided by (1 + inflation rate).

14. Real Interest Rate

Interest rate expressed in terms of real goods; that is, the nominal interest rate minus the expected inflation rate. [See also **Nominal risk-free interest**]

15. Real Option

Option involving real (as opposed to financial) assets. Real assets include land, plant, and machinery. Similar to options on financial securities, real options involve discretionary decisions or rights, with no obligation, to acquire or exchange an asset for a specified alternative price. The ability to value real options (e.g., to defer, expand, contract, abandon, switch use, or otherwise alter a capital investment) has brought a revolution to modern corporate resource allocation.

16. Real Risk-Free Rate of Interest

The real risk-free interest rate is the return investors require on a zero-risk instrument with no inflation. Since no such security or economic environment exists, the real risk-free rate is admittedly a theoretical concept. It forms the basis for all expected returns and observed interest rates in the economy. Although it cannot be observed directly, it can be estimated. Studies indicate that, over time, the real risk-free interest rate in a country is approximately equal to the economy's long-run growth rate. But short-term influences can lead to increase or reductions in the real risk-free rate.

For example, short-term increases in growth above long-term trends (e.g., the business cycle) can cause an economy to have a larger demand for capital than a low-growth or recessionary economy. Larger government budget deficits are an additional source of demand for capital; all else being equal, they lead to higher real risk-free interest rates.

Supply forces can affect the real risk-free rate as well. Changes in national savings affect the pool of funds available for investment. Actions by the Fed can affect the short-term supply of capital and real interest rates. As people typically spend more than they earn when they are young and then earn more than they spend as they grow older, the graying of the baby boomers in the US may boost the supply of capital through a positive influence on personal savings. Legislation offering tax shields or other inducements to save, such as individual retirement accounts (IRAs) and tax-deferred annuities, also increase savings and the supply of capital.

17. Realized Compound Yield

A measure of total return calculated by comparing total future dollars equal to coupon interest or dividends plus reinvestment income and maturity or sale value of the underlying asset, with the initial purchase price, over the appropriate number of compounding periods.

18. Rebalancing

The process of adjusting a trading position periodically. Usually the purpose is to maintain delta neutrality. In the case of options and other more complicated derivatives, the hedge that is set up is only instantaneously riskless. To remain riskless it must be rebalanced continuously. [See also **Delta hedging**]

19. Rebate

The return of a portion of unearned interest to a borrower.

20. Rebate Option

A claim that pays $ 1 at the time the price of the underlying asset reaches a barrier. [See also **Deferred rebate option**]

21. Receivable Balance Pattern

The receivable balance pattern, also known as the **payments pattern approach**, provides a way of monitoring accounts receivable. This technique examines the percentage of credit sales for a given time period (usually one month) that are still outstanding at the end of each subsequent time period.

This approach is not affected by changes in sales levels, as the average collection period (ACP) and aging schedule are, so the receivable balance pattern does not give misleading signals. In addition, this approach can develop predictions of receivable balances and collections as part of a cash flow forecast. [See also **Payments pattern approach**]

22. Receivables

Account receivables which are noninterest bearing short term extensions of credit to customer in the normal course of business. This kind of "*trade credit*" might be at risk to the extent that the customer may not pay his obligation in full.

23. Receivables Turnover Ratio

Total operating revenues divided by average receivables. Used to measure how effectively a firm is managing its accounts receivable. [See also **Asset management ratios**]

24. Receiver Swaption

A swaption giving the holder the right to receive the fixed rate in a swap. Thus, the holder of a receiver swaption would exercise his right when the fixed rate is below the strike price.

25. Recombining Tree

A binomial tree describing asset price moves in which an up move followed by a down move generates the same stock price as a down move followed by an up move. It is also called a lattice. Binomial option pricing model is based upon a lattice.

26. Record Date

The shareholders whose names appear on the corporation's list of shareholders on the record date are entitled to receive the dividend even if they sell their stock before the payment date. [See also **Dividend declaration date**]

27. Recourse

Legal right to enforce a claim against another party.

28. Recoveries

The dollar amount of loans that were previous charge off but now collected.

