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CFA® Program Level I

Economics Cheat Sheet

2027 curriculum · 8 readings · 23 formulas

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CFA® PROGRAM LEVEL I · CHEAT SHEET

Economics

Exam weight 6–9% · 8 readings · 23 formulas

12 The Firm and Market Structures

MODULE 12.1 · BREAKEVEN, SHUTDOWN, AND SCALE

- In the short run at least one input is fixed; in the long run every input is variable.
- A price taker breaks even at a price equal to minimum ATC and shuts down in the short run when price falls below minimum AVC.
- When price is between AVC and ATC the firm keeps operating in the short run, because its loss is smaller than its fixed cost, and exits in the long run unless price is expected to rise.
- In any market structure: $TR \geq TC$ means stay; $TVC \leq TR < TC$ means operate in the short run and exit in the long run if the shortfall is expected to persist; $TR < TVC$ means shut down.
- Marginal cost crosses AVC and ATC at their minimum points.
- The minimum efficient scale is the lowest point of LRATC; economies of scale make LRATC fall and diseconomies of scale make it rise.

EXAM SHORTCUTS

- Decide breakeven and shutdown with two comparisons in order: TR against TC, then TR against TVC.
- Short-run shutdown compares price with AVC; long-run exit compares price with ATC.

MODULE 12.2 · CHARACTERISTICS OF MARKET STRUCTURES

- Every firm maximizes profit where MR = MC; a price taker has $P = MR$, while a price searcher has $MR < P$.
- Monopolistic competition has many firms, differentiated products and low barriers, and earns zero economic profit in the long run with excess capacity.
- Oligopoly is defined by interdependence among a few large firms protected by high barriers to entry.
- Cournot firms decide simultaneously and the Stackelberg leader decides first; exam convention: they choose prices, the Cournot firm assuming its rival keeps last period's price and the Stackelberg leader charging a higher price and earning the larger share of total profit; current practice: they choose quantities and sell at one market price.
- In a Nash equilibrium no firm can gain by changing its choice alone, and the outcome need not maximize joint profit.
- The oligopoly price lies between the collusive (monopoly) price and the perfectly competitive price.

EXAM SHORTCUTS

- Classify a market from two facts first: the number of firms and the barriers to entry. Many firms with identical products is perfect competition; many with differentiated products and low barriers is monopolistic competition; a few interdependent firms behind high barriers is oligopoly; one firm with no close substitutes is monopoly.
- To find a Nash equilibrium, mark each player's best reply to every choice of the rival; a cell with both choices marked is an equilibrium.
- Under the kinked demand curve model, a cost change that keeps MC inside the gap in MR leaves price and output unchanged.

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MODULE 12.3 · IDENTIFYING MARKET STRUCTURES

- A market structure is identified by the number of firms, the barriers to entry, the nature of substitutes and the nature of competition.
- The N-firm concentration ratio is the sum of the N largest market shares; the HHI is the sum of their squared shares.
- The HHI is more sensitive than the concentration ratio to mergers among the largest firms.
- Neither measure accounts for barriers to entry or potential competition, and neither measures the elasticity of firm demand directly.

EXAM SHORTCUTS

- With shares in whole percentages, square and add them to get the HHI on the 0 to 10,000 scale without converting to decimals.
- When two of the top N firms merge, the N-firm concentration ratio rises only by the share of the firm that enters the top N.

FORMULAS

The two concentration measures

$$\text{N-firm concentration ratio} = \sum_{i=1}^{N} s_i$$

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

13 Understanding Business Cycles

- The business cycle has four phases: trough (real GDP stops falling and growth turns positive), expansion (real GDP rising), peak (real GDP at its high for the cycle, then starting to fall) and contraction or recession (real GDP falling).
- The classical cycle plots the level of real GDP and the growth cycle its percentage gap from trend; the growth rate cycle turns earlier at peaks and troughs and, under the exam convention, is the preferred measure that shows GDP relative to a trend rate, while in current practice it tracks the growth rate itself, which can be compared with trend growth.
- A common rule of thumb dates a contraction from two consecutive quarters of falling real GDP and an expansion from two consecutive quarters of rising real GDP, while official dating bodies also weigh unemployment, industrial production and inflation.
- Credit cycles, swings in loan availability and interest rates, tend to amplify business cycles, can feed asset price bubbles and have on average lasted longer than business cycles.
- The inventory-sales ratio rises above normal late in an expansion as sales growth slows, leading firms to cut production, and falls below normal near the trough as sales pick up, leading firms to raise output.
- Firms first change how intensively they use existing workers and equipment, and only once the trend looks durable do they hire or lay off workers, invest in new capacity, or defer maintenance and delay replacing equipment.
- Durable goods spending is the most cyclical, services spending moderately cyclical and nondurable goods spending the least; imports rise with domestic GDP growth, while exports depend mainly on trading partners' growth.
- Leading indicators turn before peaks and troughs, coincident indicators turn at about the same time, and lagging indicators turn after a new phase is under way and confirm it.

