Level I of the CFA® 2025 Exam

Study Notes - Equity

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Learning Module 1: Market Organization & Structure

LOS 1a: explain the main functions of the financial system

Achievement of Purposes

People use the financial system for various reasons, which can be broken down into six main purposes. However, regardless of the purpose, the financial system is more efficient when transactions are performed in liquid markets.

1. Saving

Both individuals and companies alike set aside money in the present to have more to spend in the future. Individuals typically save during their working years so they can withdraw money later on to fund their retirement. Corporations may save money collected from customers to repay suppliers or lenders, purchase new equipment, or acquire other companies. Money can be saved in a broad range of investment vehicles: from low-risk treasury bills to higher-risk corporate bonds and stocks. Investors that put money into riskier investments expect to be compensated with higher returns.

2. Borrowing

In contrast to saving, borrowing involves receiving money in the present that will be repaid in the future. People can borrow money through secured loans, like most car loans and mortgages; for example, the lender can sell the asset posted as collateral if the borrower defaults. On the other hand, student loans or credit card debt is typically unsecured. Since there is no collateral to be recovered if the borrower fails to pay, lenders will typically charge a higher interest rate on unsecured loans to compensate for the greater downside risk. In addition, companies oftentimes utilize both debt and equity to fund current and future investments. Finally, governments also borrow money to finance current spending by issuing bills, notes, and loans repaid with future taxes or revenue earned by government projects.

3. Raising Equity Capital

Companies use investment banks to assist in raising equity capital, where investors trade cash for a share of ownership in the company. While equities don't promise investors a fixed payment in the future, investors expect payments in the form of future dividends or capital gains. In addition, analysts help investors accurately value company shares, while regulatory reporting requirements and accounting standards aim to ensure that a company's financial statements do not mislead investors.

4. Managing Risks

To manage risks, investors use forward contracts, futures contracts, options contracts, insurance contracts, and other derivatives. These contracts serve to offset the effect of adverse price movements in assets that a party may need to buy or sell in the future. For example, an airline may enter into a forward contract to buy jet fuel at a certain price on some fixed date in the future, hedging the risk of rising prices. The party on the other side of the trade may be the fuel supplier, hedging the risk of falling prices. While their risks are opposite, both parties achieve their purposes with a single transaction.

5. Exchanging Assets for Immediate Delivery (Spot Market Trading)

People and companies use the spot market to trade a currency to acquire other currencies or commodities, which will be delivered immediately when the transaction occurs.

6. Information-Motivated Trading

While both investors and information-motivated traders ultimately try to buy low and sell high, information-motivated traders are different in that they expect to earn excess returns from their informational advantage in addition to the normal returns traditional investors earn for the risk of holding an asset over time. Information-motivated traders believe the information they have allows them to buy undervalued companies and sell overvalued companies, expecting to profit when the share prices more accurately reflect the intrinsic value of the companies.

Active investment managers all participate in information-motivated trading to beat their benchmark or the return earned by "buy and hold" investors taking similar risks. In theory,

active managers can gain an information edge over other market participants by hiring skilled professionals and conducting thorough research on potential investments. Investors are also information-motivated traders when they allocate funds with the expectation of earning conditional returns greater than the unconditional returns they would earn in the same asset class.

Determining Appropriate Rates of Return

Since savers are on the opposite end of transactions with borrowers and equity sellers, the rate of return must be set at the point where both parties are satisfied. The cost of moving money through time, or the equilibrium interest rate, is the rate at which aggregate supply for funds through savings equals aggregate demand. Savers won't supply capital if too low of a rate is offered, and borrowers won't demand capital if too high of a rate is offered. To determine the rate of return, the equilibrium interest rate must be adjusted depending on the risk characteristics, terms, and liquidity of the security.

Efficient Capital Allocation

Efficient capital allocation allows the market's scarce capital to be allocated to only the most productive investments. A market is efficient when market participants have access to accurate information. When investors are thorough in their analysis of available information, they improve the efficiency of the market by simply acting in their own best interests. For example, well-informed investors will not make a loan to someone with poor credit without being appropriately compensated with a higher rate of return, nor will they invest in projects unless the value of future cash flows exceeds the cost.

Question

As the portfolio manager of an equity fund, you decide to allocate a percentage of the fund's capital to invest in the common stock of ABC after its share price plummeted on lower-than-expected earnings. You believe that ABC's stock is currently undervalued due to an overreaction of the market to the earnings announcement. In this instance, you were using the financial system for:

A. Saving.
B. Managing Risk.
C. Information-Motivated Trading.

Solution

The correct answer is **C**.

You were acting as an information-motivated trader because you traded with the intention of earning excess profit from information that had not been priced into the market.

LOS 1b: describe classifications of assets and markets

Assets

Securities: includes both debt and equity securities. Securities may be further classified as public or private securities, depending on if they are traded on a public exchange.

Currencies: monies issued by national monetary authorities.

Contracts: agreements to trade other assets in the future.

Commodities: precious metals, energy products, industrial metals, and agricultural products.

Real Assets: all tangible properties, such as real estate, airplanes, airports, machinery, timberland, and pipelines.

Markets

Spot Markets: traded contracts require immediate delivery.

Primary Market: funds flow from the purchaser to the issuer.

Secondary Market: funds flow between traders.

Money Markets: trades debt instruments maturing in one year or less.

Capital Markets: trades instruments maturing in over one year, such as bonds and equities. Corporations usually finance their operations through the capital markets.

Traditional Investment Markets: transactions involve only direct or indirect investments in publicly traded debts and equities.

Alternative Investment Markets: includes private markets investments, which are more difficult to trade and value. To compensate for the limited liquidity, investors in these markets expect to earn a greater risk-adjusted return than they would in traditional investments.

Question

A direct investment in an industrial warehouse is an example of a:

A. Security.
B. Contract.
C. Real asset.

Solution

The correct answer is C.

Since the investment is in a tangible property (real estate), it would be considered a real asset.

LOS 1c: describe the major types of securities, currencies, contracts, commodities, and real assets that trade in organized markets, including their distinguishing characteristics and major subtypes

Fixed Income

Fixed income investments include promises to repay borrowed money and a variety of other instruments with payment schedules. People, companies, and governments create fixed-income instruments when they borrow money. While there is no consensus definition on the exact cut-offs, fixed-income securities are often classified based on maturity date as short-term (less than one or two years), intermediate-term (two to five years), and long-term (greater than five years). Fixed income investments include:

- **Notes:** fixed income instruments, usually with a maturity of ten years or less.
- **Bonds:** fixed income instruments, usually with a maturity of more than ten years.
- **Convertible bonds:** can be converted into the issuing corporation's stock by the holder after a specified amount of time.
- **Bills/Securities of Deposit/Commercial Paper:** Short-term securities, usually maturing in a year or less, issued by governments, banks, and corporations.
- **Repurchase Agreements:** short-term lending instruments in which the borrower sells an instrument and promises to buy it back at a higher price.
- **Money Market Instruments:** debt instruments maturing in one year or less, purchased by money market funds and corporations seeking a return on short-term cash balances.

Equities

Equities represent ownership rights in companies and include:

- **Common Stock:** shareholders have a right to company dividends if the board of directors declares a dividend, elect the company's board of directors, and a share of the proceeds if the company is liquidated.
- **Preferred Stock:** shareholders have no voting rights but generally have the right to a regular dividend and have priority over common shareholders to liquidation proceeds. Cumulative preferred equity are preferred shares that require a company to repay any omitted preferred dividends before dividends are paid to common shareholders.
- **Warrants:** securities issued by a corporation that gives the holder the option to buy a company's securities (usually common stock) at the exercise price at any time before the warrant's expiration.

Pooled Investments

Pooled investments represent indirect ownership of assets held by an entity by purchasing shares, units, depository receipts, or limited partnership interests. Pooled investments are typically used to gain access to skilled investment management and/or to diversify an investor's portfolio efficiently. Pooled investments are made up of two types of investment vehicles: open-ended and closed-ended funds.

Open-ended funds issue new shares and redeem existing shares at the fund's net asset value (usually daily), and investors are typically able to trade their shares directly with the fund. On the other hand, closed-ended funds issue shares in primary market offerings, and those limited shares are traded in the secondary market. Since shares of closed-ended funds are not redeemable at their net asset value, shares may trade at a discount or premium to NAV. Pooled investment include:

- **Mutual Funds:** open-ended and closed-ended investment vehicles that pool money from many investors for investment in a portfolio of securities.
- **Exchange-traded funds (ETFs):** open-ended funds that investors can trade in the secondary markets. ETFs rarely trade at significant discounts or premiums because a

class of investors known as authorized participants can trade directly with a fund and profit from any differences between the NAV and market price.

- **Asset-backed Securities:** securities whose values and income payments are derived from a pool of assets, such as mortgage bonds, credit card debt, or car loans.
- **Hedge Funds:** usually organized as limited partnerships in which the managers are the general partners, and the qualified investors are the limited partners. Hedge funds employ various strategies and are subject to different regulatory requirements depending on the jurisdiction. Defining characteristics of most hedge funds include the use of leverage to boost fund returns and a fee structure that charges a performance fee when positive returns are achieved in addition to the standard management fee.

Currencies

There are approximately 175 currencies worldwide, some of which are considered reserve currencies – currencies held by banks and other monetary authorities in large quantities. Primary reserve currencies include the US dollar and the euro. Secondary reserve currencies include the British pound, the Japanese yen, and the Swiss franc.

Contracts

Contracts are agreements to trade other assets in the future, many of which are derivatives. Derivative contracts are assets that derive their value from the prices of underlying assets. Derivatives are classified by the nature of their underlying assets. For instance, a contract based on the price of gold would be considered a physical derivative, while a contract based on Costco's stock price or the S&P 500 would be considered a financial derivative – or, more specifically, an equity derivative. Types of contracts include:

- **Forward Contracts:** agreements to trade the underlying asset in the future at a price agreed upon today, often used by traders to hedge the risk of adverse price movements. There are two primary issues with trading in forwards: counterparty risk and limited

liquidity. Counterparty risk describes the risk that the other party will fail to honor the terms of the contract. Forward contracts have limited liquidity because the other party's consent is needed before the contract can be traded.

- **Futures Contracts:** similar to forward contracts, but not hindered by the same problems. The buyer of a futures contract will receive the physical delivery or its cash equivalent at the specified date; the seller will deliver the asset or its cash equivalent. Since clearinghouses ensure that no trader is harmed by another trader’s default, there is no counterparty risk. Additionally, futures contracts are standardized, so obligations can be eliminated by taking an offsetting position (a buyer selling the same futures contract or a seller buying the same futures contract).

- **Swap Contracts:** agreements to exchange payments of periodic cash flows that depend on future asset prices or interest rates. Variable payments are based on a pre-determined variable interest rate like the London Interbank Offered Rate (Libor). Commonly used swaps include interest rate swaps, commodity swaps, currency swaps, and equity swaps.

- **Option Contracts:** call options (put options) allow the buyer to purchase (sell) an underlying instrument at a set strike price before a specified date. If the market price of the underlying security rises above the strike price, the call holder can exercise the option at a profit. Conversely, if the underlying security price falls below the strike price, the put holder profits from exercising the option. European-style contracts allow the holder to exercise only on the maturity date, while American-style contracts allow the holder to exercise the options early.

- **Credit Default Swaps:** insurance contracts that promise payment of principal if a company defaults on its bonds. A company’s bondholders may invest in related credit default swaps to hedge against the company’s risk of default, or well-informed traders may choose to invest in a company’s credit default swaps without bond exposure to essentially bet on the company’s default.

Commodities

Commodities include precious metals, energy products, industrial metals, agricultural products, and carbon credits. Exposure to commodities can be achieved directly through the spot markets or indirectly through the forward and futures markets. The producers and processors of industrial metals and agricultural products are the primary users of the commodity spot markets because they tend to have an informational edge and access inexpensive storage.

On the contrary, information-motivated traders often trade in the commodities forward or futures markets to hopefully profit from future price movements without paying for storage of the underlying assets.

Real Assets

Real assets are investments in tangible properties, usually held by operating companies. Investors find real assets attractive due to their potential income and tax benefits and low correlation to other asset classes. However, direct investments in real assets are usually quite costly as investors must either maintain the property themselves or hire a manager to do it for them. No two real assets are exactly the same, making real assets difficult to value and trade.

These issues play into the hands of information-motivated traders targeting undervalued investments acquired from less informed sellers. But, the excess returns generated by these traders may be partially or completely offset by the additional costs of finding and managing the undervalued properties.

Financial intermediaries like real estate investment trusts (REITs) and master limited partnerships (MLPs) securitize real assets and passing through most of their net income after management fees to investors. These investment vehicles allow investors to gain indirect exposure to real assets without the same shortcomings of direct investments.

Question 1

Louis Reed, a wheat farmer, wants to protect himself against the risk of falling wheat prices without sacrificing all the upside if wheat prices spike. What should Reed *most likely* do to achieve this goal?

A. Buy put options.
B. Buy call options.
C. Sell futures contracts.

Solution

The correct answer is **A**.

The sale of futures contracts would successfully hedge against declining wheat prices but would obligate Louis Reed to sell at the agreed-upon price even if market prices were higher at the time. The purchase of call options would allow him to capture more upside if wheat prices increased while still leaving him fully exposed if prices fell. The purchase of put options would allow Reedto sell his wheat at a set price without obligating him to do so in the event that the market price exceeded the strike price at the time of maturity.

Question 2

Short Term Capital Management (STCM) generates extraordinary returns by identifying small market inefficiencies and employing a high amount of leverage. Since the fund's inception, STCM's managers have become incredibly wealthy due in large part to the performance-based fees charged to fund investors. STCM is most likely a:

A. Hedge fund.
B. Mutual fund.
C. Exchange-traded fund.

Solution

The correct answer is **A**.

Hedge funds are often highly leveraged and usually charge performance-based fees, while mutual funds and ETFs are generally unleveraged and charge only a management fee as a percent of total assets.

LOS 1d: describe types of financial intermediaries and services that they provide

Financial intermediaries help entities achieve their goals by providing products and services that help connect buyers and sellers. The key financial intermediaries are defined below.

Brokers: agents who fill orders for their clients, helping reduce their client's transaction costs by efficiently matching them with someone else willing to take the other side of their trades.

Block Brokers: provide brokerage service to large traders. Large orders typically cause the market to move against the trader: large buy orders trade at a premium, and large sell orders trade at a discount. Block brokers serve to manage large orders so that their clients lose the least amount of money due to adverse movements in the market.

Investment Banks: primarily help corporate clients in issuing a wide range of securities, including common stock, preferred stock, notes, and bonds, in addition to assisting their clients with potential takeover targets.

Exchanges: provide places where traders can meet to arrange their trades. Over time, exchanges have progressed to usually arranging the trades for their traders based on orders coming in from brokers and dealers. In addition, exchanges usually regulate the issuers and members to promote an efficient marketplace and derive their authority from their national or regional governments.

Alternative Trading Systems/Electronic Communications Networks/ Multilateral Trading Facilities: trading venues that function like exchanges but do not exercise regulatory authority over their subscribers except with respect to the conduct of their trading in their trading systems. Many alternative trading systems are known as dark pools because orders are not shown to other market participants.

Dealers: fill their clients' orders by trading with them. Unlike brokers, dealers directly buy from or sell to their clients, hoping to find another client to take the opposite side of the trade.

Broker-dealers: describes an entity that is both a broker and a dealer. Broker-dealers have an inherent conflict of interest in that a broker aims to acquire the best price for their clients, but a

dealer maximizes their profit by buying from their clients at low prices and selling to their clients at high prices.

Securitizers: Banks and investment companies can create new financial products by purchasing and repackaging various securities or assets. Mortgage-backed securities are among the most common securitizations and allow investors to purchase a diversified portfolio of mortgages. For many mortgage-backed securities and other securitizations, the financial intermediary splits the securities into different classes, or tranches, which have different rights to the cash flows from the asset pool. This helps the intermediary tailor securitizations to the risk/return profile of different investors. In addition to the diversification benefits, securitization also greatly improves liquidity in the mortgage market that can pass through to homeowners in the form of lower interest rates. Securitizations are often set up in special purpose vehicles/entities to better protect investors if the intermediary goes into bankruptcy.

Depository Institutions: commercial banks, savings and loan banks, credit unions, and similar institutions raise funds from depositors and other investors and lend them to borrowers. Depositors benefit from the banks' transaction services and interest payments on their deposits, while the bank benefits by obtaining funds without finding and raising capital from investors. Other financial intermediaries, like acceptance corporations, discount corporations, payday advance corporations, and factors provide secured loans for borrowers financed by the sale of commercial paper, bonds, and shares to investors. Depository banks and financial corporations can be considered securitized asset pools backed by a diversified portfolio of loans with depositors holding the most senior tranche (most protected against losses) and the institutions' shareholders holding the most junior tranche (least protected).

Insurance Companies: help people and companies hedge their risks by underwriting contracts that pay out in the event of losses from a wide variety of causes. Insurance companies basically transfer the risk from the buyers of the insurance contracts to the insurance company's creditors and shareholders. Common problems with insurance contracts include fraud, moral hazard (losses are more likely when people know they're insured), and adverse selection (those who buy insurance may be more prone to losses).

Arbitrageurs: aim to profit through buying an asset in one market and selling an identical or

similar asset in another market at a higher price. Thus, arbitrageurs provide liquidity to buyers and sellers across different markets. In efficient markets, opportunities for pure arbitrage – or profiting from the purchase or sale of an identical asset in different markets – are rare because market participants can easily acquire the best prices. Instead, arbitrageurs often take part in replication: purchasing and selling risk in different forms using securities and contracts.

Clearinghouses: arrange the final settlement of trades in guaranteeing contract performance in futures markets and acting only as escrow agents in other markets. To protect against losses, clearinghouses require members to have adequate capital and post margins. In addition, clearinghouse members trade on behalf of brokers and dealers that are non-members and similarly ensure that the non-members have enough capital to back their trades.

Question

If a corporation wants to protect against potential losses from fire damage to a newly constructed factory, it would most likely make use of what financial intermediaries?

A. Arbitrageurs.
B. Investment banks.
C. Insurance companies.

Solution

The correct answer is **C**.

The corporation could effectively hedge against this risk by buying a fire insurance policy from an insurance company.

LOS 1e: compare positions an investor can take in an asset

A position in an asset describes how much of the asset an investor owns. The investor can either have a long position, meaning the investor owns the asset or has borrowed money to purchase the asset, or the investor can have a short position, meaning the investor sold the asset without owning it.

Contracts

An investor generally has a long position in a contract if they will take physical delivery of the underlying asset or its cash equivalent and a short position if they are liable for delivery of the asset.

For options contracts specifically, the long investor has the right to exercise the option, and the short investor must satisfy the obligation if exercised. Describing option positions in this way can be confusing in the case of put options, which give the holder the right to sell the underlying asset. So an investor that purchases a put option has a long position in the option but is considered to have short exposure to the underlying asset. For example, if an information-motivated trader believes that Apple's stock is overvalued, he can effectively bet against the stock by buying put options on the stock. Since the trader has the right to exercise the option, he has a long position in the puts. However, because the long put position effectively bets on a decrease in Apple's share price, the trader is considered to have short exposure to Apple's stock.

For swap contracts, the long side benefits from an increase in the price of the underlying asset. In currency contracts, an investor has a long position in the currency being bought and a corresponding short position in the currency being sold.

Short Positions

An investor can take a short position by borrowing shares of a stock from a securities lender and then selling them. Securities lenders require short sellers to post the proceeds from the stock

sale as collateral for the loan. The proceeds are then invested in short-term securities, with interest being returned to the short seller at the rebate rate. In some cases, the rebate rate may be negative – meaning the short seller is paying the lender to invest the sale proceeds, but usually, the rebate rate is 10 basis points less than the overnight lending rate. The difference between the overnight lending rate and the rebate rate is the loan fee that the securities lender receives for its services.

While the losses from a long position are limited to the price paid for the security, losses from shorting a stock are theoretically unlimited because the short seller is obligated to return the security, which doesn't have a price cap. Similarly, the long investor stands to benefit from unlimited gain potential while the short seller can only gain the total proceeds from the initial sale (if the stock price of the shorted security drops to zero, the short seller eliminates their obligation for free).

Leveraged Positions

In many markets, traders can borrow securities through margin loans at the cost of paying the call money rate on the loan. Similar to a down payment on a house, the borrower must put up a minimum of their own equity, the initial margin requirement, in the purchase. To protect brokers against losses in leveraged positions, traders must keep an amount of equity in their positions that is greater than or equal to the maintenance margin requirement (usually 25%). If share prices fall and equity drops below the maintenance margin requirement, the trader will receive a margin call to restore equity back to the required level. If additional equity is not contributed, the broker will close out the position to prevent further losses.

Question

A trader sells 10,000 put options on the stock of ZYX. What is this trader's position relative to the option and exposure to ZYX's stock?

A. Long position in the put options, short exposure to ZYX's stock.
B. Short position in the put options, long exposure to ZYX's stock.
C. Short position in the put options, short exposure to ZYX's stock.

Solution

The correct answer is **B**.

Since the trader sold the options, she is obligated to fulfill the contract if the option is exercised and therefore has a short position in the put options. However, the trader stands to lose if the price of ZYX falls below the strike price of the options as she will be obligated to buy ZYX shares above market price. So the options trader is betting against a price decline in the stock and thus has long exposure to the stock.

LOS 1f: calculate and interpret the leverage ratio, the rate of return on a margin transaction, and the security price at which the investor would receive a margin call

Leverage Ratio

The relation between risk and borrowing can be measured by the leverage ratio. The maximum leverage ratio calculates financial leverage if the trader's equity position is equal to the initial margin requirement.

$$\text{Leverage ratio} = \frac{\text{Total value of the position}}{\text{Equity value of the position}}$$

$$\text{Maximum leverage ratio} = \frac{1}{\text{Minimum margin requirement}}$$

Return on Margin Transaction

Calculating the rate of return on a margin transaction is the same as calculating the rate of return on an unlevered transaction; it simply involves one extra step to calculate and subtract out the margin interest paid. The rate of return should be calculated based on the initial equity investment, not the total purchase price of assets. Upfront costs such as commission should be included in the initial equity amount.

Example of a Margin Transaction

A trader purchases $100,000 worth of a highly volatile stock at a leverage ratio of 2.5, receives a special dividend of $800 after six months, and sells the stock exactly one year after purchase at $200,000. The commission is $10 at purchase. The trader is charged 8% interest on the borrowed money.

To get the rate of return, we just have to find the profit (or loss) and divide it by the initial equity investment.

Let's first calculate the amount of money the trader had to borrow in order to make this transaction.

We can find the equity investment by dividing the full $100,000 purchase by the leverage ratio of 2.5.

$$\text{Equity investment} = \frac{\$100,000}{2.5} = \$40,000$$

And the remainder has to be borrowed:

$$\text{Borrowed amount} = \$100,000 - \$40,000 = \$60,000$$

The amount that the trader will have to pay in interest over one year is the interest rate on the loan multiplied by the loan amount:

$$\text{Interest paid} = \$60,000 \times 8\% = \$4,800$$

Moving on to the profit calculation:

Sale Price	$200,000
Purchase Price	−$100,000
Realized Gain (Loss)	$100,000
Purchase commission	−$10
Dividend	$800
Margin interest	−$4,800
Sale commission	−$10
Return	$95,980

To find the total initial equity investment, just take the $40,000 calculated above and tack on the small commission on purchase of $10:

$$\text{Equity investment plus commission} = \$40,000 + \$10 = \$40,010$$

Finally, we can calculate the rate of return on this trade:

$$\text{Rate of return} = \frac{\$95,980}{\$40,010} = 239.89\%$$

Margin Call Price

A margin call will take place when equity drops below the maintenance margin requirement. After the purchase of a security on margin, any changes in that security's price will be reflected completely in equity. There is a simple formula that can be used to find the margin call price:

$$\text{Margin call price} = \frac{\text{Debt}}{1 - \text{Maintenance quad margin}}$$

Example of a Margin Call Price

You have been provided the following information:

- Purchase price per share: $30
- Leverage ratio: 2.0
- Maintenance margin: 25%

Remember, the equity investment can be found by dividing the total purchase price by the leverage ratio:

$$\text{Equity investment} = \frac{\$30}{2} = \$15$$

So, this trade involves $15 of equity and $15 of debt, and we need to find at what price a margin call would take place:

$$\text{Margin call price} = \frac{\$15}{1 - 0.25} = \frac{\$15}{0.75} = \$20$$

Question

What is a trader’s maximum leverage ratio, given an initial margin requirement of 40%?

A. 1.00

B. 2.50

C. 4.00

Solution

The correct answer is **B**.

As shown above, the maximum leverage ratio is equal to 1 divided by the initial margin requirement.

Maximum leverage ratio = $\frac{1}{0.4} = 2.5$

LOS 1g: compare execution, validity, and clearing instructions

The bid prices represent the amounts at which dealers are prepared to buy, while the ask prices, or offer prices, indicate the amounts at which they are willing to sell. Ask prices consistently exceed bid prices.

Dealers also specify the quantities they are willing to trade at these prices, known as bid sizes and ask sizes, depending on whether they are associated with bids or offers.

The highest bid in the market is referred to as the best bid, and the lowest ask is known as the best offer. The market bid–ask spread is the difference between the best bid and the best offer.

Execution Instructions

Execution instructions is defined as how to fill the order. Here are many ways how orders can get filled:

- Market order: obtain the best price immediately available.
- Limit order: same as the market order, except the price, must be no higher than a specified amount for buy orders and no lower than a specified amount for sell orders.
- Marketable limit order: When the price is placed above the best offer for buy orders or below the best bid for sell orders.
- Behind the market: buy (sell) order placed below (above) the best bid (offer).
- Standing limit orders: limit orders waiting to trade.
- Inside the market: the price gap between the best offer and best bid.
- All-or-nothing order (AON): trades only if the entire order can be filled.
- Hidden order: exposed only to brokers or exchanges that receive them.
- Display size: amount of the order shown to the public.

- Iceberg orders: a large order that is divided into smaller, undisclosed parts. It helps to prevent the market from reacting strongly to a large order, reducing the risk of slippage and adverse price movements.

Validity Instructions

Validity instructions is defined as when the order may be filled, with examples below:

- Day order: order is good only for the day on which it is submitted.
- Good-till-canceled order (GTC): usually limited to a few months but can stay open for longer.
- Immediate or cancel order (IOC): good only upon receipt by broker or exchange
- Good-on-close order (Market-on-close): can only be filled at the close of trading.
- Good-on-open order (Market-on-open): can only be filled at the open of trading.
- Stop order (stop-loss order): sell orders are only executed if a trade occurs at or below the stop price; buy orders are only valid once the price rises above stop price.

Clearing Instructions

Clearing is defined as how to arrange the final settlement of the trade. Unlike other instructions, clearing instructions are not attached to each order. Instead, clearing instructions simply indicate what entity is responsible for clearing and settling the trade and if the sale is a long sale or short sale.

Question

A trader submits a buy order at the beginning of the day on 10,000 shares of a stock trading at $48 per share. The stock gradually rises to $52 per share by market close. The trader acquired 5,000 shares of the stock over the day at a price between $50 and $51 per share, and the order was still valid when the market opened the next day. What order did the trader *most likely* submit?

A. GTC, stop 48, limit 51buy order.
B. GTC, stop 50, limit 51 buy order.
C. Day, stop 50, limit 51 buy order.

Solution

The correct answer is **B**.

Since no shares were purchased at prices between $48 per share and $50 per share, it's unlikely the trader had a stop order at $48. Given that the order was not canceled at the end of the day, it could not be a day order. Therefore, the most likely option is GTC, stop 50, limit 51 buy order.

LOS 1h: compare market orders with limit orders

Market orders obtain the best price being offered in the market, so traders submitting marker orders are simply taking the market price. Limit orders will only buy below or sell above a given price. Suppose a trader’s limit order specifies a price between the bid and offer prices. In that case, that trader is considered to make the market as other market participants may accept the better price being offered.

Question

Alphabet Inc. (GOOG)	December 14, 2016
Open	$797.40
High	$804.00
Low	$794.01
Close	$797.07

If a trader had submitted a buy order for a single GOOG share at market open, what order would *most likely* result in the best one-day return?

A. Market order.

B. Limit order at $793.

C. Limit order at $795.

Solution

The correct answer is **C**.

The limit buy order at $795 would be filled as the price dropped to a $794.01 low, and the trader would have a small unrealized gain at market close, but the limit buy order at $793 would not be executed and thus result in neither a gain nor loss as no transaction would take place. At the beginning of the day, the market order would likely result in a purchase of the GOOG share at about $797.40, and the trader would end the day with a small loss.

LOS 1i: define primary and secondary markets and explain how secondary markets support primary markets

The sale of securities by the issuer to investors occurs in the primary markets, while the sale of securities between private investors occurs in the secondary markets.

Primary Markets

Initial public offerings (IPO) describe the issuer’s first sale of a security to the public, while additional units are called seasoned offerings. The issuer usually hires an investment bank to assist in the sale of securities by finding investors (book building).

Investment banks take part in two main types of offerings: underwritten offerings, in which the investment bank agrees to buy any unsold securities at the price negotiated with the issuer, and best-effort offerings, in which the issuer will not sell as much as expected if the investment bank fails to attract enough interest in the offering. Investment banks hired to assist in the sale of securities generally have a conflict of interest in that the issuer wants to maximize the sale price of their securities, but the investment bank can reduce its risk of having to buy overpriced securities and indirectly help its other clients by offering lower prices.

To sell new issues of seasoned securities directly to the public, corporations sometimes use a shelf registration – spreading out the sale of additional securities over time as capital is needed and avoiding the common downward price pressure caused by a single large offering.

Corporations may also issue additional securities through dividend reinvestment plans (DRPs) where existing shareholders may opt to reinvest their dividends in new shares from the issuer or through a rights offering where existing shareholders are offered options to purchase new shares at a discount.

Corporations can also offer their securities to private qualified investors through private placements, usually with investment banks' help. Qualified investors are generally assumed to conduct thorough due diligence before making investments, and thus less disclosure is generally needed for private placements. However, private investors usually demand a higher rate of

return due to the inherent lack of liquidity of the private securities.