29. Recovery Rate

It can be defined as 1 minus loss given default (LGD). Recovery rates for individual obligors differ by issuer and industry classification. Rating agencies such as Moody's publish data on the average prices of all defaulted bonds, and generally analysts will construct a database of recovery rates by industry and credit rating for use in modeling the expected recovery rates of assets in the collateral pool.

30. Recovery Value

The percentage of par value received by either a bondholder or a lender in a bankruptcy.

31. Red Herring

A red herring is basically a preliminary **prospectus**. [See also **Prospectus**]The nickname arises from the disclaimer, printed in red on the cover of the prospectus, that the SEC has not yet approved the securities for sale.

32. Redlining

A practice whereby lenders deny loans to residents living in predetermined geographic areas. For example, many lenders were found to be making mortgage loans much more readily available in white neighborhoods than in those with higher proportions of nonwhites. Such a practice is illegal.

33. Reference Price

A market price or rate used to determine the payoff on a derivatives contract.

34. Refunding

The process of replacing outstanding bonds, typically to issue new securities at a lower interest rate than those replaced.

35. Registered Bond

A bond whose issuer records ownership and interest payments. Differs from a bearer bond, which is traded without record of ownership and whose possession is its only evidence of ownership. [See also **Bearer bond**]

36. Registered Trader

A member of the exchange who executes frequent trades for his or her own account.

37. Registration Statement

The registration that discloses all the pertinent information concerning the corporation that wants to make the offering. The statement is filed with the Securities and Exchange Commission.

38. Regression Equation

An equation that describes the average relationship between a dependent variable and a set of explanatory variables. [See also **Scatter diagram** and **Market model**]

39. Regular Cash Dividend

Cash payment by firm to its shareholders, usually four times a year.

40. Regulation A

The securities regulation that exempts small public offerings (those valued as less than $1.5 million) from most registration requirements.

41. Reinvestment Rate Risk

The return that an investor receives from a bond investment equals the bond's yield to maturity or effective annual rate only if the coupon payments can be reinvested at a rate equal to the bond's yield to maturity. Since the form of the interest facto in the bond price equation, $(1 + r)^m$ assumes that all the cash flows are reinvested at the periodic rate r for m periods; should future coupons be reinvested at a lower rate, the investor's actual yield will be less than the bond's yield to maturity. Therefore, reinvestment rate risk occurs when fluctuating interest rates cause coupon payments to be reinvested at different interest rates. Another illustration of reinvestment rate risk occurs when maturing bank CDs are rolled over into new CDs. The risk benefits the investor when the new CD rate is higher than the maturing CD rate; it works against the investor when the new CD rate is lower.

A zero coupon bond, a bond which pays no explicit interest, eliminates reinvestment risk. This is the primary reason for the popularity of zero coupon bonds in the investors.

42. Reinvestment Risk

The risk that future cash flows may be reinvested at rates below those expected or available at present. [See also **Reinvestment rate risk**]

43. REIT

Real estate investment trust, which is similar to a closed-end mutual fund. REIT's invest in real estate or loans secured by real estate and issue shares in such investments. [See also **Closed-end fund**]

44. Relative Price Risk

Relative price risk is one type of the exchange rate risk. It is due to changes in supply-and-demand conditions in various countries.

45. Relative Purchasing Power Parity

A more useful offshoot of **absolute purchasing power parity** is relative purchasing power parity. [See also **Absolute purchasing power parity**] Relative purchasing power parity claims that the exchange rates between countries will adjust over time to reflect their relative inflation rates. If h_{FC} and h_{US} are the inflation rates in a foreign country and the US, respectively, relative purchasing power parity claims that the expected change in the spot rate between the currencies (ΔER) is given as:

$$\Delta ER = \frac{E(S_1)}{S_0} - 1 = \frac{h_{FC} - h_{US}}{1 + h_{US}},$$

which is equivalent to:

$$1 + \Delta ER = \frac{E(S_1)}{S_0} = \frac{1 + h_{FC}}{1 + h_{US}},$$

where S_0 and $E(S_1)$ are the current spot exchange rate and the expected spot rate one year in the future, respectively.