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EXAM SHORTCUTS

- The growth rate cycle reaches its high and low points before the level of real GDP does, because growth slows while the level is still rising and recovers while the level is still falling.
- Series that record decisions made before output changes, such as average weekly hours, new orders, building permits and share prices, are leading indicators.

14 Fiscal Policy

MODULE 14.1 · FISCAL POLICY OBJECTIVES

- Fiscal policy is the government's use of taxes and government spending to steer economic activity, and monetary policy is the central bank's management of the quantity of money and credit.
- Both policies aim at price stability and economic growth, and only fiscal policy is a direct tool for redistributing income and wealth.
- Expansionary fiscal policy means higher spending or lower taxes, giving a larger deficit or smaller surplus; expansionary monetary policy is also called accommodative or easy, and contractionary monetary policy restrictive or tight.
- Automatic stabilizers such as unemployment compensation and the progressive income tax push the budget toward deficit in a recession and toward surplus in a boom without new legislation, while discretionary fiscal policy needs legislation and is slowed by policy lags.
- Exam convention: with tax rates held constant, the debt ratio rises when the real interest rate on government debt exceeds real GDP growth and falls when it is below; current practice: this holds when the primary budget is balanced, since a primary deficit or surplus can reverse the result.
- Concerns about deficits are higher future taxes, a loss of market confidence and crowding out of private investment; arguments against concern include debt held by citizens, debt that finances productive investment, needed tax reform, Ricardian equivalence and an economy below full capacity.

EXAM SHORTCUTS

- Classify a policy by who acts: taxes, government spending and transfers set by the government are fiscal policy, while money, credit and short-term rates managed by the central bank are monetary policy.

MODULE 14.2 · FISCAL POLICY TOOLS AND IMPLEMENTATION

- Fiscal spending tools are transfer payments (not counted in GDP), current spending and capital spending, and revenue tools are direct taxes on income or wealth and indirect taxes on goods and services; indirect taxes can be changed quickly, while direct taxes, transfers and capital spending take time.
- Government spending raises aggregate demand more than an equal tax cut, because households save part of a tax cut, and tax cuts aimed at low-income households, who have a higher MPC, work better.
- The fiscal multiplier is $1/[1 - MPC(1 - t)]$, which rises with the MPC and falls with the tax rate.
- Exam convention: equal increases in government spending and taxes leave the budget balanced and raise aggregate demand, so the balanced budget multiplier is positive; current practice: with an income tax the higher output also raises tax receipts, but the direction of the output effect is unchanged.
- Recognition, action and impact lags separate the need for discretionary fiscal policy from its effect, so a badly timed policy can destabilize the economy.
- The stance is judged from the change in the structural (cyclically adjusted) deficit, the deficit current policies would produce at full employment: a rise means expansionary policy, while a change in the actual deficit that leaves it unchanged reflects the cycle.

EXAM SHORTCUTS

- To leave aggregate demand unchanged when government spending rises by ΔG, taxes must rise by $\Delta G/MPC$, more than the spending increase.

FORMULAS

Fiscal policy tools: spending and revenue, advantages and disadvantages

$$\text{fiscal multiplier} = \frac{1}{1 - MPC(1 - t)}$$

$$\Delta AD_{\text{tax}} = -\Delta T \times MPC \times \text{fiscal multiplier}$$