Secondary Markets

Transactions of existing securities (usually not involving the issuer) take place in the secondary markets. The secondary markets support the primary markets by offering liquidity to the initial investors in a security. This liquidity helps issuers attract more demand for their security offerings in the primary markets, leading to higher initial sale prices and a lower cost of capital.

Question

What is a likely benefit of a corporation issuing new securities in a private placement instead of an initial public offering?

A. Lower cost of capital.
B. Cheaper offering costs.
C. More liquidity for investors.

Solution

The correct answer is **B**.

Since less disclosure is usually required of issuers, private placements tend to have lower offering costs than public offerings. However, because private placement securities are less liquid, investors demand a higher return on their capital resulting in lower security prices and therefore a higher cost of capital for the corporation.

LOS 1j: describe how securities, contracts, and currencies are traded in quote-driven, order-driven, and brokered markets

Quote-Driven Markets/Over-the-Counter (OTC) Markets

In quote-driven markets, customers trade at prices quoted by dealers that generally work for commercial banks, investment banks, broker-dealers, or trading houses. Most trades in these markets are conducted through proprietary computer communications networks or by phone.

Order-Driven Markets

Order-driven markets arrange trades using rules to match buy orders to sell orders submitted by customers or dealers. Almost all exchanges use order-driven trading systems, and every automated trading system is an order-driven system. Two sets of rules characterize order-driven market mechanisms: order matching rules, which match buy and sell orders, and trade pricing rules, which determine the price of the matched trades.

Order Matching Rules

Order-driven trading systems rank buy and sell orders by price (often along with secondary criteria), matching the highest-ranking orders (if possible) at the minimum order amount. If there is a remaining size in a buy (sell) order, the trading system will match it with the sell (buy) order that is next in the rankings. The first rule in the order precedence hierarchy is price priority, followed by secondary precedence rules, which determine how to rank orders of the same price. The first order to arrive at the best price usually has priority over other orders, though sometimes trading systems trade displayed quantities before hidden quantities of the same price.

Trade Pricing Rules

Call markets commonly use the uniform pricing rule, in which all trades execute at the same price, and the market chooses the price that maximizes the quantity traded. Continuous trading

markets use the discriminatory pricing rule, which determines the price base on the limit price of the first order or quote (the standing order). Crossing networks, trading systems matching buyers and sellers willing to trade at prices obtained from other markets, use the derivative pricing rule: usually the midpoint of the best bid and ask quotes for the underlying asset.

Brokered Market

Brokers arrange trades among their clients for unique instruments with limited liquidity as such instruments would not generate enough orders in order-driven markets. Trades in this market usually take place between a small number of people or institutions.

Question

What market would an art collector use to sell a number of valuable paintings?

A. Brokered market.
B. Order-driven market.
C. Quote-driven market.

Solution

The correct answer is **A**.

Since there would not be enough liquidity for unique art pieces to have a quote-driven or order-driven market, the paintings would need to be sold in a brokered market.

LOS 1k: describe characteristics of a well-functioning financial system

A well-functioning financial system has complete markets with effective financial intermediaries and financial instruments allowing:

- Investors to move money from the present to the future at a fair rate of return;
- Borrowers to easily obtain capital;
- Hedgers to offset risks; and
- Traders to easily exchange currencies and commodities.

The financial system has complete markets if the contracts or assets required to resolve these issues can be traded. Well-functioning financial systems are characterized by financial instruments that help people solve financial problems, liquid markets with low trading costs (operationally efficient), timely financial disclosures resulting in market prices that reflect available information (informationally efficient), and therefore prices that move primarily with changes in fundamental value instead of liquidity demands. Well-functioning markets ultimately lead to efficient allocations, which use resources where they are most valuable.

These are the attributes that characterize sound financial systems:

- Pricing that is consistent with fundamental values and any changes in the fundamental values is what largely cause price variations.
- Governments and companies making timely financial disclosures.
- Markets with cheap trading fees and high liquidity.
- The presence of developed markets where financial instruments that assist individuals in resolving their financial issues are traded.

Question

Which of the following is *least likely* a characteristic of a well-functioning financial system?

A. Instruments that solve financial problems.
B. Market prices that always equal fundamental value.
C. Markets where assets can be easily traded at low cost.

Solution

The correct answer is **B**.

Informational efficiency in well-functioning financial systems should allow investors to estimate fundamental values and cause price changes to correlate with changes in fundamental value. However, fundamental value estimates in well-functioning financial systems will not necessarily always match actual fundamental value.

LOS 1l: describe objectives of market regulation

The objectives of market regulation are to control fraud, control agency problems, promote fairness, set mutually beneficial standards, prevent undercapitalized financial firms from making excessively risky investments, and to ensure that long-term liabilities are funded.

1. **Control Fraud**: market regulators put systems in place to prevent fraud as financial customers aren't always sophisticated enough to do so themselves.
2. **Control Agency Problems**: regulators solve agency problems by setting minimum standards of competence for agents like the CFA or GIPS.
3. **Promote Fairness**: regulators aim to reduce profits that insiders could extract from the markets. Laws against insider trading, for instance, help to level the playing field.
4. **Set Mutually Beneficial Standards**: regulators help analysts easily compare companies by requiring compliance with accounting standards set by IASB, FASB, and others.
5. **Prevent Excessive Risk**: regulators require financial firms to maintain minimum levels of capital so that the firms honor their commitments and so that the firm's owners have some "skin in the game."
6. **Ensure Liabilities are Funded**: regulators watch over insurance companies and pension funds to ensure adequate reserves are maintained to cover liabilities because managers of these entities tend to underestimate long-term liabilities, especially when there is an incentive not to do so.

Question

As a market becomes more regulated, what would probably become more common?

A. The collapse of financial firms.
B. Insiders with an edge over other market participants.
C. Conservative liability estimates by insurance companies and pension funds.

Solution

The correct answer is **C**.

Regulation should promote fairness and therefore reduce the advantage that insiders have over less sophisticated investors. Also, by preventing excessive risks, financial firms should have a higher margin of error and thus be less likely to become insolvent. Since unregulated insurance companies and pension funds have a tendency to utilize aggressive liability estimates (usually in order to maximize reported profit), more regulation would probably encourage these entities to become more conservative in their estimates.

Learning Module 2: Security Market Indices

LOS 2a: describe a security market index

A security market index represents a given security market, market segment, or asset class, usually constructed as portfolios of marketable securities, known as constituent securities. Indexes help investors track performance and risk, benchmark active managers, and invest in broad markets at low costs.

An index may have two versions: a price return index, which tracks only the price of constituent securities, and a total return index, which accounts for reinvestment of interest, dividends, and other distributions.

Question

Assuming an index is made up of dividend-paying stocks, what type of index would likely post higher long-term returns?

A. Price return index.
B. Total return index.
C. Neither, price and total returns should be exactly equal.

Solution

The correct answer is **B**.

Since dividends are assumed to be reinvested back into the total return index and not the price return index, the total return index will outperform as dividends are added in and compounded over time.

LOS 2b: calculate and interpret the value, price return, and total return of an index

Index Value

The formula for calculating the value of a price return index is as follow:

$$V_{PRI} = \frac{\sum_{i=1}^{N} n_i P_i}{D}$$

Where:

V_{PRI} = the value of the price return index

n_i = the number of units of constituent security held in the index portfolio

N = the number of constituent securities in the index

P_i = the unit price of constituent security

D_i = the value of the divisor

While the formula for calculating the value of an index may seem somewhat complicated at first glance, it is similar to calculating the value of any other normal portfolio of securities as it involves adding up the values of constituent securities. Index value calculation has just one additional step of dividing the sum of constituent securities' values by a divisor, which is usually chosen at the inception of the index to set a convenient beginning value and then adjusted to offset index value changes unrelated to changes in the prices of constituent securities.

Example 1: Index Value

An index is made up of two constituent securities, Stock A and Stock B. What beginning divisor must be used to achieve a beginning value of 1,000?

Security	Units	Price/Unit
Stock A	50	10
Stock B	30	100

Let’s first calculate the sum of the values of both constituent securities.

Stock A value = 50 × 10 = 500

Stock B value = 30 × 100 = 3,000

Stock A value + Stock B value = 3,500

The divisor must be set such that this figure is adjusted down to 1,000.

$$1,000 = \frac{3,500}{D}$$

$$D = \frac{3,500}{1,000}$$

$$D = 3.5$$

Price Return and Total Return

The price return calculation – the return from the index in percentage terms – is simply the difference in value between the two periods divided by the beginning value.

$$PR_I = \frac{V_{PRI1} - V_{PRI0}}{V_{PRI0}}$$

The formula for total return is the same, except we need to add the income generated from the securities, usually in the form of dividends:

$$TR_I = \frac{V_{PRI1} - V_{PRI0} + Income_I}{V_{PRI0}}$$

PR_I = the price return of the index portfolio

V_{PRI1} = the value of the price return index at the end of the period

V_{PRI0} = the value of the price return index at the beginning of the period

TR_I = the total return of the index portfolio

$Income_I$ = the total income from all securities in the index over the period

Another way to calculate these returns would be to sum up the weighted returns of each constituent security in the index portfolio.

$$R_I = w_1R_1 + w_2R_2 + \ldots + w_NR_N$$

R_I = the return of the index portfolio number (as a decimal number)

R_i = the return of constituent security i (as a decimal number)

w_i = the weight of security i (the fraction of the index portfolio allocated to security

Note that this formula works for both price and total return calculations.

Example 2: Price Return and Total Return

Calculate the one-year price return and total return for the Uncommon & Riches 5, a fictional index made up of five constituent securities. The divisor's value begins and ends the year at 1.

Constituent Security	Units (billions)	Beginning Value	Dividend	Ending Value
Orange	5	107	2.15	116
Macrotough	7.75	55	1.20	62
Enout Stationary Corp	4	75	2.70	91
Draintree	0.5	660	0.00	750
Smith & Smith	2.75	100	3.00	115

Let's first calculate the beginning index price by multiplying the number of units and price of each constituent security and totaling the values.

V_{PRI0} = (5 × 107) + (7.75 × 55) + (4 × 75) + (5 × 660) + (2.75 × 100)

V_{PRI0} = 535 + 426.25 + 300 + 330 + 275 = 1,866.25

We'll do the same calculation again, except replace the beginning values with ending values.

$V_{PRI1} = (5 \times 116) + (7.75 \times 62) + (4 \times 91) + (5 \times 750) + (2.75 \times 115)$

$V_{PRI1} = 580 + 480 + 364 + 375 + 316.25 = 2{,}115.75$

And one more time to calculate portfolio income.

$\text{Income}_I = (5 \times 2.15) + (7.75 \times 1.20) + (4 \times 2.70) + (5 \times 0) + (2.75 \times 3)$

$\text{Income}_I = 10.75 + 9.30 + 10.80 + 8.25 = 39.10$

The one-year price return for the Uncommon & Riches 5 comes out to: (2,115.75 – 1,866.25)/1,866.25 = **13.37%**

To calculate the total return, we'll add in the portfolio income: (2,115.75 + 39.10 – 1,866.25)/1,866.25 = **15.46%**

LOS 2c: describe the choices and issues in index construction and management

Index providers generally take a top-down approach to constructing a portfolio by defining:

1. the target market;
2. the portfolio constituents within that market;
3. the weights of individual securities;
4. the rebalancing frequency; and
5. when to re-examine the portfolio construction methods.

Target Market

Depending on the index, the target market may be defined broadly or narrowly based on asset class, geographic region, exchange, and/or other characteristics (sector, size, style, duration, credit quality).

Security Selection

Constituent securities are then selected from the available universe of securities in the given target market. Some indices may limit the number of securities to a certain amount, while others may have their number of holdings vary over time. Finally, the securities are weighted based on price, equal weights, market capitalization, or fundamentals (book value, cash flow, revenues, earnings, dividends, the number of employees).

We will see those different weighting methods and the rebalancing methods commonly used in the next learning objectives.

Question

Which of the following is NOT usually a part of the standard index construction process?

A. Determining an appropriate benchmark for the index.
B. Deciding when the index portfolio should be rebalanced.
C. Deciding how to weight constituent securities within the index.

Solution

The correct answer is **A**.

Most of the time, an index can serve as a benchmark but does need to establish a benchmark for its own performance.

LOS 2d: compare the different weighting methods used in index construction

There is no perfect index weighting method as each one has its own strengths and weaknesses.

Price Weighting

In price-weighted indices, an equal number of shares of each security is purchased, and the beginning divisor is usually set to the total number of shares in the portfolio. Using this method, the highest-priced stocks have the highest weightings within the portfolio regardless of their total market capitalization. For stock splits not to change all portfolio weights, the divisor must be adjusted. Price-weighted indices are the easiest to calculate but generally have arbitrary index weightings.

Equal Weighting

Equal-weighted indices involve a simple calculation to find the appropriate weight of each constituent within the portfolio. Since securities that experience greater capital appreciation during a period will naturally become over-weighted in these indices, a rebalance to equal weighting helps to avoid allocating the most capital to the most expensive stocks. Equal-weighted indices involve frequent rebalancing and don’t necessarily reflect the overall performance of all investors in those securities.

Market-capitalization Weighting

To weight an index by market capitalization, a company’s shares outstanding are multiplied by its per-share market value and calculated as a proportion of total market capitalization. This helps introduce a natural momentum factor into the market-cap weighted index as price changes generally correspond with market capitalization and, therefore, the desired weighting in the index. Market capitalization indices are commonly used by index funds due to minimal turnover

but cause the investor to hold more of a constituent security as its price (and therefore market capitalization) increases faster than the broader market.

Float-adjusted Market-capitalization Weighting

In float-adjusted market-capitalization weighting, the weight of each constituent security is determined by adjusting market capitalization for its market float. Float refers to the regular shares a company has issued to the public available for investors to trade. Most market capitalization-weighted indices are adjusted for float.

Fundamental Weighting

Attempts to give the index a “value tilt” by weighting constituent securities based on certain factors such as book value, earnings, and dividends. While market capitalization indices mostly take on a momentum tilt, fundamental-weighted indices will do the opposite by rebalancing to “contrarian” positions when the price paid for the given factor is low.

Question

Which type of index weighting method is naturally rebalanced by price changes in its constituent securities?

A. Equal.
B. Fundamental.
C. Market-capitalization.

Solution

The correct answer is **C**.

Market-capitalization indices tend to rebalance automatically with changes in price since the outperformance of one constituent security against the broad portfolio will generally increase the weight of that security within the index in line with the security's increase in proportion of total market capitalization.

A is incorrect. Unless all constituent securities move together, any price changes in equal-weighted indices must be frequently rebalanced.

B is incorrect. Fundamental-weighted indices must also be constantly rebalanced based on price changes and updates in company fundamentals.

LOS 2e: calculate and analyze the value and return of an index given its weighting method

Every index weighting method has a formula that calculates the weighting of a given constituent security within an index. For the following examples, the same portfolio of three securities will be used to help illustrate the weighting methods. Note that while income from constituent securities could hypothetically be reinvested in the index, the index level adjusts only for price changes.

Security	Beg. Price/Share	Income	End Price/Share
Security A	500	0	750
Security B	20	1	21
Security C	45	1	25
Total		2	

Price Weighting

Here, the weight of each security *i* is given by:

$$w_i^P = \frac{P_i}{\sum_{i=1}^{N} P_i}$$

Where:

w_i = fraction of the portfolio that is allocated to the security or weight of the security

N = number of securities in the index

P_i = price of the security

Example of a price-weighted index

Security	Beg. Value	Income	End Value	Shares	Beg. Weight	End Weight
Security A	500	0	750	1	88.5%	94.2%
Security B	20	1	21	1	3.5%	2.6%
Security C	45	1	25	1	8.0%	3.1%
Total	188.33		265.33	3	1	1
Price Return	40.9%					
Total Return	41.2%					

One share of each security is held in the index, and the divisor is set to 3 – the total number of shares. The high weighting of Security A in both periods is perhaps the most interesting part of this index. While this is an extremely concentrated index, price/share is nevertheless very important in how securities are weighted in price indices, even though it remains a mostly arbitrary figure.

Equal Weighting

Here, the weight of each security *i* is given by:

$$w_i^E = \frac{1}{N}$$

Where:

N = number of securities in the index

Example of an equal-weighted index

Security	Beg. Value	Income	End Value	Shares	Beg. Weight	End Weight
Security A	500	0	750	1	33.3%	48.3%
Security B	500	25	525	25	33.3%	33.8%
Security C	500	11	278	11.11	33.3%	17.9%
Total	1,500.00	36.11	1,552.78	37.11	100%	100%
Price Return	3.5%					
Total Return	5.9%					

As shown in the table, each of the three securities is equally weighted within the index at the beginning of the period but largely strayed from the initial weights. While the price index posted

returns above 40%, returns of the three-security portfolio were much more modest when beginning with the same values.

Market-capitalization

Here, the weight of each security *i* is given by:

$$w_i^M = \frac{Q_i P_i}{\sum_{i=1}^{N} Q_i P_i}$$

Where:

Q_i = number of shares outstanding of security

Example of a market-capitalization index

Security	Beg. Value	Income	End Value	Out. Shares(mm)	Beg. Weight	End Weight
Security A	1,500	0	2,250	3	25.6%	46.7%
Security B	300	15	315	15	5.1%	6.5%
Security C	4,050	90	2,250	90	69.2%	46.7%
Total	5,850.00	105.00	4,815.00	108.00	100%	100%
Price Return	−17.7%					
Total Return	−15.9%					

Note that the column that recorded constituent shares as part of the index portfolio is now equal to millions of outstanding shares. The beginning and ending values now reflect the market capitalizations of the companies in the index portfolio. Since Security C has by far the largest amount of shares outstanding, it accounts for more than two-thirds of market capitalization when multiplied out with the share price at the beginning of the period. As a result of Security C's heavy weighting, the market-capitalization index performed very poorly during the period.

Float-adjusted Market-capitalization Weighting

Here, the weight of each security *i* is given by:

$$w_i^{fM} = \frac{f_i Q_i P_i}{\sum_{i=1}^{N} f_i Q_i P_i}$$

Where:

f_i = fraction of shares outstanding in the market float

Example of a float-adjusted market-capitalization index

Security	Beg. Value	Income	End Value	Out. Shares(mm)	Beg. Weight	End Weight	M
Security A	750	0	1,125	3	15.4%	31.7%	
Security B	270	14	284	15	5.5%	8.0%	
Security C	3,848	86	2,138	90	79.0%	60.3%	
Total	4,867	99.00	3,546.00	108.00	100%	100%	
Price Return	−27.1%						
Total Return	−25.1%						

To calculate float-adjusted market capitalization, we multiply each market capitalization by its respective fraction of outstanding shares in the market float. Since Security A is more closely held with just 50% market float, its weight is significantly reduced in the float-adjusted index compared to the unadjusted market capitalization index. In this scenario, the index's performance becomes highly skewed by Security C’s losses during the period.

LOS 2f: describe rebalancing and reconstitution of an index

Index managers must consider when the index should be rebalanced and when the security selection and weighting decisions should be re-examined.

Rebalancing

Rebalancing refers to adjusting the weights of the constituent securities in the index on a regularly scheduled basis – usually quarterly. Price-weighted indices are not rebalanced, and rebalancing is a minor concern for market capitalization indices as they mostly rebalance themselves.

Reconstitution

Reconstitution is the process of changing the constituent securities in an index. Since many indices base their portfolio allocation on a set of criteria, the securities that meet the criteria tend to change over time. Securities that no longer meet the criteria are excluded on the reconstitution date, and new securities are included. Oftentimes, the reconstitution will require further rebalancing as the turnover of securities changes the targeted allocations. Expected inclusion of certain securities in a widely-tracked index tends to drive prices up while expected exclusion tends to drive prices down in anticipation of future purchases or sales of related index funds.

Question

If a company in a market-capitalization index with a market capitalization of $15 billion at quarter-end will be replaced by a company with a market capitalization of $17.5 billion, what effect would the reconstitution have on the other companies within the index?

A. Allocations would stay the same.
B. Allocations to other companies would increase.
C. Allocations to other companies would decrease.

Solution

The correct answer is **C**.

Since the company to be added has a higher market capitalization than the one being kicked out of the index, the new company will be weighted more heavily thus reducing allocation to all other companies within the index.

LOS 2g: describe uses of security market indices

The primary uses of market indices are to (1) gauge market sentiments, (2) serve as proxies for measuring returns and risk, (3) serve as proxies for asset classes, (4) benchmark active managers, and (5) model portfolios for index funds and exchange-traded funds.

1. **Gauges of Market Sentiment:** the original purpose of indices was to get a sense of investor confidence and market sentiment.
2. **Return/Risk Proxies:** indices play a useful role in the capital asset pricing model as a certain index (like the S&P 500) sets the expected return and risk for the overall market. Beta (systematic risk) can then be calculated for individual securities based on their covariance with the index, and alpha (risk-adjusted excess returns) can be calculated for active managers.
3. **Asset Class Proxies:** Future assumptions regarding the return and risk profiles of certain asset classes are largely centered on how various broad indices have performed in the past.
4. **Active Management Benchmarks:** indices can also be useful in judging the relative performance of active managers as long as the selected benchmark targets the same markets as the active manager.
5. **Model Portfolios:** indices dictate the investments and weightings of index funds and exchange-traded funds, which help investors gain passive broad exposure to certain markets – usually at a lower cost than active management.

Question

What type of actively-managed fund might use the S&P 500 as a performance benchmark?

A. US small-cap equity fund.
B. US large-cap equity fund.
C. Global large-cap equity fund.

Solution

The correct answer is **B**.

Since the S&P 500 is based on the largest 500 liquid and publicly-listed stocks in the United States, it would not serve as an appropriate benchmark for a US small cap equity fund or for a global large cap fund.

LOS 2h: describe types of equity indices

Types of equity indices include broad market, multi-market, sector, and style indices.

1. **Broad Market Indices:** typically represents more than 90% of a selected market. Common US broad market indices include the Wilshire 5000 or Russell 3000.
2. **Multi-market Indices:** usually comprise indices from different countries and are designed to represent multiple security markets, useful for investors taking a global approach to equity investing. For example, the S&P Global 1200 is constructed as a composite of 7 headline indices, many of which are accepted leaders in their regions. These include the S&P 500® (US), S&P Europe 350, S&P TOPIX 150 (Japan), S&P/TSX 60 (Canada), S&P/ASX All Australian 50, S&P Asia 50, and S&P Latin America 40.
3. **Sector Indices:** represent and track different economic sectors on a national, regional, or global basis. Sector indices are helpful for investors wanting more exposure to certain sectors and to help determine if an active manager's performance is based on stock selection or sector allocation. The S&P Health Care Sector Index would be, as the name suggests, an example of a sector index.
4. **Style Indices:** represent groups of securities classified according to market capitalization, value, growth, or a combination of these characteristics. Large-cap, mid-cap, and small-cap equities can be further classified as value, growth, or blend (a combination of the two). The Russell 3000 Growth Index would be an example of a style index.

Question

A general emerging markets equity index fund likely tracks what type of index?

A. A style index.

B. A multi-market index.

C. A broad market index.

Solution

The correct answer is **B**.

Broad market indices mostly refer to those that represent a large proportion of a market within a given country, and style indices are only appropriate for index funds with a deliberate style-tilt. Since emerging markets equity funds span across different countries, it would be sensible for this index fund to follow a multi-market index.

LOS 2i: describe types of fixed-income indices

Construction

The number of fixed-income securities is often larger than the number of equity securities since fixed-income issuers often issue various fixed-income instruments with different characteristics. This expansive universe means that fixed-income indices may have to include thousands of different securities to track their target market accurately. Additionally, these markets lack liquidity, and index providers must contact dealers to obtain prices or even estimate prices based on other securities with similar characteristics. These challenges make it more difficult and costly for investors to replicate fixed-income indices.

Types of Indices

Fixed income securities may be classified by the issuer’s economic sector, geographic region, or the economic development of the issuer’s region. Classification may also be based on the type of issuer or financing, the currency of payments, maturity, credit quality, or the presence of inflation protection. Fixed-income indices are further categorized into aggregate or broad market indices, market sector indices, style indices, economic sector indices, and specialized indices (high-yield, inflation-linked, emerging market).

Question

Which of the following is *least likely* a challenge in constructing a fixed-income index?

A. Lack of liquidity .
B. Large size of the investment universe.
C. Difficulty estimating future interest payments.

Solution

The correct answer is **C**.

Options A and B are incorrect since they are, in fact, challenges. Fixed-income index managers often struggle with a low amount of liquidity and a high number of securities.

Another challenge is estimating current value for illiquid fixed-income securities, but estimating future interest payments is not a necessary step or challenge in constructing a fixed-income index.

LOS 2j: describe indices representing alternative investments

As alternative investments have increased in popularity, it has become necessary to create alternative investment indices. The most widely followed classes of indices include commodities, real estate, and hedge funds.

Commodity Indices

These indices consist of futures contracts on one or more commodities. Although some commodity indices may include the same commodities, returns may differ based on the weighting method. Since there is no clear way to weigh indices of futures contracts, commodity index providers create their own methods. For instance, some indices contain a fixed number of equally-weighted commodities, a combination of liquidity measures and world production values, or have a committee to determine index weights.

Due to significant variance in weighting methods between indices targeting the same markets, commodity index portfolios may exhibit very different risk and return profiles. Also, price changes within a commodities index will differ significantly from the prices of underlying assets.

Real Estate Indices

Real estate indices include the highly illiquid market for real estate and the highly liquid market for real estate securities. Real estate indices are categorized as appraisal, repeat sales, or real estate investment trust (REIT) indices.

Hedge Fund Indices

These indices track hedge funds – private investment vehicles that use leverage, long-short strategies, and charge additional performance-based fees. Since hedge funds are only required to report performance to their investors, their inclusion in these indices is usually voluntary. As a

result, hedge fund indices typically struggle with performance differences between similar indices (due to hedge funds reporting to one index, but not the other) and survivorship bias (exclusion of poorly performing and/or closed funds).

Question

The performance of which of the following can be easily duplicated by an index fund?

A. REITs.
B. Real estates.
C. Hedge funds.

Solution

The correct answer is **A**.

REITs are highly liquid securities and there are a number of REIT indices in existence that accurately track the performance of REITs.

A is incorrect. A real estate index would be very difficult, if not impossible, to replicate due to the illiquid and heterogeneous nature of real estate investments.

B is incorrect. Hedge fund indices would be similarly difficult to replicate due to their illiquidity, limited access, and the inherent biases of hedge fund indices.

LOS 2k: compare types of security market indices

Investors can choose from security market indices representing various asset classes, including equity, fixed-income, commodity, real estate, and hedge fund indices. While proper use of any index is dependent on understanding their construction and management, it is also important to note the significant differences between asset class indices.

Equity indices are the easiest to implement as they are based on securities that are typically highly liquid and easily priced. On the other hand, fixed-income indices pose more of a problem due to limited liquidity, a massive universe of fixed-income securities, and imprecise value estimates.

Commodity indices are usually based on baskets of futures contracts instead of actual commodity prices and thus lack an obvious weighting method. Additionally, commodity indices with the same target markets often vary dramatically in composition.

Real estate indices track illiquid and unique properties, while REIT indices track highly liquid securities that often correlate with price changes in other marketable securities. Finally, hedge fund indices lack the information to effectively track the broad hedge fund universe and often struggle with survivorship bias.

Learning Module 3: Market Efficiency

LOS 3a: describe market efficiency and related concepts, including their importance to investment practitioners

Market efficiency describes the extent to which available information is quickly reflected in the market price. Market efficiency is highly important to active investment managers as their advantage depends on exploiting market inefficiencies and earning excess risk-adjusted returns.

Investment officers must seriously consider the efficiency of any market they invest in to determine how much to invest in active management over passive management. If a market is completely efficient, passive management is often the better choice due to lower costs, but active management tends to be the better choice in highly inefficient markets.

Governments and market regulators are also concerned with market efficiency because an efficient market implies fair prices and optimal allocation of resources. In contrast, inefficient markets may ultimately lead to irrational resource allocation and below-average returns for unsophisticated investors.

Question

Net of fees in efficient markets, passive management is likely to perform:

A. Worse than active management.
B. Better than active management.
C. The same as active management.

Solution

The correct answer is **B**.

The gross performance of active and passively managed funds, in the long run, should be roughly equal. Since actively managed funds, on average, charge higher fees for investing in a given asset class, the net performance of passive management in a perfectly efficient market is likely to be better than active management.

LOS 3b: distinguish between market value and intrinsic value

The **market value** is the price at which an asset can currently be bought or sold. The **intrinsic value/fundamental value** is the value placed on it by investors if they had a complete understanding of the asset's investment characteristics.

In an efficient market, market values should be an accurate reflection of perceived intrinsic value. However, in relatively inefficient markets, significant discrepancies may exist between market and intrinsic value to the point that investors in these markets may attempt to calculate independent estimates of intrinsic value to test if assets are being undervalued or overvalued.

Question

If you believe the per-share intrinsic value of Ford Motor Company (F) is $14.00 and it is currently selling at a market price of $12.75, you think the stock is:

A. Overvalued.
B. Fairly valued.
C. Undervalued.

Solution

The correct answer is **C**.

Due to your belief that Ford stock is worth $1.25/share more than it is currently selling for, you believe that the stock is being undervalued by the market.

LOS 3c: explain factors that affect a market’s efficiency

Most, if not all, markets can be thought of as existing on a spectrum between perfect efficiency and complete inefficiency. This is because several factors contribute to or impede the efficiency of a market, including market participants, information availability and financial disclosure, and limits to trading.

Market Participants

In general, as the number and sophistication of participants within a market increase, the market becomes more efficient.

Information Availability and Financial Disclosure

The more information market participants have, the more accurate the market’s estimates of intrinsic value, thus creating greater market efficiency. In highly efficient markets, information is provided to all market participants simultaneously, and the advantage of insiders is limited.

