Portfolio Management Investment Policy for Individual Investors

EXAM ESSENTIALS

Exam Essentials:

Exam Points: 42 (28 questions)

Percent of Total: 12%

Question Format: Multiple Choice

Sample Exam Coverage: 2002 - 42, 43, 44, 45, 46, 48, 50
1998 (1) - 40, 41, 43
1998 (2) - 47, 48, 49, 50

Most Likely Exam Topics

Elasticity of demand
Indifference curves
Types of costs
Economic vs. accounting profit
Law of diminishing returns
Price takers/price searchers
Profit maximizing output levels
Characteristics of different competitive models

Five star rating of LOS in this section

Number of LOS	Los rank
8	★★★★★
10	★★★★
14	★★★
9	★★
2	★

Total Los: 43
Study session average: 3.3

Preliminary Learning Outcomes:

Note: We have italicized all material relating to preliminary learning outcomes. We have not assigned star rankings to these LOS, since they will not be tested directly on the exam.

Readings

1.A. Gwartney: Economics: Private and Public Choice, 9th edition (2000)
Chapter 3: Supply, Demand, and the Market Process

LOS Discussion

1.A.a) Explain the laws of supply and demand;

*The **law of supply** states that there is a **direct** relationship between supply and price: as prices increase (decrease), producers will bring more (less) of their product to market. The **law of demand** states that there is an **inverse** relationship between price and buyer demand: as prices increase (decrease), consumers will purchase less (more) goods and services.*

1.A.b) Explain the difference between shifts in and movements along supply-and-demand curves;

*A **change in quantity demanded** is simply a movement along a demand curve from one point to another. **Changes in demand**, caused by changes in factors such as income, number of consumers, or prices of substitute goods, will cause a shift in the entire demand curve.*

*A **change in quantity supplied** is a movement along a supply curve from one point to another. **Changes in supply**, caused by changes in factors such as resource prices, technology, taxes, and natural and political events, will cause a shift in the entire supply curve.*

1.A.c) Discuss the factors that cause a demand curve to shift;

Factors that can cause a change in the entire demand curve:

1. *Change in consumer income - consumers can purchase more goods.*
2. *Changes in the number of consumers in the market - fewer customers = demand curve shift.*
3. *Changes in the price of a related good - changes in prices of similar products influence consumers' choices.*
4. *Changes in expectations - consumers' expectations about the future can affect a product's demand.*
5. *Demographic changes - demand for products is influenced by demographic composition of the market.*
6. *Changes in consumer tastes and preferences - consumer preferences change as people learn and change.*

1.A.d) Discuss the factors that cause a supply curve to shift;

Factors that can cause a change in the entire supply curve:

1. *Changes in resource prices - higher production costs lead to decreased production.*
2. *Changes in technology - improvements reduce production costs and stimulate production.*
3. *Elements of nature - favorable weather can lead to bumper crops, where natural disasters (flood, drought) can considerably reduce yield.*
4. *Political disruptions - war and changing political conditions can alter supply.*
5. *Changes in taxes - can increase (decrease) costs of production.*

1.A.e) Define short-run and long-run market equilibrium;

Markets have an automatic tendency to gravitate toward equilibrium, which occurs when there is a state of balance between two opposing forces. Changes in either supply or demand will lead to changes in equilibrium, and will not be instantaneous, but over time. In the short run, firms do not have enough time to react to a change in price. The long run is defined as a period of time that is lengthy enough for decision makers to fully adjust to a market change.

1.A.f) Discuss how markets respond to changes in supply and demand;

An increase in supply (the supply curve shifts to the right) will lead to a subsequent decrease in prices. Lower prices tend to whet consumers' appetites and cause demand to increase. Producers then will supply more products to meet the increased demand. These two reactions will tend to force quantity supplied and quantity demanded back to a state of equilibrium. A decrease in supply will lead to the opposite reaction.

An increase in demand (the demand curve shifts to the right) will lead to a subsequent increase in prices. At a higher price, consumers tend to seek substitute goods and services, and/or producers will supply a larger quantity of product. Again, these two reactions will tend to force quantity demanded and quantity supplied back to a state of equilibrium. When a decrease in demand occurs, the opposite chain of events will occur.

1.A.g) Explain how shortages and surpluses affect the analysis of equilibrium prices;

The consumption response to a price change due to a shortage will usually be smaller in the short run than over a longer period of time. At first, consumers' behavior will show little change. Therefore, an unexpected reduction in the supply of a product will typically push prices up more in the short run than in the long run. However, over time consumers will seek substitutions or will alter their consumption behavior. Decreased consumer demand will then be the long-term result of a shortage.

The quantity supplied is generally more responsive to a price change in the long run than in the short run. Suppliers must be given sufficient time to increase production, and the increased supply will put downward pressure on prices over time.

1.A.h) Explain how the "invisible hand" principle works;

*The **invisible hand principle** describes the tendency of competitive markets to direct the actions of self-interested individuals toward those actions that also promote economic progress (economic well-being of society). This occurs through several means:*

1. *market prices relay information to decision makers*
2. *market prices coordinate choices of buyers and sellers*
3. *market prices establish a reward system to motivate parties to cooperate and work efficiently*

Readings

1.B. Gwartney: Economics: Private and Public Choice, 9th edition (2000)
Chapter 4: Supply and Demand: Applications and Extensions (pp. 89-110)

LOS Discussion

1.B.a) Analyze, in terms of supply and demand, the markets for labor, loanable funds, and foreign exchange;

In the production of goods and services, producers demand resources, such as raw materials and labor, while households supply them, in order to have the income to purchase the finished goods and services. The labor market is a huge component of the resource market, and the market for resources and products are closely linked. Changes in one will directly affect the other. For example, increased demand for labor will lead to higher production costs, and therefore a decrease in supply.