In sum, relative purchasing power parity is the idea that the rate of change in the price level of

commodities in one country relative to the price level in another determines the rate of the exchange rate between the two countries' currencies. [See also **International fisher effect**]

46. Remainder Man

One who receives the principal of a trust when it is dissolved.

47. REMIC

A real estate mortgage investment conduit [REMIC] issuing securities collateralized by mortgages and passing on principal and interest payments to investors. REMIC is a new type of Mortgage-backed instrument which is part of the tax reform act of 1986. Like CMOs, REMIC securities represent claims on the underlying cash flows that are prioritized by multiple classes or branches. [See also **Collateralized mortgage obligation (CMO)**]

48. Reorganization

Financial restructuring of a failed firm. Both the firm's asset structure and its financial structure are changed to reflect their true value, and claims are settled. Current law allows the bankrupt firm to be reorganized under chapter 11. The objective of reorganization is to keep the firm alive while settling creditor's claims and attracting new capital into the firm. [See also **Chapter 11**]

49. Replacement Cost

Cost to replace a firm's assets. "Reproduction" cost.

50. Replacement Value

Current cost of replacing the firm's assets.

51. Replacement-Chain Problem

Idea that future replacement decisions must be taken into account in selecting among projects.

52. Repo

Repurchasing agreement. A procedure for borrowing money by selling securities to a counterparty and agreeing to buy them back later at a slightly higher price. [See also **Repurchase agreement**]

53. Repo Rate

The annualized percentage difference between the original sale price and final repurchase price in a repurchase agreement.

54. Repricing

The replacement of an out-of-the-money compensation option with an at-the-money compensation option. This kind of reducing the exercise price of compensation option in response to a decline in stock price is called option repricing.

55. Repurchase Agreements

Repurchase agreements (repos) are not actual securities in themselves, but rather contracts to immediately acquire available funds by selling securities, together with a simultaneous agreement to repurchase those securities at a later date. Most repos are outstanding for only one business day, and nearly all involve Treasury or government agency securities.

For example, suppose a company has $1 million in excess cash available for two days. Instead of buying T-bills and then selling them two days later, the company could create a repurchase agreement with a bank. The company would agree to purchase $1 million worth of T-bills and then sell them back to the bank after two days for the original $1 million plus two days of interest. No actual transfer of physical securities is made; rather, the entire transaction consists of bookkeeping entries on the two parties' accounts.

Repos offer two distinct advantages for investing short-term surplus cash. First, their maturities can be tailored to suit the exact times that the

parties have funds available, from overnight to 30 days or more. Second, because repos state the selling price of the securities in the initial agreement between buyer and seller, they eliminate interest rate risk. The yields on repos are similar to, but slightly lower than, those of T-bills.

56. Repurchase of Stock

Device to pay cash to firm's shareholders that provides more preferable tax treatment for shareholders than dividends. Treasury stock is the name given to previously issued stock that has been repurchased by the firm. ʃee also **Stock repurchase**]

57. Reserve Cash

A company's cash needs fall into three categories: (1) cash for day-to-day transactions, (2) reserve cash to meet contingencies, and (3) cash for compensating balance requirements. To estimate reserve cash requirements, the cash flow manager can tabulate the daily or weekly changes in the cash amount. These changes will range from some very large changes to small fluctuations. Because the major cash flow problem is running short of cash, the financial manager is especially interested in large decreases and thus might select a reserve balance that would meet all but the largest historic cash decreases.

58. Reserve for Bank Debts

Amount appearing on a bank's balance sheet that represents the estimated value of uncollected loans.

59. Reserve Requirement Ratios

Percentages applied to transactions account and time deposits to determine the dollar amount of required reserve assets.

60. Reserve Requirements

In regulating the banking industry, the Fed sets reserve requirements to specify the portion of a bank's total deposits that it must hold as reserves. The Fed hesitates to change the reserve requirement due to the money multiplier effect; small changes in the reserve ratio can have a very large impact on money supply. This makes the tool too coarse for the subtle work of adjusting the economy.

61. Reserve Target

The minimum daily reserve ratio of deposit institution (DI) required by Fed. In general, the DI can either undershooting or overshooting this ratio.