Limits to Trading

The act of arbitrage is believed to increase market efficiency. Pure arbitrage typically involves buying an asset in one market and selling the same asset in a different market at a higher price. For example, when market participants believe a security is overvalued, they can perform a short sale – or the sale of a borrowed security. Some regulators argue that short selling puts inefficient downward pressure on securities leading to market crashes, but research generally shows that short selling helps supply and demand effectively determine market prices.

Transaction Costs and Information Acquisition Costs

Traders incur these expenses in order to locate and take advantage of potential market inefficiencies.

Transaction costs are the charges and fees incurred when purchasing or disposing of a security. Brokerage commissions, bid-ask spreads, taxes, and any other expenses incurred during trade execution are examples of these costs.

Information-acquisition costs are the charges incurred in order to gather pertinent data regarding a security or investment. Research charges, data subscription fees, financial analysis tools, and other resources used to collect and process data can all be included in these costs.

Question

As more market participants opt for passive management over active management, market efficiency is likely to:

A. Increase.
B. Decrease.
C. Remain unchanged.

Solution

The correct answer is **B**.

Passive management does not generally try to exploit market inefficiency but instead assumes that the market is highly efficient and passive investors will ultimately earn higher returns by reducing management fees as much as possible. At least, in theory, the popularity of active over passive management has an inverse relationship to its effectiveness. Therefore, as passive management becomes more common, there are fewer active market participants to find and profit from price inefficiencies, and market efficiency is likely to decrease.

LOS 3d: contrast weak-form, semi-strong-form, and strong-form market efficiency

Eugene Fama developed a framework of market efficiency that laid out three forms of efficiency: weak, semi-strong, and strong. Each form is defined with respect to the available information that is reflected in prices. Investors trading on available information that is not priced into the market would earn abnormal returns, defined as excess risk-adjusted returns.

Weak Form

In the weak-form efficient market hypothesis, all historical prices of securities have already been reflected in the market prices of securities. In other words, technicians – those trading on analysis of historical trading information – should earn no abnormal returns. Research has shown that this is likely the case in developed markets, but less developed markets may still offer the opportunity to profit from technical analysis.

Semi-strong Form

In a semi-strong-form efficient market, prices reflect all publicly known and available information, including all historical price information. Under this assumption, analyzing any public financial disclosures made by a company to determine a stock's intrinsic value would be futile since every detail would be taken into account in the stock's market price. Similarly, an investor could not earn consistent abnormal returns by acting on surprise announcements since the market would quickly react to the new information.

Strong Form

In a strong-form efficient market, security prices fully reflect both public and private information. Therefore, insiders could not generate abnormal returns by trading on private information because it would already figure into market prices. However, researchers find that

markets are generally not strong-form efficient as abnormal profits can be earned when nonpublic information is used.

Summary

In the following graph, we can clearly see that the weak form of market efficiency reflects only past market data. In contrast, the strong form reflects all past data, public market information, and insider information.

Market Prices Reflect

Forms of market efficiency	Past market data	Public information	Private information
Weak form	✓		
Semi-strong form	✓	✓	
Strong form	✓	✓	✓

Question

If a skilled fundamental financial analyst and an insider trader all earn the same long-run risk-adjusted returns, what form of market efficiency is likely to apply?

A. Weak form.
B. Strong form.
C. Semi-strong form.

Solution

The correct answer is **B**.

Since the insider trader can’t even earn higher risk-adjusted returns than the skilled fundamental financial analyst, the market must be strong-form efficient.

LOS 3e: explain the implications of each form of market efficiency for fundamental analysis, technical analysis, and the choice between active and passive portfolio management

The table below shows if abnormal returns can be earned through various strategies and active management assuming different types of market efficiency.

	Technical Analysis	Fundamental Analysis	Insider Trading	Active Management
Weak	No	Yes	Yes	Yes
Semi-strong	No	No	Yes	No
Strong	No	No	No	No

Since abnormal returns from the analysis of historical prices would be quickly arbitraged away in a weak-form efficient market, no technical analyst would be able to earn consistent abnormal returns. However, fundamental analysis and insider trading can still earn abnormal returns in a weak-form efficient market because public information and non-public information would not necessarily be fully reflected in market prices. Similarly, active management that utilizes fundamental analysis could also be capable of earning abnormal returns. Therefore, active management could consistently outperform passive management on a risk-adjusted basis – gross of fees – in a weak-form efficient market. In addition, if abnormal returns earned by active fundamental analysis exceed additional active management fees, active management could also earn abnormal returns net of fees.

Fundamental analysis and active management lose their abilities to earn abnormal returns in a semi-strong efficient market due to prices fully reflecting public information. Despite active management's inability to outperform passive management at the same risk level, active management may still be a rational investment option as a way for investors to manage certain risks and achieve financial goals. In strong-form efficient markets, even insider trading cannot earn abnormal profits. However, most markets are not strong-form efficient due to regulations against trading on non-public information.

Question

Which of the following statements is most likely true?

A. In a strong form efficient market, a rational investor would invest in an actively managed fund.
B. In a weak-form efficient market, active management can outperform passive management net of fees.
C. In a semi-strong form efficient market, fundamental analysis can earn abnormal returns, but technical analysis cannot.

Solution

The correct answer is **B**.

Active management should be able to outperform passive management gross of fees in a weak-form efficient market. However, its ability to outperform net of fees depends on how high abnormal returns are relative to additional management fees.

A is incorrect. In a strong form efficient market, no rational investor would invest in an actively managed fund since the fund would charge more fees, and pay more transactions costs, without being able to earn abnormal returns.

C is incorrect. Both fundamental analysis and technical analysis cannot earn abnormal returns in a semi-strong efficient market.

LOS 3f: describe market anomalies

Market anomalies are exceptions to the notion of market efficiency. They may be present if a change in the price of an asset or security cannot directly be linked to current relevant information known in the market. Market anomalies are only valid if they are consistent over long periods of time and not the result of data mining or examining data with the intent of developing a hypothesis. There is much debate if market anomalies truly exist after making appropriate adjustments for risk, transaction costs, sampling errors, and other factors. Market anomalies can be categorized as time-series anomalies, cross-sectional anomalies, or other anomalies.

Time Series Anomalies

- **Calendar anomalies:** Significant differences in returns on different days, months, or years. The most commonly known calendar anomaly is the January effect, in which stocks tend to outperform in the month of January. Part of this effect may be explainable by individual investors or fund managers selling off during the previous December either for tax reasons or to show off impressive end-of-year results.
- **Momentum/overreaction**: The momentum anomaly refers to the empirically observed tendency for rising asset prices to rise further and falling prices to keep falling. Stocks with strong past performance continue to outperform stocks with poor past performance in the next period. It is termed an anomaly because in finance theory, an increase in asset price, in and of itself, should not warrant a further increase in asset price unless it is backed up by new information or changes in demand and supply. The momentum anomaly suggests investors should buy past "winners" while selling past "losers." Financial economics students have largely attributed the appearance of momentum to cognitive biases, which belong in the realm of behavioral economics.

  The overreaction anomaly goes contrary to the momentum anomaly. It refers to the empirically observed tendency of stocks to exhibit long-term reversals in returns. Stocks that have performed poorly in the past three to five years demonstrate superior

performance over the next three to five years compared to stocks that have performed well in the past. The overreaction anomaly suggests buying past losers while selling past winners.

Cross-Sectional Anomalies

Two of the most researched of these anomalies in financial markets are the size effect and value effect. The Fama and French three-factor model (seen in the Portfolio Management section) attempts to adjust for these anomalies.

- **Size effect:** Small companies tend to outperform larger companies. This argument has indeed been validated through historical analysis, at least until the 1980s. However, some empirical studies have declared the size effect to be “dead” after the early 1980s.
- **Value effect:** Value stocks, which generally are stocks with below-average price-to-earnings and market-to-book ratios, and above-average dividend yields, have consistently outperformed growth stocks. However, this effect seems to have weakened or disappeared after the papers that highlighted it was originally published.

Other Anomalies

- **Closed-end fund discounts:** Closed-end funds sometimes sell at a discount to their net asset value or the price that the fund’s holdings could theoretically be sold for if fully liquidated. Tax inefficiency and expectations of manager underperformance may partially explain this anomaly.
- **Earnings surprise:** Stock prices have a tendency to underreact to new information, allowing for a momentum strategy (buying stocks with recent positive developments and selling stocks with recent negative developments) to be potentially profitable.
- **Initial public offerings (IPOs):** Investors can purchase a stock at its initial offering price to earn excess returns. This is somewhat understandable as investment banks

arranging the IPOs are often incentivized to set a low price.

- **Prior information:** Some researchers have found that equity returns relate to prior information like interest rates, inflation rates, stock volatility, and dividend yields. However, this is not evidence of a market anomaly as abnormal returns cannot be earned using such information.

Question

What characteristic used for stock screening is the *least likely* to result in any abnormal profits due to market anomalies?

A. P/E ratio.
B. Earnings per share.
C. Market capitalization.

The correct answer is **B**.

Screening for stocks with larger market capitalizations and P/E ratios may arguably allow the investor to take advantage of abnormal returns based on cross-sectional anomalies. However, stocks with low/high earnings per share alone (without considering price per share) have not been shown to generate abnormal returns.

LOS 3g: describe behavioral finance and its potential relevance to understanding market anomalies

Behavioral finance examines investor behavior to understand how people make decisions, individually and collectively. Behavioral finance does not assume that investors always act rationally but instead that people can be negatively affected by behavioral biases.

Market efficiency does not require all market participants to act rationally as long as the market acts rationally in aggregate. If the market can adjust for irrationality quickly, then behavioral finance does not necessarily contradict market efficiency. However, if the market allows its participants to earn abnormal returns from the irrationality of others, then the market cannot be efficient.

Loss Aversion Bias

People tend to dislike losses more than they like comparable gains. This may help to explain under-reaction and overreaction market anomalies.

Herding Bias

Market participants tend to trade along with other investors while potentially ignoring their own private information or analysis. This bias may also serve as a possible explanation for the under-reaction and overreaction market anomalies.

Information Cascades

Similar to herding, information cascade is the transmission of information from those who act first and whose decisions influence the decisions of others. As investors base their decisions on the actions of other investors acting before them, stock returns may be serially correlated and lead to over-reaction anomalies. In addition, research has shown information cascades to be

greater for companies with poor-quality information.

Overconfidence Bias

People tend to overestimate their ability to determine intrinsic values accurately and may not process information appropriately as a result, which ultimately leads to mispriced securities. This mispricing has been shown to mainly take place in higher-growth companies, whose prices react slowly to new information.

Other Biases

Other biases include representativeness (overweighting current situation in making decisions), mental accounting (separately accounting for different investments and individual security gains/losses), conservatism (maintaining prior views or forecasts despite new information), and narrow framing (viewing issues in isolation and responding based on how issues are posed).

Question

A scientist runs a series of unweighted coin-flipping experiments with Bob, Bill, and Jane as test subjects.

- The scientist first invites Bob to wager $100 on the result of the coin flip, offering $300 if Bob is correct. Bob refuses.
- Bill, however, is willing to pay $100 for the chance to win $150 ($50 profit) on correctly calling heads or tails because he recently lost $50 in a casino and it is important that he breaks even on gambles for the week.
- Finally, the scientist does not ask Jane to wager money but instead offers her a choice of taking $50 or winning $100 if the next coin flip comes up heads. Jane takes the $50.

Which investor has acted rationally?

A. Bob.
B. Bill.
C. Jane.

Solution

The correct answer is **C**.

Bob is likely affected by loss aversion as a 50% chance to win $300 is worth $150, but he wasn't willing to wager $100.

On the other hand, Bill is likely doing mental accounting because his previous losses are sunk costs and shouldn't motivate him to make bets with a negative expected value (a 50% chance to win $150 is only worth $75).

Jane would have made a perfectly rational decision as she should be indifferent between the two options. By taking the sure $50, she may have acted out of risk

aversion, which is often accounted for in standard financial models and not irrational behavior.

Learning Module 4: Overview of Equity Securities

LOS 4a: describe characteristics of types of equity securities

Unlike debt securities, equity securities do no impose an obligation on the issuer to repay the amount financed. Instead, shareholders act as owners of a company with a claim on the company’s net assets and expect that management will act in the shareholders’ best interests. Equities can be split into two main categories: common securities and preference securities.

Common Shares

Common shares represent an ownership interest in a company. Similar to preferred shareholders, common shareholders have a claim to the company’s net assets in the event of a liquidation. Unlike preferred shareholders, however, common shareholders share in the company's operating performance and participate in the governance process through voting rights. Since it is often not feasible for common shareholders to attend shareholder meetings in person, they can designate another party to vote for them (vote by proxy). Statutory dictates that each share represents one vote, while cumulative voting is often used to allow smaller shareholders to vote multiple times for a single candidate with each share.

A company can issue multiple common shares with different voting rights and/or other ownership rights. For example, callable common shares give the issuing company the option of buying back the shares at a certain price (typically done when market price rises above strike price), and putable common shares give investors the option of selling back to the company at a certain price (typically when the market price drops below strike price).

Preference Shares

Preference shares have priority to common shares with respect to the payment of dividends and claim on net assets upon liquidation but do not share in the company’s operating performance and do not typically have voting rights. While preference shares differ from debt securities in

that the issuing company is not obligated to pay dividends, preference share dividends are often fixed like interest payments on debt securities and generally yield more than dividends paid on common shares.

With cumulative preference shares, the accrued preference dividend payments must be paid before any dividends go out to common shareholders. With participating preference shares, shareholders receive an additional dividend if the company’s profits exceed a pre-specified level. Preference shares may also be convertible, meaning they can be converted into common shares at a certain ratio determined at issuance.

Question

What is the most likely reason for an investor to choose a company's preference shares over its common shares?

A. The preference shares offer increased voting rights.
B. The preference shares usually have a higher dividend yield than the common shares.
C. The preference shares give the investor more exposure to the company's upside potential.

Solution

The correct answer is **B**.

The preference shares usually have a higher dividend yield than the common shares to make up for the fact that they don't offer voting rights.

A is incorrect. Preference shares usually do not have voting rights.

C is incorrect. Since even participating preference shares offer limited upside potential, common shares should offer investors more exposure on the upside.

LOS 4b: describe differences in voting rights and other ownership characteristics among different equity classes

In addition to issuing common or preference shares, companies can also issue different classes of these shares to further tailor the securities to the needs of the company and its investors.

Common Shares

- **Voting rights:** different classes of common shares may vary significantly in the amount of voting power they offer shareholders. For example, a class of common stock may make up a small minority of the equity stake but still allow its shareholders to maintain control over a company due to differing voting rights.
- **Liquidation proceeds:** different classes of common shares may differ in priority and amount of proceeds to be received by shareholders in the event of a liquidation.
- **Callable/putable**: certain common shares may be callable by the issuer or putable by the investor.
- **Other ownership rights:** classes of common shares may also differ in dividend payments, conversion rights, and rights in the event of a split or subdivision of another class of shares.

Preference Shares

- **Cumulative:** preference shares may differ in their rights to accumulated unpaid dividends.
- **Participating:** preference shares may differ in their rights to receive a bonus dividend payment if the company’s profits exceed a pre-specified level.
- **Convertible:** some preference shares may be convertible into common shares at a ratio determined at issuance.

Question

What type of preference share is *likely* to give the investor the most exposure to a company's upside potential?

A. Convertible.
B. Cumulative.
C. Participating.

Solution

The correct answer is **A**.

There is no limit to the potential upside of convertible preference shares since they are convertible to common shares at a fixed ratio.

B is incorrect. Cumulative preference shares may help an investor recover lost income if a company is returning to profitability, but ultimately shareholders capture minimal returns on the upside.

C is incorrect. Similarly, participating shares are limited to a fixed bonus dividend on the upside.

LOS 4c: distinguish between public and private equity securities

The public securities market is still significantly larger than the private securities market, but investments in private equity have rapidly increased over the last few decades. Because of the size of public securities markets and to protect less sophisticated investors, the public markets tend to be much more regulated than the private markets. Due to the additional scrutiny, public firms are incentivized to ensure shareholders that management is acting in their best interests. Some evidence has shown that corporate governance is more effective at public firms than at private firms. Generally, public securities have much more active secondary markets where investors can easily and cheaply sell their securities at market prices.

This is not the case for private securities, which are often highly illiquid and traded through negotiations with other investors. However, investors in the private markets expect to be compensated with higher returns for the additional limitations. Most investors gain exposure to the private markets through venture capital (start-up financing to early-stage companies), leveraged buyouts (taking companies private), or private investments in public equity (private purchases of secondary offerings by public firms). By going private, management can adopt a more long-term focus and eliminate costs related to public disclosure instead of struggling to meet quarterly targets.

Question

Why might a pension fund decide to increase its allocation to private securities and reduce its allocation to public securities?

A. To increase the fund’s expected return.
B. To reduce overall transaction costs and management fees.
C. To increase the fund’s liquidity in order to pay out future short-term obligations.

Solution

The correct answer is **A**.

A move to more investments in private securities would likely reduce the fund’s liquidity and increase transaction costs and management fees. However, most investors expect higher returns from their private security investments than public security investments.

LOS 4d: describe methods for investing in non-domestic equity securities

Along with the technological advancements in recent decades, it has become significantly easier for investors to make international investments at low costs. Similarly, international issuers are now more capable of raising money from foreign investors. This increase in global investment has allowed many emerging markets to develop and stabilize their economies. Investments in non-domestic equity securities can be made directly or through depositary receipts, global registered shares, or baskets of listed depository receipts.

Direct Investment

Direct investing involves buying and selling securities directly in foreign markets, meaning that all the transactions are in the company's, not the investor's, domestic currency. Investing directly in foreign securities may result in less transparency and more volatility as audited financial information may not be provided, and the market may be less liquid.

Depository Receipts

A depository receipt is a security that trades like an ordinary share on a local exchange and represents an economic interest in a foreign company. A depository receipt is created when foreign equity shares are deposited in a bank that then issues receipts representing the deposited shares.

Depository receipts sponsored by the issuing company grant investors the same rights as direct owners in common shares and are usually more regulated, while unsponsored receipts do not give investors voting rights. There are two main types of depository receipts:

- **Global Depository Receipt (GDR)**: issued outside the company's home country and outside the United States. GDRs are not subject to foreign ownership and capital flow restrictions that the issuing company's home country may impose. The majority of GDRs are denominated in US dollars.

- **American Depository Receipt (ADR)**: a US dollar-denominated security that trades like a common share on US exchanges. There are four primary types of ADRs, with each type having different levels of corporate governance and filing requirements.

Global Registered Share (GRS)

A global registered share is a common share traded on different stock exchanges around the world in different currencies. GRSs are more flexible than depository receipts because they represent an actual ownership interest and can be traded anywhere without currency conversion.

Basket of Listed Depository Receipts (BLDR)

A BLDR is an exchange-traded fund that represents a portfolio of depository receipts. These securities can allow investors to gain broader exposure to a foreign market and easily implement hedging or arbitrage trading strategies.

Question

You’re an investor based in the US who wants to invest in non-domestic equity securities without exchanging your US dollars for foreign currency. What type of investment should you avoid?

A. Direct investments.
B. Global registered shares (GRS).
C. American depository receipts (ADR).

Solution

The correct answer is **A**.

You can buy ADRs and GRSs with your US dollars, but cannot make direct investments in foreign equities without first converting your currency.

LOS 4e: compare the risk and return characteristics of different types of equity securities

The type of security and its features affect its risk/return profile. Therefore, as an investor's risk increases, its expected return should also increase to compensate.

Equity Return Characteristics

There are two main sources of total return for equity securities – capital appreciation and dividend income:

$$\text{Total Return} = \frac{P_1 - P_0 + D}{P_0}$$

Where:

P_1 = Sale price (or price at t = 1)

P_0 = Purchase price (or price at t = 0)

D = Dividend income paid to the investor between t = 0 and t = 1

Exam tip: Most of the return calculations in finance follow the same logic:

$$\text{Return (\%)} = \frac{\text{Ending price} - \text{Beginning price} + \text{Dividend income}}{\text{Beginning price}}$$

The Reinvestment of Dividends

Historically, the reinvestment of dividend income has been an extremely important source of compound growth. Of course, the total return of non-dividend paying stocks is entirely based upon capital appreciation.

Direct investments in foreign securities or depository receipts have an additional source of return: foreign exchange gains (or losses) arising from changes in exchange rates.

Equity Risk Characteristics

In general, investors expect lower risks and returns from preference shares than common shares because dividends on preference shares are fixed.

Preference shareholders also have priority to dividend payments, and liquidation proceeds claimed by preference shares are known (although not guaranteed).

Preference shareholders usually expect more of their total return from dividend income, while common shareholders typically expect more return from capital appreciation.

Callable common or preference shares are riskier than their non-callable counterparts, while putable common or preference shares are less risky than their non-putable counterparts.

Question

A US investor makes a direct investment in a foreign equity security with a current dividend yield of 2.5%. If the investor holds the stock for ten years, how many components are likely to make up the investor's total return?

A. One
B. Two
C. Three

Solution

The correct answer is **C**.

The investor should earn a total return made up of capital appreciation, dividend income, and foreign exchange (gains or losses).

LOS 4f: explain the role of equity securities in the financing of a company’s assets

Companies issue equity securities in the primary markets to raise capital and increase liquidity. Having public shares also gives the company another currency to make acquisitions with or incentivize employees.

Raising capital aims to maximize shareholder wealth, which may be done through financing the purchase of long-lived assets, capital expansion projects, research and development, and/or the entry into a new product or geographic region. In some rare cases, capital is raised only to keep a company operating as a going concern.

LOS 4g: distinguish between the market value and book value of equity securities

The book value of a company's equity reflects the historical operating and financing decisions of its management. The market value of the company's equity reflects these decisions as well as investors' collective assessment and expectations about the company's future cash flows generated by its positive net present value investment opportunities.

As such, book value only looks at the company's past, while market value should be based on the company's future. If a company has a high price-to-book ratio (market price per share divided by book value of equity per share) relative to its industry peers, the market likely has high growth expectations for the company. It doesn't make sense to compare the P/B ratios of companies within different industries because market prices also reflect the growth opportunities of the industries as a whole, which may differ significantly.

Question

Company	P/B
Toyota	1.25
Ford	1.58
Tesla	11.65

Based solely on the P/B ratio, which auto company is *likely* to have the *least attractive* opportunities for growth?

A. Ford.

B. Tesla.

C. Toyota.

Solution

The correct answer is **C**.

Because Toyota has the lowest current P/B ratio, the market is placing the lowest value on the company's future growth opportunities. On the other hand, the market has high growth expectations for Tesla.

LOS 4h: compare a company’s cost of equity, its (accounting) return on equity, and investors’ required rates of return

Required rates of return describe the reward investors expect from taking on a given level of risk.

Cost of Equity

The cost of equity is the minimum expected rate of return that a company must offer its investors to purchase its shares in the primary market and maintain its price in the secondary market. The cost of equity is often found using CAPM:

$$E(R_i) = R_f + \beta_i[E(R_m) - R_f]$$

but could also be calculated using other models, which we will see in the section Equity Valuation: Concepts and Basic Tools.

Return on Equity (ROE)

Return on Equity is the primary measure that equity investors use to determine whether a company's management is effectively and efficiently using the capital that the owners have provided to generate profits. Return on equity is calculated by taking net income and dividing it by the average book value of equity.

$$ROE = \frac{NI_1}{(BV_1 + BV_0)/2}$$

Where:

NI_1 = Net income at year end

BV_1 = Ending book value

BV_0 = *Beginning book value*

The average book value of equity is used in cases where a company's book value tends to be volatile from year to year or when it is the industry standard. Otherwise, basing ROE on the beginning book value of equity can also be appropriate.

Required Rate of Return

Investors' required rate of return on debt securities is simply the interest rate on the company's bonds. Thus, the cost of debt is equal to the debt investors' minimum required rate of return.

Investors' required rate of return on equity securities is more difficult to pin down. An equity investor's minimum required rate of return is based on the future cash flows they expect to receive, which are uncertain and must be estimated. The minimum required return may differ across investors, resulting in a cost of equity that differs from the minimum required return of some investors.

Question

ABC Corp generated a 15% return on equity during 2017. The 2017 beginning and ending book values of equity were the same. In 2018, ABC Corp reported a 15% increase in net income and a 15% increase in the book value of equity from one year prior. Using the average book value of equity approach, what was ABC's 2018 return on equity?

A. Exactly 15%.
B. Less than 15%.
C. Greater than 15%.

Solution

The correct answer is **C**.

Since return on equity is being based on the average book value of equity, the full 15% increase in the book value of equity is not being accounted for in the denominator. Because the beginning and ending book values are averaged together, the average book value used in the calculation would only be 7.5% higher than the same figure in 2017.

Net income, however, increases exactly 15%. The 2017 return on equity was 15%, and 2018 net income increased more than the average book value of equity so therefore 2018 ROE is greater than 15%.

Learning Module 5: Company Analysis: Past and Present

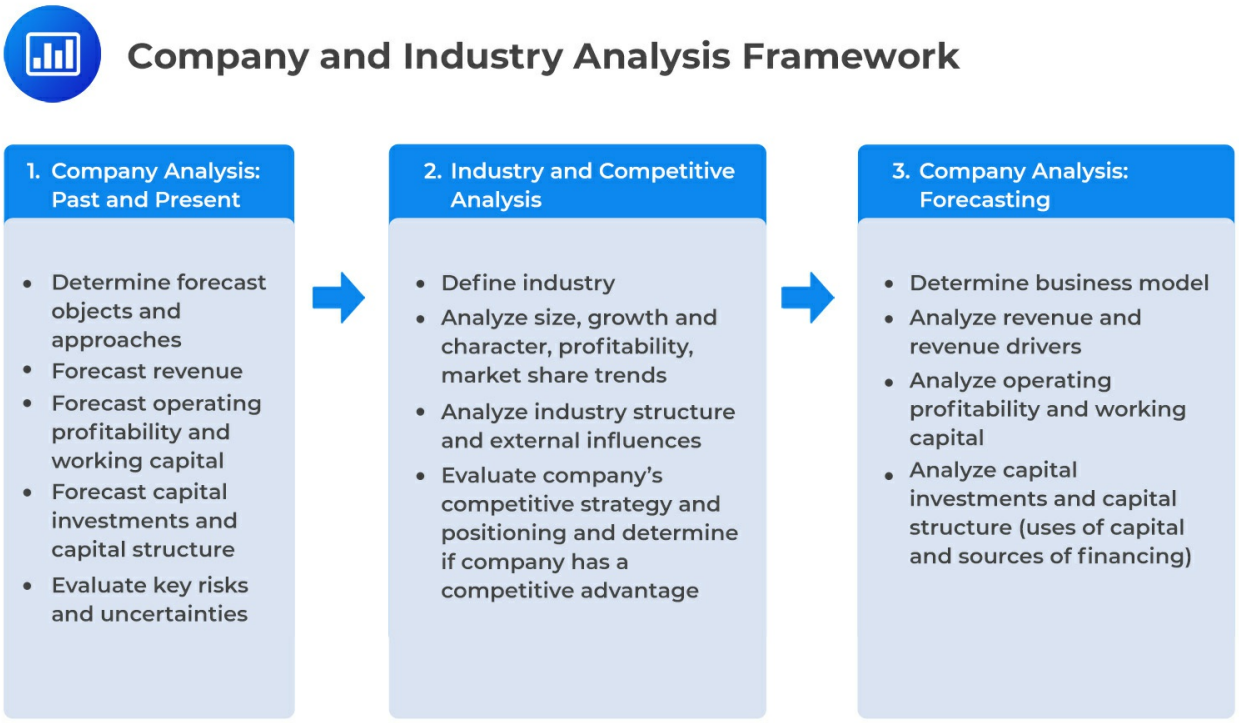
LOS 5a: describe the elements that should be covered in a thorough company research report

Financial analysts utilize specialized models when examining financial statements. The objective is to assess and offer investment guidance on issuers' equity securities. These aren't just any models; they're quantitative blueprints that echo an analyst's anticipations for the future – encompassing future earnings scenarios, cash flows, and the financial stance of the company in question.

It's crucial to understand that these models don't equate to mathematical problems with a singular correct answer. They're reflections of the analyst's viewpoints. And like any professional viewpoint, they should be anchored in evidence and fortified by thorough scrutiny.

Company and Industry Analysis

Company and industry analysis is the process of forming and justifying a view of an issuer’s future financial results and position. This involves studying past and present financial statements to form a view of future financial results.



The above figure summarizes company and industry analysis. Starting from the left:

- **Company Analysis**: **Past and Present**: This is the foundational block, where analysts dive deep into a company's historical data and present circumstances. It involves understanding the business model, revenue streams, and capital structures. For example, an in-depth examination of a company's historical financial statements would fall under this category.
- **Industry and Competitive Analysis**: Moving a step further, analysts venture into the broader industry landscape. This is where they gauge the industry's size, growth trajectories, profitability metrics, and market share trends. Additionally, they gauge the industry's size, growth trajectories, profitability metrics, and market share trends.
- **Company Analysis**: **Forecasting**: The final stretch of the analysis focuses on the future. Using insights gleaned from the previous stages, analysts project future revenue, profitability, capital investments, and potential risks. It's this forward-looking perspective that helps analysts predict a company's future earnings and cash flows, forming the basis for investment recommendations.

In essence, the framework provides a structured approach, ensuring that analysts consider all critical factors before making investment recommendations.

Company Research Reports

Initial Reports

The company research reports contain analysts' company and industry analysis, as well as their valuation and investment recommendations. The structure, content, and tone of a company research report are dependent on the analyst's setting.

In the case of public issuer equity securities, reports created for external clients, known as "sell-side reports," typically include a comprehensive initial report when the analyst starts covering the security. This is often called an "initiating coverage" report or "initiation."

The structure of the initial company research report is given in the following table:

Initial Company Research Report Elements

Section	Details
Front Matter	Issuer, security, analysts recommendation, target prices, disclosures, disclaimers, legal
Recommendation	Analysts' summary reasons.
Company Description	Issuer's business model, strategy, key charts and figures.
Industry Overview and Competitive Positioning	Analysis of industry metrics, competitive landscape, external influences, industry position, strategy.
Financial Analysis and Model	Evaluation, forecasting of revenue, costs, profitability, cash flows, financial statements.
Valuation	Estimation of company, security values, target prices, discussion on key inputs, analyses.
ESG Considerations	Assessment of ESG indicators, risks, ownership structure, management composition, executive compensation.
Risks	Evaluation of potential risks impact on financial analysis and valuation.