The loanable funds market can be described as the broad market that coordinates borrowing and lending decisions of business firms and households. Interest rates are the key factor, being the major determinant of a consumer or business' choice of spending today versus spending in the future. An increase in demand will push interest rates up, thereby encouraging additional savings, which in turn will be available to fund more borrowing.

The foreign exchange market is the market in which currencies of different countries are bought and sold. Even when transacted domestically, the purchase or sale of foreign products will involve some exchange of currencies at some point in the production cycle. Changes in the foreign exchange markets are important because they alter the prices of all goods and services that are traded in the international market.

1.B.b) Explain the effects of price ceilings and price floors;

*A **price ceiling** is a legally established maximum price that sellers may exchange for a product or service. This results in a lower price than the markets would naturally produce, at least in the short run. However, at the lower price, the amount of supply that producers are willing to make decreases, while the amount that consumers are willing to purchase increases. A shortage will result, which leads to some form of rationing in order to distribute the products.*

*A **price floor** is a legally established minimum price that buyers must pay for a product or service. This results in a higher price than the markets would naturally produce, at least in the short run. At higher prices, producers are willing to increase production and bring more supply to the market, while consumers' demand will decrease because of the artificially high price. A surplus will result, leading buyers to be more selective in their purchasing decisions. Consumers will often expect incentives or favors from producers in order to win their business in this type of market.*

1.B.c) Contrast the economic efficiency of a black market with the efficiency of a market operating within the legal system;

A black market is a market that operates outside the legal system, either by selling illegal goods, or legal goods at illegal prices. Example would include the sale of illegal drugs, or the "scalping" of tickets in excess of their face value. Supply and demand work just as in the legal market, although prices have to be high enough to compensate for the additional risk involved. Black markets tend to have more defective products (lack of regulations), higher profit rates (for those who don't get caught) and greater use of violence (settlement of disputes). A market that operates within a well-structured legal system provides for secure private property rights, enforcement of contracts, and an unbiased system for settlement of disputes.

1.B.d) Define the incidence of a tax;

Tax incidence describes the manner in which the burden of taxes is distributed among buyers and sellers. The party who actually pays the tax to the government (writes the check) is not necessarily always the party who economically bears the tax burden. For example, if a tax is placed on the sale of specific item, the seller will likely raise the price of that item, forcing the consumer to fund the tax that the seller then must remit to the taxing authority.

1.B.e) Distinguish between actual and statutory incidence;

The actual burden of a tax is independent of whether it is statutorily placed on the buyer or seller. For example, assume a new $1,000 tax is placed on the seller of a used car. The new tax results in the seller raising the price of the car to compensate for the additional tax due. The supply curve will shift vertically upward by the amount of the tax, resulting in a new higher equilibrium price for used cars. Although the tax was imposed on the seller, the result is both higher used-car prices for the buyer and lower net receipts for the seller.

1.B.f) Discuss how elasticities of supply and demand influence the incidence of a tax;

The incidence of a tax is determined primarily by the elasticities of supply and demand, rather than what is statutorily mandated. When demand is relatively inelastic and supply elastic, the primary burden of a tax will fall on buyers. An example is gasoline, where demand is inelastic because consumers cannot readily switch to another alternative fuel. Therefore, an increase in the tax on gas is mostly passed on to the consumer. In the opposite case, when demand is relatively elastic and supply is inelastic, sellers or suppliers will shoulder the greater share of the tax burden. The luxury boat tax placed on U.S. sales in the 1990's is a good example; buyers could buy outside of the U.S. or purchase other luxury items. The sellers are not able to raise prices enough to cover the tax, and thus receive a lower net price.

Readings

1.A. Gwartney: *Economics: Private and Public Choice*, 9th edition (2000)
Chapter 19: Demand and Consumer Choice, including addendum: Consumer Choice and Indifference Curves

LOS Discussion

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1.A.a) Explain consumer choice in an economic framework;

The market demand curve is composed of individual consumer demands. Consumer choice is a way of allocating resources to maximize benefits to the consumer and is governed by five underlying principles:

1. Limited income necessitates choice
2. Consumers make rational, purposeful decisions
3. One good can be substituted for another
4. Consumers make decisions with imperfect information - reliance upon past experiences
5. Law of diminishing marginal utility - benefits from consuming successive units of a product will decline as the rate of consumption increases

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1.A.b) Define, describe, calculate and interpret price and income elasticity of demand;

The price elasticity of demand is a measure of how demand for a product will change, given a change in the price of the product. If the elasticity ratio is greater than 1 (or less than -1), then demand is elastic, because demand will change at a rapid rate relative to price changes. If the ratio is between 1 and -1, then demand is inelastic, because demand is not heavily influenced by price.

$$\textit{Price elasticity of demand} = \frac{\textit{\% change of quantity demanded}}{\textit{\% of change price}}$$

Another way to consider elasticity is to evaluate the effect of changing prices on total revenue. If a price decrease of 10% causes a 5% increase in units sold, then demand is inelastic (the change in quantity demanded was less than the change in price). The decrease in price is not fully offset by higher unit sales, and so total revenue will decrease. When demand is elastic, a decrease in price would cause total revenue to increase, as the increase in quantity demanded more than offsets the lower price per unit.