62. Reserves

Qualifying assets to meet reserve requirements, including vault cash and deposit balances help at Federal Reserve Banks.

63. Reset Date

The date in a swap or cap or floor when the floating rate for the next period is set.

64. Residual Claim

Refers to the fact that shareholders are at the bottom of the list of claimants to assets of a corporation in the event of a failure or bankruptcy.

65. Residual Dividend Approach

An approach that suggests that a firm pay dividends if and only if acceptable investment opportunities for those funds are currently unavailable. ʃee also **Residual theory**]

66. Residual Theory

The most easily understood theory of dividend payment determination is called the residual theory. As the name implies, this theory holds that firms pay dividends out of earnings that remain

after it meets its financing needs. These are funds for which the firm has no immediate use. The procedure for a residual dividend policy follows several steps:

1. Determine the firm's optimal capital budget.
2. Determine the amount of equity needed to finance that budget.
3. To the extent possible, use the firm's retained earnings to supply the needed equity.
4. Distribute any leftover earnings as dividends. .

The basic assumption of residual dividend theory is that shareholders want the firm to retain earnings if reinvesting them can generate higher rates of return than the shareholders could obtain by reinvesting their dividends. For example, if a corporation can invest retained earnings in a new venture that generates an 18 percent rate of return, whereas investors can obtain a return of only 10 percent by reinvesting their dividends, then stockholders would benefit more from the firm reinvesting its profits.

Whether firms actually practice the residual theory is a matter of question. Such a theory would imply erratic dividend payments, especially for fast-growth companies. Firms do seem to try to stabilize their dividend-payout rates, so analysts do not place much faith in the residual theory. However, two alternative theories for the dividend behavior of firms have found considerable empirical support.

67. Residual Value

Usually refers to the value of a lessor's property at the time the lease expires.

68. Residuals

Parts of stock returns not explained by the explanatory variable (the market-index return). They measure the impact of firm-specific events during a particular period. [See also **Market model**]

69. Resistance Level

A price level above which it is supposedly difficult for a stock or stock index to rise.

70. Resolution Trust Corporation (RTC)

A government agency (1989–1996) that assisted in the management and savings and loans deemed to be insolvent during the Thrift Crisis. At the time of its dissolution in 1955, RTC had resolved or closed more than 700 saving institutions.

71. Respondent Bank

Bank that purchases services from a correspondent bank.

72. Restrictive Covenants

Provisions that place constraints on the operations of borrowers, such as restrictions on working capital, fixed assets, future borrowing, and payment of dividend.

73. Retained Earnings

Earnings not paid out as dividends. It is one of the items of equity statement. This term also appears in the balance sheet.

74. Retention Rate

The retention rate represents the proportion of every $1 of earnings per share that is retained by the firm; in other words, it is equal to one minus the **dividend payout ratio**. [See also **Dividend payout ratio**]

75. Retention Ratio

Retained earnings divided by net income. It is equal to one minus the dividend payout ratio.

76. Retractable Bonds

[See **Putable bonds**]

77. Return

Profit on capital investments or securities.

78. Return Items

Checks that have not been honored by the drawee bank and have been returned to the check writer.

79. Return on Assets [ROA]

Income divided by average total assets. [See also **Profitability ratios**]

80. Return on Equity (ROE)

Net income after interest and taxes divided by average common stockholders' equity. [See also **Profitability ratios**]

81. Return on Sales (ROS), or Profit Margin

The ratio of operating profits per dollar of sales (EBIT divided by sales). [See also **Profitability ratios**]

82. Revenue Bond

Most of municipal bonds are revenue bonds. They will be repaid out of proceeds from the specific revenue-generating project that they were sold to finance, such as toll roads.

83. Reverse Cash-and-Carry

The simultaneous short-sale and forward purchase of an asset or commodity.

84. Reverse Conversion

A short position in an asset coupled with a purchased call and written put, both with the same strike price and time to expiration. The position is a synthetic short T-bill position.

85. Reverse Mortgage

A mortgage in which the owner of the property can borrow against existing equity in the property.

86. Reverse Purchase Agreement

The purchase of a security coupled with an agreement to sell it at a later date. The opposite of a repurchase agreement.

