EC 120 Final Cheat completed version 1.2 Sheet

MUx_MUy Optimization Px Pv

Profit maximize: product (suppliers) / utility (consumers). Optimize marginal per dollar. Accounting profit = economic profit minus economic costs, i.e., opp. costs incurred from not doing things. Specifically: cost of people's time, cost of money's time (interest/risk)

Supply / Demand

 $S+ \rightarrow P-Q+$ read as supply up \rightarrow price down/quantity up

S+ \rightarrow P- Q+	S- \rightarrow P+ Q-
$D+ \rightarrow P+Q+$	$D- \rightarrow P-Q-$
S+ D+ \rightarrow P? Q+	S- D- \rightarrow P? Q-
$S > D \rightarrow P+Q?$	$D > S \rightarrow P - Q?$

Market is sum of individual curves. Individual curves from indifference / budget curves.

Game Theory

	20/20	25/5	30/30	25/5	30/30	25/5
	5/25	0/0	5/25	0/0	5/25	8/8
Fg: 0/0 (cheat)			Eq: 30/30 (coop)		Eq: 8/8, 30/30	

0/0 (cheat) Eq: 30/30 (coop) Eq: 8/8, 30/30 Firms can cooperate (tacitly or explicitly) to achieve the best outcome in cooperative equilibria.

Sometimes in non-cooperative games, one dominant strategy always finds the best outcome. These tend to a Nash equilibrium. If $\pi(\text{coop}) > \pi(\text{mixed})$, there's coop equilibrium.

If π (cheat) > π (mixed), cheat equilibrium.

CPFs/PPFs Opportunity cost = dA/dB. Unemployment moves point inwards, not PPF.



resource re-allocation.

Bowed Out PPF Inefficient. Opportunity cost increases with production.



PPF Expands Tech advancement, population increase.

PPF Contracts Resource loss, population decrease.

Market Failure

DWL > 0. When not allocatively efficient, requires intervention to fix. Negative surplus can exist on right of equilibrium.

Monopolies/oligopolies/monopolistic competition all cause failure. Non-rival or non-excludable goods always inefficient.

Hiding asymmetric info in a transaction: Moral hazard hiding afterwards (skydiving after buying insurance), adverse selection hiding before (insider trading).

Markets are efficient when $\Sigma MC = \Sigma MB$ for all affected people. **Externalities** are differences between private (market forces) and societal (everyone else affected) costs or benefits.



Intervention Government functions: monopolizing the use of force and protecting property rights. Broader social goals of reducing inequality, public provision, protection (paternalism), and social responsibility with public provision, redistribution, regulation. Consider indirect costs of production, compliance, and rent-seeking (corruption).

Floors bind above equilibrium, ceilings bind. Quotas act like price floors.

Taxation Aim for **equity** and **efficiency**. Less elastic pays more tax. Revenue = direct burden and DWL = excess burden. The Laffer curve between rates and revenues shows diminishing direct burden.

Inequality measured by Lorenz curve between people and income (area = Gini coefficient).

Excess

Direct

If marginal rate \neq avg rate, tax changes inequality.

Progressive MR > AR Proportional MR = AR **Regressive** MR < AR Worst is **poll tax**.

a constant for everyone.



Trade Markets Terms of trade = exports ÷ imports. Changes to ToT = CPF rotates. The law of one price says world price is constant except for shipping costs. Countries engage in **protectionism** to promote diversification, protect interest groups (infant industries), improve ToT, or just make more money. No trade = autarky.

Feasible inside PPF, efficient on PPF If domestic S > D, export diff. Tariffs / import quotas have same effect. If domestic D > S, import. Consumers lose A+B+C+D. C is revenue for tarrifs but DWL for guotas. A voluntary Import export restriction (VER) is just another quota. Countervailing duties are tarrifs specifically for going no u to foreign subsidies. Dumping is flooding of foreign

market at low price.



Advantages: comparative (lower opp. cost) or absolute (lower absolute cost) given some other resource. Specialization in producing goods with advs creates gains from trade, economies of scale, and learning by doing.

Comparative advantage can come from **factor endowments** (forests, oil, ...), climate, human capital, acquired skill (learning by doing), etc.

When trade opens between countries, CPF rotates away from origin around advantage point (since the other good is imported from the second country)



Export

В

P2

P1

В

X adv. in good A, Y adv. in good B

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Market Structures

Perfect Competition Firms small wrt market, sell infinite product at market price. This gives a

horizontal/infinitely elastic firm demand curve (while market remains downwards sloping).

Products are homogenous. No big barriers to entry or exit.



Produce where MC = MR = P.

In the long run, since firms can easily exit and enter, supply always

tends to the equilibrium price. LRS = min(LRATC), exit if P < LRS

Market is allocatively and productiely efficient.

Monopolistic Competition Monopolies on a differentiated product. Act like monopoly in short run, PC in long run since firms can enter/exit until zero profit.



Leads to long run equilibrium with P = LRATC tangent to demand

Always produce under "efficient" scale (i.e. excess capacity). Differentiation (through adverts) decreases elasticity, increasing profits. Cannot know efficiency because of differentiation

Oligopoly/Cartel

Monopoly in short term, perfect competition in long term.

Balance between firm production and market quantity. Explicit collusion is illegal, usually termed cartels. Cartels must prevent new entrants and restrict output. Implicit or tacit collusion is not. Usually 4-firm concentration > 40%.



1

Cross-Elasticity 0

complements

substitutes

Good X's demand over good Y's price Complements are goods that are used together. Substitutes are goods that can replace each other. Same sign as term in demand equation.