The classic example of inelastic demand is the addict's demand for heroin, since demand will be constant despite any change in price. An example of highly elastic demand might be TV sets, since lowering prices would stimulate higher demand. Because elasticity is a relative concept, remember that the elasticity of a straight demand curve will differ along the curve.

Price elasticity of demand measures the change in demand for a given change in price, whereas income elasticity measures the change in demand for a given change in income. Income elasticity is defined as:

$$\frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

The income elasticity coefficient is usually positive. In general those goods that are regarded as necessities will have low income elasticities (between 0 and 1) while those goods regarded as luxuries will have high income elasticity (greater than 1). Those few goods that have negative income elasticity are termed to be inferior goods.

CONCEPT QUIZ

If demand for a product is highly elastic:

a. it is likely that there are no good substitutes for the product.
b. price and total revenue will move in opposite directions.
c. demand is not heavily influenced by price.
d. all of the above.

b - if demand is elastic, a price decrease of 10% might lead to an increase in quantity sold of 20%, so the decrease in price resulted in higher revenue.

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1.A.c) Identify and discuss the determinants of price and income elasticity of demand;

Price elasticity of demand measures the change in demand for a given change in price, whereas income elasticity measures the change in demand for a given change in income.

The main determinants of price elasticity of demand are:

Availability of substitutes - most important determinant. If cheap substitutes are available, rising prices will force consumers to switch to the substitute product, thus making demand elastic.

Share of total budget expended on product - products that account for large portions of consumers' budgets will be more price elastic.

Time and adjustment to price change - the longer a shift in price continues, the higher the demand elasticity, since consumers will adjust their spending habits. This is also called the "second law of demand."

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1.A.d) Describe the relationships among total revenue, total expenditures, and price elasticity of demand;

If the price of a product rises, total consumer expenditures can rise, fall or remain unchanged, depending on the elasticity of demand. Price elasticity is the ratio of percentage change in quantity to the percentage change in price. When demand is inelastic (a price elasticity coefficient of less than one), a change in price will cause total expenditures to change in the same direction. When demand is elastic (coefficient greater than one), a change in price will cause total expenditures to move in the opposite direction. When demand elasticity is unitary, total expenditures will be unaffected by changes in price.

Analyzing a particular firm's demand curve can be done using the firm's total revenues, which is price per unit times quantity sold. A firm's reaction to a change in price will again be determined by its price elasticity of demand. When a firm's demand curve is inelastic, its total revenue will rise if it increases its price and fall if it lowers its price. When demand is elastic, revenue will fall if price is increased, and will rise when prices fall. When demand elasticity is unitary, total revenues will be unaffected.

1.A.e) Explain why the price elasticity of demand tends to increase in the long run; ★★

The second law of demand describes the relationship between the elasticity coefficient and the length of the adjustment period after a price change. It states that consumers will have a greater response to a change in price as they have the time to adjust to the change. When the price of a product increases, consumers' responses will not be instantaneous, and will progressively increase over time. Demand for most products will be less elastic in the short run than in the long run.

1.A.f) Discuss the characteristics of consumer indifference curves; ★★★

Economists evaluate consumer choice using indifference curve analysis. Indifference curves diagram an individual's preference for alternative consumption bundles. A consumer will always seek out the combination of goods that falls on the highest indifference curve.

Indifference curves have the following properties:

- More goods are preferable to fewer goods
- Goods can be substituted for one another
- The value of a good declines as it is consumed more intensely - causes marginal rate of substitution to decline
- The curves are everywhere dense - they include all of the possible combinations
- Indifference curves cannot cross - if they did, the first property would be violated.

1.A.g) Discuss the role of the consumption-opportunity constraint and the budget constraint in indifference curve analysis; ★★

The **consumption-opportunity constraint** distinguishes bundles that are attainable from those which are not. The **budget (or market) constraint** separates the bundles of goods that the consumer can and cannot buy because of budget limitations. In a money economy, these two constraints are usually equal. The indifference curve and the market-constraint curve will coincide at the point that maximizes the consumer's level of satisfaction.

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1.A.h) Describe, and distinguish between, the income effect and the substitution effect.

Income effect - part of an increase (decrease) in amount consumed that is result of consumer's real income (meaning the consumption possibilities available to the consumer) being expanded (contracted) by a reduction (rise) in the good's price.
Substitution effect - part of an increase (decrease) in amount consumed that is result of a good being cheaper (more expensive) in relation to other goods because of reduction (increase) in price.

Exam Tips

Substitutes are products that fulfill similar needs. Complements are products that exhibit an inverse relationship between the price of one and demand for the other - the text uses the example of gasoline and large cars.

Candidates should understand the major determinants of demand and the interrelationship between demand and price, which is best expressed as price elasticity of demand.

Readings

1.B. Gwartney: *Economics: Private and Public Choice*, 9th edition (2000)
Chapter 20: Costs and the Supply of Goods

LOS Discussion

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1.B.a) Describe the principal-agent problem of the firm;

The principal-agent problem is basically a conflict of interest. When the buyer (principal) does not have complete information about the circumstances faced by the seller (agent), the buyer can not know how well the agent performed the agreed upon service. For example, a mechanic may have different priorities than the customer does about the best way to fix a car - customer wants long-lasting repairs at cheapest price, mechanic has some incentive to provide short-term repairs at high price. This applies to many large organizations where the interests of management (job preservation) diverge from the interests of owners/shareholders (profit maximization).