87. Reverse Repo (RP)

A contract in which a lender provides funds to a borrower for which collateral is provided in the event on nonpayment. Every RP transaction involves both a regular RP and reverse RP depending on whether its viewed from the lender's or borrower's prospective. Most RPs use Treasury or US agency securities as collateral.

88. Reverse Repurchase Agreement

Securities purchased under an agreement to resell them at a later date.

89. Reverse Split

The procedure whereby the number of outstanding stock shares is reduced; for example, two outstanding shares are combined to create one. [See also **Stock split**]

90. Reverse Stock Split

A reverse stock split, as its names implies, is a reduction in the number of shares outstanding, with each share increasing in value to keep the total value of the firm unchanged. As with a **stock split**, theory gives no reason to expect any change in the underlying value of the company that engages in a reverse split. [See also **Stock split**]In

fact, many investors regard a reverse split as an admission by management that the company faces financial difficulties. This belief is based primarily on the argument that the market price per share is too low to attract serious investors.

91. Reversible Swap

Allows counterparty to change status from floating-rate payer to fixed-rate payer and vice versa.

92. Reversing Trade

Entering the opposite side of a currently held futures position to close out the position.

93. Reversion Level

The level to which the value of a market variable (e.g., an interest rate) tends to revert.

94. Revolving Commitment (Revolver)

A generic term referring to some facility which a client can use – or refrain from using – without canceling the facility. In other words, it guarantees that funds can be borrowed, repaid and borrowed again over an extended period, perhaps as long as 3 years. See also **Revolving credit agreement**]

95. Revolving Credit Agreement

Banks usually grant lines of credit for specific lengths of time, usually one year or less. The parties may, of course, renegotiate the loan to provide the funds for a longer time, if needed. Still, the bank usually expects the borrower to clean up the loan – that is, to reduce its debt to the bank to zero – at least once during the year.

A borrower that has a recurring need for funds may instead arrange a revolving credit agreement. This type of loan resembles the line of credit, in that the parties agree to a maximum credit level, and the borrower may draw funds up to that limit. The revolving credit agreement, however, meets the borrower's need to borrow the funds, pay off the loan, and then borrow again, time after time. Such a situation may supply funds for a borrowing company that produces a small number of large, high-value products, such as ships or steam turbines; the firm must borrow to finance the construction of each product until it eventually collects the proceeds of the sale. Moreover, a revolving credit agreement is more likely to be guaranteed by the bank than a line of credit.

Because the bank must commit to the agreement for a much longer time than a conventional line of credit would demand, the negotiation process for a revolving credit agreement tends to be more formal. The bank may specify that the borrower must maintain its working capital above a specified level, forbid any factoring of accounts receivable without the bank's permission, or stipulate that any further borrowing must be subordinated to the revolving credit debt. Commitment fees also are common for large revolving credit agreements. Most banks offer the borrower a choice between a **committed line of credit** and an **uncommitted line of credit**. See also **Committed line of credit** and **Uncommitted line of credit**.]

96. Revolving Loan

A credit line on which a borrower can both draw and repay many times over the life of the loan contract. See also **Revolving credit agreement**]

97. Reward-to-Volatility Ratio

Ratio of excess return to portfolio standard deviation. See also **Sharpe ratio**]

98. Rho

The change in value of a derivative due to a change in the interest rate. Based upon the call option formula defined in option pricing equation See also **Option pricing equation** for variable definitions] The mathematical result can be defined as:

$$\frac{\partial C}{\partial r} = TXe^{-rT}N(d_2) > 0.$$

99. Riding the Yield Curve

It is one of the bond portfolio management strategies designed to increase income is called riding the yield curve. To be successful, managers using this approach must be willing to make several rather strong assumptions about the future course of interest rates. To illustrate, suppose that a manager would ordinarily hold 1-year Treasury securities as part of an institution's secondary reserves but now sees an upward-sloping yield curve. The yield on 1-year Treasuries is 3.5 percent, and the yield on 2-year Treasuries is 4.0 percent. *If the manager assumes that the shape and level of the yield curve will remain the same,* the price of 2-year Treasuries must rise so that their yield next year (when they will be 1-year Treasuries) will be 3.5 percent. A manager willing to ride the yield curve would hold 2-year Treasuries this year, then sell them at the end of the year after their price rose to provide additional income on the portfolio. Assuming that the level and shape of the yield curve has, in fact, remained unchanged, the manager would then reinvest the proceeds in 2-year Treasuries and begin the ride again.