MR=MC

Monopoly Set price where MR = MC. Come about **naturally** with utilities / manufacturing / economies of scale / one firm supplies entire industry, or created by government / IP rights / trade groups.

Not allocatively efficient always productively efficient. Governments try to fix by setting P = MC but causes losses and firms exit the industry. Or set **P** = **ATC** but that is not allocatively efficient and halts investment.

Two-part tarrifs = fixed price + marginal price.

← Recall profit = Q×(P-ATC).

Any change in quantity produced creates price and output effects: total revenue goes up when output > price.



Price Discrimination

Monopolies/oligopolies optimize with perfect price discrimination by selling to everyone at demand so entire area between D and ATC is profit.

Usually impossible (except for airlines etc.) so bucket customers with imperfect price discrimination - more elastic demand gets lower price. Allowing movement between buckets is **hurdle pricing** so more marginal utility = effort = discount.

Pollution



Total pollution = size of economy (GDP) × energy use × pollution from energy. If small, estimate composition of percentages with addition.

Direct control usually inefficient because firms have diff costs. Mostly useful for 100% removal of specific pollutant. Let market forces do the hard work instead.

Add tangible cost to pollution: **direct taxes** (know P, unknown Q) on units or distribute permits (unknown P, know Q) for sale. Graph as P/Q of abatement (reduction).

With fixed number of permits, firms trade until price of permit = MC of abatement for all firms.

Inelastic ($\eta < 1$) means responsive to quantity, elastic (n > 1) to price.

Unit elastic gives maximum revenue / total expenditure, so moving closer to that point (e.g. inelastic + raised price or elastic + higher quantity) raises revenue. Lines have parabolic elasticity so one unit elastic "best" point.

Income Elasticity



Calculate the same but instead of price use income Inferior goods are those people buy less when rich Necessities are staples that everyone needs



Consumer Behaviour Making a Supply/Demand Curve Two effects when price goes down: substitution (always up) Imagine a curve of all points income (depends on elasticity) with equal benefit (utility or Indifference **Budget** product) from two inputs: (Isoquant) (Isocost) indifference or isoquant curves. Inferior Normal Liné Map Good Good Draw the PPF-style line for fixed cost of goods/inputs. This is the **budget** or **isocost** line. Income effect changes Inferior demand curve can slope up. The optimal isoquant All goods can be quantity by switching the is tangent to the excludable (limited Giffen goods are super essentials. isoquant line as real income by action) or rival Conspicuous consumption goods are budget line. As the (purchasing power) goes up. budget line changes, (limited by use). super luxury goods. different isoquants Non-Excludable Excludable Substitution effect is the give different optimal change of the the isocost line Public Club Von-Rival points, creating the sliding down isoquant when ex. health, empty highway. ex. toll roads, museums. demand and long-run relative costs change. MCs = 0 so P = 0, typically Pos externalities, typically supply curves. provided by government. monopoly or government. income Common substitution **Private** does not chance ex. fishing, busy highway. does not change ex. food. preferences, possibilities, so Rival Positive externalities, no Most goods/markets. slope of isocost area under isocost allocative eff. Tragedy of Consider negative is invariant

Supply

Short run, some variable Long run, all factors variable Very long run, tech variable

the commons from

overexploiting until MB = 0.



Long Run

All possible short-run cost curves' respective minimum points create a long-run average total cost curve. Minimized where marginal products per dollar are equal. Break even at P = LRAC.

LRAC down \rightarrow MC down \rightarrow returns to scale up.

Factor Markets

Human/physical capital (stock) which produces cash flow. MRP = MR×MP acts as demand, do normal S/D.

Equilibrium differentials don't change. Intrinsic (features) vs acquired (invest) vs compensating (non-monetary diffs) e.g. hazard pay or wage discrimination. Factor mobility is ease in reuse in new industry, erodes temporary differentials.

Gains = transfer earnings (opp cost) + economic rent (extra). More elastic \rightarrow transfer earnings.

A supplier's costs can be variable or fixed, so: TC = TFC + TVC

externalities.

Express wrt quantity: ATC = AFC + AVCMinimized when they cross the marginal **cost** curve ($\Delta TC/\Delta Q$).

Firms always pay FC, so if MC < ÁVĊ, no point in staying open and firm temporarily shuts down (distinct from exiting when long-term is unviable)

Short Run

that the actual curve is a sum of everyone in the market. Very Long Run Changing the LRAC's shape is possible. Tech changes move the curve downwards, reducing costs for every possible production level.

Productive Efficiency

A firm is productively efficient if it is producing at minimal cost (P = SRATC = LRATC).

A market is productively efficient if all firms have the same MC and is producing on the PPF.

Allocative Efficiency

Economy/market is allocatively efficient if P = MC and no DWL. Measure failure by size of DWL: Perfect competition > Oligopoly > Monopoly

Labour Monopsonies are monopolies but upside-down, with one seller buyer. Minimum wages → unemployment. **Unions** collectively bargain for better wages. This creates a labour surplus, which is fixed by featherbedding (useless hiring) and advertising.

Kapital Markets



Interest is the "price" of capital. Do supply and demand with interest rate and investment instead of price and quantity. Total production depends on tech of labour and capital: **TP = f(K,L)**.



This gives the supply/demand curve of one individual in the market. Don't forget

is invariant



MP acts like the opposite of MC: **MP crosses AP at maximum**



This page, and the bottom of the others, intentionally left blank. Doodle your own stuff. Good luck on the exam! – You got this :)