

Econ 201 Midterm 2 Review

The problems on this page refer to this table and these abbreviations. Consumption = C, Taxes = T, Investment Demand = I_D , Disposable Income = $Y-T$, Govt. Purchases of Goods and Services = G, Aggregate Expenditure = AE, the MPC is constant, Foreign trade is zero. Autonomous consumption = \$50.

AS = Y	T	Y-T	C	I_D	G	AE	Δ Inventories
\$2,250	\$250	\$2,000	\$1,850	\$200	\$250	\$2,300	-\$50
\$2,500	\$250	\$2,250	\$2,075	\$200	\$250	\$2,525	-\$25
\$2,750	\$250	\$2,500	\$2,300	\$200	\$250	\$2,750	\$0
\$3,000	\$250	\$2,750	\$2,525	\$200	\$250	\$2,975	\$25
\$3,250	\$250	\$3,000	\$2,750	\$200	\$250	\$3,200	\$50
\$3,500	\$250	\$3,250	\$2,975	\$200	\$250	\$3,425	\$75
\$3,750	\$250	\$3,500	\$3,200	\$200	\$250	\$3,650	\$100

1. (4 points) Fill in the table.

2. (4 points) How big a **change** in Investment Demand would it take to **increase** the equilibrium by \$750?

(Sign, as in + or -, matters here.)

ANSWER: $MPC = \Delta C / \Delta(Y-T) = \$225 / \$250 = 0.9$

$\Delta AE = \$750 = 1/(1-MPC) * \Delta I_D = 10 * \Delta I_D$

$\Delta I_D = \$750 / 10 = \75

3. (4 points) How much of a tax **change** would it take to reduce output by \$500? (Sign matters here.)

ANSWER: $\Delta AE = -\$500 = -MPC/(1-MPC) * \Delta T = -9 * \Delta T$

$\Delta T = -\$500 / -9 = \55.56

4. (4 points) How much is saving when $Y = \$3,750$?

ANSWER: Savings = $(Y-T) - C = (\$3,750 - \$200) - \$3,225 = \325

5. (4 points) Autonomous consumption rises by \$20 and taxes rise by \$50. What is the new equilibrium level of saving?

ANSWER: Leakages = Injections

$S + T + \text{Imports} = I_D + G + \text{Exports}$

$S + \$200 + \$0 = \$200 + \$250 + \$0$ (Originally)

$S + \$200 = \450 (Originally)

$S = \$250$ (Originally)

$S + (\text{Taxes} + \$50) = \450 (After Δa and ΔT)

$S + \$250 = \450 (After Δa and ΔT)

$S = \$200$

10. (4 points) Compute the [Overnight Salad](#) Price Index (basically a CPI) for **2022**, using **2024 as the base year**. Show enough of your work so that we can understand how you got your answer. (Your answer goes at the bottom of the page.)

	P_{2022}	Q_{2022}	P_{2023}	Q_{2023}	P_{2024}	Q_{2024}
Lettuce	\$3	4	\$5	6	\$4	6

Mayonnaise	\$8	2	\$7	3	\$6	4
Hotdogs	\$5	10	\$8	8	\$7	12
Rootbeer	\$4	5	\$3	4	\$2	6

ANSWER:

$$CPI_{2022 \text{ with } 2024 \text{ base}} = \frac{\vec{P}_{2022} * \vec{Q}_{2024}}{\vec{P}_{2024} * \vec{Q}_{2024}} * 100$$

Comparison year: $P_{2022} * Q_{2024} = \$3 * 6 + \$8 * 4 + \$5 * 12 + \$4 * 6 = \$18 + \$32 + \$60 + \$24 = \$134$

Base year: $P_{2024} * Q_{2024} = \$4 * 6 + \$6 * 4 + \$7 * 12 + \$2 * 6 = \$24 + \$24 + \$84 + \$12 = \$144$

Price index for 2022 with 2024 as the base year = $\$134 / \$144 * 100 = 93.1$

11. (4 points) In the previous problem, what is the simple inflation rate from 2022 to 2023, using 2024 as the base year? Show your work and put your answer in the box below.