In sum, riding the yield curve is an investment strategy the investor buys a security that matures after the investor's assumed holding period. The investor plans to sell the security at the end of the holding period and earn an above-average return because interest rates are expected to remain stable or fall.

100. Rights Issue

An issue to existing shareholders of a security giving them the right to buy new shares at a certain price.

101. Rights Offering

A rights offering allows the firm's current shareholders to purchase additional shares in proportion to their current ownership. This way, the original shareholders maintain control of the firm while raising the needed equity capital among themselves. For example, suppose four shareholders each own 25 percent of a firm whose equity has a value of $4 million. If the firm needs an additional $1 million to finance a plant expansion, it can make a rights offering, allowing each shareholder to invest $250,000. This way, each shareholder can retain 25-percent ownership in the expanded firm.

If a shareholder cannot or declines to invest the full $250,000, the remaining shareholders can invest the difference. Proportionate ownership would change to reflect the overall fraction invested by each shareholder.

The advantage of the rights offering is that the current set of shareholders can maintain control of the firm by each contributing additional funds to meet the firm's needs. This condition creates a practical difficulty, though. As a group, the shareholders may not be able to raise the needed funds, leading to a failure of the rights offering. The firm then must arrange financing from other sources of private equity.

102. Risk Arbitrage

Speculation on perceived mispriced securities, usually in connection with merger and acquisition targets.

103. Risk Class

A partition of the universal set of risk measure so that projects that are in the same risk class can be comparable. M&M propositions have been derived in terms of risk class assumption.

104. Risk Classification

Certain types of projects are inherently more or less risky than other. The firm can use past experience and information from audits of earlier projects to create risk classes or categories for different types of capital budgeting projects. The findings from

break-even, scenario, sensitivity, or simulation an-alysis also can be used to determine risk categories for projects. Each risk category can be given a generic description to indicate the types of projects it should include and a risk-adjusted discount rate or project cost of capital to assign those projects. An example is shown is Table A.

Subjectivity enters this process as management must decide the number of categories, the description of each risk category, and the required rate of return to assign each category.

Differences of opinion or internal firm politics may lead to controversy in classifying a project. Clearly defined category descriptions can minimize such problems.

The process of setting up the risk categories can be made less subjective if the firm audits ongoing and completed capital budgeting projects. Audits can provide fairly objective written records of the firm's experiences with different categories of pro-jects. This paper analysis trail can be used to justify the classifications given to different kinds of pro-jects, as well as the risk premiums assigned to different risk classes.

Table A: Risk Classification Example

Risk categories:	Description
Below-average risk:	Replacement decisions that require no change, or only a minor change, in technology. No change in plant layout required. Discount rate = Cost of capital − 2%
Average risk:	Replacement decisions involving significant changes in technology or plant layout; all cost-saving decisions; expansions and improvements in the firm's main product lines. Discount rate = Cost of capital.
Above-average risk:	Applied research and development; expansion of production or marketing efforts into developed economies in Europe and Asia. Discount rate = Cost of capital + 2%
High risk:	Expansion of production or marketing efforts into less-developed and emerging economies; introduction of products not related to any of the firm's current product lines. Discount rate = Cost of capital + 5%

105. Risk Lover

[See also **Risk averse, risk neutral, risk lover**]

106. Risk Management

The active use of derivatives and other techniques to alter risk and protect profitability.

107. Risk Averse, Risk Neutral, Risk Lover

A *risk-averse* investor will consider risky portfolios only if they provide compensation for risk via a risk premium. A *risk-neutral* investor finds the level of risk irrelevant and considers only the expected return of risky prospects. A *risk lover* is willing to accept lower expected returns on pro-spects with higher amounts of risk.