1.B.b) Distinguish among the types of business firms; ★★★

Businesses can be organized in one of the following ways:

1. proprietorship - owned by a single individual who is fully liable for the debts of the firm. Typically are small businesses where the proprietor works directly for the firm.
2. partnership - two or more persons act as co-owners of the firm, sharing risks and responsibilities. Examples include law, accounting and medical firms.
3. corporation - owned by shareholders who possess ownership rights to the firm's profits, but whose liability is limited to the amount of their investment in the firm. Stockholders typically hire managers to run the firm, and ownership of shares can be easily transferred.

1.B.c) Distinguish between (1) explicit costs and implicit costs, (2) economic profit and accounting profit, and (3) the short run and the long run in production; ★★★★★

1. **Explicit costs and implicit costs** - Explicit costs are monetary payments to resource owners (money wages, interest, rent). These costs will be reflected in the firm's financial statements. Implicit costs do not involve a monetary payment, and are associated with the use of resources owned by a firm. Implicit costs represent compensation to the equity owner(s) of the firm for their opportunity costs - since they invested their time or resources in this firm, they sacrificed the opportunity to invest elsewhere. These costs will not be reflected in the firm's financial statements.
2. **Economic profit and accounting profit** - Economic profits are derived by subtracting economic costs from total revenues. Total economic costs include the opportunity cost of the assets owned by the firm. Accounting profits omit implicit costs such as the costs of owner-provided labor services or capital assets. Note that a firm earning zero economic profits is earning exactly the market rate of return on their investment.
3. **Short run and the long run in production** - Short run is usually defined as a period during which some factors of production, such as the size of a firm's plant, cannot be varied. The long run is a period long enough to allow for varying the size of all factors of production.

CONCEPT QUIZ

The economic profit of a firm:

a. is best measured by the net income reported on the firm's income statement.
b. will usually be higher than accounting profit.
c. will be positive even though accounting profits are negative.
d. takes into account implicit costs which are not typically reflected in accounting statements.

d - economic profit includes both explicit and implicit costs.

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1.B.d) Define various types of costs, including opportunity costs, sunk costs, fixed costs, variable costs, marginal costs, and average costs;

Opportunity costs attempt to measure the costs of selecting one investment over another - the opportunities forgone because capital was employed in one endeavor and therefore not available for others.

Sunk costs are costs that have already been incurred as a result of prior decisions. Sunk costs should exert no influence over current economic decision making.

Fixed vs. variable costs - fixed costs, such as property taxes, do not change over the short run, regardless of production levels. Variable costs vary directly with levels of output.

Average vs. marginal costs - marginal cost is the change in total cost required to produce one more unit of output. Average costs are per unit costs for total production.

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1.B.e) State the law of diminishing returns and explain its impact on a company's costs;

The law of diminishing returns states that as more units of a variable resource are applied to a fixed amount of other resources, output will eventually increase by smaller and smaller amounts. Once a firm hits a level of diminishing marginal returns, more and more units of the variable factors will be required to produce one additional unit.

The net result of this analysis is that as production levels increase, **average** fixed costs will decline, causing average total costs to decline. Once the firm reaches the point of diminishing marginal returns, however, marginal costs will begin to increase to the level where the increasing marginal costs outweigh the reduction in average fixed costs, therefore causing average total costs to increase.

CONCEPT QUIZ

As a firm increases production, average total costs will decline up to the point where increasing _____ costs offset the benefit of spreading _____ costs over a larger number of units produced.

a. fixed; sunk
b. sunk; opportunity
c. marginal; fixed
d. marginal; variable

c - as production increases, fixed costs can be spread over a larger number of units produced, thus lowering average fixed costs. However, due to the law of diminishing returns, marginal costs will at some point increase enough to offset the lower average fixed costs.

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1.B.f) Describe and explain the shapes of the short-run marginal cost, average variable cost, average fixed cost, and average total cost curves;

Marginal cost (MC) is the change in total cost resulting from the production of one additional unit. In the short run, MC will typically decline if output is increased, reaching a minimum, and then will increase sharply as maximum production capacity is approached.

Total variable costs are those costs that rise as output increases. For a given level of output, the average variable cost (AVC) is the total variable cost divided by output. In the short run, AVC will slightly decline, to a certain point at which output will increase by smaller and smaller amounts, causing AVC to rise. This is the point of diminishing returns, where it will take successively larger amounts of the variable factor to expand output by one unit.

Total fixed cost is the sum of costs that do not vary with output. Average fixed cost (AFC) is the total fixed cost divided by output. AFC will be high for low rates of output, but will decline as output increases, causing the curve to slope downward to the right.

Average total cost (ATC) is the total cost divided by the total number of units produced. ATC will be a U-shaped curve, since AFC will be high for small rates of output and MC will be high as the plant approached maximum capacity.

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1.B.g) Define economies and diseconomies of scale and explain how each is possible, and relate each to the shape of a company's long-run average total cost curve;

Economies of scale arise when a firm is able to reduce its per unit costs by employing a large production facility to produce a large amount of goods. Economies of scale will shift a firm's LRATC downward due to reduced costs. **Diseconomies of scale** can arise when a firm gets so large that bureaucratic inefficiencies result. Coordinating the large operation becomes too cumbersome, and long run average total costs actually start to rise. Subsequently, diseconomies of scale will cause a firm's LRATC to shift upward due to increased production costs.

Economies and diseconomies of scale are long-run concepts, which relate to production when all factors are variable. In contrast, increasing and diminishing returns are short-run concepts, relevant only with fixed factors of production.

The long-run average total cost curve (LRATC) for a firm may have a very narrow range on the curve that represents ideal plant size. All plants smaller or larger than that point(s) on the curve will have higher per-unit costs. Industries that may have this curve include retail sales and agriculture.