Subsequent Company Research Report

Follow-up reports are more concise compared to the initial ones. These reports are designed for readers already acquainted with the issuer or security, seeking updates related to new data, analyses, or shifts in the analyst's recommendations.

The structure of a subsequent report depends on the analyst's setting and the nature of the report. For example, an analyst might deliver a short verbal report or a few presentation slides to update the internal team on the latest financial results of Microsoft Corp.

The typical elements of subsequent elements are given in the table below:

Subsequent Company Research Report Elements

Section	Details
Front Matter	- Analysts’ names - Issuer name - Security and exchange identifiers (e.g., symbol, CUSIP) - Analysts’ recommendation: buy, hold, sell - Current security price and analysts’ target price - Disclosures, disclaimers, and other legal requirements
Recommendation	- Analysts' updated recommendation - Summary of changes from the prior recommendation - Supporting explanations for any changes
Analysis of New Information	- Comparison of quarterly results to projections - Interpretation of new data - Adjustments to prior forecasts based on new data
Valuation	- Review of prior financial statement forecasts - Updated forecasts based on new data - Updated company and security value estimates - Discussion of any changes from the prior report's valuation
Risks	- Updated risk factors - Detailed discussion of any changes from prior risk assessments

Question

Which of the following is the *most likely* primary factor that determines the structure of a subsequent report after the initiating coverage report?

A. The analyst's setting and the nature of the report.
B. The financial models used in the report.
C. The future earnings and cash flows of the issuer.

The correct answer is **A**.

The primary factor that determines the structure of a subsequent report after the initiating coverage report is the analyst's setting and the nature of the report. The analyst's setting refers to the context in which the analyst is working, including the type of firm, the analyst's role, and the audience for the report. The nature of the report refers to the purpose of the report, such as whether it is an update on a company's financial performance, a response to a significant event affecting the company, or a change in the analyst's recommendation.

The report's structure is customized to fit specific circumstances. For instance, a report about a company's quarterly earnings may emphasize comparing actual results with the analyst's past forecasts and consensus estimates. In contrast, a report addressing a major event might center on analyzing how the event affects the company's future outlook.

B is incorrect. While the financial models used in the report are an important part of the analysis, they do not determine the structure of the report. The models are tools that the analyst uses to support his or her analysis and recommendations. It's noteworthy that the structure of the report is determined by the analyst's setting and the nature of the report.

C is incorrect. The future earnings and cash flows of the issuer are important factors that the analyst will consider in their analysis, but they do not determine the

structure of the report. The analyst will use financial models to forecast the issuer's future earnings and cash flows and to value the issuer's securities, but the structure of the report is determined by the analyst's setting and the nature of the report.

LOS 5b: determine a company’s business model

Understanding a company's business model is the first step in conducting an industry and company analysis. This process is crucial as it helps in summarizing the key drivers of a company's financial results and position. It also assists in focusing on areas that require further investigation and sets the analyst's expectations for the issuer.

For instance, if we consider a company like Apple Inc., understanding its business model would involve understanding its revenue streams, key products and services, its target market, and its competitive advantage in the technology industry.

Key Elements of a Business Model

A business model describes a company's operations and includes several elements. Analysts investigate these elements by answering key questions. The answers to these questions are company-specific, but the key questions are common across industries and companies. Some companies have a conventional business model, such as a retailer like Walmart or a natural resource producer like ExxonMobil, which simplifies business model identification. Analysts often focus their analysis on the differences in a company's business model from a conventional model or those of its competitors.

Detailed Business Model Analysis for Analysts

Business Model Element	Key Questions for Analysts	Explanation
Goods or Services offered	What offerings does the company bring to the market?	Core of any business. Analysts assess offering nature, features, benefits, and uniqueness.
Primary customers and customer Segments	Who is the company's target demographic?	Crucial for determining scale, pricing, and marketing. Identify main customer segments.
Sales channels, including customer acquisition and product/service delivery mechanisms	How does the company reach potential and current customers and deliver products?	Effective ways to get product to the customer. Understand distribution, retail, online platforms. Evaluate product/service delivery.
Pricing Model and Payment Conditions	How does the enterprise set its pricing, and what are the payment conditions?	Influence on company's revenue. Analyze pricing strategy and payment terms.
Dependencies: Suppliers and Collaborative Entities	Which external entities does the company depend upon, and how does it manage relationships?	Gauge company's dependency, risks, and bargaining power. Understand relationships with external entities.

Sources of Information for Determining a Business Model

To analyze and understand a company's business model, analysts require various information sources. These sources provide insights into a company's operations, financial performance, strategies, and market positioning. Let's delve deeper into these sources and understand their significance and utility.

1. Issuer Sources

Issuer sources are directly provided by the company and tend to be the most reliable for understanding company-specific operations and strategies.

- **Regulatory filings**: These, especially annual (10-K) and quarterly reports (10-Q), contain a wealth of information about a company's financial performance, risk factors, strategies, and more.
- **Earnings calls**: Management discusses recent performance and future outlooks, and analysts can ask questions directly.
- **Investor events**: These provide deeper insights into specific segments or strategies of the company.
- **Press releases**: Offer timely updates on recent developments, product launches, or mergers and acquisitions.
- **Direct communications**: Conversations with company personnel can provide nuanced insights.
- **Company website**: A hub of information, including company history, product details, and more.

2. Public Third-party Sources

These are external sources that provide a broader perspective on industry trends, economic factors, and more.

- **Industry reports**: Offer a comprehensive view of industry trends, challenges, and opportunities.
- **Economic indicators**: Help in understanding the macroeconomic environment in which the company operates.
- **News outlets**: Provide current events and developments that might impact the company.

- **Social media**: Offers real-time insights and public perception about the company and its products.
- **Search engines**: A vast resource for miscellaneous information, from customer reviews to academic papers.

3. Proprietary Third-party Sources

These are specialized sources that provide in-depth, often paid, insights and analyses.

- **Analyst reports**: Detailed reports by experts on company performance, industry comparison, and forecasts.
- **Data platforms**: Platforms like Bloomberg and FactSet offer real-time data, analytics, news, and more.
- **Consultancy reports**: In-depth industry insights, such as Rystad in energy, Gartner, and IDC in information technology, are often based on proprietary research methodologies.

4. Proprietary Primary Research

This involves firsthand research conducted or commissioned by the analyst. It's tailored to the analyst's specific requirements.

- **Surveys**: Gather data directly from customers, suppliers, or other stakeholders.
- **Product comparisons**: In-depth analyses of how a company's product stands against competitors.
- **Interviews**: Conversations with industry experts, former employees, or others can provide unique insights.

A blend of these information sources provides a comprehensive understanding of a company's business model, its competitive positioning, and potential future performance.

Question

What is *most likely* the role of issuer sources in determining a company's business model?

A. They provide information about the company's competitors.
B. They provide information about the company's stock price.
C. They provide information through regulatory filings, especially the annual and quarterly reports, and other issuer-related sources.

The correct answer is **C**.

Issuer sources are vital for understanding a company's business model, and they do this by sharing information in regulatory filings, particularly in the annual and quarterly reports and other documents related to the company. These sources are a goldmine of information about the company's activities, financial health, future plans, and the risks it faces. They offer a glimpse into the company's business model, including how it makes money, manages costs, targets specific customer groups, defines its unique value, and competes in the market.

Regulatory filings, such as the annual report (Form 10-K) and quarterly report (Form 10-Q), are required by securities regulators and are publicly available. They contain audited financial statements, management's discussion and analysis (MD&A), disclosures about market risk, and other important information. Other issuer-related sources may include press releases, investor presentations, conference call transcripts, and corporate websites. These sources can provide timely and detailed information about the company's recent developments, management's outlook, and other relevant issues.

A is incorrect. While issuer sources may contain some information about a company's competitors, their primary role is not to provide information about the competition. Information about competitors is typically obtained from industry

reports, market research, news articles, and other external sources.

B is incorrect. Issuer sources do not directly provide information about the company's stock price. The stock price is determined by the market and can be influenced by a variety of factors, including the company's financial performance, market conditions, investor sentiment, and other factors. While issuer sources can provide information that may affect the stock price, they do not provide the stock price itself.

LOS 5c: evaluate a company’s revenue and revenue drivers, including pricing power

Revenues represent the total sales a company achieves within a specific period, often before any expenses or deductions. This metric offers a snapshot of a company's ability to sell its goods or services. In many ways, it serves as the lifeblood of the business, and consistent revenue growth often signals a company's expanding customer base, increased sales volume, or successful price increases.

Understanding Revenue Drivers

Revenue drivers are underlying mechanisms or factors that have a direct impact on the revenue of a company. These can range from macroeconomic factors, like overall economic growth, to micro factors, like the launch of a new product line. Grasping the intricacies of these drivers is essential to forecast future revenues accurately and to interpret past revenue trends. Additionally, understanding these drivers can help analysts anticipate changes in revenue based on projected changes in these drivers.

Methodologies to Determine Revenue Drivers

While financial statements give us the 'what' of revenue figures, they don't necessarily explain the 'why.' To truly grasp what's driving revenue changes, analysts employ methodologies to unravel the underlying causes. Two principal methods, the bottom-up approach and the top-down approach, offer distinct perspectives on this.

Bottom-up Approach

This approach is about understanding revenue from the ground level and building upwards. It's akin to assembling a puzzle by scrutinizing each piece before viewing the whole picture.

- **Granularity**: The bottom-up approach demands a granular view. For instance, if we consider a bookstore, this method would involve looking at sales for each book genre, then perhaps each author, and even individual titles.

- **Focus on Components**: Using the bookstore example further, one might study how many copies of each title were sold and at what price. This provides clarity on which titles or genres are the most lucrative.
- **Internal Factors**: The bottom-up approach heavily leans on internal data. It evaluates how individual segments contribute to the overall revenue, allowing a deeper understanding of the company's operations and product performance.

Example: Consider a global sportswear brand like Adidas. Using a bottom-up approach, one might start by analyzing revenue from distinct product lines such as footwear, apparel, and accessories. Further, each product line can be dissected by regions like North America, Asia, and Europe. This granular analysis helps pinpoint the product in which region is driving growth or lagging behind.

Top-down Approach

This method is the opposite of the bottom-up approach. Instead of starting with the smallest revenue components, it begins by analyzing the broader market and then narrowing down to the company's specific revenue.

- **Market Overview**: The top-down approach starts by gauging the total market size. For a tech company like Apple, it would involve looking at the global electronics or smartphone market's total value.
- **Market Share Analysis**: After understanding the market's size, the focus shifts to the company's slice of the pie. Using Apple as an example again, one would analyze its share in the global smartphone market.
- **External Factors**: This approach emphasizes external data and trends. It factors in market growth rates, competitor activities, and regulatory changes, giving a holistic view of the external factors influencing revenue.

Example: Brands like Rolex can charge premium prices for their watches not just because of the product's inherent quality but also due to the brand's legacy, exclusivity, and prestige associated

with owning a Rolex.

Pricing Power: A Critical Determinant of Revenue

At the heart of a company's revenue stream lies its pricing strategy. While on the surface, it might seem like companies have total control over their prices, the actual dynamics are deeply interwoven with market conditions and the company's position within its industry. **Pricing Power** refers to a company's ability to alter its product or service prices without seeing a corresponding drop in sales volume.

It's an indicator of the company's resilience to price changes in relation to customer demand. **Example**: Imagine a brand 'HydroClear' that sells a unique water purification system. If they slightly increase their price due to the unmatched quality they offer, and sales remain stable, they demonstrate a strong pricing power.

Factors Influencing Pricing Power

Several elements come into play when determining the extent of a company's pricing power:

1. **Market Structure**: The competitive landscape of the industry significantly impacts pricing decisions. Monopolies may have high pricing power due to lack of competition, whereas in a competitive market, companies might have to adhere to industry price standards.
2. **Company's Competitive Position**: The company's reputation, brand loyalty, product uniqueness, and standing in comparison to competitors can heavily influence its ability to set and change prices.

Challenges in Highly Competitive Markets

Highly competitive markets present unique challenges for companies trying to establish themselves and remain profitable. Here's a deeper dive into the intricacies of such markets:

- **Price Takers**, **Not Makers**: In saturated markets, companies often have limited flexibility in setting prices. They are typical "price takers," meaning they have to adjust

to the prevailing market price. For instance, in the smartphone market, if one brand offers similar features as a popular brand but at a much higher price, consumers might opt for the more affordable, well-known option.

- **Threat of Price Wars**: Companies might be tempted to undercut competitors by reducing prices. However, this can lead to "price wars," where everyone drops prices, often to the detriment of profit margins. A classic example is the airline industry, where frequent price wars can erode profitability.
- **Marginal Profits**: With prices often driven down to the marginal cost due to intense competition, there's little room for significant profits. Only those with a cost advantage, like companies that have achieved economies of scale, can hope for better returns.
- **Homogeneity Over Uniqueness**: With little to no product differentiation, products become almost indistinguishable from one another. Think of bottled water brands; many offer the same product, making it hard for consumers to distinguish based on the product alone.
- **Low Barriers to Entry**: The easier it is for new companies to enter the market, the tougher the competition. For instance, setting up an online retail store has become relatively easy, leading to a plethora of choices for consumers and fierce competition among sellers.
- **High Substitutability**: With numerous alternatives available, brand loyalty can be hard to achieve. For instance, if one brand of toothpaste is unavailable, consumers might easily switch to another brand without much thought.
- **Commoditization**: Over time, as products become more standardized and innovation slows, markets can become commoditized. A product that was once unique becomes commonplace. An example is the television market, where flat-screen TVs, once a novelty, have become the standard.

Advantages in Less Competitive Markets

Companies operating in less saturated markets or those with unique offerings often enjoy distinct advantages that allow them to maintain and grow their profitability. Here's a detailed look at the benefits of operating in such environments:

- **Pricing Power**: With limited competition, these firms can set their prices without much concern for undercutting or price wars. For instance, a unique software solution that addresses a specific industry pain point can demand premium pricing due to its distinctiveness.
- **Product Differentiation**: In less competitive markets, the products or services often stand out. They're not just another option among many; they're THE option. Apple, for instance, has carved a niche for itself with its ecosystem, making its products distinct from other tech offerings.
- **Barriers to Entry**: Certain markets are hard to penetrate due to high startup costs, stringent regulations, or the need for specialized knowledge. Pharmaceutical companies with patented drugs enjoy a period of market exclusivity where they face no competition.
- **Switching Costs**: In industries where changing a provider involves significant cost, time, or effort, existing companies enjoy customer loyalty. For example, businesses using a specific CRM system might find it expensive and time-consuming to migrate data to a new system.
- **Brand Loyalty**: When customers are deeply loyal to a brand, they're less price-sensitive and more forgiving of occasional missteps. Luxury brands like Louis Vuitton or Chanel command loyalty and can charge premium prices due to the perceived value and status they offer.
- **Value and Cost-based Pricing**: Companies with pricing power can strategically set prices based on the perceived value to the customer or based on costs, ensuring healthy profit margins. A unique artisanal café can charge more for its handcrafted brews compared to regular coffee shops.
- **Diversified Offerings**: Beyond the core product, companies in less competitive

markets can offer auxiliary services or products, enhancing the overall customer experience. A software company might offer dedicated customer support, training, or customization, adding layers of value to the primary product.

While highly competitive markets require firms to be razor-sharp in their strategies and operations, less competitive markets offer breathing room and avenues for sustained profitability. However, it's worth noting that such advantages don't grant companies a free pass–they still need to innovate, deliver value, and maintain their unique position to continue enjoying these benefits.

Analyzing Pricing Power

For analysts, gauging a company's pricing power isn't solely about tracking its price tags. It's also about comparing these prices with operational costs, leading to insights on **profit margins**. If a company can't raise its prices in the face of rising costs, it may indicate weak pricing power.

Example: Consider an artisanal bakery using high-quality ingredients. If ingredient costs rise and the bakery can't increase prices due to fierce competition from commercial bakeries, it suggests limited pricing power.

Question

Which of the following *most likely* describes pricing power as a revenue driver? A company's ability to:

A. Raise prices without losing customers.
B. Lower prices without losing customers.
C. Maintain prices without losing customers.

The correct answer is **A**.

Pricing power refers to a company's ability to raise prices without losing customers. This is a significant revenue driver as it directly impacts a company's profitability. Companies with strong pricing power can increase their prices over time, thereby increasing their revenues and profits, without experiencing a significant drop in demand for their products or services.

This is often a sign of a strong brand, high-quality products, or a lack of competition. Pricing power is a key indicator of a company's competitive advantage and its ability to generate sustainable profits over the long term. It is a crucial factor for investors to consider when evaluating a company's investment potential.

B is incorrect. A company's ability to lower prices without losing customers does not refer to pricing power. While being able to lower prices can be a competitive advantage in certain situations, it does not necessarily translate into higher revenues or profits. In fact, it could lead to lower profit margins if not managed properly.

C is incorrect. A company's ability to maintain prices without losing customers is not the definition of pricing power. While maintaining prices can be important, especially in a competitive market or during periods of inflation, it does not provide the same potential for increasing revenues and profits as the ability to raise prices.

LOS 5d: evaluate a company’s operating profitability and working capital using key measures

Operating profitability and working capital are two key measures used to evaluate a company's financial health. Operating profitability measures how much profit a company makes on a dollar of sales after paying for variable production costs but before paying interest or tax. Working capital, on the other hand, is a measure of both a company's operational efficiency and its short-term financial health. It is calculated as current assets minus current liabilities.

Operating Costs

Operating costs are expenses associated with the day-to-day operations of a business. For example, in a manufacturing company, these costs might include raw materials, direct labor costs, and overheads such as rent and utilities. Operating costs also include the management of business activities and compliance with laws and regulations. For instance, a pharmaceutical company would have to bear costs related to regulatory compliance and quality control.

Operating costs account for the majority of costs for most companies and are primarily determined by the company's business model and size. For instance, a software development company would have high research and development costs, while a retail company would have high inventory costs.

Recall that financing costs include payments to debt and equity investors as a return on their investment. For example, a company that has issued bonds would have to bear interest costs, which are a type of financing cost. On the other hand, Financing costs include payments to debt and equity investors as a return on their investment. For example, a company that has issued bonds would have to bear interest costs, which are a type of financing cost.

Classification of Operating Costs

Operating costs can be categorized into three groups: by their behavior with output, their nature, or their function. Consider the following table:

Categories	Description	Types
Behavior with Output	Costs change with production or service levels (short term)	Variable and Fixed costs, short-term fluctuation regardless of volume
Nature (Type of costs)	Specific expenditure category or nature	Raw goods and Office essentials
Function (Purpose of Cost)	Primary expense reason or objective	Employee salaries, Product manufacturing, Promotional activities, Administrative tasks, Innovation, improvement

Fixed and Variable Costs

Operating costs are essential components of a company's financials, influencing profitability. To analyze a firm's potential profitability and cost structure, these costs can be divided into fixed and variable components.

1. Fixed Costs (FC)

Fixed costs remain unchanged over a specific period or range of production levels. Even if a company produces more or fewer units, these costs stay constant.

- **Examples**:
    - *Salaries:* Monthly salaries paid to employees are fixed costs. Whether the company produces 100 or 1,000 units, these salaries remain the same.
    - *Depreciation:* The depreciation of machinery or equipment doesn't change with the number of units produced.
    - *Rent:* Rent for a factory or office space remains constant, regardless of production levels.

2. Variable Costs (VC)

Variable costs change with the level of production or services provided. When production

increases, variable costs go up, and vice versa.

- **Examples**:
    - *Materials:* The more units produced, the more materials are required, increasing the cost.
    - *Direct Labor:* In some industries, labor costs may increase with more units produced, especially if overtime or additional shifts are needed.
    - *Utilities:* Operating machinery for longer periods might increase electricity costs.

Operating Profit Calculation

The relationship between fixed and variable costs, the number of units sold, and the sale price determines the operating profit of a company. Here's how it's calculated:

$$\text{Operating Profit} = [Q \times (P - VC)] - FC$$

Where:

Q = Units of outputs sold in a period.

P = Price per unit of output.

VC = Variable operating costs expressed per unit of output.

FC = Fixed operating costs, which do not change within a given range of output in the short run.

Example: Calculating Operating Profit

Let's consider a company, 'ToyBox Inc.,' that manufactures toys:

- Fixed Costs (FC) = $10,000 monthly (includes salaries, rent, and depreciation)
- Variable Costs (VC) = $5 per toy (includes materials and direct labor)

- Each toy is sold for a price (P) = $20

If ToyBox Inc. sells 1,000 toys (Q) in a month, the operating profit can be calculated as:

$$\text{Operating Profit} = [1,000 \times (\$20 - \$5)] - \$10,000 = \$5,000$$

This means that after covering all fixed and variable costs, ToyBox Inc. has made a profit of $5,000.

Operating Leverage

The amount of fixed costs in the operating cost structure of a company is referred to as **operating leverage**. The **contribution margin** is the difference between the price of a unit and the variable costs. It is calculated as *(P- VC).*

Operating leverage presents both benefits and risks. If operating costs are largely fixed, and the contribution margin is positive, operating profit can increase rapidly with increases in Q. However, if Q declines, since fixed costs do not change, operating profit will fall.

Degree of Operating Leverage (DOL)

Operating leverage can be measured and compared across firms using the degree of operating leverage (DOL). A firm can increase its DOL by increasing the fixed costs and decreasing the variable costs in its cost base.

Degree of Operating Leverage can be calculated as

$$\text{DOL} = \frac{\%\Delta\text{Operating Profit}}{\%\Delta\text{Sales}}$$

Where:

- % Operating Profit = Percentage change in operating profit.
- % Sales = Percentage change in sales.

Example: Calculating the Degree of Operating Leverage (DOL)

Based on the data below, the degree of operating leverage for TechPulse Inc. for the year ended 31 December 20Y2 is closest to:

Description	31 December 20X2 (in millions of EUR)	31 December 20X1 (in millions of EUR)
Revenue	15,000	14,000
Costs of goods sold	7,500	7,000
Selling, general, and administrative expenses	2,000	1,900
Research and development expenses	1,800	1,700
Other operating expenses	500	480
Interest expense	350	330
Other (income) expense	50	(80)
Income before income taxes	2,900	2,670
Provision for income taxes	580	534
Net income	2,320	2,136

Solution:

Given the financial data for TechPulse Inc., we can calculate the percentage change in Sales and the percentage change in Operating Profit to determine the Degree of Operating Leverage (DOL).

Step 1: **Calculating the Percentage Change in Sales**

$$\%\Delta\text{Sales} = \frac{\text{Sales}_{20X2} - \text{Sales}_{20X1}}{\text{Sales}_{20X1}} \times 100$$

Using the provided data:

$$\%\Delta\text{Sales} = \frac{15,000 - 14,000}{14,000} \times 100 = 7.14\%$$

Step 2: **Calculating the Percentage Change in Operating Profit**

$$\%\Delta\text{Operating Profit} = \frac{\text{Operating Profit}_{20X2} - \text{Operating Profit}_{20X1}}{\text{Operating Profit}_{20X1}} \times 100$$

Using the provided data:

$$\text{Operating Profit}_{20X1} = 14,000 - 7,000 - 1,900 - 1,700 - 480 = 2,920$$

$$\text{Operating Profit}_{20X2} = 15,000 - 7,500 - 2,000 - 1,800 - 500 = 3,200$$

$$\%\Delta\text{Operating Profit} = \frac{3,200 - 2,920}{2,920} \times 100 = 9.59\%$$

Step 3: **Calculating the DOL**

$$\text{DOL} = \frac{\%\Delta\text{Operating Profit}}{\%\Delta\text{Sales}} = \frac{9.59}{7.14} = 1.34$$

The Degree of Operating Leverage (DOL) for TechPulse Inc. for the year is 1.34. This indicates that for every 1% increase in sales, the operating profit would increase by 1.34%.

Natural and Functional Operating Cost Classifications

Instead of classifying operating costs as fixed and variable, both the International Financial Reporting Standards (IFRS) and the US Generally Accepted Accounting Principles (GAAP) allow companies to present operating costs in two main ways: Natural cost classification and Functional cost classification. Each presentation method is influenced by accounting standards and the specifics of a company's industry and history.

Natural Cost Classification

The natural cost classification method classifies costs based on their nature. For instance, salaries, rent, utilities, and raw materials. In a company's income statement with natural classification, expenses are listed as they are, without grouping them under broader functional categories.

Functional Cost Classification

In Functional cost classification, costs are grouped based on the function they serve in the business. Common functions include Cost of Sales (or Cost of Goods Sold), Selling Expenses, General and Administrative Expenses, and Research and Development Expenses.

For example, salaries might be divided between "Selling Expenses" (for sales staff) and "General and Administrative Expenses" (for office staff). This provides a clearer picture of how much is being spent on each business function.

If a company uses the functional classification method, its income statement will have a standardized structure. This makes it easier for stakeholders to compare financials across companies in the same industry.

The way a company classifies its costs gives stakeholders insights into its operations and spending patterns. Whether you're looking at costs by their nature or by the function they serve, understanding these classifications helps in analyzing a company's financial performance.

Measures of Operating Profitability

The functional classification of operating costs allows analysts to calculate and distinguish crucial operating profitability measures used in analysis and forecasting. Operating profitability provides insights into a company's core business performance without considering external factors like interest, taxes, or other non-operational costs.

Key measures of operating profitability include:

Gross Profit:

Gross profit is the difference between revenues and the direct costs associated with producing goods or services (Cost of Sales or Cost of Goods Sold). That is:

$$\text{Gross Profit} = \text{Revenue} - \text{Cost of Sales}$$

Gross profit provides an initial insight into a company's production efficiency and pricing strategy.

Gross Margin:

Most of the cost of sales tends to be variable, implying that gross margin can serve as an approximate measure of the contribution margin. Gross margin is calculated using the gross profit as:

$$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Revenue}}$$

EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization):

EBITDA measure provides a view of profitability from core operational activities by excluding interest, taxes, and the non-cash expenses of depreciation and amortization. It is calculated as:

$$\text{EBITDA} = \text{Revenue - (Cost of Sales+Operating Expenses)}$$

EBITDA is often used to compare profitability between companies and industries as it eliminates the effects of financing and accounting decisions.

EBITDA Margin:

EBITDA margin is calculated using the EBITDA as:

$$\text{EBITDA Margin} = \frac{\text{EBITDA}}{\text{Revenue}}$$

Operating Profit [EBIT (Earnings Before Interest and Taxes)]:

Also known as operating profit, EBIT further narrows down profitability by considering depreciation and amortization costs but still excluding interest and taxes. It is calculated as:

Operating Profit (EBIT) = Revenue - (Cost of Sales+Operating Expenses+ Depreciation and Amor

EBIT offers a snapshot of a company's operational profitability and its ability to cover its operating expenses.

EBIT or Operating Margin:

EBIT margin is calculated using EBIT as:

$$\text{EBIT margin} = \frac{\text{EBIT}}{\text{Revenue}}$$

Cost Drivers

The notes accompanying financial statements offer invaluable insights about the composition and nature of operating costs. Analysts and investors can dive into these notes to gain a deeper understanding of a company's cost structure and operational efficiency.

For most companies, the major driver of operating costs over the long run is output. This is because output growth often requires growth in assets, human capital, and purchased goods and services. Since output or revenue is a major cost driver, analysts often express operating costs as a percentage of revenue. Moreover, analysts consider industry profitability, economies of scale, and economies of scope.

Industry Profitability, Economies of Scale, and Economies of Scope

- The **profitability of an industry** is not just a function of the goods and services it produces. The internal competitive dynamics and the relative positioning of firms within that industry deeply influence it. Over the long term, the intensity of competition, barriers to entry, threats from substitutes, and bargaining power of both suppliers and customers collectively determine how lucrative an industry is.

  For example, The smartphone industry is dominated by a few key players like Apple and Samsung. These giants have established strong brand identities and have significant market shares. Their dominant position and the high costs associated with entering the smartphone market deter new entrants, keeping the industry profitability high for these established players.

- **Economies of scale** refer to a decline in costs per unit as output grows. This generally

results from having fixed costs in the cost structure that are spread over more units of output. A company with entirely variable costs can also exhibit some economies of scale over time if it increases its bargaining power over suppliers as it grows, driving down variable costs per unit.

- **Economies of scope** refer to a decline in costs per unit as the number of products or business lines increases. This generally results from shared costs between the product lines. Examples of economies of scope can be found in financial services, where there are customer, client service, compliance, technology, and back-office similarities (and thus cost efficiencies) across various lines of business.

For example, A bank offers both credit card services and home loans. While these are distinct services, they might share customer service platforms, IT infrastructure, or even regulatory compliance systems. By leveraging these shared resources, the bank reduces the per-unit cost for each service, showcasing economies of scope.

It's important to note that claims of economies of scale or scope should be corroborated empirically.

Working Capital and Working Capital Management

Recall that working capital is calculated as:

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Where:

- Current Assets are assets that are expected to be used, consumed, or converted into cash within one year or within the normal operating cycle of a business, whichever is longer.
- Current Liabilities are the company's debts or obligations that are expected to be settled within one year or within the firm's normal operating cycle, whichever is longer.

Working capital management is a key measure of a company's financial health. It involves managing the company's current assets and current liabilities to ensure it has enough to meet its short-term obligations and operating expenses.

The primary measures of a company's working capital management are activity ratios that determine the cash conversion cycles and net working capital to sales ratios.

Cash Conversion Cycle

The cash conversion cycle is a key measure of a company's working capital management. It determines how quickly a company can convert its investments in inventory and other short-term assets into cash. It is calculated as:

$$\text{Cash Conversion Cycle} = \text{DOH} + \text{DSO} - \text{DPO}$$

.

Where:

DOH = Days of inventory on hand.

DSO = Days sales outstanding.