108. Risk Neutral

A term describing an investor who is indifferent between receiving amount of x dollar and taking a risky bet with an expected value equal to x dollar. [See also **Risk averse, risk neutral, risk lover**]

109. Risk Premiums

The nominal risk-free return is the same for all investments throughout the market. However, there are as many different interest rates or expected returns as there are time horizons (ran-ging from one day to many years) and financial instruments (from passbook savings accounts to corporate stocks). The interest rates we observe in the economy differ from the nominal risk-free rate due to risk premiums. With the possible exception of Treasury bills, all investments are risky.

In sum, risk premium is the excess return on the risky asset that is the difference between expected return on risky assets and the return on risk-free assets.

110. Risk-Free Asset

An asset with a certain rate of return; often taken to be short-term T-bills.

111. Risk-Free Investment

A risk-free investment is one in which the investor is sure about the timing and amount of income streams arising from the investment. However, for most types of investments, investors are uncertain about the timing and amount of income of their investments. The types of risks involved in investments can be quite broad, from the relatively riskless **T-bill** to highly risky speculative stock. [See also **Treasury bills**]

112. Risk-Free Rate

The interest rate that can be earned with certainty. It is risk free in terms of default risk instead of inflation risk. [See also **Nominal risk-free interest rate**]

113. Riskless Portfolio

A combination of assets that earns the riskless rate of interest over the chosen investment horizon. The investment horizon is assumed to be one period; the duration of this period can be any length of time, an hour, day, week, and so on.

114. Risk-Neutral Measure

The probability distribution for an asset transformed so that the expected return on the asset is the risk-free rate.

115. Risk-Neutral Probability

In the binomial model, the probability of an up move in the asset price such that the expected return on the asset is the risk-free rate.

116. Risk-Neutral Valuation

The valuation of an option or other derivative assuming the world is risk neutral. Risk-neutral valuation gives the correct price for a derivative in all worlds, not just in a risk-neutral world.

117. Risk-Return Trade-Off

If an investor is willing to take on risk, there is the reward of higher expected returns. Both security market line and capital market line are used to determine the risk return trade off. [See also **Capital market line** and **Security market line**]

118. Risky Asset

An asset with an uncertain rate of return. For example, stocks are risky assets.

119. Risky Corporate Debt

Sometimes, options are used to value risky corporate debt. Because of the limited liability of stockholders, money borrowed by the firm is backed, at most, by the total value of the firm's assets. One way to view this agreement is to consider that stockholders have sold the entire firm to debt holders but hold a call option with an exercise price equal to the face value of the debt. In this case, if the value of the firm exceeds the value of the debt, stockholders exercise the call option by paying off the bondholders. If the value of the firm is less than the value of the debt, shareholders do not exercise the call option, and all assets are distributed to the bondholders.

120. Roll Back

[See also **Backwards induction**]

121. Roth IRA

An individual retirement account introduced in 1998 that allows individuals whose wages and

salaries are below a predetermined minimum to contribute after-tax income. The contributions grow on a tax-sheltered basis and thus are not taxed at withdrawal.

122. Round Lot

Common stock trading unit of 100 shares or multiples of 100 shares. When an individual wants to buy fewer than 100 shares, the order is turned over to an odd-lot dealer who will buy or sell from his own inventory.

123. R-Squared (R^2)

Square of the correlation coefficient proportion of the variability explained by the linear model. R^2 for regression for estimating beta is $R^2 = \beta_i^2 \frac{\text{var}(R_{mt})}{\text{var}(R_{it})}$. Under this case, R^2 represents the ratio between systematic risk and total risk. [See also **Beta** and **Market model** for variable definitions]

124. Rule 415

In 1983, the SEC passed Rule 415, which allows firms to register security issues (both debt and equity) and then "put them on the shelf" for sale any time over the next two years. Once registered, the securities can be offered for sale by submitting a short statement to the SEC whenever the firm needs the funds or when market conditions are attractive. [See also **Shelf registration**]

125. Rule of 72

Divide 72 by the interest rate at which funds are invested. The value indicates how long it will take for the amount of funds invested to double in value.

126. Run on a Bank

Situation in which a large number of depositors lose confidence in the safety of their deposits and attempt to withdraw their funds.