Another type of LRATC has a broad range of ideal plant sizes, meaning that smaller firms within the range can be just as efficient as larger firms within the range. Economies of scale exist, but once the minimum size is achieved, there would not be an additional cost advantage. Examples of industries with this curve are apparel, lumber, and publishing.

A third type of LRATC indicates that economies of scale exist for all levels. The bigger the firm, the lower the cost per unit. A representative industry is the local telephone service company.

1.B.h) Describe the factors that cause cost curves to shift. ★★★

Cost curves shift as a result of changes in:

(1) prices of resources - direct relationship. For example, as prices of resources rise, the cost of production will increase, shifting the firm's cost curve upward.
(2) taxes - a tax based upon the level of production or sales will increase costs, and shift the firm's total and marginal cost curves upward. A one-time tax, such as a license, will raise the average cost, but not the variable cost.
(3) regulations - increases in regulatory compliance will shift cost curves upward.
(4) technology - technological advances will shifts the firm's cost downward as production becomes more efficient.

Exam Tips

Candidates should be familiar with the components of a firm's costs, whether the costs are broken out as economic vs. accounting costs, fixed vs. variable costs, or average vs. marginal costs. Special attention should be paid to the analysis of these costs at different levels of production.

Much of the difference between pure competition, monopolistic competition, and monopoly discussed in later Gwartney chapters is explained in terms of the concepts covered in this chapter.

Readings

1.C. Gwartney: *Economics: Private and Public Choice*, 9th edition (2000)
Chapter 21: Price Takers and the Competitive Process

LOS Discussion

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1.C.a) Distinguish between price takers and price searchers;

A **price taker** must accept the market price in order to sell its product. This implies that the firm faces a perfectly elastic demand for its product. A price taker can sell all of its output at the market price, but cannot sell any output at a price above the market price. Producers in the wheat farming and beef cattle markets are examples of price takers.

A **price searcher** is a seller trying to find the price at which profit will be maximized. Price searchers face a downward sloping demand curve - the amount the firm is able to sell is inversely related to price. A firm like Nike is a price searcher - they can set the prices they charge for their products, but the quantity they sell is closely related to the price.

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1.C.b) Discuss the conditions that characterize a purely competitive or price taker market;

There are four assumptions underlying pure competition:

1. Homogeneous product - the product of all firms is identical.
2. Large number of independent firms.
3. Each buyer and seller is small relative to overall market.
4. There are no artificial barriers to entry or exit.

Because of these assumptions, a purely competitive (PC) firm is a price taker - it must accept the market price in order to sell its product. All other producers offer identical goods, no one has any significant market share advantage, and new competitors could enter the market at any time. This implies that the PC firm faces a perfectly elastic demand for its product.

CONCEPT QUIZ

The purely competitive firm will:

a. always face potential competition from new entrants to the industry.
b. never earn an accounting profit.
c. be able to use market share as a weapon against other firms in the industry.
d. typically be a price searcher.

a - because there are no barriers to entry, new competition will always be a threat.

1.C.c) Explain how and why price takers maximize profits at the quantity for which marginal cost = price = marginal revenue; ★★★

Marginal revenue (MR) = the change in total revenue per unit of output. Since a PC firm sells all of its output at the same price, MR = market price.

In the short run, the PC firm will expand output until marginal revenue = marginal cost. A firm will gain from additional output as long as the MR is greater than or equal to the marginal cost of the unit. At the point where production of an additional unit adds more to cost than it does to revenue, profit will be reduced, and the firm has exceeded the optimal output rate, which is P = MR = MC.
In long run equilibrium for a competitive industry, all firms will earn zero economic profit.

1.C.d) Calculate and interpret the total revenue and the marginal revenue for a price taker; ★★

Marginal revenue is the incremental change in total revenue derived from the sale of one additional unit of production. It can be calculated as:

MR = Change in total revenue / Change in output

A price taker's marginal revenue will be equal to the market price, because price takers sell all units at the same price. Output will be at the level where marginal revenue (price) is equal to marginal cost.

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1.C.e) Explain the decision by price takers with economic losses to either continue to operate, shut down, or go out of business;

When a price taker is faced with the situation where the market price of a product falls below the firm's average total cost, three options exist: continue operations in the short run, shut down temporarily, or go out of business. If market conditions are temporary and are expected to improve, the price taker may choose to continue operations, as long as it can cover its variable costs. If the market price declines below the firm's average variable cost, then a temporary shutdown would be preferable to incurring additional losses in the short run. When market conditions are not expected to improve, the firm would choose to immediately go out of business and liquidate, in order to minimize additional future losses due to the firm's fixed costs.

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1.C.f) Describe the short-run supply curve for a company and for a competitive market;

A purely competitive firm maximizes profits by setting output where marginal revenue (which in this case will be the market price per unit) equals marginal cost, and variable costs are covered. The short run supply curve of the firm will therefore be the part of the short run marginal cost curve that lies above its average variable cost.

In a competitive market, the supply curve for the market will be a horizontal summation of the individual firms' supply curves. Since firms will provide higher output at higher prices, the short run market supply curve will slope upward to the right.

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1.C.g) Contrast the role of constant-cost, increasing-cost, and decreasing-cost industries in determining the shape of a long-run market supply curve;

The **long-run market supply curve** indicates the minimum price at which a firm will supply various market output levels, given sufficient time both to adjust fixed factors and to enter/exit from the industry. The shape of the curve is dependent upon the cost of production, and may be one of three variations:

Constant-cost industries - if factor prices are unchanged, the long-run market supply curve will be perfectly elastic. This may occur if the industry's demand for resources is very small relative to the total demand for the resources.