DPO = Days payable outstanding.

A short cash conversion cycle means that the company requires less external financing to fund operations. This is beneficial as it reduces the company's reliance on external financing and can improve its profitability.

Net Working Capital to Sales Ratio

The net working capital to sales ratio determines the level of investment, in addition to capital investments, that cannot be distributed to investors. This ratio is important as it provides an indication of the company's ability to generate sales from its working capital. A high ratio may indicate that the company is not efficiently using its working capital to generate sales.

The Net Working Capital to Sales Ratio is calculated as:

$$\text{Net Working Capital to Sales Ratio} = \frac{\text{Net Working Capital}}{\text{Sales}}$$

Where:

$$\begin{aligned}\text{Net Working Capital} = &(\text{Current assets, excluding cash and marketable securities}) - \\ &(\text{Current liabilities, excluding short-term and current debt})\end{aligned}$$

Negative net working capital means that the company's current liabilities exceed its current assets. This implies that suppliers are a source of financing for the company. While this can provide short-term financing, it may not be sustainable in the long term and could indicate financial distress.

Question #1

Which of the following *most likely* indicates a negative net working capital?

A. Suppliers are a source of financing for the company.
B. The company is efficiently using its working capital to generate sales.
C. The company requires less external financing to fund operations.

The correct answer is **A**.

Negative net working capital implies that a company's current liabilities exceed its current assets. This situation indicates that suppliers are a source of financing for the company. When a company has negative net working capital, it means that it is financing its operations largely through trade credit, i.e., by delaying payments to its suppliers. This can be a sign of financial distress, as it suggests that the company is not generating enough cash from its operations to meet its short-term obligations.

In certain industries, like retail, having negative net working capital might indicate effective inventory management. It means companies can sell their goods rapidly, generating revenue before they owe their suppliers. So, while negative net working capital could seem concerning, it doesn't always mean a company is in bad financial shape.

B is incorrect. Negative net working capital does not necessarily indicate that the company is efficiently using its working capital to generate sales. While it is true that a company with negative net working capital may be able to quickly turn over its inventory, this is not always the case. In fact, negative net working capital can also be a sign of financial distress, as it suggests that the company is not generating enough cash from its operations to meet its short-term obligations.

C is incorrect. Negative net working capital does not imply that the company requires less external financing to fund operations. On the contrary, it suggests that the company is relying heavily on external financing, specifically trade credit, to fund

its operations. This can be a sign of financial distress, as it suggests that the company is not generating enough cash from its operations to meet its short-term obligations.

Question #2

Industry profitability is largely dictated by market structure and a company's competitive positioning. What *most likely* determines industry profitability in the long run?

A. Competitive forces within the industry.
B. The company's operating costs.
C. The company's financing costs.

The correct answer is **A**.

Long-term industry profitability hinges on the competitive forces at play. This idea originates from Michael Porter's Five Forces Framework, which states that the competitive landscape within an industry impacts the profitability of all its companies. These five forces consist of new entrant threats, buyer negotiation power, supplier negotiation power, threats from substitute products or services, and the level of competitive rivalry.

These forces shape the pricing power, costs, and investment required in an industry, thereby influencing the industry's overall profitability. A highly competitive industry, for example, may have low profitability due to high competition, low barriers to entry, and high bargaining power of buyers and suppliers. Conversely, an industry with few competitors and high barriers to entry may have high profitability.

B is incorrect. While a company's operating costs can affect its individual profitability, they do not determine industry profitability in the long run. Operating costs can vary widely between companies within the same industry due to differences in efficiency, scale, technology, and other factors. Therefore, while controlling operating costs is crucial for a company's profitability, it does not dictate the profitability of the industry as a whole.

C is incorrect. Similar to operating costs, a company's financing costs can impact its individual profitability but do not determine industry profitability in the long run. Financing costs are related to the way a company finances its operations and investments and can vary significantly between companies based on their capital structure, creditworthiness, and interest rates. Therefore, while financing costs can affect a company's bottom line, they do not dictate the profitability of the entire industry.

LOS 5e: evaluate a company’s capital investments and capital structure

Sources and Uses of Capital

Companies invest capital that they acquire from debt and equity investors. Their primary goal is to earn returns that exceed the investors' required rates of return. A significant part of company analysis involves assessing whether these required rates of return have been met or exceeded, thereby creating economic value for investors over time.

The company analysis also includes evaluating the risks and opportunities associated with the company's capital structure, such as the use of financial leverage. The table provided below provides a snapshot of how businesses manage their financial resources, ensuring they have enough funds to operate smoothly while also making strategic investments for the future.

Sources of Capital (Where it comes from)	Uses of Capital (Where it's spent)
Operational profits including savings from working capital	- Reserving cash and making investments
Raising funds through issuing debt	- Allocating to working capital needs
Raising funds through issuing equity	- Investing in physical and intangible assets
Selling off assets	- Buying other businesses or assets (acquisitions) - Reducing outstanding debt - Distributing profits as dividends or buying back shares

Evaluation of Capital Investments

Assessing the efficiency of management in utilizing investor capital can be achieved by comparing long-term returns on invested capital to the required rates of return. Independent investment analysts, who lack the same information as management, utilize aggregated measures to gauge if there have been changes in value creation, whether positive or negative.

For example, if a company has consistently shown a high return on invested capital, it indicates effective management of investor's capital.

Understanding and Assessing Risks Related to Capital Structure

Risks associated with the capital structure can be measured using leverage and coverage ratios, credit ratings by third-party rating agencies, and the degree of financial leverage.

The **degree of financial leverage**, which is the sensitivity of net income to changes in operating income, increases with higher interest expenses that are fixed with respect to operating income. It is similar to the degree of operating leverage but is determined by financing costs rather than fixed operating costs. For example, a company with a high degree of financial leverage may see a significant change in net income with a small change in operating income.

The Degree of Financial Leverage (DFL) is calculated as:

$$\text{DFL} = \frac{\%\Delta\text{Net income}}{\%\Delta\text{Operating income}}$$

Where:

DFL = Degree of Financial Leverage.

%Net income = Percentage change in net income.

%Operating income = Percentage change in operating income.

Financial Leverage and Levered Returns

Unlevered returns, represented by Return on Invested Capital (ROIC) and return on assets (ROA), are enhanced by financial leverage to yield levered returns or return on equity (ROE).

Both Return on Invested Capital (ROIC) and Return on Equity (ROE) are fundamental metrics that provide insights into a company's efficiency in generating returns. ROIC focuses on returns generated from the capital invested in the business, while ROE emphasizes returns to equity shareholders. Financial leverage can amplify the difference between these two metrics.

Let's use an example of a company, TechFirm Inc., to illustrate this:

1. **Starting Point**: TechFirm Inc. has an initial investment (equity) of $100,000 and generates a profit of $10,000. Therefore, its ROE is 10% (10,000 / 100,000).
2. **Introducing Debt**: Now, imagine TechFirm Inc. borrows $100,000 at an interest rate of 5%. With this, it now has a total capital (equity + debt) of $200,000. Let's assume that by effectively using this borrowed amount, it manages to double its profit to $20,000. After paying off the interest of $5,000 (5% of $100,000), it's left with a profit of $15,000.
3. **Calculating ROIC**: ROIC would consider the returns generated by the entire capital. So, ROIC = $15,000 / $200,000 = 7.5%.
4. **Calculating ROE**: ROE focuses only on equity shareholders. Given that equity remains $100,000 and profit (after interest) is $15,000, ROE becomes 15% (15,000 / 100,000).

From this example, we see how TechFirm Inc., by using financial leverage (debt), increased its ROE from 10% to 15%, even though its ROIC went down from 10% to 7.5%. This amplification in returns due to leverage is precisely why companies like Google with high ROE are seen as highly profitable.

However, it's essential to be cautious. While leverage can enhance returns, it also introduces additional risks. If TechFirm Inc. had not been able to utilize the borrowed funds effectively, it could have ended up with reduced profitability or even losses.

This example provides a clearer picture of how financial leverage can influence a company's returns and the difference between ROIC and ROE.

Question

What is *most likely* the main benefit of using financial leverage?

A. Stabilizes the fluctuations in ROE.
B. Increases the available capital for new investments.
C. Enhances unlevered return to produce levered returns.

The correct answer is **C**.

The primary benefit of employing financial leverage is its potential to amplify unlevered returns, thereby generating higher levered returns. By leveraging, companies employ borrowed capital for investment and earn a return on it, which is hoped to exceed the interest expense. Financial leverage is the use of various financial instruments or borrowed capital to amplify the potential return of an investment.

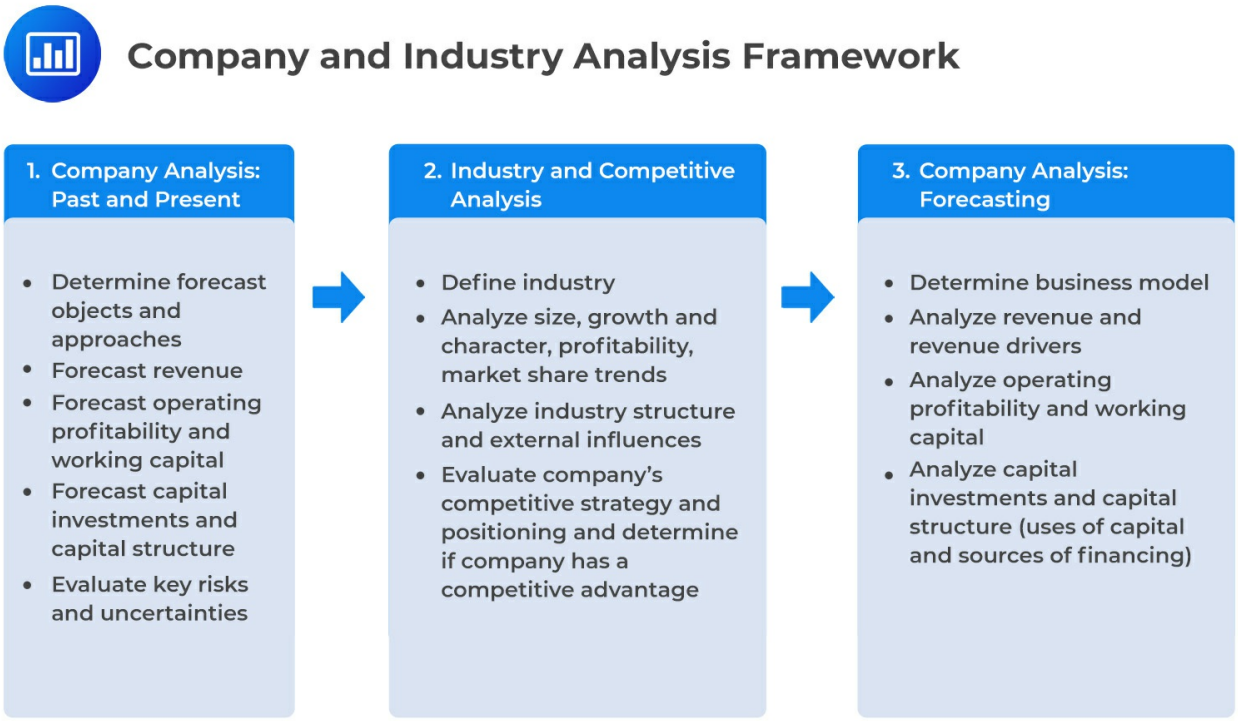
A is incorrect. Financial leverage does not stabilize fluctuations in return on equity; in fact, it can increase the volatility of returns on equity because it adds fixed financing costs (interest expenses) that must be paid regardless of the company's earnings performance. Hence, it can make returns on equity more volatile rather than stabilizing them.

B is incorrect. While financial leverage does indeed make more capital available for investment by allowing businesses to invest borrowed funds, this is a characteristic of leveraging and not the main benefit. The main benefit is the enhancement of returns on equity, provided the investments funded with borrowed funds generate returns above the cost of borrowing.

Learning Module 6: Industry and Competitive Analysis

LOS 6a: describe the purposes of, and steps involved in, industry and competitive analysis

Recall that industry and competitive analysis is the second step in the company and industry analysis framework:



Decoding Industry Dynamics and Profitability

Industries are ecosystems of interrelated businesses, often sharing fundamental operational characteristics. Companies within an industry usually possess parallel business models and face analogous market challenges. They not only vie for market share in product sectors but also in sourcing raw materials, talent, and other essential factors. This shared competitive environment exposes them to common demand trends, supply chain complexities, and overarching risks.

Porter's Five Forces model is a fundamental framework for grasping industry dynamics. It asserts that variations in profitability among industries stem from structural elements like the

power of suppliers, the risk of new competitors entering the market, competitive intensity, the influence of buyers, and the potential for substitute products or services. While the broader industry context establishes a basic profitability course, factors specific to individual companies, such as innovative strategies, operational intricacies, company size, and management effectiveness, can lead to deviations from the industry average.

The Balancing Act: Industry Versus Company-specific Effects

The tug-of-war between industry and company-specific factors in shaping profitability has been the subject of extensive research. A seminal study by McGahan and Porter in 1997 highlighted this dynamic interplay. Their findings suggest that while the overarching industry environment is crucial in determining the sustainability of economic profits, the company-specific factors often wield a more potent influence, especially for companies that don't rank at the top of their industry. Essentially, while industry dynamics can act as a cap on profitability, they don't necessarily guarantee a minimum profitability threshold.

Competition as the Great Equalizer

In any industry, competition serves as a constant force, striving to push companies toward an industry's average profitability. The more intense the competition, the stronger this push. For analysts, understanding this dynamic is crucial. It allows them to gauge the industry's median profitability rate, anticipate possible structural shifts in the market, and determine where a specific company stands in relation to this established baseline. However, it's paramount to recognize the fluid nature of these dynamics. While the majority of businesses may hover around the industry average, outliers like disruptors or laggards can significantly deviate due to their strategies and market execution.

Importance of Analyzing an Industry

1. Improve Forecasts

A comprehensive understanding of an industry necessitates a deep dive into the various competitive forces at play. This includes not only direct industry competitors but also potential

threats from alternative products, the influence and bargaining power of suppliers, and the ever-evolving demands and preferences of consumers. By adopting a bird's-eye view of the industry, analysts can demystify these dynamics. This typically involves meticulously documenting past competitive strategies, their implementation, subsequent market reactions, and the long-term outcomes of these strategic decisions.

An interesting revelation by Guan, Wong, and Zhang in 2014 showcased the nuanced layers of industry analysis. Their study found that analysts who broadened their horizons to include both companies and their suppliers in their evaluations showcased a markedly improved accuracy in predicting earnings.

2. Identify Investment Opportunities

Going beyond the obvious, conducting a thorough industry analysis can unveil hidden investment opportunities. Sometimes, an analyst may stumble upon a hidden gem – a company that industry giants previously overshadowed but, under closer scrutiny, demonstrates substantial strengths compared to its competitors. Additionally, for investors interested in the broader industry outlook rather than any particular company, the appeal might lie in the industry's overall growth prospects. These investors, seeking diversification, could opt for a 'basket approach,' spreading their investments across a range of companies in the industry. They can adjust their stakes based on factors like company size, market liquidity, or perceived future potential.

Industry and Competitive Analysis Steps

Industry and competitive analysis are vital tools for businesses and investors, offering a deeper understanding of a company's position within its industry and the competitive landscape. This analysis is generally approached in a structured manner, breaking down into specific steps to ensure a holistic understanding. Here are the key steps involved:

- **Define Industry**: Utilize third-party classification systems. Exercise judgment considering similar products, substitutes, multidivisional entities, and geographic locations.
- **Industry Survey**: Measure the industry's size, growth rate, character, profitability, and market share trends.
- **Industry Structure**: Conduct Porter's Five Forces analysis. Identify the most crucial elements and determine what needs continuous monitoring.
- **External Influences (PESTLE Analysis)**: Examine the Political, Economic, Social, Technological, Legal, and Environmental (PESTLE) influences on the industry.
- **Competitive Analysis**: Evaluate the company's competitive strategy within the industry context. Determine the competitive edge.

Question

Which of the following is most likely a primary implication of industry participants having parallel business models and competing in the same or similar product markets?

A. It results in identical profitability for all industry participants.
B. It ensures that all industry participants have the same competitive strategy.
C. It leads to the same demand and supply opportunities and risk factors for all industry participants.

The correct answer is **C**.

The key takeaway from the resemblance among industry players is that it results in identical demand and supply scenarios, along with shared risk factors for all participants in that industry. Typically, companies within an industry operate under comparable business models and vie for market share in the same or closely related product markets. Consequently, they encounter comparable structural elements that are prevalent in the industry, including the extent of competition, the negotiating strength of suppliers and customers, the possibility of new entrants into the market, and the potential for substitute products to emerge. These factors wield substantial influence over the opportunities and risks involving the demand and supply dynamics for all companies within that industry.

For example, if an industry is characterized by high competition, all companies in the industry may face pressure on prices and margins. Similarly, if an industry is dependent on a few large suppliers, all companies in the industry may face the risk of supply disruptions or price increases. Therefore, understanding the industry structure is crucial for assessing the opportunities and risks faced by companies in the industry.

A is incorrect. While industry participants may have similar business models and face similar industry structural factors, it does not necessarily result in identical

profitability for all industry participants. Companies can differentiate themselves through various strategies, such as cost leadership, differentiation, or focus, which can lead to different levels of profitability. Furthermore, the profitability of a company also depends on its operational efficiency, financial management, and other company-specific factors.

C is incorrect. The similarity among industry participants does not ensure that all industry participants have the same competitive strategy. Even within the same industry, companies can adopt different competitive strategies based on their unique capabilities, resources, and market positioning. For example, some companies may choose to compete on price, while others may choose to compete on quality, innovation, or customer service. Therefore, the competitive strategy of a company is not solely determined by the industry structure but also by the company's own strategic choices.

LOS 6b: describe industry classification methods and compare methods by which companies can be grouped

An industry is generally defined as a collection of companies that offer similar products or services as perceived from a customer's perspective. For instance, Apple, Samsung, and Huawei can be grouped as they offer smartphones and related services. However, defining an industry can be complex due to several factors:

- Deciding whether to include substitute products or services. For example, should electric and traditional gasoline cars be classified in the same industry?
- Classifying companies that operate in more than one industry. For instance, Amazon operates in e-commerce, cloud computing, and entertainment sectors.
- Geographical considerations such as whether to classify companies based on their location or the markets they serve. For example, should a US-based company that primarily serves the European market be classified as a US company?
- Updating classifications as business models evolve over time. For instance, how should a traditional retail company transitioning to e-commerce be classified?

To help analysts navigate these challenges, third-party organizations maintain industry classification schemes. These schemes, such as the Global Industry Classification Standard (GICS), are widely used in investment management to categorize companies and facilitate industry analysis.

Early Classification Schemes (Legacy Schemes)

In the past, government agencies created early industry classification systems, like SIC (Standard Industrial Classification), NACE (Statistical Classification of Economic Activities in the European Community), and ISIC (International Standard Industrial Classification). These classification systems were tailored to individual countries and their specific needs.

These schemes grouped companies based on their production characteristics into industries such as agriculture, manufacturing, distribution, retail, and services. Moreover, these schemes were

not updated frequently and became less useful with the emergence of new technologies and business models.

Modern Commercial Classification Schemes

Modern industry classification schemes such as the Global Industry Classification Standard (GICS), Industry Classification Benchmark (ICB), and The Refinitiv Business Classification (TRBC) are global and updated at least annually.

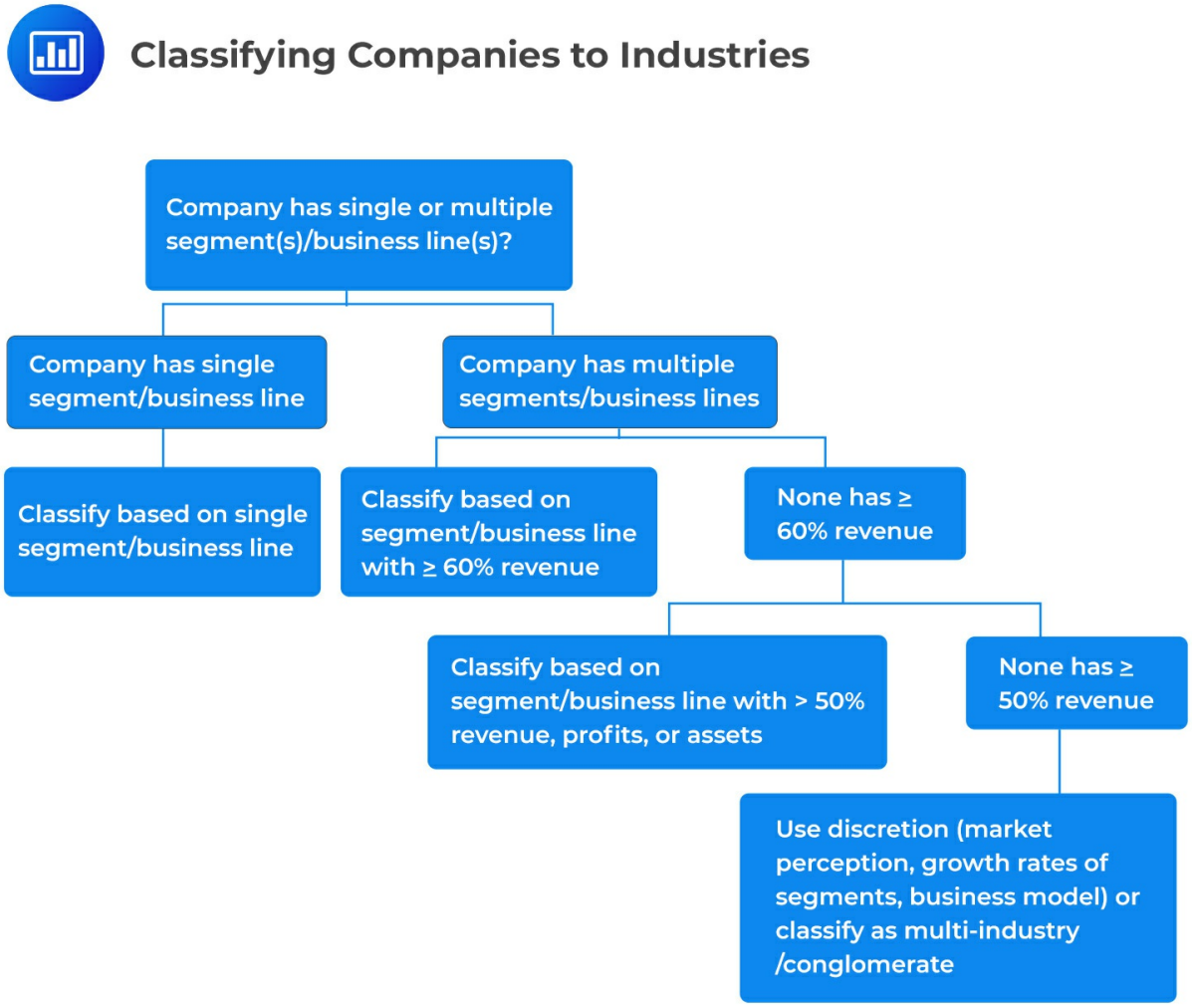
Unlike legacy schemes, which use a "supply" approach, these schemes group companies based on the similarity of the products or services they sell, a "demand" approach. For example, Netflix and Disney+ would be grouped as they offer streaming services.

GICS and ICB cover public companies, while TRBC covers private companies, non-profits, and government entities. Data aggregators (such as Bloomberg and FactSet) and stock exchange operators use these industry classification schemes or have their own substantially similar ones.

GICS, ICB, and TRBC are hierarchical taxonomies similar to the taxonomy used in biology. In other words, a company is placed in a single group in the lowest tier, where groups make up the higher tiers.

GICS, ICB, and TRBC each have distinct guidelines for classifying companies that operate across multiple industries, and all employ a certain degree of discretion. However, the process is similar, with the objective of classifying a company into a single grouping that describes most of its business.

The process is as follows:



GICS, ICB, and TRBC Structures

Global Industry Classification Standard (GICS)

GICS classification was jointly developed by Morgan Stanley Capital International (MSCI) and S&P Dow Jones Indices. These two financial institutions worked together to create this system.

1. Energy.
2. Financials.

3. Materials.
4. Information Technology.
5. Industrials.
6. Communication Services.
7. Consumer Discretionary.
8. Utilities.
9. Consumer Staples.
10. Real Estate.
11. Health care.

Industry Classification Benchmark (ICB)

ICB was developed by FTSE Russel. It consists of 11 industries, 20 supersectors, 45 sectors, and 173 sub-sectors. The ICB industries include:

1. Energy.
2. Financials.
3. Basic Materials.
4. Information Technology.
5. Industrials.
6. Telecommunications.
7. Consumer Discretionary.
8. Utilities.
9. Consumer Staples.
10. Real Estate.
11. Health care.

Refinitiv Business Classification (TRBC)

TRBC was developed by Refinitiv. It consists of 14 economic sectors, 33 business sectors, 154 industries, and 898 sub-sectors. The TRBC economic sectors include:

1. Energy.

2. Financials.
3. Basic Materials.
4. Technology.
5. Industrials.
6. Communication Services.
7. Consumer Cyclicals.
8. Utilities.
9. Consumer Non-Cyclicals.
10. Real Estate.
11. Healthcare.
12. Institutions, Associations, and Organizations.
13. Government Activity.
14. Academic and Educational Services.

Understanding the Limitations of Industry Classification Schemes

Third-party industry classification schemes are instrumental in conducting in-depth analyses in various domains, such as developing indexes and evaluating investment performances. However, analysts often face a myriad of challenges when leveraging these schemes for detailed industry research. In this document, we delve deeper into these obstacles and discuss their potential impact on industry analysis:

Classification Challenges

1. Classifying Companies with Business Model Variations or that Sell Substitute Products

Analysts frequently encounter challenges with third-party classification schemes that tend to categorize companies either in overly broad or excessively narrow groups, driven by their perception of product similarities and business models. For instance, if an analyst wants to delve into the intricacies of e-commerce platforms, they might consider the "technology" sector too inclusive. This sector combines companies like Shopify, which specializes in offering commerce

platforms, and Check Point Software, which focuses on cybersecurity solutions. These two companies have distinct focuses and don't directly compete in the same market.

2. Grouping of Multi-product Companies

Since GICS, ICB, and TRBC are strict taxonomies, classification schemes tend to confine multi-product companies to a single category, which can complicate competitor analysis. A case in point is the cloud infrastructure sector, where an analyst might miss the competitive landscape between Microsoft's Azure and Amazon's AWS. Despite being formidable competitors in the cloud segment, their parent companies belong to different sectors, potentially leading to an oversight in competitive analysis.

3. Geographic Limitations in Classifications

The global scope of these classification schemes sometimes does not cater well to companies that have a significant presence on national or local scales. This issue arises mainly due to unique consumer behaviors or regulatory restrictions in different regions. For example, a healthcare provider operating predominantly in the UAE might find little merit in being compared with a global healthcare chain, given the stark differences in regulatory environments and consumer preferences in different regions.

4. Changes in Classifications over Time that affect Prior Period Comparability of Industry Statistics

Classification scheme providers may amend classifications over time, significantly impacting industry statistics. A prominent instance of this is the advent of the Real Estate sector, which primarily consists of Real Estate Investment Trusts. This shift caused a reclassification of companies from the Financial sector, considerably modifying the dynamics and performance indicators of both sectors.

Events in the market, like initial public offerings (IPOs) and de-listings due to acquisitions or bankruptcies, can alter the makeup of classification schemes. This can introduce survivorship bias when analyzing historical data. For example, if a company that consistently underperforms is removed from an index, it could artificially inflate the historical performance of that sector. This can lead to a distorted view of the industry's performance over time.

To ensure reliable and accurate analysis, analysts should focus on updating historical data to align with the latest classifications. Moreover, efforts should be directed toward creating datasets that are free from survivorship bias. This practice helps prevent the derivation of misleading conclusions based on outdated or distorted data, thereby fostering a more realistic and insightful analysis.

Alternative Methods of Grouping Companies

Grouping companies is not limited to industry or product approach. Other methods are used in contexts such as index construction and investment performance evaluation. These include:

- **Geography:**

Companies are classified by country, and then countries are aggregated into categories such as developed, emerging, and frontier markets. For example, a company might be classified as a US company if it is incorporated in the US, even if it primarily serves the Chinese market.

The classification of developed, emerging, and frontier markets is more controversial, and third parties like index providers use greater discretion. It is not a quantitative determination but considers variables such as the size and liquidity of equity securities markets in the country, income per capita, and legal restrictions on foreign investment.

- **Sensitivity to the Business Cycle:**

Companies are categorized as either "defensive" or "cyclical." Defensive companies are those whose sales growth, profitability, and valuations are less influenced by changes in broad macroeconomic factors like GDP growth. In contrast, cyclicals are more sensitive to these changes. For instance, a utility company is considered defensive because people need electricity regardless of the economy, whereas a luxury goods company is seen as cyclical. After all, its sales might decline during a recession.

This categorization is achieved by grouping entire sectors from industry classification schemes. It's possible to combine this approach with other methods, such as a geographic focus or credit

ratings, to further refine exposure to specific risk factors.

- **Statistical Similarities:**

Companies are grouped based on similarities of financial ratios and market data or co-movements of their securities' investment returns. This approach includes grouping by size according to market capitalization or other characteristics such as valuation ratios, growth rates of sales or earnings, profitability ratios, and statistics based on price performance such as volatility and momentum. For example, small-cap growth companies might be grouped together based on their similar size and growth characteristics.

- **ESG Characteristics:**

Companies are grouped based on ESG (Environmental, Social, and Governance) characteristics, such as the ratio of carbon emissions to revenues, board and executive personnel diversity measures, and exposure to certain businesses such as tobacco and gambling. These metrics can be aggregated into composite ESG ratings or scores that enable cross-issuer comparability.

These groupings are usually relative and tend to show far more turnover in their constituents than groupings based on industries and countries because these statistics are less stable by company, and companies' rankings change. For example, a company might improve its ESG score by reducing its carbon emissions, moving it into a different grouping.