15 Monetary Policy

MODULE 15.1 · CENTRAL BANK OBJECTIVES AND TOOLS

- A central bank supplies currency, acts as banker to the government and other banks, regulates and supervises the payments system, is lender of last resort, holds gold and foreign exchange reserves and conducts monetary policy; under the exam convention it is the sole supplier of money, while in current practice its monopoly covers banknotes and bank reserves (coins are often issued by the government or a mint) and commercial banks create most deposit money.
- Controlling inflation to promote price stability is a central bank's primary objective, and some central banks also aim for stable exchange rates, full employment, sustainable growth and moderate long-term interest rates.
- Most developed-country central banks aim for inflation in a range around 2% to 3%, not zero, because swings around a zero target would often mean deflation.
- Exam convention: open market operations, the policy rate and reserve requirements are the three working tools, used expansionarily by cutting the rate or requirements and buying securities; current practice: the Federal Reserve has set reserve requirements to zero and steers the federal funds rate mainly through the rate it pays on reserve balances.
- The federal funds rate is the market rate US banks charge each other for overnight loans of reserves, which the Federal Reserve targets, while the discount rate is what a bank pays to borrow from the Federal Reserve.
- A policy-rate change reaches the price level through other short-term rates, asset prices, expectations and exchange rates; a rate increase lowers aggregate demand and appreciates the currency, and if money neutrality holds, monetary policy has no long-run effect on real output.

EXAM SHORTCUTS

- Monetary tightening makes the domestic currency appreciate, so an answer in which tightening cuts spending through a weaker currency can be ruled out.

MODULE 15.2 · MONETARY POLICY EFFECTS AND LIMITATIONS

- An effective central bank has independence, credibility and transparency; operational independence means it sets the policy rate alone, and target independence means it also defines the inflation measure, the target and the horizon for reaching it.
- Inflation targeting, the most widely used regime, keeps expected inflation inside a band, most commonly 2% ± 1%, while an exchange rate target makes the central bank buy its currency with foreign reserves when it falls below target and sell it when it rises above, so the pegging country ends up with the anchor country's inflation rate.
- The neutral interest rate equals the real trend rate of economic growth plus the inflation target, and a policy rate above it is contractionary and below it expansionary; the exam convention describes the neutral rate as the money supply growth rate that neither speeds up nor slows growth, while current practice treats it as the policy rate that neither stimulates nor restrains the economy.
- Monetary policy can fail when long-term rates move against short-term rates because of expected inflation, in a liquidity trap where demand for money is very elastic, and when banks will not lend despite excess reserves, which led central banks to quantitative easing.
- Exam convention: the nominal policy rate cannot be cut below zero, leaving little room to stimulate; current practice: some central banks have set slightly negative rates; either way deflation is harder to reverse than inflation.
- With expansionary fiscal and contractionary monetary policy, interest rates rise and the public sector's share of GDP rises, while contractionary fiscal and expansionary monetary policy lower rates and let the private sector grow.

EXAM SHORTCUTS

- To judge the stance, add the real trend growth rate and the inflation target and compare the policy rate with that sum: above it means contractionary, below it expansionary.

FORMULAS

Effective central banks, targeting regimes and limits of policy	$\text{neutral interest rate} = \text{real trend rate of economic growth} + \text{inflation target}$

16 Introduction to Geopolitics

- Geopolitics studies interactions among nations, involving state actors (national governments) and nonstate actors (companies, nongovernment organizations and individuals), and a country's cooperation varies along a spectrum, driven by its national interests in security, economic needs and culture.
- Globalization is the long-run integration of economic activity and cultures across the world, and nationalism here means a country putting its own economic interests first, alone or in competition with others.
- The IMF promotes international monetary cooperation, balanced growth of trade and exchange stability and makes resources available, with adequate safeguards, to members with balance of payments difficulties; the World Bank fights poverty with loans, credits and grants to developing countries; the WTO, the sole international body for the rules of trade between nations, runs a dispute settlement process.
- Geopolitical risk changes the risk premium on a country's or region's assets and is described by its likelihood, its impact and its velocity, meaning how quickly investment values reflect it.
- A black swan is a low-likelihood exogenous event with substantial short-term effects; long-horizon investors usually need not react to one and should instead analyze medium- and low-velocity risks.
- National security tools are classified as active or threatened, while economic and financial tools are classified as cooperative or noncooperative, and sanctions count as a financial tool.
- Investors should focus on geopolitical risks with potentially high impact, judge whether their effects are discrete or broad, estimate them with scenario analysis and track their likelihood with signposts.

EXAM SHORTCUTS

- Place a country on the two axes and the archetype follows: noncooperative and nationalist is autarky, noncooperative and globalized is hegemony, cooperative and nationalist is bilateralism, and cooperative and globalized is multilateralism.
- Classify a geopolitical risk by what is known in advance: a known date with an unknown outcome is event risk, an unanticipated event is exogenous risk, and known factors with long-lasting effects are thematic risk.