Increasing-cost industries - an increase in market demand and industry output will cause higher per-unit production costs for all firms in the industry. As a result, larger market output will occur only at a higher price.

Decreasing-cost industries - costs of production decline as the industry expands. Lower reserve prices will lower the unit costs of the firms, allowing them to increase output at a lower price.

Of the three alternatives, increasing-cost industries are the norm and decreasing-cost industries are rare.

1.C.h) Explain the impact of time on the elasticity of supply.

The market supply curve's elasticity generally increases, as more time is allowed for adjustment to a price change.

It is less costly to expand output slowly in response to an increase in demand. Accordingly, expansion of output by companies will increase with time, provided that price exceeds cost. Thus, the elasticity of market supply curve will be greater when more time is allowed for companies to adjust output.

Exam Tips

Candidates should understand the assumptions necessary for pure competition. Candidates should also know how the purely competitive firm determines its most efficient level of output. Be able to contrast pure competition with monopoly, oligopoly, or monopolistic competition.

There are some inherent problems with the purely competitive model:

Due to economies of scale, large firms often have production costs below that of small firms.
Consumers frequently desire products that are not homogeneous.
Firms often compete on a basis other than price, such as quality or service.

Readings

1.D. Gwartney: Economics: *Private and Public Choice*, 9th edition (2000)
Chapter 22: Price-Searcher Markets with Low Entry Barriers

LOS Discussion

★★★★★

1.D.a) Describe the conditions that characterize competitive price-searcher markets;

Competitive price searcher markets (also called monopolistic competition) exist where there are a large number of independent sellers, each producing a differentiated product, in a market with low barriers to entry. These firms have a downward-sloping demand curve, and can raise their prices without losing all of their customers.

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1.D.b) Explain how price searchers choose price and output combinations;

Price searchers face a demand curve that is downward sloping but still highly elastic. The marginal revenue will be less than price.

Price searchers will expand output so long as each additional unit sold generates a profit, or so long as marginal revenue exceeds marginal cost. They will therefore lower price and expand output to the point where marginal revenue equals marginal cost.

In the long run, monopolistic competitors will earn a zero economic profit, since any short term economic profits would induce more firms to enter the market, and lower prices.

CONCEPT QUIZ

Competitive price searchers differ from purely competitive firms because competitive price searchers:

a. produce differentiated products.
b. need not worry about potential new entrants to the industry.
c. are able to control their costs.
d. can earn long term economic profits.

a - purely competitive firms produce homogeneous products, and can not distinguish themselves through product differentiation.

1.D.c) Summarize the debate about the efficiency of price-searcher markets with low barriers to entry, including the concepts of contestable markets, entrepreneurship, allocative efficiency, and price discrimination;

★★★

When firms can freely enter and exit a market, the potential profits or losses of the industry will determine its size. Profits will attract new entrants into the industry, while losses will drive them away. As stated above, in the long run only a zero economic profit will be possible in an industry because of competitive conditions caused by low barriers of entry.

A **contestable market** has low costs of entry and exit, so a firm may enter with little risk. This yields two important results: one, prices in the long run will not be higher than the level necessary for zero economic profits and two, minimum costs of production will occur.

The effect of **entrepreneurship** on the efficiency of price-searcher markets is important. The function of the entrepreneur is not quantifiable and therefore cannot be incorporated into economic models.

A**llocative efficiency** is the allocation of resources to the production of the most highly desired goods and services at the lowest cost. For identical cost conditions, the price of a product is slightly higher in a price searcher market than a price taker market. The traditional view held that this was due to allocative inefficiency. Currently, economists believe that the price difference is the premium paid by consumers for variety and convenience.

Price discrimination occurs when a seller charges different prices to different consumers for the same goods or services. To gain from price discrimination, price searchers must be able to: identify and separate (at a low cost) at least two groups with different elasticities of demand, and prevent those buying at the lower price from reselling to those who must buy at the higher prices.

★★★

1.D.d) Explain how price discrimination increases output and reduces allocative inefficiency;

Price discrimination can increase total gains from trade and reduce allocative inefficiency. Assume a seller has two groups of consumers, one with an inelastic demand for the product, the other with an elastic demand. The seller can charge a higher price to the group with the inelastic demand, increasing total revenues received from that group. Alternatively, a price decrease may increase revenues from the group with elastic demand. For each group, a seller can maximize profit by equating marginal cost and marginal revenue. Output will be increased and larger gains will be realized in a system with price discrimination, and allocative inefficiency will be reduced.

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1.D.e) Explain why competition is an important disciplinary force in a market with low barriers to entry.

When barriers to entry are low, firms must consider not only existing competition, but potential new competition as well. In order to maintain their own competitive position, firms must:

Operate efficiently and cater to consumer preferences

Develop improved products and find the most efficient production methods.

Employ the size and type of business structure that minimizes costs per unit.

Each of these activities provides long-term benefits to the economy as a whole.

Exam Tips

Candidates should understand the basic characteristics of monopolistic competition, and how these firms differ from monopolists and purely competitive firms in terms of optimum levels of output and price.

Price discrimination is the practice of charging different consumers different prices for the same product. It can exist only if three conditions are met:

1. The seller must confront a downward sloping demand curve.
2. There must be at least 2 consumers whose price elasticities of demand differ.
3. The seller must be able to identify and separate these consumers at low cost.