Question

Companies are often grouped based on ESG characteristics. Which of the following is *most likely* an example of an ESG characteristic?

A. The ratio of carbon emissions to revenues.
B. The ratio of sales to revenues.
C. The ratio of employees to revenues.

The correct answer is **A**.

The ratio of carbon emissions to revenues is an example of an ESG (Environmental, Social, and Governance) characteristic. ESG characteristics are factors that investors consider alongside traditional financial measures to gauge a company's performance and risk profile.

The environmental component of ESG refers to how a company's operations impact the natural environment. This includes factors such as a company's energy use, waste, pollution, natural resource conservation, and treatment of animals.

The ratio of carbon emissions to revenues is a measure of a company's environmental impact, specifically its carbon footprint, relative to its size. This ratio can be used to compare the environmental performance of companies within the same industry or across different industries. A lower ratio indicates a company that is more efficient in its use of resources and has a smaller environmental impact relative to its revenues.

B is incorrect. The ratio of sales to revenues is not an ESG characteristic. This ratio is typically equal to one, as sales are a component of revenues. It does not provide any information about a company's environmental, social, or governance practices.

C is incorrect. The ratio of employees to revenues is not typically considered an ESG characteristic. While it may provide some information about a company's efficiency or labor intensity, it does not directly relate to the company's environmental, social, or

governance practices. However, other employee-related metrics, such as diversity and inclusion measures or worker safety statistics, could be considered ESG characteristics.

LOS 6c: determine an industry’s size, growth characteristics, profitability, and market share trends

The process of industry and competitive analysis is a crucial part of understanding the business landscape. It begins with defining an industry, followed by a comprehensive survey to gather essential information for its evaluation. This survey involves several key steps, including estimating the industry size, calculating the historical growth rate, evaluating the character of the growth rate, measuring industry profitability, and identifying major industry players and market share trends.

Industry Size

The measurement of an industry's size is typically based on the cumulative annual sales figures observed from the product's or customer's perspective. It is critical to mention that the total sales might not encompass every sector of a company's sales. For example, in the case of a conglomerate like Amazon, only the revenues generated from its retail division would be accounted for when evaluating the retail industry size, excluding the contributions from other branches like Amazon Web Services.

An industry's expansion pace can be determined by analyzing the year-to-year rates annually or by calculating the compounded annual growth rate spanning multiple years. Additionally, a detailed assessment of the industry's growth can be conducted by segregating the contributions from volume increments and alterations in price or mix.

Approaches to Estimating Industry Size

The industry size estimation can be quite complex, especially for sectors not predominantly occupied by large public corporations, such as the automotive, smartphone, aviation, and pharmaceutical industries. In these cases, a significant portion of sales can be attributed to private firms, including smaller businesses, which might not have readily available data or be too cumbersome to accumulate.

To determine the size of industries, analysts use various methods. They can use economic indicators provided by government agencies, rely on surveys conducted by independent consulting firms, or study industry-specific data found in confidential resources disclosed during investor presentations by issuers. However, it's the analyst's responsibility to confirm the accuracy and credibility of these data points.

Industry Growth

The growth rate can be determined either through year-over-year rates annually or as a compounded annual growth rate spanning multiple years. Ideally, growth in the industry should be broken down by contributions from volume and price/mix factors.

Characterizing Industry Growth

The historical growth trajectory of an industry can be described by the intensity of its growth rate and its sensitivity to the business cycles.

One method of characterizing industry growth rate is a style box. This analysis involves comparing the historical growth rate of an industry against broader economic indicators during periods of economic downturns and booms. The analysis is significantly influenced by the growth rate magnitude and how the industry responds to economic cycles.

	Mature	Growth
Defensive	-Utilities -Beverages -Pharmaceuticals	-Biotechnology -Software -Gaming
Cyclical	-Crude oil -Natural gas -Freight transportation	-Semiconductors -Fintech -Digital advertising

Growth Industries

Growth industries are sectors that have not fully tapped into their potential market. Their growth trajectories are often independent of the general economic trends and are propelled by

technological advancements or novel business models. Examples include the renewable energy sector and artificial intelligence (AI) industries.

Analysts scrutinizing growth industries focus on determining the sustainability of high growth rates and predicting the maximum market penetration level. These inquiries become particularly intricate with nascent industries. For instance, determining the peak market penetration for the electric vehicle industry can be complex, given its current growth phase.

Mature Industries

Mature industries are those that have exhausted their market growth potential, exhibiting growth rates that either mirror the general economic trends or are on a decline due to shifting consumer preferences. An example is the traditional print media industry, which is declining as digital media takes precedence.

Investors keen on mature industries are vigilant about potential disruptions, alterations in market competition, and the pace at which the industry is receding. For instance, investors in the cable television industry are constantly monitoring the rise of streaming services as a disruptive force.

Business Cycle Sensitivity

The business cycle sensitivity of an industry is predominantly determined by the business models of the companies within that industry and is often linked to the industry's maturity stage. Factors influencing this sensitivity encompass consumer dependency (discretionary or necessary) on the products or services, pricing strategies, interest rate impacts on the business model, and the nature of the product (durable goods versus recurring purchases).

Investors generally anticipate fluctuating returns from companies operating in cyclical industries. However, diverse perspectives regarding the duration and intensity of these cycles result in fluctuating valuations of companies over time. For instance, the real estate industry often experiences variations in valuations due to differing investor perceptions about market cycles.

The distinction between growth and mature companies can sometimes be of limited value. For instance, a significant economic downturn will likely negatively affect all companies, meaning differences emerge in magnitude rather than being purely categorical. Furthermore, within a given industry, firms at various life cycle stages can exhibit notable differences in growth, defensiveness, and cyclicality.

Analysis of Industry Profitability Measurement

One of the best approaches to gauge the profitability of an industry is by examining a time series distribution of returns on invested capital over a period of time. This analysis is grounded on evaluating after-tax operational profits against every dollar of capital invested, disregarding the influence of the capital structure. Nevertheless, implementing this strategy is often impracticable unless most companies in the industry are publicly listed.

To circumvent this obstacle, analysts frequently resort to evaluating the profitability of publicly listed companies, projecting a similar profitability trajectory for private firms within the industry. This projection can be realized by leveraging multiple data sources to infer the profitability metrics of private entities or by consulting data disseminated by government bodies or independent consultancies.

While aiming for a profitable industry is a rational approach, scrutinizing the chronological trends of profitability within the industry is often more insightful. This involves an in-depth analysis of the fluctuations in profitability over a span of time, identifying whether it is on an upward or downward trajectory. Detecting a significant trend in this analysis can serve as a pivotal focal point for analysts, guiding further investigative efforts.

Analysis of Market Shares and Industry Concentration

Market Share

Market shares are computed annually to gauge the influence and standing of different companies in an industry. This is done by determining the proportion of the total industry

revenue that each company generates. Nevertheless, because determining the exact size of the industry can be challenging, it's advisable to view market shares as estimates within a certain range rather than pinpoint numbers.

Observing how a company's market share evolves over time can give us insights into how customers view the company's products in comparison to rival offerings. For example, a growing market share might indicate a positive customer response to a company's new line of eco-friendly products.

When analyzing market dynamics, it is essential to take note of acquisitions, especially substantial ones. Even though acquiring a rival can bolster a company's market share, it is vital to assess whether the company is expanding its market presence organically without relying on acquisitions. This paints a more accurate picture of a company's inherent growth and market acceptance. For instance, if a tech startup expands its market share by developing innovative products, it indicates organic growth.

Industry Concentration

It is crucial to factor in the concentration level within the industry. A lower concentration, characterized by the presence of many small competitors, is typically linked to intense competition unless the industry focuses on localized services or offers highly differentiated products. In contrast, increasing concentration, where few companies dominate the market, often results in reduced competition and increased profitability. For instance, a burgeoning industry like craft breweries, characterized by numerous small players, usually experiences high competitive intensity.

Herfindahl-Hirschman Index (HHI)

A widely used tool to assess industry concentration is the Herfindahl-Hirschman Index (HHI), which is derived by summing up the squares of the market shares of all industry participants. As such, the Herfindahl-Hirschman Index (HHI) is calculated as follows:

$$HHI = \sum_{i=1}^{n} s_i^2$$

where: s_i stands for the market share of the ith company, represented as a whole number (for example, a market share of 40% is denoted as 40, rather than 0.40).

To illustrate, an industry dominated by four firms with market shares of 40%, 30%, 20%, and 10% would have an HHI of $40^2 + 30^2 + 20^2 + 10^2 = 3000$. In the extreme case of a monopoly, the HHI would reach the maximum value of 10,000 ($= 100^2$).

Antitrust agencies in various nations deem markets with an HHI between 1500 and 2500 moderately concentrated and those with an HHI above 2500 highly concentrated. As a rule of thumb, if an acquisition in a highly concentrated market increases the HHI by over 200 points, it might face regulatory hurdles, as it could potentially lessen competition further.

Question

Which of the following are *most likely* the key issues for investors in a mature industry?

A. Identifying major industry players and analyzing market share trends.
B. Estimating the size of the industry and calculating its historical growth rate.
C. Monitoring for disruptive threats, changes in competitive intensity, and the speed of decline.

The correct answer is **C.**

Investors in mature industries face several important challenges. These include keeping an eye out for disruptive threats, shifts in competitive intensity, and the pace of decline. Mature industries typically experience slow growth, have established competitors, and predictable market dynamics. Yet, they can also be vulnerable to disruptions from new technologies or business models. Changes in competitive intensity might occur due to shifts in market share or strategies among competitors. The speed at which the industry declines can also be a concern as it moves toward obsolescence. Investors must diligently monitor these factors as they can have a substantial impact on the profitability and sustainability of companies within the industry.

In mature industries, there are key challenges to consider. Disruptive threats can jeopardize established business models, shifts in competitive intensity may put pressure on profit margins, and a rapid decline can lead to stranded assets. Consequently, having a deep understanding of these dynamics is essential when making investment decisions in such industries.

A is incorrect. Identifying major industry players and analyzing market share trends are also important aspects of industry analysis. However, they are not the key issues for investors in a mature industry. In a mature industry, the major players and market

share trends are usually well-established and do not change significantly over time. Therefore, while understanding these factors can provide insights into the competitive landscape, they are not the primary concerns for investors in a mature industry.

B is incorrect. While estimating the size of the industry and calculating its historical growth rate are important aspects of industry analysis, they are not the key issues for investors in a mature industry. The size and growth rate of the industry are more relevant for investors in growth industries where the potential for expansion is a key driver of investment returns. In a mature industry, the focus is more on the competitive dynamics and the risks of disruption or decline.

LOS 6d: analyze an industry’s structure and external influences using Porter’s Five Forces and PESTLE frameworks

Understanding Porter's Five Forces Analysis

Porter's Five Forces is a vital analytical tool used to scrutinize the structure of an industry, which subsequently aids in predicting the potential long-term profitability of the industry, gauged through the returns on invested capital. The magnitude of the five pivotal forces in an industry greatly influences its profitability prospects.

Intense forces imply subdued profitability for companies within the industry, while milder forces suggest a potentially lucrative industry.

While historical data from industry surveys may have offered insights into the industry's past profitability, analyzing the structural forces transcends mere profitability measurement. It encompasses a qualitative evaluation of the profitability drivers and enhances awareness of critical factors that could influence industry profitability in the future. This method proves particularly beneficial in nascent industries where data might be scarce or in industries that are yet to reach a profitable stage, helping to anticipate potential profitability trajectories.

The critical forces to be evaluated are as follows:

Analyzing Porter's Five Forces

Examining the five forces is akin to analyzing a company's business model, characterized by qualitative research that resists generalization. More specifically, we will employ a checklist approach, which involves a set of questions in each respective force.

1. Threat of New Entrants

Analysis in this segment involves evaluating the probable threats that new industry entrants might pose. It involves answering the following questions:

- Has there been a notable influx of new entrants in the industry in recent times?

- Are there network effects in the industry, where the value of the product or service increases as more people use it, potentially causing a new entrant to have a less valuable offering until it achieves a larger user base?
- Do established players gain advantages from economies of scale due to substantial fixed costs, implying that a newcomer might need considerable time and face unprofitable conditions before achieving competitiveness?
- Do existing companies gain advantages from economies of scope spanning various business segments–resulting from heightened customer convenience and market dominance and/or from shared costs that can be optimized across their operations?
- Do consumers exhibit brand loyalty?
- Do customers face considerable switching costs in terms of time, education, or substitution?
- Do established players possess unique or favored access to scarce resources or direct customer touchpoints?
- Do government regulations impose limitations or delays on entering the industry?

2. Threat of Substitutes

This analysis entails examining the threats presented by alternative products or services:

- Is there an alternative product or service that meets the same or similar customer requirements? Is its cost lower?
- Can consumers manage without the product offered by the industry?
- Is the alternative product's performance getting better compared to the product of the industry?
- Is the transition to an alternative challenging for consumers?

3. Bargaining Power of Customers

Here, the focus is on evaluating the negotiating strength of customers or buyers in the industry:

- Does a small number of dominant customers characterize the industry?
- Is the industry's products standardized or undifferentiated?
- Do the customers deem the industry's products as essential?
- Do the industry's products constitute a significant portion of the customers' budget?
- Can customers opt for backward integration, meaning they choose to "produce" instead of "purchase" what the industry offers?

4. Bargaining Power of Suppliers

This segment involves evaluating the negotiating power of suppliers:

- Does a small number of dominant suppliers characterize the industry?
- Are there considerable costs associated with changing suppliers?
- What are the switching costs for companies to change suppliers?
- Are the suppliers distinct or specialized in their offerings?
- Are there alternative products available that can replace those provided by the suppliers?

5. Rivalry among Existing Competitors

This analysis examines the extent of competition or rivalry among the existing players in the industry. For instance, the fast-food industry is marked by intense competition with numerous established players:

- Has there been a history of price rivalry among competitors?
- Do multiple competitors of similar size exist in the market?

- Are the products differentiated?
- Are there significant obstacles to leaving the industry?
- Is the growth rate of the industry sluggish?

External Influences on Industry Growth

The external influence on industry growth is done using the PESTLE analysis framework. It involves the assessment of political, economic, social, technological, legal, and environmental impacts on an industry.

Political Influences on Various Sectors

Political influence influences involve changes in fiscal and monetary policies, the government's direct interventions in markets, regulatory shifts, and geopolitical developments. Political impacts are significant in the following sectors: energy, healthcare, and defense:

Energy Sector

The energy sector is affected by three main political influences: short-term political desire for stable and low energy prices, climate accords and laws advocating for reduced emissions, and the activities of OPEC (Organization of the Petroleum Exporting Countries).

Short-term political interest in maintaining low energy prices to appeal to consumers and businesses with inelastic price demand. On the other hand, long-term strategies may focus on higher prices to curb demand and meet emission targets. Investors and producers might be concerned about the long-term perspective, given that governments plan to reduce the proportion of fossil fuels in the energy mix. However, cutting down on fossil fuel production conflicts with the desire for low energy prices in the short run.

The actions of OPEC, which controlled 35% of global crude oil production in 2021, significantly influence global energy prices, possibly maintaining low prices to slow the transition to renewables. For instance, OPEC members might opt to maintain prices at a level that hinders the

shift to renewables, capitalizing on governments' short-term requirements for low energy prices.

Healthcare Sector

Governments are the primary purchasers of healthcare products and services, sometimes implementing reforms to gain political favor or address fiscal issues. For instance, governments have undertaken reforms, including extending healthcare coverage and subsidies, implementing price controls or reductions, and limiting specific healthcare services or products.

Defense Sector

Defense spending is dictated by geopolitical objectives, perceived threats, and alliance commitments. From the late 1990s to 2010, a notable increase in global military spending as a share of global GDP benefited defense companies. Moreover, geopolitical events and competing budgetary priorities will determine future defense expenditures.

Nations are selective regarding the countries they allow their domestic defense companies to engage with. The contracting procedure is complex, encompassing third-party expenses and performance evaluations.

Economic Influences on an Industry

Various economic indicators, including fluctuations in GDP, personal income, inflation, interest rates, and exchange rates, play a pivotal role in shaping industries. Some of these influences are cyclical, moving in tandem with the business cycle. Others are structural, arising from enduring demographic shifts or productivity growth rates in various nations.

Specific sectors like financial services and consumer discretionary goods are particularly sensitive to these cyclical economic shifts. For example, during economic recessions, discretionary spending has a noticeable contraction, which can significantly impact the luxury goods sector.

Managing exchange rate fluctuations becomes paramount to safeguard profitability for industries operating in multiple currency zones. This is especially crucial when there's a significant mismatch between the currency composition of revenues and costs or when operating

in countries known for currency instability. To navigate such challenges, companies often turn to strategies like hedging.

With faster growth, multinational corporations frequently set their sights on emerging markets. A case in point: Nestlé SA, which in 2022, derived over 40% of its sales from emerging markets, registered faster volume growth there compared to its performance in developed markets.

The automotive industry, selling high-priced durable goods, experiences significant influences from economic factors. In economic downtimes, consumers may delay buying new vehicles, opting for used cars, or retaining their current vehicles.

Social Influences on Industries

Social influences on an industry cover cultural and consumer trends, demographic changes such as relative population growth rates, and lifestyle changes.

Social influences are pivotal in shaping industries, particularly those directly interacting with consumers. These influences foster a dynamic relationship between companies and society, characterized by mutual influence and changing trends.

While these influences appear external, they're intricately linked with industry actions. Companies shape cultural narratives through avenues like political lobbying, advertising, and strategies like product media placements. Additionally, the rising prominence of social media and journalism has magnified reputational risks for businesses. There's mounting pressure to ensure sustainable sourcing and a heightened examination of supply chains for potential human rights infringements.

Social influences are particularly amplified in industries that target direct consumers. For instance, together with technological and economic influences, the global beauty industry, especially the premium segment, has seen robust growth since 2010. Moreover, the advent of superior camera quality in mobile devices, coupled with social media, has amplified the significance of personal aesthetics. Furthermore, these platforms have enabled beauty brands to market through third-party influencers and video demonstrations effectively.

Creation of a dynamic ecosystem where companies and society mutually influence each other.

Technological Influences on Industries

Technological advancements significantly influence industries by either fostering new developments or rendering existing products obsolete. These advancements can be categorized into sustaining and disruptive innovations, which have varying impacts on the market dynamics and industry leaders.

Sustaining Innovations

Sustaining innovations refers to incremental improvements in products or services without altering core functionalities or operations. They are typically led by established industry players (incumbents) aiming to better cater to existing or adjacent customers.

An example of sustaining innovation is progressive enhancements in cable television technology, including digital transmission, improved video quality, and increased channel offerings.

Disruptive Innovations

Disruptive innovations introduce new markets or reshape existing ones with radically different value propositions that, initially, might not appeal to existing customers but gradually gain traction. For instance, the rise of internet-based video streaming services disrupted the traditional cable television industry.

With the rise of disruptive innovations, the incumbent companies face a dilemma in adopting disruptive innovations (innovator's dilemma). They will choose to Adopt disruptive innovations, which might accelerate the decline of existing businesses but can prevent market share loss. Alternatively, the incumbents may choose to Ignore the disruptive innovations, which can maintain short to medium-term profits but risk market share loss in the long run.

Legal Influences on an Industry

Legal influences pertain to the modifications in laws and regulations that could modify the operational practices or economic outcomes of industries. These changes often represent adjustments to existing regulations that oversee the industry's functioning. Companies usually try to mold these legal influences through policy advocacy and legal actions.

Two industries where legal influences have a pronounced impact are the tobacco and cannabis sectors:

Tobacco Industry

Jurisdictions globally have implemented diverse laws and regulations governing the entire spectrum of tobacco-related activities. These rules aim to deter consumption and mitigate the detrimental health effects linked to tobacco, including the risks of secondhand smoke. Regulatory aspects cover a vast area, from advertising restrictions, mandatory graphic warnings on packaging, and age-specific sales limits to more comprehensive bans on public smoking and restrictions on nicotine content and flavor additives. Besides these specific regulations, the sector is also subjected to considerable taxation.

Cannabis Industry

The cannabis industry's legal framework is in a state of flux. Various jurisdictions stand at different points on the legalization spectrum. For instance, Canada has legalized cannabis production, sales, and consumption. In contrast, nations like the USA exhibit a more fragmented approach, with individual states dictating their distinct cannabis policies. Yet, in most Asian and African countries, cannabis remains completely illegal.

Environmental Influences on Industries

Environmental influences are primarily aligned with legal influences, encompassing the challenges and prospects that arise with the shift towards a greener economy. These influences include aspects such as carbon emission reductions, waste and land management, and environmental conservation.

Due to environmental influences, companies may need to adapt business operations due to regulatory shifts, taxation, and consumer preferences. Failure to adapt might lead to losing market share to greener alternatives.

Question

Which of the following is *most likely* the difference/similarity between sustaining and disruptive innovations in the context of technological changes?

A. Both sustaining and disruptive innovations refer to improvements in product or service performance.
B. Sustaining innovations create a new market or enter an existing one with a different value proposition, while disruptive innovations refer to improvements in product or service performance.
C. Sustaining innovations refer to improvements in product or service performance, while disruptive innovations create a new market or enter an existing one with a different value proposition.

The correct answer is **C**.

Sustaining innovations refer to improvements in product or service performance, while disruptive innovations create a new market or enter an existing one with a different value proposition. Sustaining innovations are typically incremental improvements or advancements in technology that help a company maintain or strengthen its position in the market.

They are often targeted at a company's existing customers and are designed to meet their expected needs. On the other hand, disruptive innovations are not just improvements or advancements. They create a new market and value network, or they disrupt an existing market and value network by introducing simplicity, convenience, accessibility, and affordability.

Disruptive innovations are typically produced by outsiders and entrepreneurs rather than existing market-leading companies. The term 'disruptive innovation' was defined and analyzed by the American scholar Clayton M. Christensen and his collaborators beginning in 1995.

A is incorrect. This choice incorrectly states that both sustaining and disruptive innovations refer to improvements in product or service performance. While it is true that sustaining innovations refer to such improvements, disruptive innovations are characterized by creating a new market or disrupting an existing one with a different value proposition, not merely by improving product or service performance.

B is incorrect. This choice incorrectly swaps the definitions of sustaining and disruptive innovations. As explained above, sustaining innovations refer to improvements in product or service performance, while disruptive innovations create a new market or enter an existing one with a different value proposition.

LOS 6e: evaluate the competitive strategy and position of a company

Understanding the competitive strategy and position of a company is crucial for analysts and investors because it provides insights into the company's approach to gaining a competitive edge in the market and its ability to create value for its stakeholders.

Understanding Competitive Strategy

Every company, whether a multinational corporation like Apple or a local bakery, has a competitive strategy. This strategy can be either intentional or unintentional—an intentional strategy results from company-wide planning, performance measurement, and feedback loops to refine the strategy. For instance, Apple's intentional strategy might involve continuous innovation and high-quality product design.

On the other hand, an unintentional strategy arises from different teams within a company pursuing their incentives, repeating past actions, or adhering to industry or professional norms. For example, a bakery might unintentionally develop a strategy of baking more bread on weekends due to higher demand without any formal planning.

Unintentional strategies often exacerbate communication and coordination issues within a company, although they might perform well in areas like discovery-oriented research. The effectiveness of a competitive strategy is demonstrated by a company's history of value addition for its stakeholders, such as economic profits. The effectiveness of a strategy can only be judged retrospectively.

Evaluating Competitive Strategy

To evaluate a competitive strategy on a forward-looking basis, an analyst should assess the strategy along the following three dimensions:

- Does the strategy create a defense against the five industry forces? For example, does Apple's strategy of continuous innovation and high-quality design protect it from competitive rivalry, threat of new entrants, threat of substitutes, bargaining power of suppliers, and bargaining power of customers?

- Does the strategy benefit from, or is at least not at odds with, the expected external industry influences identified in the PESTLE analysis? For instance, does a bakery's strategy align with the political, economic, social, technological, legal, and environmental factors affecting the bakery industry?
- Does the company have the resources and capabilities to execute the strategy? For example, does Apple have the necessary technological expertise, financial resources, and human capital to execute its strategy of continuous innovation and high-quality design?

The analysis and answers to these questions are specific to each company and industry.

Three Well-Known Competitive Strategies

Three prominent competitive strategies that have been demonstrated to be successful across a myriad of industries are cost leadership, differentiation, and focus. These strategies, outlined in Michael Porter's seminal research on business competition, offer distinct pathways to achieving a competitive edge.

Cost Leadership:

Cost leadership, as exemplified by companies like Walmart, hinges on minimizing costs and offering products at prices lower than competitors. It is executed through means such as achieving economies of scale, fostering a culture of strict cost control, and establishing low-cost distribution channels. This approach effectively shields against the threats of new entrants and intense industry rivalry, making it particularly suitable in industries where price is a major determinant of customer choice. However, it does carry risks, such as potential cost inflation and technological changes, that can erode the cost leadership position.

Differentiation:

Pursued by companies like Apple, differentiation strategy revolves around offering products with unique features and superior quality. It entails a substantial investment in advertising, brand building, and customer service. The goal is to create customer loyalty and reduce the bargaining power of buyers, thus defending against new entrants and substitutes. This strategy is often

appropriate in industries characterized by innovation and where customers value distinctiveness. Yet, it is not without risks, including imitation by competitors and a potential increase in the pricing premium, which might deter customers.

Focus:

Focus strategy is often adopted by niche players, like a local bakery specializing in a specific type of bread, which focuses on serving a narrow target market exceptionally well. Leveraging a deep understanding of customer needs and preferences, companies adopting this strategy often incorporate elements from both cost leadership and differentiation strategies but with a more narrowed focus.

Focus strategy works effectively to defend against the threat of new entrants and substitutes, especially in sectors where customers are not primarily driven by price and have a preference for premium products. However, it risks being outcompeted in price and changing customer preferences. As outlined in the CFA curriculum, vol 3, page 520, the following is the analysis of the three strategies:

Strategy Aspects	Cost Leadership	Differentiation	Focus
Executing strategy means	−Economies of scale from fixed costs −Favorable access to raw materials −Culture of strict cost control −Aggressive pricing to gain high volume −Low-cost distribution −Economies of scope	−Investments in advertising, brand, customer service −Superior quality, unique features −Culture of strong customer experience −Premium pricing −Integration of services, software, and hardware	−Proximity to customers, strong understanding of −Protection using trademarks, copyrights, patents −Incorporate elements of both strategies, focus on a particular group
Which of the Five Forces it defends against	−Threat of new entrants: Capital requirements, scale advantages −Bargaining power of customers: Customers can only bring prices down leaving margin for cost leaders −Industry rivalry: Rivals may not compete on price	−Threat of new entrants and of substitutes: Customer loyalty deters switching, protect market share −Bargaining power of customers: Customers unwilling to comparison shop −Bargaining power of suppliers: Pass price increases to customers	−Threat of new entrants and of substitutes: Customer loyalty deters switching, protect market share −Bargaining power of customers: Customers unwilling to comparison shop −Difficult to serve particular customer group
Industry appropriateness	−Price-conscious customers −Minimal innovation in industry	−Customers value distinctiveness −Innovation varies in features	−Price not foremost concern −Desire for premiumization
Risks to the strategy	−Capital intensive −Cost inflation, loss of discipline −Technological change results in loss	−Imitation by competitors −Pricing premium too high −Buyers no longer demand service	−Larger competitors outcompete on price −Differences in demand narrow −May preclude high market share −Buyers no longer demand service

Question

Which of the following statements about the competitive strategies outlined by Michael Porter is *most accurate?*

A. Cost leadership strategy is suitable for companies that prioritize creating products with unique features and superior quality.
B. Differentiation strategy aims to defend against the threat of new entrants and substitutes primarily by achieving economies of scale.
C. Focus strategy is often adopted by niche players targeting a narrow market segment and may incorporate elements from both cost leadership and differentiation strategies.

The correct answer is **C.**

The focus strategy is about serving a narrow or specific segment of the market exceptionally well, often by understanding their unique needs and preferences deeply. As described, this strategy can take elements from both cost leadership (e.g., serving this niche at a low cost) and differentiation (e.g., offering the niche a unique product).

A is incorrect. Cost leadership emphasizes minimizing costs to offer products at lower prices than competitors. It does not prioritize the creation of products with unique features and superior quality; that's the essence of the differentiation strategy.

B is incorrect. While the differentiation strategy indeed defends against the threat of new entrants and substitutes, it does so by offering unique and high-quality products, fostering customer loyalty, and reducing the bargaining power of buyers. Achieving economies of scale is primarily an element of the cost leadership strategy, not differentiation.

Learning Module 7: Company Analysis: Forecasting

LOS 7a: explain principles and approaches to forecasting a company’s financial results and position

Forecasting a company's financial results and position is a critical aspect of financial analysis. It involves predicting the future financial performance of a company based on various factors such as historical data, industry trends, and management guidance. The approaches to forecasting can vary significantly depending on the analyst, the company, and the industry.

An analyst at a public research firm often concentrates on short-term forecasts for revenue and earnings per share. Meanwhile, an investor holding a controlling stake in a private company typically develops comprehensive models for a longer-term perspective, spanning multiple years or even decades.

Let's consider two real-world companies for our discussion - Costco Wholesale Corporation and Amazon.com Inc. (an online marketplace). While these companies operate in different sectors, the principles of financial forecasting apply to both.

Key Elements in Financial Statements Forecasting

When forecasting a company's financial performance, analysts often focus on four key elements:

- **Drivers of Financial Statement Lines:** These are factors that influence the lines in a financial statement. For example, for a company like Costco, net sales can be analyzed using drivers like the average number of stores open and the average net sales per store. These drivers can be forecasted individually and then multiplied to get the forecast of net sales. Other key drivers include gross margin and SG&A expenses that can be forecasted as percentages of net sales.
- **Individual Financial Statement Lines:** Analysts can directly forecast individual financial statement lines. This approach is often used for lines without clear drivers, for less-material items, and for items that the analyst does not have a perspective on. Examples include lines such as amortization expense on the income statement, "other

non-current assets" on the balance sheet, and various lines on statements of cash flows for which minimal disclosures are provided.