17 International Trade

- A country has a comparative advantage in a good when its opportunity cost of producing it is lower than other countries', and specializing according to comparative advantage raises total output.
- Newer trade models add gains from economies of scale, more variety for consumers, stronger competition and a better allocation of resources.
- Consumers of imported goods and export industries gain from trade while import-competing producers and workers lose, but overall gains exceed losses, especially in the long run, and both trading partners share the net gains.
- Infant industry and national security arguments for trade restrictions have some support among economists, while protecting domestic jobs or industries has little or none.
- Tariffs, import quotas and VERs reduce imports, raise the domestic price, domestic quantity supplied and producer surplus, lower consumer surplus and reduce national welfare, with the possible exception of a tariff or quota imposed by a large importing country.

- A quota whose licenses the government sells for full value has the same outcome as an equivalent tariff, while free licenses to foreign exporters send the quota rents abroad, and a VER causes the same welfare loss as an equivalent quota with free licenses to foreign exporters.
- An export subsidy raises the domestic price by the full subsidy in a small exporting country, while a large exporter's subsidy lowers the world price, benefiting foreign consumers and hurting foreign producers.
- A free trade area removes barriers among members, a customs union adds common restrictions on nonmembers, a common market adds free movement of labor and capital, an economic union adds common institutions and economic policy, and a monetary union adds a single currency.

EXAM SHORTCUTS

- Find comparative advantage from opportunity costs, not output: the country that gives up less of the other good has the advantage, even if the other country produces more of both goods.
- Each level of integration adds one feature to the level below, so classify an agreement by the highest feature it has: free trade among members, common restrictions on nonmembers, free movement of labor and capital, common institutions and economic policy, then a single currency.

FORMULAS

Tariff welfare formulas (small country)

$$\text{Loss of consumer surplus} = \frac{Q_{D,0} + Q_{D,1}}{2}\Delta P$$

$$\text{Gain in producer surplus} = \frac{Q_{S,0} + Q_{S,1}}{2}\Delta P$$

$$\text{Tariff revenue} = M_1\Delta P = (Q_{D,1} - Q_{S,1})\Delta P$$

$$\text{Deadweight loss} = \text{consumer surplus loss} - \text{producer surplus gain} - \text{t}$$
$$= \frac{1}{2}(Q_{S,1} - Q_{S,0})\Delta P + \frac{1}{2}(Q_{D,0} - Q_{D,1})\Delta P$$

18 Capital Flows and the FX Market

MODULE 18.1 · THE FOREIGN EXCHANGE MARKET

- The FX market serves trade flows and the much larger capital flows; a position that reduces an existing currency risk is hedging, and one that creates or increases currency risk is speculating.
- The sell side is the large multinational dealer banks, and the buy side is corporations, real money and leveraged accounts, governments and central banks, and the retail market; the exam convention separates real money from leveraged accounts by derivatives use, while current practice separates them by leverage.
- A P/B quote states how many units of the price currency buy one unit of the base currency, so a higher quote means the base currency has appreciated, and the quote is direct for an investor whose home currency is the price currency.
- A spot rate is for immediate delivery (usually two business days), and a forward rate is agreed today for an exchange of fixed amounts on a specified future date.
- The real P/B rate equals the nominal P/B rate × $CPI_{\text{base}}/CPI_{\text{price}}$, so it rises with the nominal rate and the base-country price level and falls with the price-country price level.
- The base currency changes by new P/B ÷ old P/B − 1 and the price currency by old P/B ÷ new P/B − 1, and the two percentages differ in size.

EXAM SHORTCUTS

- In a price/base quote a higher number means the base currency (the denominator) has appreciated, so identify the base currency before judging which currency strengthened.
- The percentage change in the real P/B rate is approximately the nominal change plus base-country inflation minus price-country inflation, a quick estimate that needs no CPI ratio.

MODULE 18.2 · MANAGING EXCHANGE RATES

- The IMF lists two regimes for countries without their own currency (formal dollarization and monetary union) and seven for countries with one, and moving toward floating generally gives more room for independent monetary policy.
- A currency board explicitly commits to swap domestic currency for a named foreign currency at a fixed rate, issuing currency only when fully backed, while a conventional fixed peg allows ±1% margins and a target zone wider bands such as ±2%.
- A crawling peg adjusts the peg rate itself, crawling bands widen the band over time as a step toward floating, managed floating reacts to indicators without a target rate, and an independent float uses intervention only to slow the rate of change.
- A currency appreciation raises imports and cuts exports, but these trade effects build up slowly; capital flows dominate exchange rate moves in the short and intermediate term, and trade flows matter more in the long term.
- Under $(X - M) \equiv (S - I) + (T - G)$, a trade deficit is matched by a capital account surplus, and shrinking it on a lasting basis requires domestic spending to fall relative to income.
- Capital restrictions aim to reduce the volatility of domestic asset prices, maintain fixed exchange rates, keep domestic interest rates low and protect strategic industries from foreign ownership.