Readings

1.E. Gwartney: *Economics: Private and Public Choice*, 9th edition (2000)
Chapter 23: Price-Searcher Markets with High Entry Barriers

LOS Discussion

1.E.a) Discuss entry barriers that protect companies against competition from potential market entrants; ★★★★

Barriers to entry include:
1. Economies of scale - larger firms have lower unit costs, making it difficult for smaller firms to enter the market and compete effectively.
2. Government licensing - some are designed to ensure minimum performance standards (barber shop permit), while others are designed to limit competition (television station license).
3. Patents - grant the owner exclusive legal right to commercial use of a product or idea for a limited period of time. May raise prices in the short term, but also encourages further research and development.
4. Control over an essential resource - will eliminate potential competitors until alternative resources or methods are discovered

1.E.b) Distinguish between the characteristics of a monopoly and those of an oligopoly; ★★★★★

The two basic characteristics of a monopoly are high barriers to entry and the presence of a single seller of a product for which there are no good substitutes. True monopolies are rare.

An oligopoly is an industry dominated by a few sellers, each of which is large relative to the overall market. Other characteristics include:
1. Interdependence among oligopolistic firms
2. Substantial economies of scale.
3. Significant barriers to entry.
4. Products may be either homogeneous or differentiated.

The difference between monopolistic competition and oligopoly is to a certain extent the degree to which a price searcher is limited by competition.

CONCEPT QUIZ

The main difference between monopolists and oligopolists is that:

a. monopolists have no competition.
b. monopolists have lower cost structures.
c. oligopolists have lower cost structures.
d. oligopolists sell homogeneous products.

a - oligopolists have competitors with similar market shares, and must consider the response of their rivals when making business decisions.

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1.E.c) Describe how a profit-maximizing monopolist sets prices and determines output;

A monopolist is a price searcher, i.e. a seller trying to find the price at which profit will be maximized. Because a monopolist faces a downward sloping demand curve, the marginal revenue (MR) earned for each additional unit of output will be less than the sales price of the additional unit. Therefore, when the monopolist expands output to the point where MR = MC, price will still be higher than MC. In general, this leads to lower levels of output than would exist under pure competition, and hence a less efficient market. Allocative inefficiencies result.

High barriers to entry protect the monopolist from new entrants, and allow the monopolist to earn long-term economic profits.

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1.E.d) Discuss price and output under oligopoly, with and without collusion;

An oligopolist must consider the pricing behavior of the industry, rather than purely economic factors, when determining that product price that will deliver the maximum profit. If all firms operating under oligopoly decide to set their own prices, the market price would be driven down to the point that just covers costs of production. No single firm would attempt to raise the price of their product, because consumers would switch to the products of rival firms. Likewise, no one firm would attempt to undercut the competition by lowering prices, because prices would then be less than the cost of production. There are strong incentives for oligopolists to collude and agree to raise prices and restrict output. Under perfect cooperation, oligopolist would agree not to produce units for which marginal revenue is less than marginal cost, thereby maximizing the joint profits of the group.

1.E.e) Discuss why oligopolists have a strong incentive to collude and to cheat on collusive agreements; ★★★

By colluding with rivals, oligopolists are able to replicate monopolistic industry conditions, and maximize industry profits.

Oligopolists face two conflicting tendencies - the incentive to collude with rivals, so that industry profits can be maximized, and the incentive to cheat on any collusive agreement so that their own firm's profits can be maximized.

1.E.f) Discuss the obstacles to collusion among oligopolistic companies; ★★★

There are five barriers to collusive behavior:

1. **Collusion is difficult when a large number of oligopolists are involved in an industry** - many conflicting interests will make collusion more difficult.
2. **Collusion is less workable when price cuts cannot be easily detected and eliminated** - oligopolists must be able to efficiently monitor the pricing activities of its rivals to maintain collusive agreements.
3. **Collusion is difficult to achieve when low entry barriers exist** - oligopolists must be able to exclude potentials rivals from entering the market to maintain their own profits.
4. **Collusion is difficult to achieve when demand conditions are unstable** - differences in expectations about future demand create greater potential conflict among oligopolistic firms.
5. **The costs of collusion increase when antitrust laws are sternly enforced** - an increased threat of penalty will discourage illegal collusive agreements.

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1.E.g) Review government policy alternatives intended to reduce the problems stemming from high barriers to entry.

In order to avoid the problems associated with high barriers to entry in certain industries, economists suggest four policy alternatives:

Restructure the industry to increase the number of firms - e.g. split up of AT&T in 1984; this alternative is less attractive in industries where economies of scale are important.

Reduce artificial barriers that limit competition - e.g. tariffs, licensing requirements; to do this you must overcome opposition from within protected industries.

Regulate price and output - for this option to be effective, regulators must have very complete understanding of industry cost structure, demand conditions.

Supply market with government production - this option basically replaces private monopoly with public monopoly.

Exam Tips

Candidates should know the basic characteristics of monopoly and oligopoly, and why a monopolist's ideal level of production differs from that of a competitive firm. Again, be able to differentiate among the different types of markets discussed here and in the prior two chapters. The type of industry in which a firm operates will have significant influence on that firm's profitability.

This reading thus has obvious implications for industry and company analysis as covered in the Equity study sessions.

For most oligopolists, demand will be very elastic for price increases, since customers would merely go to other firms. For price decreases, however, demand is inelastic, since rivals would quickly lower their own prices. The result of this situation is a kinked demand curve. Because of the kinked demand curve, prices may change little despite significant changes in costs. Prices in oligopolistic markets are therefore usually stable.