- **Summary Measures:** These include metrics like total assets, earnings per share, and free cash flow. Efficiency is a benefit of employing these as forecasting objects. However, it comes with less transparency, making it difficult to audit the forecast. The summary measure must be steady and predictable for this strategy to be effective, or issuer disclosures must be highly limited.

- **Ad Hoc Objects:** These are things that prior financial statements might not have yet disclosed. Before the issuer records an accrual on its financial accounts, an analyst may occasionally be required to estimate a loss or gain and its timing in order to make an investment decision with regard to the company's equity or debt instruments. Examples of such situations include announcing a significant court proceeding, a government regulation, or a tax dispute.

Approaches to Financial Forecasting

There are several approaches to financial forecasting, each with its own strengths and limitations. These include:

1. Historical Results Forecast Approach (assumes the past is the precedent)

The Historical Results Forecast Approach is a method used to predict future outcomes based on past results. This approach is considered the easiest and often the default method due to its simplicity and the assumption that past events are likely to recur. However, it's important to note that past results were produced under specific conditions that may not be the same as current or future conditions.

Applicability of the Historical Results Forecast Approach

- This approach is suitable for companies operating in industries where the analyst does

not anticipate any changes in the industry structure.

- It is also applicable to companies that have a low sensitivity to changes in the business cycle.
- Commonly used for forecast objects that are not material or that the analyst does not hold an opinion on.

Limitations of the Historical Results Forecast Approach

- It is less appropriate for companies in cyclical industries. A future period is likely to be at a different point in the business cycle than the current or past period.
- An "over the cycle" average or median may be suitable for a multi-year forecast for a cyclical company but less appropriate for a specific year as it hides the year-to-year volatility.
- This approach is also not suitable for companies that are changing their competitive strategy or undergoing a restructuring, such as making a large acquisition. This makes historical results non-comparable.

2. Historical Base Rates and Convergence Forecast Approach

The Historical Base Rates and Convergence Forecast Approach is a strategic method in financial forecasting. This approach utilizes averages or medians from an industry or peer group as a "base rate" for forecasting, often considering macroeconomic variables such as GDP growth in the calculations.

Key Aspects of the Approach

- Relies on industry or peer group averages or medians as a base for forecasting.
- Requires analyst discretion in object selection and timeframe determination for convergence to the base rate.

- Suitable for established industries with numerous publicly traded counterparts.
- Effective for smaller companies maturing to match the financial profile of larger peers.

Applicability and Examples

- **Banks:** Useful in forecasting trends for regional banks aligning with industry standards set by giants.
- **Automakers:** Can be applied to budding electric vehicle manufacturers.
- **Restaurants:** Beneficial for local restaurant chains aiming to mirror the success patterns of established entities.

Limitations of the Approach

- Not suitable for new or volatile industries where establishing a base rate is challenging.
- Less applicable to highly cyclical industries due to the potential masking of yearly volatility.
- Not ideal for industry leaders that significantly influence the industry base rate.

3. Management Guidance Forecast Approach

Management guidance includes earnings, revenue, and other targets that public company management may publicly provide for the next quarter, year, or longer. It can be specific or more general and is frequently revised during the year. Guidance is valuable because it provides forward-looking information based on the knowledge and insights of company management. Investors rely heavily on guidance as it forms a significant portion of the information used in quarterly financial analysis.

Characteristics of Guidance

- Guidance typically includes a range, like "2%–4% sales growth," and involves numerous forecasts and assumptions. These encompass factors like economic growth, cost increases, market share shifts, pricing decisions, and currency exchange fluctuations made by company management.
- Guidance will change if management’s estimates change, and it is not uncommon for companies to suspend guidance altogether in periods of high uncertainty, such as during the COVID-19 pandemic or in recessions.

Investor Focus and Management Expectations

- A key focus of investors is understanding management’s assumptions embedded in guidance and scrutinizing their plausibility.
- While the middle of a guidance range may seem to represent management's "true" expectations, the upper bound frequently does a better job of doing so. This is because the upper bound is "padded" by pairing it with a pessimistic lower bound in order to make the target easier to overcome and for which management can receive compensation.

Use of Guidance for Forecasts

- Using guidance for forecasts is appropriate when it is provided and when management has demonstrated a track record of reliable estimates. Analysts should analyze past guidance versus actuals.
- Guidance should not be used for companies that are highly sensitive to the business cycle, as management does not have an informational advantage over investors in forecasting macroeconomic variables like GDP or the prices of commodities.
- Investors are skilled at predicting macroeconomic trends, while management excels in predicting company-specific factors. Management's forecasts are typically more accurate for areas they can control, like operating costs and capital spending.

4. Analyst's Discretionary Forecast Approach

The Analyst's Discretionary Forecast Approach is a flexible method in financial forecasting that employs a combination of different techniques instead of relying on a single model or method. This approach comes into play, especially when traditional forecasting methods are found inadequate or non-applicable.

Techniques Included in the Analyst's Discretionary Forecast Approach

- **Surveys**: Gathering data through questionnaires to gain insights.
- Quantitative models: Using statistical models to analyze data and trends.
- **Probability distributions**: Utilizing statistical methods to predict various possible outcomes.
- **Analogies to historical precedents that differ from comparable companies or industry averages**: Drawing parallels with past events that are not necessarily in line with industry norms.
- **Other unobservable inputs**: Considering factors that are not directly measurable but influence the forecast.

Applicability of the Analyst's Discretionary Forecast Approach

This approach is particularly utilized for:

- Companies operating in cyclical industries, where there are recurrent ups and downs.
- Companies that have a limited number of comparables in the market.
- Companies that do not offer management guidance for forecasting.
- Companies witnessing a significant shift, be it in the competitive landscape or regulatory environment.

Examples of the Analyst's Discretionary Forecast Approach

Here are instances where this approach might be employed:

- **Energy Sector:** Analysts may use this approach to forecast trends in the energy sector, especially considering the unprecedented shift towards renewable energy and the adoption of new technologies like electric vehicles. Factors such as government emission reduction commitments, proposed legislation, and capital expenditure constraints would be considered.
- **Technology Startups:** In the case of technology startups that are carving out new niches, analysts might rely on a blend of surveys, expert opinions, and analogies to emerging trends to forecast financial outcomes.

Selecting a Forecast Horizon

Selecting an appropriate forecast horizon is a vital step in the financial forecasting process. It depends on various factors, including the investment strategy, the cyclicality of the industry, company-specific factors, and the preferences or guidelines established by the analyst's employer. Here, we explore these aspects in detail:

Investment Strategy

- The choice of the forecast time horizon is closely aligned with the investment strategy under consideration. It is crucial to establish a time frame that resonates with the objectives and average holding period stated in the investment strategy.
- Professional investment strategies generally indicate the investment time frame and the average holding period in their objectives. Adhering to these time frames is essential for achieving the expected outcomes.
- For instance, fund managers with a long-term perspective may predominantly concentrate their forecasts on a span of three to five years. In contrast, managers who have a shorter-term focus might prioritize the upcoming one or two quarters.

Industry Cyclicality

- Industry cyclicality is a significant determinant in deciding the forecast time frame. The period chosen should cover a business cycle to facilitate the attainment of anticipated mid-cycle levels of sales and profitability.
- The cyclic nature of the industry necessitates a forecast period that extends sufficiently to capture the fluctuations and trends accurately.

Company-Specific Factors

- Company-specific elements, such as recent acquisitions or restructuring initiatives, play a pivotal role in determining the forecast horizon.
- It is imperative to allocate a time span that allows for the manifestation of the benefits arising from these activities in the financial statements, thus offering a realistic view of the financial prospects.

Analyst’s Employer’s Preferences

- At times, the selection of the forecast horizon may be dictated by the guidelines or preferences set by the analyst’s employer, leaving little room for individual discretion.
- This standardized approach ensures consistency and alignment with the organizational objectives and strategies.

Question #1

A financial analyst is working on a forecast for a company in the energy sector. The company is facing unprecedented changes due to the potential shift to renewable energy and the adoption of technologies like electric vehicles. The analyst needs to consider various factors such as government emission reduction commitments, proposed legislation, and capital expenditure constraints. Which forecasting approach is the analyst *most likely* to use in this scenario?

A. Quantitative Forecasting Approach.
B. Analyst's Discretionary Forecast Approach.
C. Historical Forecasting Approach.

The correct answer is **B.**

The analyst is likely to use the Analyst's Discretionary Forecast Approach in this scenario. This approach is often used when there are significant changes in the external environment that are likely to impact the company's future performance. It involves the use of subjective judgment and expertise to make forecasts. In this case, the company is facing unprecedented changes due to the potential shift to renewable energy and the adoption of technologies like electric vehicles.

The analyst needs to consider various factors such as government emission reduction commitments, proposed legislation, and capital expenditure constraints. These factors are complex and interrelated, and their impact on the company's future performance is uncertain. Therefore, the analyst needs to use his or her judgment and expertise to assess these factors and make a forecast. This approach allows the analyst to incorporate the latest information and changes in the external environment into the forecast.

A is incorrect. The Quantitative Forecasting Approach is based on mathematical models and statistical techniques. It uses historical data to make forecasts. While this

approach can be useful in many situations, it may not be appropriate in this case because the company is facing unprecedented changes that are not reflected in the historical data.

C is incorrect. The Historical Forecasting Approach is based on the assumption that the past performance of a company is a good indicator of its future performance. This approach may not be appropriate in this case because the company is facing unprecedented changes that are likely to significantly impact its future performance. The historical data may not provide a reliable basis for forecasting the company's future performance in the face of these changes.

Question #2

An investment analyst is preparing a forecast for a security that is being considered for a professionally managed investment strategy. The investment objectives of the strategy describe a long-term time frame and an average holding period. In this context, what time period is the analyst *most likely* to focus their forecasting on?

A. One or two quarters.
B. Three to five years.
C. Indefinite.

The correct answer is **B.**

Given the long-term investment objectives and average holding period described in the strategy, the analyst is most likely to focus their forecasting on a time period of three to five years. This is because long-term investment strategies typically involve holding securities for several years, and the performance of these securities over this time frame is crucial to the success of the strategy.

The analyst would therefore need to forecast the performance of the security over this period to determine whether it is likely to meet the strategy's objectives. This would involve analyzing the security's fundamentals, such as its earnings, cash flows, and financial health, as well as external factors such as economic conditions and industry trends, over a three to five-year horizon.

A is incorrect. A time period of one or two quarters is typically considered short-term in the context of investment forecasting. While short-term forecasts can be useful for certain types of investment strategies, such as trading or tactical asset allocation, they are less relevant for a long-term, buy-and-hold strategy.

C is incorrect. An indefinite time period is not practical for investment forecasting. While it is true that some investment strategies, such as value investing, involve holding securities for an indefinite period until their intrinsic value is realized, this does not mean that forecasts can or should be made over an indefinite time period. Forecasts need to be based on specific assumptions and data, which are typically only available or reliable for a certain time horizon.

LOS 7b: explain approaches to forecasting a company’s revenues

Forecasting a company's revenues is a critical aspect of financial analysis. It involves estimating future revenues using various approaches and considering different risk factors that might influence a company's financial standing. In this lesson, we delve into different forecasting objects and approaches, highlighting their real-world applications and importance in modern financial analysis. Let's begin by understanding the types of forecast objects that are commonly used.

Forecast objects for revenues, instrumental in company analysis for predicting future revenues, can be classified as either **top-down** or **bottom-up** drivers. These drivers aid in formulating an accurate picture of a company’s potential future revenue streams. Below, we will explore each of these drivers with real-world examples.

Top-Down Forecast Objects

1. **Growth relative to GDP growth** Utilizing this approach involves comparing the growth rate of a company with the nominal GDP growth rate. For instance, if a telecommunications company has historically grown at 1.5 times the rate of GDP growth, analysts may use this ratio to forecast future revenues. Further, the company's position in its life cycle or sensitivity to business cycles is considered to derive premiums or discounts in percentage points.
2. **Market growth and market share** In this approach, the focus is on predicting the growth rate of the company's product market and evaluating the changes in market share over time. For instance, if a smartphone manufacturing company holds a 20% market share and the market is expected to grow by 10%, the company's revenue forecast might be adjusted accordingly. Regression analysis might be employed to estimate the relationship if a predictable relationship between product market revenue and GDP exists.

Bottom-up Forecast Objects

1. **Volumes and average selling prices:** This method entails preparing individual

forecasts for the volumes and prices of the company's products and then multiplying them to get a revenue forecast. For example, a car manufacturer may estimate revenues by forecasting the number of cars to be sold and the average price per car.

2. **Product-line or segment revenues:** Here, forecasts are made for individual products, business lines, geographical areas, or reporting segments and then aggregated to form a total revenue forecast. For instance, a multinational corporation might forecast revenues separately for different regions and then aggregate them.
3. **Capacity-based measures:** This approach, commonly used in retail, bases forecasts on parameters like the number of stores and sales per store or the growth in sales from new-store openings. For instance, a retail chain might estimate future revenues based on projected sales per store and the planned number of new store openings.
4. **Return- or yield-based measures:** Forecasts in this category are based on account balances and revenue yields on them. For example, for a bank, net interest income can be calculated using the formula:

   $$\text{Net Interest Income} = (\text{Loans} \times \text{Average Interest Rate}) - (\text{Deposits and Liabilities} \times \text{Their}$$

Using a combination of both top-down and bottom-up objects can assist in uncovering implicit assumptions or errors that might arise from employing a single approach.

Top-Down Drivers

Forecast Method	Examples
Historical Results	−Utilizing past GDP growth rates to anticipate potential market size for the real estate industry. −Assessing previous years' consumer behavior patterns during holiday seasons to project market share for retail businesses. −Analyzing past economic conditions to predict market trends for investment sectors.
Historical Base Rates and Convergence	−Leveraging industry average profit margins from the past decade to estimate future market share for manufacturing firms. −Utilizing historical data on market penetration rates in similar markets to predict potential market size for a new product launch. −Predicting market trends for the automotive industry based on peer group average growth rates over the past 5 years.
Management Guidance	−Using management's projections on the expansion into new markets to gauge potential market size growth for a telecommunications company. −Incorporating management's guidance on product innovations to estimate market share expansion for a tech company. −Considering company's forecasted trends in consumer preferences to adapt market strategies for a food and beverage company.
Analyst’s Discretionary Forecast	−Conducting expert surveys to gauge anticipated market trends in the renewable energy sector. −Developing customized quantitative models to forecast market size for emerging technologies. −Synthesizing data from different sources to project market share dynamics for e-commerce platforı

Bottom-Up Drivers

Forecast Method	Examples
Historical Results	−Analyzing historical sales data per store to forecast future sales for a retail chain, considering seasonal variations and promotions. −Using past membership growth rates to forecast future membership numbers for a gym, factoring in new location openings and marketing campaigns. −Evaluating historical data on store expansions to anticipate future growth for a supermarket chain, considering market saturation and consumer trends.
Historical Base Rates and Convergence	−Utilizing industry average sales per store data to project company sales, considering economic factors and consumer preferences. −Estimating future membership pricing trends based on industry averages, considering competitive pricing strategies and market demand. −Leveraging industry average data on store expansion to project company growth, considering regional market dynamics and consumer behavior.
Management Guidance	−Considering management's guidance on store expans plans to predict future growth for a retail business, taking into account market competition and consumer −Integrating company's projections on sales per store to develop a comprehensive sales forecast, considering product innovations and marketing strategies. −Incorporating management's strategies on membersh pricing to anticipate future revenue streams, considering market trends and consumer preferences.
Analyst’s Discretionary Forecast	−Applying advanced statistical models to forecast sales per store for a new retail brand, considering market dynamics and consumer insights. −Using specialized surveys and market research to predict membership growth for a subscription-based service, considering industry trends and consumer beh −Developing complex predictive models to anticipate the growth trajectory of a startup, considering various market and company-specific factors.

Separating Recurring and Non-recurring Revenue or Revenue Growth

In forecasting, it is essential to separate non-recurring items and effects from recurring ones, as they have different drivers. This separation helps in avoiding inflation or deflation of the forecast object's size. These items can be classified into **disclosed** and **non-disclosed** non-recurring

items.

Disclosed non-recurring items are disclosed by the company's management, including the effects of changes in exchange rates, extra selling days, acquisitions/divestitures, and other "one-time" revenues or gains. These are separated to focus the forecast on "underlying" revenue or growth. Analysts might also incorporate proprietary exchange rate forecasts in revenue projections.

Non-disclosed, non-recurring items are not quantified by management, requiring analyst judgment to estimate. For instance, during the COVID-19 pandemic, a surge was seen in e-commerce sales. However, many e-commerce companies saw a decline in revenue in 2022, indicating that some of the growth was non-recurring.

Forecasting revenues is a vital aspect of financial analysis, involving various approaches such as using historical results, base rates and convergence, management guidance, and discretionary forecasts by the analyst. While forecasting, analysts must consider several risk factors, which might vary across companies. The common risk factors to consider include competition, changes in business cycles, inflation or deflation, and technological developments.

Due to the considerable range of possible results, analysts frequently create multiple forecasts for a company's financial statements, known as scenarios. These scenarios are developed using varying perspectives on critical risk factors.

Question

When conducting revenue forecasts, analysts must take into account various risk factors. These factors can differ from one company to another, but some are common to all businesses. Which of the following is *least likely* considered a common risk factor in revenue forecasting?

A. Competition.
B. Technological developments.
C. Company's brand image.

The correct answer is **C.**

While a company's brand image can certainly impact its revenue, it is not typically considered a common risk factor in revenue forecasting. Revenue forecasting is a financial projection that is based on the sales that a company expects to generate in the future. It is influenced by a variety of factors, including market conditions, competition, and technological developments. These factors can directly impact a company's ability to generate sales and, therefore, its revenue. However, a company's brand image is more related to its reputation and customer perception, which can indirectly impact revenue but is not a direct risk factor. It is more subjective and difficult to quantify, making it less suitable for inclusion in a revenue forecast. While a strong brand image can certainly contribute to higher sales, it is not a risk factor in the same way that competition or technological developments are.

A is incorrect. Competition is indeed a common risk factor in revenue forecasting. The presence of competitors can impact a company's market share and pricing power, both of which can directly impact its revenue. Therefore, analysts must take into account the competitive landscape when conducting revenue forecasts.

B is incorrect. Technological developments are also a common risk factor in revenue forecasting. Technological advancements can disrupt industries and change the way

business is conducted, potentially impacting a company's revenue. For example, a company that fails to adapt to new technologies may lose market share to competitors that do, resulting in lower revenue. Therefore, analysts must consider the potential impact of technological developments when conducting revenue forecasts.

LOS 7c: explain approaches to forecasting a company’s operating expenses and working capital

Issuer's Disclosures about Operating Costs

When it comes to operating costs, issuers tend to provide less detailed information compared to their revenue disclosures. Analysts often work with broader financial statement categories like cost of sales or SG&A. They might also use summary measures like EBITDA margins to evaluate costs across different geographic regions, business segments, or product lines.

The forecasts for revenues and costs should be coherent. If the sales of a low-margin product, segment, or geography are forecasted to grow faster than other revenues, a certain level of overall profit margin deterioration should be forecasted. This is applicable even if the analyst is uncertain about the precise margins earned on each object.

Cost of Sales and Gross Margins

Analysts should forecast any change in the product mix sold. For instance, in the case of a company that also sells higher-margin items, such as alcoholic products or pharmaceutical products, the analyst would want to forecast any change in the product mix sold.

Cost of sales, also known as cost of goods sold (COGS), is usually the largest cost for companies that manufacture and/or sell products. It is directly linked to sales, making it a crucial factor in forecasting. This cost can be forecasted as a percentage of sales or as a gross margin. The gross margin can fluctuate based on the company's market position.

If a company is losing market share due to the introduction of cheaper substitute products, the gross margin is likely to decrease. Conversely, if a company is gaining market share through the introduction of differentiated products and achieving cost advantages, the gross margin is likely to increase.

Given the significant impact of the cost of sales, even a single basis point change in the gross margin forecast can materially affect the forecasts of operating profit and free cash flow.

Therefore, a detailed analysis of these costs, such as by segment, input, product line, volume, and price components, can provide a better justification for the forecast.

For instance, companies that face fluctuating input costs that can only be passed on to customers after a time lag need to be considered. Particularly for companies with low gross margins, sudden shocks in input costs can significantly affect operating profit.

Analysts should also consider a company's hedging strategy in their forecasts. Companies that rely heavily on commodities often see their gross margins decline when input prices increase significantly, as variable costs rise faster than output prices.

Through hedging strategies, companies can mitigate the impact on profitability. For example, brewers often hedge the cost of barley, a key raw material, one year in advance. While companies may not disclose specific hedging positions, their hedging strategy is often disclosed in the notes to the financial statements.

Another factor to consider is the impact of increasing sales prices on sales volume, especially if product demand is price elastic. This can be mitigated by a policy of gradual sales price increases. For instance, if a brewer anticipates higher barley prices due to a poor harvest, they can slowly increase prices to avoid a sharp price jump the following year.

While competitors' gross margins can provide a useful cross-check for forecasting gross margins, differences in business models can make these margins incomparable. For example, some retailers own and operate their own stores, while others operate as wholesalers with franchised retail operations. In the franchise model, most of the operating costs are incurred by the franchisee, and the wholesaler sells products with only a small markup to these franchisees. Compared to a retailer with its own stores, a wholesaler will have a much lower gross margin but also much lower operating costs.

Selling, General and Administrative (SG&A) Expenses

SG&A expenses, also known as Selling, General, and Administrative expenses, are a major type of operating costs. Unlike the cost of sales, these expenses often have a less direct relationship with revenues. This means that they may not increase or decrease in direct proportion to the

company's sales.

It's crucial to recognize that not all SG&A (Selling, General, and Administrative) expenses share the same degree of correlation with revenue. For instance, expenses related to sales and distribution often contain a significant variable element and can be projected as a percentage of sales. In contrast, general corporate expenditures tend to be more fixed in nature and might be more appropriately forecasted using a fixed growth rate derived from anticipated wage inflation.

Regarding segment disclosures, they commonly feature profitability indicators like operating and EBITDA margins for each segment. However, they typically do not provide detailed cost breakdowns such as cost of sales or SG&A by segment. If an analyst is creating a model based on segment projections, they may opt to utilize aggregated metrics specific to each segment instead.

Working Capital Forecasts

Working capital forecasts are crucial financial projections that help in predicting the future financial health of a business. They are typically made by using efficiency ratios, which are combined with sales and cost forecasts to project various elements of working capital. These elements include accounts receivable, inventories, accounts payable, and other current assets and liabilities.

Efficiency ratios are used as the forecast object in working capital forecasts. These ratios, which were discussed in earlier modules, are used to measure the effectiveness of a company's use of its assets and liabilities. They are crucial in predicting the future financial health of a business.

While a historical results approach is common for working capital efficiency ratios, analysts can also use other forecast approaches. These approaches can be used to predict a company's operating costs and working capital.

Operating costs and working capital are two key elements that are predicted in working capital forecasts. Operating costs refer to the expenses associated with running a business while working capital refers to the difference between a company's current assets and current

liabilities.

Question #1

A company is looking to improve its financial health and is focusing on its efficiency ratios. These ratios are crucial for the company as they measure certain aspects of the company's financial performance. What do efficiency ratios *most likely* measure in a company?

A. The company's profitability.
B. The company's market share.
C. The effectiveness of a company's use of its assets and liabilities.

The correct answer is **C.**

Efficiency ratios primarily measure the effectiveness of a company's use of its assets and liabilities. These ratios are used to analyze how well a company is managing its assets and liabilities internally. They are also known as activity ratios or asset utilization ratios. Efficiency ratios include inventory turnover, receivables turnover, payables turnover, and asset turnover, among others. These ratios provide insights into the effectiveness of a company's management in using its assets to generate sales and profits.

For example, a high inventory turnover ratio indicates that a company is efficiently managing its inventory and is able to quickly sell its goods. On the other hand, a low ratio may indicate poor inventory management or low demand for the company's products. Therefore, by focusing on improving its efficiency ratios, a company can enhance its financial health by optimizing the use of its assets and liabilities.

A is incorrect. While efficiency ratios can indirectly impact a company's profitability, they do not primarily measure profitability. Profitability ratios, such as the gross margin ratio, operating margin ratio, and net profit margin ratio, are used to measure a company's profitability.

B is incorrect. Efficiency ratios do not measure a company's market share. Market

share is a measure of a company's sales in relation to the total sales of all companies in the market. It is not directly related to the company's use of its assets and liabilities.

Question #2

An analyst is preparing a working capital forecast for a company. She is considering various approaches to predict the company's operating costs and working capital. Which of the following is *most likely* a common approach used for forecasting working capital efficiency ratios?

A. Historical results approach.
B. Current market trends approach.
C. Competitor analysis approach.

The correct answer is **A.**

The Historical results approach is a common method used for forecasting working capital efficiency ratios. This approach involves analyzing the company's past performance to predict future trends. The historical results approach is based on the assumption that the past is a good predictor of the future. This method is often used because it is straightforward and easy to implement. It involves analyzing the company's historical financial statements and calculating the working capital efficiency ratios for each period.

These ratios are then used to forecast future ratios. The historical results approach is particularly useful when the company's operations have been stable over time. However, it may not be as effective if the company's operations have changed significantly or if the company is facing new challenges or opportunities.

B is incorrect. The Current market trends approach is not typically used to forecast working capital efficiency ratios. While current market trends can provide useful information about the overall economic environment and industry conditions, they do not provide specific information about a company's working capital management.

Therefore, this approach is not typically used to forecast working capital efficiency ratios.

C is incorrect. The Competitor analysis approach involves comparing a company's performance to that of its competitors. While this can provide useful insights, it is not typically used to forecast working capital efficiency ratios. This is because working capital management is highly company-specific and depends on a variety of factors, including the company's business model, industry, and management practices. Therefore, while competitor analysis can provide useful context, it is not typically used as the primary method for forecasting working capital efficiency ratios.

LOS 7d: explain approaches to forecasting a company’s capital investments and capital structure

Long-term Assets Projections

Long-term assets projections are primarily based on the cash flow statement and income statement projections. The net Property, Plant, and Equipment (PP&E) and intangible assets on the balance sheet mainly increase due to capital expenditures and decrease due to depreciation and amortization expenses.

Types of Capital Expenditures

Capital expenditures can be divided into two categories:

- **Maintenance capital expenditures**: These are necessary to sustain the current business. Forecasts for these are often based on historical depreciation and amortization expenses, usually with a small upward adjustment to account for inflation in capital goods. For businesses with low fixed asset turnover, maintenance capital expenditure requirements can be quite high.
- **Growth capital expenditures**: These are needed to expand the business. These forecasts are more discretionary and are tied to management’s expansion plans and revenue growth.

Projection for Depreciation and Amortization Forecasts

Projections for depreciation and amortization hinge on the net value of property, plant, and equipment (PP&E) and intangible assets listed on the balance sheet, which grow as a result of capital expenditures. These projections align with the estimated useful lifespans established by management's accounting policies. One way to estimate this is by considering the ratio of gross fixed assets to depreciation and amortization expenses. Further details can often be located in the financial statements accompanying notes.

Future Capital Structure Projections

Analysts must also make projections about a company's future capital structure. **Leverage ratios**–such as debt to capital, debt to equity, and debt to Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA)–are often used as the forecast object to project future debt and equity levels.

When projecting the future capital structure, analysts should consider historical company practices, management's financial strategy, and the capital requirements implied by the capital expenditure assumptions. Management may provide guidance on target capital structure, debt covenant ratios (e.g., net debt to EBITDA), and capital expenditures, sometimes broken down into maintenance, growth, and acquisitions.

Question

Which of the following factors should analysts *most likely* consider when projecting the future capital structure of a company?

A. Company's product portfolio, marketing strategy, and customer base.
B. Company's market share, competitive landscape, and industry growth rate.
C. Historical company practice, management’s financial strategy, and the capital requirements implied by the capital expenditure assumptions.

The correct answer is **C.**

When projecting the future capital structure, analysts should consider historical company practices, management’s financial strategy, and the capital requirements implied by the capital expenditure assumptions. Historical company practice provides insights into the company's past financial decisions and can serve as a guide for future capital structure decisions.

Management's financial strategy is crucial as it outlines the company's approach to financing its operations and growth, including its preferences for debt versus equity financing. The capital requirements implied by the capital expenditure assumptions are also important as they indicate the amount of funding the company will need to support its planned investments. These factors are directly related to the company's capital structure and can significantly influence its future capital structure decisions.

A is incorrect. The company's product portfolio, marketing strategy, and customer base can influence its revenue and profitability, but they do not directly determine its capital structure. The capital structure is a financial decision made by the company's management based on factors such as the company's financial strategy, capital requirements, and historical practice.

B is incorrect. While the company's market share, competitive landscape, and industry growth rate can influence its financial performance and, thus, its ability to raise capital, they are not directly related to the company's capital structure. The

capital structure is determined by the company's financing decisions, not its market position or industry dynamics.

LOS 7e: describe the use of scenario analysis in forecasting

Industry and Business Risks

Industry and business risks can lead to future outcomes that deviate from expectations. These risks are crucial in the final step of forecasting, where the possibility of different outcomes based on key risk factors is considered, along with their likelihood of occurrence.

Generic risk factors are those that affect all companies but to varying degrees. These include:

- Changes in the business cycle.
- Competition.
- Inflation and deflation.
- Technological developments.

Scenario Analysis

Instead of developing single-point estimate forecasts, analysts create several forecast scenarios that vary based on different outcomes with respect to key risk factors. These scenarios are then compared with other analysts' forecasts for a company, as well as forecasts implied by current valuations, to make investment decisions.

For instance, scenario analysis can be used to assess the impact of technological developments that threaten to cannibalize demand for an existing product. Technological developments can affect both the demand for a product and the quantity supplied of a product.

For example, when technological changes lead to lower manufacturing costs, the supply curve shifts to the right as suppliers can produce more of the product at the same price. On the other hand, if technological changes result in the development of attractive substitute products, the demand curve shifts to the left.

Question

In scenario analysis, how are different forecast scenarios typically created?