EXAM SHORTCUTS

- Because $(X - M) \equiv (S - I) + (T - G)$, a trade deficit implies that private saving falls short of investment, the government runs a budget deficit, or both, and a larger capital account surplus cannot be the cure.

FORMULAS

Nominal and real exchange rates	$\text{real P/B rate} = \text{nominal P/B rate} \times \frac{CPI_{\text{base currency}}}{CPI_{\text{price currency}}}$
Percentage change in a currency's value	$\%\Delta \text{ base} = \frac{\text{new P/B}}{\text{old P/B}} - 1$ $\%\Delta \text{ price} = \frac{1/\text{new P/B}}{1/\text{old P/B}} - 1 = \frac{\text{old P/B}}{\text{new P/B}} - 1$
Exchange rates, trade and capital flows	$(X - M) \equiv (S - I) + (T - G)$

19 Exchange Rate Calculations

- A cross rate is found by arranging price/base quotes so the common currency cancels, $A/C = A/B \times B/C$, inverting a quote first when it has the wrong orientation.
- Under no-arbitrage, with domestic/foreign (price/base) quotes, $F/S = (1 + r_d)/(1 + r_f)$, with the price currency's rate in the numerator and the base currency's rate in the denominator.
- With price/base quotes the forward premium on the base currency is $(r_d - r_f)/(1 + r_f)$, roughly the rate differential; the exam convention prints the relation as $(r_f - r_d)/(1 + r_d)$, which holds only for quotes of foreign currency per unit of domestic currency.
- For a forward shorter than a year, each annualized money market rate is scaled to the period, usually $r \times \text{days}/360$, before applying parity.

- A forward quoted in points is $F = S + \text{points} \times \text{point size}$, where one point is the last decimal place of the spot quote, and a percentage quote gives $F = S(1 + \text{percentage})$.
- The forward premium (+) or discount (–) on the base currency is $F/S - 1$, and the price currency's premium or discount is found by inverting both quotes first.
- If the quoted forward differs from the no-arbitrage forward, borrowing one currency, converting at spot, investing and selling the proceeds forward earns a riskless profit, and arbitrage trading restores parity.
- The no-arbitrage forward rate is the rate that rules out arbitrage at a point in time, not the expected future spot rate, and interest rate differentials have historically forecast future spot rates poorly.

EXAM SHORTCUTS

- Before computing a cross rate, check its size: if one unit of the base currency buys more of the common currency than one unit of the price currency does, the cross rate must be above 1.
- The currency with the higher interest rate trades at a forward discount, so whether the forward is above or below spot is known before any calculation: with a P/B quote, forward exceeds spot when the price currency's rate is higher.
- The forward premium or discount on the base currency is roughly the interest rate differential for the period, $r_{\text{price}} - r_{\text{base}}$, which checks a computed forward rate.

FORMULAS

Currency cross-rates	$\frac{A}{C} = \frac{A}{B} \times \frac{B}{C}$
The no-arbitrage (interest rate parity) relation	$(1 + r_d) = \frac{1}{S_{d/f}}(1 + r_f)\,F_{d/f}$ $\frac{F_{d/f}}{S_{d/f}} = \frac{1 + r_d}{1 + r_f}$ $F_{d/f} = S_{d/f}\,\frac{1 + r_d}{1 + r_f}$ $S_{d/f} = F_{d/f}\,\frac{1 + r_f}{1 + r_d}$ $\frac{F_{d/f}}{S_{d/f}} - 1 = \frac{r_d - r_f}{1 + r_f} \approx r_d - r_f$ $F = S \times \frac{1 + r_{\text{price}}\,(\text{days}/360)}{1 + r_{\text{base}}\,(\text{days}/360)}$
Forward quotes in points or percentages	$F = S + (\text{points} \times \text{point size})$ $F = S \times (1 + \text{percentage})$
Forward premium or discount	$\text{forward premium } (+) \text{ or discount } (\text{-}) = \frac{F}{S} - 1$

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