Readings

1.F. Gwartney: Economics: Private and Public Choice**, 9th edition (2000)**
Chapter 24: The Supply of and Demand for Productive Resources

LOS Discussion

1.F.a) Describe and explain the relationship between the price of a resource and the quantity demanded of that resource;

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The demand for a resource stems from the demand for the products that resource is used to produce. There is an inverse relationship between the price of a resource and the amount demanded. Two reasons why fewer resources will be demanded at higher prices are:

1. substitution in production - as prices of resources rise, producers will use lower cost substitutes. The more and better the substitutes are, the more elastic the demand for the resource.
2. substitution in consumption - as prices of products rise due to increases in resource costs, consumers will use lower cost substitute products. The more elastic the demand for the product, the more elastic the demand for the resource.

CONCEPT QUIZ

As the price of a particular resource increases:

a. supply of the resource will decrease.
b. demand for the resource will decrease.
c. supply of the end product will increase.
d. demand for the end product will increase.

b - demand for the resource will decrease as producers will substitute lower cost resources and consumers will substitute lower cost end products.

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1.F.b) Identify and describe the influence of three factors that cause shifts in the demand curve for a resource;

Three reasons for a shift in the demand curve for a resource are:

1. **Changes in demand for a product** - An increase (decrease) in demand for a product will lead to a similar increase (decrease) in demand for the resources needed for production.
2. **Changes in the productivity of a resource** - The higher (lower) the productivity of a resource, the greater (smaller) will be the demand for it.
3. **Changes in the price of a related product** - A rise in the price of a resource will cause the demand for substitute resources to expand. Also, a rise in the price of a complimentary (ex. wood and nails) product to a given resource will decrease demand for the given resource.

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1.F.c) Define the marginal revenue product of a resource and explain how it influences the demand for that resource;

The marginal product (MP) of a resource is the change in the total output of a firm that results from the employment of one additional unit of a resource. In turn, a firm's marginal revenue (MR) is the increase in revenue from the sale of each additional unit of output. Therefore the marginal revenue product (MRP) is equal to the marginal product of the resource employed multiplied by the marginal revenue of the good produced (MP * MR). A firm seeking to maximize profit will use an additional unit of a resource only if the MRP exceeds the cost of employing the resource. A firm's demand for a product is a direct reflection of the MRP. The demand curve will slope downward in the short run, because the MP will fall as more of the resource is used with a fixed amount of other resources. Factors that will cause a shift in the MRP curve are:

1. the price of the product
2. the productivity of the resource
3. the amount of other factors utilized with the resource

1.F.d) Explain the necessary conditions to achieve the cost-minimizing employment levels for two or more variable resources;

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If a firm is minimizing costs, the goal is to ensure that the marginal product per last dollar spent on each factor of production is the same for all factors. Firms will substitute resources with a high marginal product per dollar expenditure for those with a low one. For example, if a dollar spent on additional labor increased output by five units, and a dollar spent on additional machinery increase output by ten units, then the firm would substitute machines for labor. As additional units of a resource are utilized, their marginal product will fall until the proportional relationship between the price of each resource and its marginal product is achieved. When costs are minimized, the following relationship exists:

$$\frac{\text{MP of skilled labor}}{\text{Price of skilled labor}} = \frac{\text{MP of unskilled labor}}{\text{price of unskilled labor}} = \frac{\text{MP of machine A}}{\text{Price of machine A}}$$

1.F.e) Discuss the factors that influence the supply and demand of resources in the short run and long run;

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A direct relationship exists between the price of a resource and the quantity supplied. Higher resource prices will increase the quantity supplied in both the short and long run, but supply is more elastic in the long run and the response will be greater. The greatest factor affecting short-run supply is resource mobility. How easily the resource can be changed from one use to another will affect its elasticity. In the long run, as prices of resources increase, additional investments will be made to supply the resource, whether human or physical resources. The lead time will vary among resources.

The elasticity of demand for a resource is affected by the ease of substitution of another resource as well as the length of time under consideration. It takes time for a producer to alter production methods and use substitute resources as well as for consumers to switch to lower cost products. In the long run, the demand for a product is almost always more elastic than in the short run.

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1.F.f) Explain how prices for resources are determined in a market economy;

In a market economy, prices for resources will be determined by supply and demand. The market demand for a resource is slopes downward as the MRP of the resource declines. The market supply of a resource slopes upward, because higher prices will incent producers to provide a greater supply. Equilibrium is achieved when the quantity demanded and the quantity supplied are equal.

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1.F.g) Explain the process through which changing resource prices influence resource utilization and the performance of the economic system.

Resource prices are important because they coordinate the actions of producing firms that demand factors of production and those entities that supply them. Resource markets encourage efficient use of resources as well as conservation, and lead users toward less expensive resources. A properly functioning economic system is dependent upon resource prices that can freely adjust. Market prices ensure that resources are directed toward their highest valued and most effective use.

Exam Tips

Candidates should know the basic characteristics of a resource market, what important roles it plays. Also important is the relationship between the quantities supplied and demanded of a resource and its price, in both the short and long run. Candidate should be familiar with the determinants of the market price of a resource and its role in an efficient market.

Prices of resources and the quantity demanded are inversely related, and are affected by available substitutes for both the resource and the end product. Demand curves for resources shift, depending on increases in demand for product that use the resource, increased productivity of the resource, and increases in prices of substitute resources. Supply of resource will be directly related to price, which will have both short-run and long run effects.

Formulas

$$\text{Price elasticity of demand} = \frac{\%\text{ change of quantity demanded}}{\%\text{ of change price}}$$

$$MR = \text{Change in total revenue} / \text{Change in output}$$