A. By comparing them to historical data.
B. By making single-point estimates.
C. By varying outcomes related to key risk factors.

The correct answer is **C.**

Scenarios are created from varying outcomes related to key risk factors. Scenario analysis involves developing multiple scenarios, each of which represents a different set of conditions or assumptions, including variations in key risk factors. They are used to explore a range of possible outcomes and assess how different risk factors can influence the outcome being analyzed.

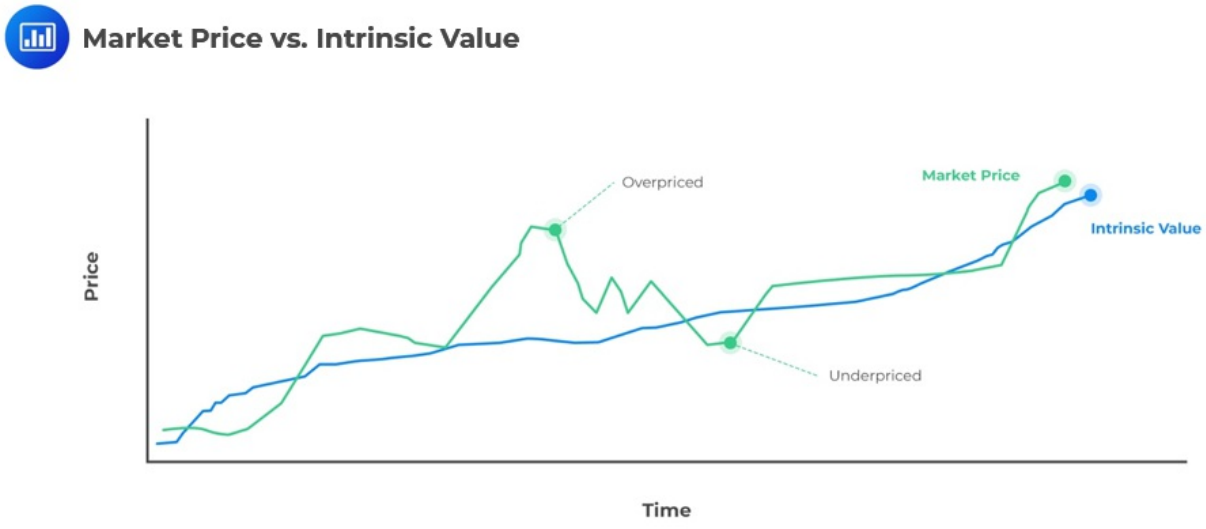
A is incorrect. Scenarios in scenario analysis are not necessarily created directly from historical data, but historical data can serve as an important input and reference point in the process of creating scenarios.

B is incorrect. Scenarios are not typically created from single-point estimates. Scenarios are constructed to consider a range of possible outcomes, and they are characterized by a set of assumptions that deviate from a single-point estimate. The purpose of scenarios is to explore different conditions and uncertainties rather than relying on a single, deterministic forecast.

Learning Module 8: Equity Valuation: Concepts & Basic Tools

LOS 8a: evaluate whether security, given its current market price and a value estimate, is overvalued, fairly valued, or undervalued by the market

When a security's current market price is approximately equal to its value estimate, the security is considered to be fairly valued. Conversely, when the market price exceeds the value estimate, the security is overvalued, and so the security is undervalued when the market price is lower than its estimated value.



Of course, there are many uncertainties in calculating an estimated valuation for a company. So while market prices should be treated with skepticism, they should also be treated with respect because an identified mispricing may reveal an error in the analyst's valuation and not the market's valuation.

Question

A share of Apple stock is currently selling for $117. An analyst calculates a share of Apple to be worth approximately $115 to $130.

The analyst thinks that Apple’s stock is currently:

A. Overvalued.
B. Fairly valued.
C. Undervalued.

Solution

The correct answer is **B**.

Based on the analyst's calculation that a share of Apple is worth approximately $115 to $130, and considering that the current market price is $117, the stock is within the analyst's valuation range. Therefore, the stock can be considered fairly valued.

LOS 8b: describe major categories of equity valuation models

There are three major categories of equity valuation models: present value models, multiplier models, and asset-based valuation models.

Present Value Models/Discounted Cash Flow Models

These models estimate intrinsic value based on expected future benefits, usually based on expected dividends (dividend discount model) or expected free cash flows (free-cash-flow-to-equity models).

Multiplier Models/Market Multiple Models

These models are based on share price multiples or enterprise value multiples. Share price multiples usually calculate the intrinsic value based on the absolute or relative multiples of trailing or projected earnings or sales. Instead of using the share price in the numerator, enterprise value multiples use the company's enterprise value (*Market capitalization + Market value of debt and preferred shares - Cash equivalents*) and typically divide it by EBITDA (*EV/EBITDA*) or total revenue (*EV/Sales*).

Asset-Based Valuation Models

These models estimate intrinsic value based on the estimated value of a company's assets minus its liabilities, often through adjustments to its book value. In theory, the value of a business should be equal to the sum of the value of the business's assets.

Question

At the beginning of 2016, stocks in the air transport industry had a trailing price-to-earnings ratio of approximately 12. An analyst believes that Fly2U, a publicly-traded air transport company, is undervalued primarily because its shares are trading at only 8 times trailing earnings.

The analyst is primarily using what type of model to estimate Fly2U’s share value?

A. Multiplier.
B. Asset-based.
C. Present value.

Solution

The correct answer is **A**.

The analyst in this scenario is primarily using a valuation model based on the price-to-earnings (P/E) ratio. The P/E ratio is a multiplier that relates a company's stock price to its earnings per share. In this case, the analyst is comparing Fly2U's P/E ratio (8 times trailing earnings) to the industry average (12 times trailing earnings) to argue that Fly2U may be undervalued.

LOS 8c: describe regular cash dividends, extra dividends, stock dividends, stock splits, reverse stock splits, and share repurchases

According to the dividend discount model (DDM), the value of an investment should be equal to the present value of the expected future benefits. For common shares, these benefits come in the form of dividends and the expected capital gain on the sale of the stock. Therefore, to understand the model, the candidate must understand all aspects of dividends.

Dividends

A dividend is a distribution paid to shareholders based on the number of shares owned. The distribution can take one of several forms:

Cash dividend

A company pays regular cash dividends whenever it distributes a share of its profits in cash to its shareholders based on a regular dividend payment schedule. For example, the company may opt to pay shareholders a dividend every quarter, semiannually, or annually. Thus, the company could issue an annual dividend of, say, $0.50 per share. In such a scenario, an investor who owns 100,000 common shares would receive $50,000.

Consistent cash dividend payouts send a positive signal to the markets, indicating that the company is growing and should continue to grow and pay dividends in the future.

Extra dividend

A company may also issue a dividend outside of the usual schedule to supplement the regular cash dividend with an extra payment. This is called an **extra dividend** or **special dividend**.

Stock dividend

Stock dividends refer to all dividend payments that are not in the form of cash. In these instances, a company chooses to distribute profits in the form of additional shares instead of

using cash. For example, when a company declares a 10% stock dividend, every shareholder receives an additional 10 shares for every 100 shares they already own.

When a company pays stock dividends, the total number of shares outstanding will increase but share value remains the same. In addition, a shareholder's proportionate ownership in the company will remain the same. Likewise, his total cost basis will be unchanged since he did not purchase the additional shares; they were rather "given" to him. His cost per share will, however, be reduced. Therefore, stock dividends are not relevant for valuation.

Stock split

In a stock split, a company gives its shareholders X number of shares for every Y number of shares that are owned. For example, in a two-for-one stock split, shareholders receive one additional share for every share previously owned. Thus, if a company had 20 million shares outstanding before the stock split, it will have 40 million shares outstanding after a 2-for-1 stock split.

Reverse stock split

A reverse stock split is the opposite of a stock split. In a reverse stock split, a company reduces the number of shares outstanding by a set multiple. For example, if a company announces a 1-for-4 reverse stock split, shareholders will receive 1 share for every 4 they own. Thus, an investor with 10,000 old shares will end up with just 2,500 new shares.

A reverse stock split results in an increase in the price per share but does not affect a company's market value or shareholders' total cost basis. For example, the same investor owning 10,000 shares at $1 will now have 2,500 shares worth $4. However, his investment in dollar terms remains $10,000.

Share repurchase

In a share repurchase, the company uses cash to buy back its own shares. Once repurchased, the shares do not participate in subsequent voting or dividend issues. The shares are also not

considered when computing the earnings per share.

A share repurchase is viewed as equivalent to the payment of cash dividends of equal value in terms of the effect on shareholder’s wealth, all other things being equal. It sends the message that the share may be undervalued. It can also be preferred to cash dividends when tax rates on dividends exceed tax rates on capital gains.

Question

A business worth $20,000,000 made $1,000,000 in profits in 2018. The business has 10 partners, each with a 10% stake. The company's policy is to pay out 40% of profits every year to the owners. In 2019, one of the owners decided to cash out although the profitability of the business remained constant. The remaining partners ended up buying out the partner. The amount received by each partner in 2019 is *closest* to:

A. $23,333
B. $40,000
C. $44,444

The correct answer is **C**.

Since the buyout is executed using
out-of-pocket cash, the value of the business remains the same.

Instead of receiving $40,000 (= 1,000,000 × 40% ÷ 10), the remaining 9 owners will receive $44,444 (= 1,000,000 × 40% ÷ 9) even though the business did not grow. What did grow is the percentage of ownership of each remaining partner; from 10% to 11.11% (= 20,000,000/9 ÷ 20,000,000).

LOS 8d: describe dividend payment chronology

Dividend chronology describes the timeline for a series of events that take place after a company decides to pay dividends to its shareholders. Included in this chronology are the declaration date, ex-dividend date, record date, and payment date in that time order.

Declaration Date

The declaration date is the day on which a company issues a statement declaring its intent to pay a dividend. On said date, the company also announces the holder-of-record date and the payment date. A holder-of-record is the name of the person who is the registered owner of a security and who has the rights to the dividend.

Ex-Dividend Date

The ex-dividend date, otherwise known as the ex-date, is the first business day on which a share will trade without its dividend. As a result, investors who owned shares before the ex-dividend date will receive a dividend once it is paid. In contrast, investors who acquire shares on or after the ex-dividend date will not have the benefit of receiving the dividend.

Holder-of-Record Date

The holder-of-record date, or just simply the record date, as determined by a company, is the business day on which a shareholder that is listed in the company’s records is deemed to have ownership of the company’s shares for the purpose of deciding who can and who cannot receive a dividend when paid.

The record date is typically one or two business days after the ex-dividend date.

Payment Date

The payment date, or payable date, is the date on which a company mails or transfers dividend payments to its shareholders on record. The payment date does not have to be a business day; it can occur on a weekend or holiday.

Question

If an investor purchases shares on the company’s ex-dividend date, which of the following statements is accurate?

A. The investor will receive the dividend when it is paid by the company.
B. The investor will not receive the dividend when it is paid by the company.
C. The investor will receive a portion of the dividend when paid by the company.

Solution

The correct answer is **B**.

When an investor purchases shares on the ex-dividend date or later, they are not entitled to receive the upcoming dividend payment. The dividend is typically paid to shareholders of record, meaning those who own the shares on or before the record date. Purchasing shares on the ex-dividend date or afterward means the investor will not be on the company's records as a shareholder entitled to receive the dividend.

LOS 8e: explain the rationale for using present value models to value equity and describe the dividend discount and free-cash-flow-to-equity models

Present value models are based on a fundamental tenet of economics stating that individuals defer consumption to reap future benefits. Therefore, the value of an investment today should be worth the present value of expected future benefits, defined as dividends or free cash flow.

Dividend Discount Model

The dividend discount model looks at cash flows from the investor's perspective. Cash is received from distributions during the holding period and the final sale price upon liquidation of the security.

$$V_0 = \sum_{t=1}^{n} \frac{D_t}{(1+r)^t} + \frac{P_n}{(1+r)^n}$$

V_0 = present value of a share of the stock today

D_t = expected dividend in year t

r = required rate of return on the stock

The first part of the equation is simply the sum of the next dividend payments that will occur at some point in the future, each discounted back at the required rate of return so that we arrive at a present value today.

The second part of the equation is the discounted terminal stock value or the expected selling price at the end of the investment horizon.

Free-cash-flow-to-equity Models

Instead of measuring expected dividends, the free-cash-flow-to-equity (FCFE) model is based on

the company's expected dividend-paying capacity. The calculation of FCFE starts with the cash flows from operations (CFO):

$$\text{CFO} = \text{Net income} + \text{Noncash expenses} - \text{Working capital}$$

Then, we can come up with the free-cash-flow-to-equity (FCFE) calculation:

$$\text{FCFE} = \text{CFO} - \text{Fixed capital investment} + \text{Net borrowing}$$

Where *Net borrowing* is simply *Borrowings* minus *Repayments*.

Question

The following is taken from an analyst's valuation of CBA, Inc:

Current Price	$8.50
Expected Year 1 Dividend	$1.00
Expected Year 2 Dividend	$1.15
Expected Sale Price (End of Year 2)	$8.75

The analyst's required return is 8%. Based on the analyst's estimates and using the dividend discount model, the stock price of CBA, Inc. is currently:

A. Overvalued.
B. Fairly valued.
C. Undervalued.

Solution

The correct answer is **C**.

Based on the given inputs, the stock's estimated value is equal to year 1 cash flows ($1.00/1.08 = $0.93) plus year 2 cash flows (($8.75 + $1.15)/$1.08^2$ = $8.49), or approximately $9.41. Because the stock's estimated value exceeds its current price, the stock is undervalued.

LOS 8f: calculate the intrinsic value of a non-callable, non-convertible preferred stock

The intrinsic value of a non-callable, non-convertible preferred stock can be calculated in much the same way as a share of common stock, except the expected sales price is replaced by the par value of the preferred shares.

$$V_0 = \sum_{t=1}^{n} \frac{D_t}{(1 + r)^t} + \frac{F}{(1 + r)^n}$$

Where:

V_0 = present value of a share of stock today

D_t = expected dividend in year t

r = required return on the stock

F = par value of the preferred stock

n = years to maturity

Question

ABC’s 5% dividend-paying preferred shares have a par value of $100. The required rate of return on preferred shares with the same rating is 7% as of the valuation date. The preferred shares will mature in ten years.

All else being equal, if the preferred shares instead matured in 15 years, how would the intrinsic value of ABC’s preferred shares change?

A. The longer maturity would increase current valuation.
B. The longer maturity would decrease current valuation.
C. The longer maturity would not change current valuation.

Solution

The correct answer is **B.**

The intrinsic value of preferred shares is influenced by the time to maturity and the required rate of return. When the dividend rate of preferred shares is lower than the required rate of return, the value of the shares will be below par value.

In this case, as the maturity of the preferred shares increases from 10 years to 15 years, it extends the period over which investors will receive dividends at a rate lower than the required return. This longer period of receiving lower-than-required returns decreases the present value of future cash flows associated with the preferred shares.

LOS 8g: calculate and interpret the intrinsic value of an equity security based on the Gordon (constant) growth dividend discount model or a two-stage dividend discount model, as appropriate

Gordon (Constant) Growth Dividend Discount Model

As the name implies, the Gordon (constant) growth dividend discount model assumes dividends grow indefinitely at a constant rate.

$$V_0 = \frac{D_1}{r - g}$$

Where:

D_1 = expected dividends **in year 1**

Note that this is of the utmost importance in your calculation. If you are given the dividend today, you would multiply D_0 by (1+r) to have the dividend in one year.

r = required rate of return

g = growth rate

Analysts may use the following equation to estimate a company's sustainable growth rate:

$g = b \times ROE$

b = earnings retention rate or (1 – dividend payout ratio)

ROE = return on equity

Multistage Dividend Discount Model

The two-stage dividend discount model is a bit more complicated than the Gordon model as it involves using both a short-term and a long-term growth rate to estimate a company's current value. The two-stage DDM assumes that the company will pay dividends that grow at a constant

rate at some point, but dividends are currently growing at an elevated and unsustainable rate. The intrinsic value of a share of stock using this model can be estimated as follows:

$$V_0 = \sum_{t=1}^{n} \frac{D_0(1+g_S)^t}{(1+r)^t} + \frac{V_n}{(1+r)^n}$$

Where:

$$V_n = \frac{D_{n+1}}{r - g_L}$$
$$D_{n+1} = D_0(1+g_S)^n(1+g_L)$$

g_S = short-term growth rate lasting for n-years.

g_L = long-term (sustainable) growth rate into perpetuity.

The above equation implies that the long-term dividend is the dividend today, multiplied by one plus the short-term dividend for a number of periods n, then multiplied by one plus the long-term growth rate.

While several equations are involved, the two-stage DDM calculation boils down to the sum of the discounted short-term dividends and the discounted long-term dividends. The short-term dividends have to be rolled back to the present (t = 0), while the value of the long-term dividends must first be calculated at the time of transition from short-term to long-term (t = n).

The number of stages used in valuation should not be solely based on the company's age, as many long-established companies can experience periods of above-average or below-average growth.

Question

Using the Gordon (constant) growth dividend discount model and assuming that r > g > 1%, what would be the effect of a 1% decrease in both the required rate of return and the constant growth rate on the stock's current valuation? Assume there is no change to current dividend payment (D_0).

A. Current valuation would increase.
B. Current valuation would decrease.
C. Current valuation would remain unchanged.

Solution

The correct answer is **B**.

If both the required rate of return and growth rate are decreased by the same amount, the denominator should remain unchanged. However, to calculate the current value, the current dividend must be rolled ahead one year by multiplying D_0 by (1+g). While the current dividend payment is unchanged in this instance, D_1 will decrease slightly when g is decreased by 1% thus making the current valuation lower than it was previously.

LOS 8h: identify characteristics of companies for which the constant growth or a multistage dividend discount model is appropriate

The Gordon (constant) growth dividend discount model is particularly useful for valuing the equity of dividend-paying companies that are insensitive to the business cycle and in a mature growth phase.

On the other hand, multistage models are often used to model rapidly growing companies. The multistage DDM can be extended beyond two stages to however many stages are deemed appropriate. For instance, the valuation of a fairly young company may benefit from a three-stage DDM.

Question

Corporation	Sensitivity	3yr Growth Rate	Long-term Growth Rate
A	Defensive	5.0%	2.0%
B	Cyclical	3.0%	3.0%
C	Defensive	6.0%	6.0%

Which one of the corporations above would *most likely* be the best fit for a valuation using the Gordon (constant) growth dividend-discount model?

A. Corporation A.

B. Corporation B.

C. Corporation C.

Solution

The correct answer is **C**.

Due to its insensitivity to the business cycle and a short-term growth rate that corresponds to its long-term growth rate, Corporation C would probably be the most appropriate candidate for valuation using the Gordon (constant) growth DDM.

A multistage model would likely be appropriate for Corporation A due to the significant variance between short-term and long-term growth rates.

A constant growth model valuation may also be appropriate for Corporation B, but accuracy is less likely due to the cyclical nature of its business.

LOS 8i: explain the rationale for using price multiples to value equity, how the price-to-earnings multiple relates to fundamentals, and the use of multiples based on comparables

The use of price multipliers to earnings, book value, and sales have all shown to have significant predictive value in determining relative future returns, implying that price multiples can be an effective tool for the valuation of companies. In addition, calculating the “justified value” (the value justified by fundamentals or a set of cash flow predictions) of certain multiples offers an alternative way of estimating intrinsic value.

Justified Price/Earnings Multiple

Assuming a constant rate of growth, the justified forward price-to-earnings ratio can be found using the following equation:

$$\frac{P_0}{E_1} = \text{justified forward P/E}$$

$$\frac{P_0}{E_1} = \frac{p}{r - g}$$

p = payout ratio

r = required rate of return

g = expected growth rate of dividends

The justified forward P/E is inversely related to the required rate of return and positively related to the growth rate. However, this relationship may not be true because a higher payout ratio may imply a slower growth rate due to the company retaining a lower proportion of earnings for reinvestment. These estimates may be highly sensitive to small changes in assumptions, so it may be useful to conduct a sensitivity analysis.

The Method of Comparables

The economic rationale underlying the method of comparables is the law of one price: identical assets should sell for the same price. Thus, if an appropriate benchmark multiplier representative of a peer group or industry can be set, an analyst can determine the current relative value of a given company.

However, it is not always easy to determine comparable companies or industries due to other business lines and differing company sizes. For instance, it would be relatively hard to find a comparable company to Apple – one that sells over 200 million smartphones per year and millions of computers and tablets throughout the world.

Question

All else equal, a decrease in which of the following will cause an increase in the justified forward P/E multiple?

A. Growth rate.
B. Payout ratio.
C. Required rate of return.

Solution

The correct answer is **C**.

Due to the inverse relationship between the required rate of return and the justified P/E, a decrease in the required return will justify a higher forward P/E. This should make sense intuitively since investors are willing to pay a higher price for assets as they relax their return requirements.

LOS 8j: calculate and interpret the following multiples: price to earnings, price to an estimate of operating cash flow, price to sales, and price to book value

The concept of price multiples refers to ratios that compare a company's share price with a financial metric, allowing for an assessment of the stock's relative value. These ratios are commonly used by practitioners for screening purposes, identifying stocks for potential purchase or sale based on specified threshold values. Additionally, price multiples are useful for evaluating a group or sector of stocks, with lower ratios often indicating more attractively valued securities.

Key price multiples utilized by security analysts include:

- **Price-to-Earnings Ratio (P/E):** This is the ratio of the stock price to earnings per share (EPS). The P/E ratio is widely cited by the media and used by analysts and investors. Historical research has shown that stocks with low P/E ratios have been associated with higher future returns.
- **Price-to-Book Ratio (P/B):** This ratio compares the stock price to the book value per share. There is substantial evidence indicating that lower P/B ratios are correlated with higher future returns.
- **Price-to-Sales Ratio (P/S):** This ratio is calculated as the stock price divided by sales per share. Research has demonstrated that a low P/S multiple is an effective predictor of future returns.
- **Price-to-Cash-Flow Ratio (P/CF):** This ratio compares the stock price to a per-share measure of cash flow, such as free cash flow (FCF) or operating cash flow (OCF).

One criticism of price multiples is that they do not account for future prospects if based on trailing or current values. To address this, practitioners often forecast fundamental values or use forward price multiples, which can provide a more forward-looking perspective.

In addition to these traditional price multiples, analysts should be familiar with industry-specific ratios and other metrics used to analyze business performance and financial condition based on financial statement data.

Linking Price Multiples, Present Value Models and Fundamentals

Price multiples can be linked to fundamental analysis through discounted cash flow models, such as the Gordon growth model. For example, the justified forward P/E ratio can be derived using the following relationship:

$$P_0 = \frac{D_1}{r - g}$$

By dividing both sides of the equation by the forecast for next year's earnings, E_1, we obtain the justified forward P/E:

$$\frac{P_0}{E_1} = \frac{\frac{D_1}{E_1}}{r - g} = \frac{p}{r - g}$$

This equation indicates that the P/E ratio is inversely related to the required rate of return and positively related to the growth rate. However, the relationship between the P/E ratio and the payout ratio (p) may not be straightforward, as a higher payout ratio can imply a slower growth rate due to lower earnings retention for reinvestment.

Question

Which one of the following statements is *most* accurate?

A. A high price-to-book ratio usually implies the company is in financial turmoil.
B. A low price-to-earnings ratio can imply the company is undervalued or has higher potential future returns, but it does not necessarily mean high growth prospects.
C. If a company's price-to-sales ratio increases from its value one year prior, the price-to-earnings ratio must have also increased if the net income/sales ratio remains constant.

Solution

The correct answer is **B**.

A low P/E ratio is generally associated with undervaluation, indicating that the stock may be priced lower relative to its earnings. However, it does not always imply high growth prospects, as it could also indicate other factors such as market pessimism or potential risks.

A is incorrect. A high P/B ratio typically indicates that the market values the company's assets highly, which is not necessarily a sign of financial turmoil. In fact, a low P/B ratio is more often associated with companies that may be experiencing financial distress.

C is incorrect. While it is true that an increase in P/S ratio could lead to an increase in P/E ratio if the net income/sales ratio remains constant, the relationship is not direct. Changes in profit margins or other factors can cause these ratios to move independently of each other.

LOS 8k: describe enterprise value multiples and their use in estimating equity value

Enterprise value (EV), often viewed as the cost of a takeover, is most frequently determined as market capitalization plus the market value of preferred stock plus the market value of debt minus cash equivalents and short-term investments.

EV/EBITDA

EBITDA (earnings before interest, taxes, depreciation, and amortization) can be viewed as a source of funds to pay off the financial stakeholders in the company (lenders, shareholders, the government, etc.). EV/EBITDA is arguably the most common EV multiple. The EV/EBITDA ratio for S&P 500 companies has averaged 13 over the past few years. As a general guideline, an EV/EBITDA value below 10 is commonly interpreted as healthy by analysts. Since EBITDA is usually positive even when net income is negative, EV/EBITDA can be calculated when a price-to-earnings (P/E) multiple may not be available.

EV/Operating income

EV/Operating income can also be used as an alternative to EV/EBITDA. Analysts may have difficulty finding the market value of a company's debt, in which case the value may have to be estimated based on comparable bond values.

Question

A junior analyst made a number of mistakes when performing an analysis of Confuzzled, Inc., a soft drink manufacturer as of year-end 2018. The analyst accidentally used the company's 2017 book value of debt ($200 million) instead of the 2018 book value of debt ($150 million) when calculating relevant financial ratios. The analyst also overstated the company's marketable securities by $20 million and understated EBITDA by $25 million. All else equal, the correction of which one of these errors on its own will cause a decrease in the analyst's calculation for Confuzzled's EV/EBITDA multiple?

A. EBITDA.
B. Cash equivalents.
C. Book value of debt.

Solution

The correct answer is **A**.

Correctly increasing EBITDA by $25 million would, in fact, decrease the calculated EV/EBITDA for Confuzzled, Inc.

B is incorrect. In correcting the marketable securities error, cash equivalents would be reduced by $20 million causing a corresponding increase in enterprise value and, therefore, an increase in the EV/EBITDA multiple.

C is incorrect. The book value of debt should not be used in calculating enterprise value. Thus, the correction should have no effect on the EV/EBITDA multiple.

LOS 8l: describe asset-based valuation models and their use in estimating equity value

An asset-based valuation of a company uses estimates of the market or fair value of the company’s assets and liabilities and, thus, is most appropriate for companies with a high proportion of current assets and current liabilities and few/insignificant intangible assets. Asset-based valuations are frequently used in combination with multiplier models to value private companies or to supplement the valuation of public companies.

Not all companies own assets for which the fair value can be easily determined, and market values can differ significantly from carrying values. Furthermore, asset valuations may be of limited use in a hyper-inflationary environment.

Question

Which of the following famous investing approaches made the most use of asset-based valuation?

A. Ben Graham's "Net-Net" or "Cigar Butt" approach of finding companies selling for less than their net working capital.
B. Joel Greenblatt's "Magic Formula" approach, which screens for stocks with low P/E ratios that also achieve high returns on invested capital.
C. Charlie Munger's/Warren Buffett's investment approach targeting great companies at good prices. This approach focuses heavily on companies with sustainable moats (competitive advantages) generally achieved with a valuable brand (intangible) and competent management.

Solution

The correct answer is **A**.

Since Ben Graham's approach focuses solely on current assets and liabilities, asset-based valuation is a core part of the strategy.

B is incorrect. Joel Greenblatt's "Magic Formula" is based on a multiplier valuation because of its use of the P/E ratio.

C is incorrect. While Warren Buffett made a number of "Cigar Butt" investments in his day, the investment approach that he is best known for (thanks in large part to Charlie Munger) strays from asset-based valuation towards valuations that take valuable intangibles into account.

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LOS 8m: explain the advantages and disadvantages of each category of the valuation model

Free Cash Flow to Equity (FCFE) Model

- **Advantages:** aims to calculate a company's capacity to pay future dividends, going beyond simply discounting expected dividends. This approach may provide a more useful valuation, especially when the company does not pay dividends or dividends are sporadic.
- **Disadvantages:** calculation is more complicated than a standard dividend discount model, and more assumptions must be made.

Gordon (Constant) Growth Dividend Discount Model

- **Advantages:** useful in valuing defensive companies at a mature life-cycle stage. The calculation is intuitive and simple.
- **Disadvantages: w**hile a single growth rate makes the calculation easy, it isn't always very practical for valuing complex companies in uncertain economic environments.

Multistage Dividend Discount Model

- **Advantages:** allows for more flexibility than the constant growth model as an analyst can include however many growth rates may be appropriate for a given company's valuation. This is particularly useful in the valuation of companies at an early stage in their life-cycle.
- **Disadvantages:** calculation isn't as clean and simple as the constant growth model. While the model allows for flexibility, it is oftentimes difficult to project multiple separate growth rates in a company's future.

Multiplier Models

- **Advantages:** can take comparable companies into account and may prove particularly useful in valuing companies with negative earnings. Limits the amount of projection necessary and ties the valuation into historical data. Price multiples have shown to be fairly good predictors of future performance.
- **Disadvantages:** a comparable company analysis may be skewed by mispricing across the given industry or peer group.

Asset-Based Valuation Models

- **Advantages:** simple calculation and no projections necessary, particularly useful in valuing firms that are heavy in current assets and light in intangibles. Also useful in supplementing other valuation methods.
- **Disadvantages:** not usually the best stand-alone option for valuing firms as going concerns. The model doesn’t take into account current or expected cash flows, earnings, or growth rates.

Question

Which of the following models would be the most helpful in valuing a Sillicon Valley startup firm?

A. Multiplier model.
B. Asset-based model.
C. Multistage dividend discount model.

Solution

The correct answer is **A**.

Multiplier models are particularly useful in valuing companies with negative earnings, which is often the case for startup companies. Also, there should be many comparable startups in the same geographical location raising capital, which makes the valuation easier.

B is incorrect. A startup firm usually does not have many tangible assets.

C is incorrect. While the multistage dividend discount model can include different growth rates, a startup company is rarely paying dividends. Therefore, this model would not be of any help.