ANSWER: $P_{2023} * Q_{2024} = \$5 * 6 + \$7 * 4 + \$8 * 12 + \$3 * 6 = \$30 + \$28 + \$96 + \$18 = \$172$

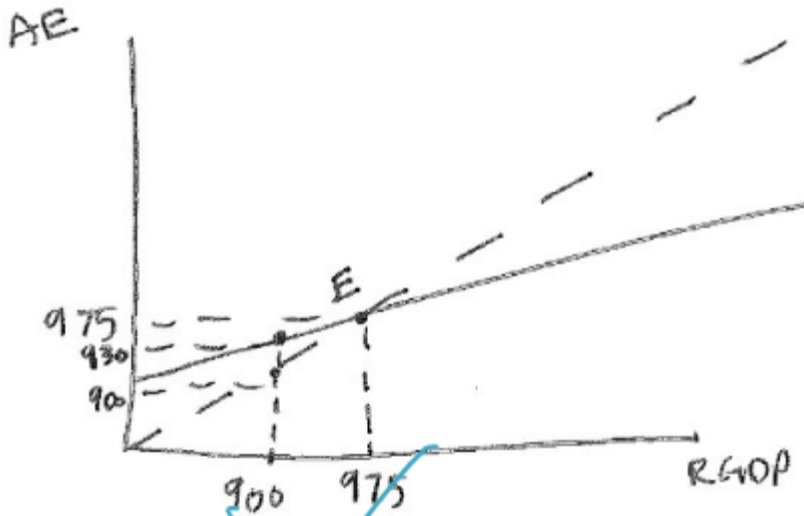
Inflation rate = $(\$172 - \$134) / \$134 = 28.4\%$

Graphs

Graph 1: (6 points) $I_p = 250$. $MPC = 0.6$. Imports = 50. Autonomous consumption = 50. $G = 220$. Exports = 40.

$T = 200$. On a well-labeled graph of Real Output versus Aggregate Expenditure (45° diagram), clearly show the equilibrium (Mark this point "E"), and what is going on with inventories when $Y = 900$. (Signs matter!). Explain in words what we expect to happen to the level of output and why.

ANSWER: $Y^* = 975$. At $Y = 900$, inventories are falling by 30, causing an increase in production.



We strongly recommend that you try these problems as well!

6. (4 points) What is **equilibrium Aggregate Expenditure** in this economy? Government Spending on Goods & Services is **\$600**. Taxes are **\$500**. Autonomous consumption is **\$50**. Imports are **\$400**. When RGDP is **\$4,000**, consumption is **\$2,675**. A rise in after-tax income of **\$500** raises savings by **\$125**. Investment demand is **\$800**. Exports are **\$500**.

Please show enough of your work so that we can understand how you got your answer.

(Please show your work and put your answer below.)

$$\text{ANSWER: } \text{MPC} = \Delta \text{dC} / \Delta (\text{Y}-\text{T}) = (\$500 - \$125) / \$500 = \$375 / \$500 = 0.75$$

$$\text{AE} = \$50 + 0.75 * (\text{Y} - \$500) + \$800 + \$600 + (\$500 - \$400) = \$1,450 - \$375 + 0.75 * \text{Y} = \$1,075 + 0.75 * \text{Y}$$

$$\text{Y} = \$1,175 / (1 - 0.75) = \$4,700$$

7. (4 points) In the previous problem, what are total leakages when production = \$4,000? What are total injections?

(Please show your work and put your answer below.)

$$\text{ANSWER: Savings} = (\text{Y}-\text{T})-\text{C} = \$4,000 - \$500 - (\$50 + 0.75 * (\$4,000 - \$500)) = \$3,500 - (\$2,675) = \$825$$

$$\text{Leakages} = \text{S} + \text{T} + \text{Imports} = \$825 + \$500 + \$400 = \$1,725$$

$$\text{Injections} = \text{I} + \text{G} + \text{Exports} = \$800 + \$600 + \$500 = \$1,900$$

8. (4 points) In the previous problem, if we raise exports by \$60, what would this do to equilibrium consumption?

(Please show your work and put your answer below.)

$$\text{ANSWER: } \Delta \text{AE} = 1 / (1 - \text{MPC}) * \Delta \text{Exports} = 1 / (1 - 0.75) * \$60 = \$240, \Delta \text{C} = \Delta \text{AE} - \Delta \text{X} = 240 - 60 = 180$$

9. (4 points) Everyone has an MPC of 0.85. Aragorn Elessar, in his role as King of the land of Gondor, hires **Gimli** to build a fast path from Minas Tirith to Edoras, the capital city of the Rohirrim, and pays Gimli 10,000 silver coins for the work. Gimli saves some of this and spends the rest to buy a cream rinse from **Legolas** in the hope of growing a shinier beard. Legolas saves a share of that income against the chance that his movie career fizzles out, and spends the rest to buy paddleboarding lessons from **Katy Perry**. Now that she has this extra income, **how much of it does Katy Perry save?**

Person	$\Delta(\text{Y}-\text{T})$	ΔSaving	$\Delta \text{Consumption}$
Gimli	10,000 Castars	1,500 Castars	8,500 Castars
Legolas	8,500 Castars	1275 Castars	7,225 Castars
Katy Perry	7,225 Castars	1,083.75 Castars	6,141.25 Castars

(Castars is not needed for the problem, but it is the currency of Gondor.)