FINAL REVIEW SESSION
ECON 102

CMP

PREPARED BY

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Q1: The following table shows the output and prices of a country in 2023 and 2024. Calculate the nominal GDP in 2023 and 2024.

Nominal GDP = $Q_{Current}$ x $P_{Current}$

Nominal GDP in 2023 = Q_{2023} x P_{2023}
= (150 x $5) + (40 x $3) + (120 x $6)
= $1590

Nominal GDP in 2024 = Q_{2024} x P_{2024}
= (180 x $6) + (75 x $5) + (200 x $7)
= $2855

Q2: The following table shows the output and prices of a country in 2023 and 2024. Calculate the real GDP in 2023 and 2024.

Real GDP = $Q_{Current}$ x P_{Base}

Base Year = 2023

Real GDP in 2023 = Q_{2023} x P_{2023}
= (150 x $5) + (40 x $3) + (120 x $6)
= $1590

Real GDP in 2024 = Q_{2024} x P_{2023}
= (180 x $5) + (75 x $3) + (200 x $6)
= $2325

Q3: The following table provides information about a country's economic variables in 2024. Compute GDP using the expenditure approach.

GDP(E) = C + I + G + NX
= $8916 + $1005 + $6933 + ($1806 - $1350)
= $17,310

Q4: The following table provides information about a country's economic variables in 2024. Compute GDP using the income approach.

GDP(I) = Factor Payments + Non-Factor Payments

Factor Payments = Wages and Salaries + Interest Income + Business Profits
$$= \$8556 + \$3855 + \$2715 = \$15{,}126$$

Non-Factor Payments = Indirect Taxes + Depreciation - Subsidies
$$= \$2637 + \$450 - \$903 = \$2184$$

GDP(I) = $15,126 + $2184 = $17,310

Q5: Calculate the GDP deflator for 2024 based on the values in the following table.

GDP Deflator = Nominal GDP / Real GDP

GDP Deflator for 2024 = Nominal GDP in 2024 / Nominal GDP in 2024
$$= 850 / 680 = 1.25$$

Q6: Nina received a raise in salary from $80,000/yr to $128,000/yr. Her savings increased from $30,000 to $42,000 per year. Calculate her MPC.

MPC = $\Delta C / \Delta Yd$

Consumption = Disposable Income - Savings
$C_{Year\,1}$ = $80,000 - $30,000 = $50,000
$C_{Year\,1}$ = $128,000 - $42,000 = $86,000

MPC = ($86,000 - $50,000) / ($128,000 - $80,000) = 0.75

Q7: The United States' autonomous consumption is $850, government expenditure is $360, marginal tax rate is 10%, exports is $240, investments is $150, marginal propensity to consume is 0.8, and marginal propensity to import 0.2. Determine the aggregate expenditure function.

AE = a + [MPC x (1 - t)Y] + I + G + X - mY
$$= 850 + [\, 0.8 \times (1-0.1)Y \,] + 150 + 360 + 240 - 0.2Y$$
$$= 850 + [\, 0.8 \times 0.9Y \,] + 750 - 0.2Y$$
$$= 1600 + 0.72Y - 0.2Y$$

= 1600 + 0.52Y

Q8: Using the previous aggregate expenditure function, solve for the equilibrium point.

AE = 1600 + 0.52Y

Equilibrium: AE = Y
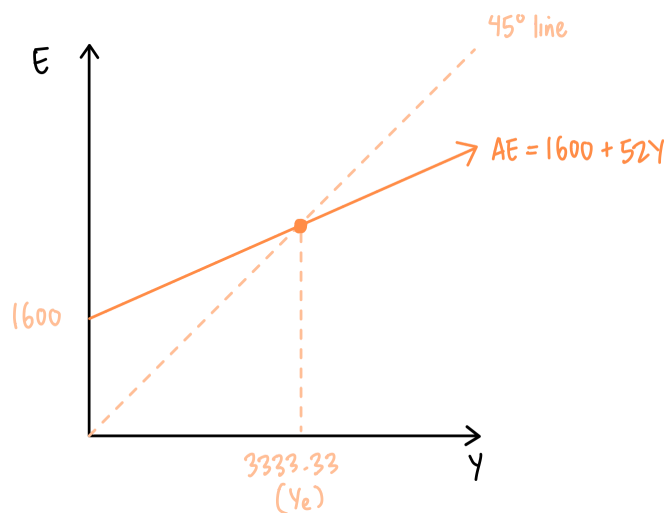Y = 1600 + 0.52Y
0.48Y = 1600
Y_e = 3333.33

Q9: Draw a graph of the AE function. Indicate the equilibrium point on the graph.

Q10: Scarlett has $100 in income. If there were no taxes, she would want to save $40. Since the government taxes 15% of Scarlett's total income, she only consumes on her after-tax income. Additionally, 10% of her income is used to purchase imports. Calculate Scarlett's marginal propensity to spend.

MPSpend = MPC (1 - t) - m
= 0.6(1 - 0.15) - 0.1
= 0.51 - 0.1
= 0.41

Q11: Suppose the autonomous consumption in Canada increases by $20 billion. MPSpend is 0.8. What is the total effect on GDP?

Change in GDP = Change in Autonomous Spending x Multiplier

Multiplier = 1 / (1 - MPSpend)
= 1 / (1 - 0.8)
= 5

Change in GDP = $20 billion x 5 = $100 billion

Q12: What is the multiplier if a $900,000 decrease in investment expenditure in the United States resulted in a $1.5 million decrease in real GDP.

Change in GDP = Change in Autonomous Spending x Multiplier

Multiplier = Change in GDP / Change in Autonomous Spending

Multiplier = -1,500,000 / -900,000 = 1.67

Q13: Determine the type of aggregate demand or aggregate supply shock in the following scenarios:
   A. A 10% decrease in income taxes.
      Expansionary AD shock

   B. A significant increase in labour productivity.
      Expansionary AS Shock

   C. The central bank raises interest rates.
      Contractionary AD Shock

   D. A sudden spike in input prices.
      Contractionary AS Shock

   E. Consumer uncertainty during an economic downturn.
      Contractionary AD Shock

   F. Increased crop yields due to good weather conditions.
      Expansionary AS Shock

Q14: RBC has $1 billion in deposits. Its reserve ratio is 12%. How many reserves does the RBC have?

Reserve Ratio = Reserves / Deposits

Reserves = Reserve Ratio x Deposits
= 0.12 x $1 billion
= $120 million

Q15: Assume all commercial banks have a 10% target reserve ratio. Assuming there are no excess reserves, what is the maximum increase in money supply if the monetary base increases by $10,000?

Total Change in Money Supply = Money Multiplier x Initial Change in Monetary Base

Money Multiplier = 1 / Reserve Ratio
= 1 / 0.10
= 10

Total Money Supply = 10 x $10,000 = $100,000

Q16: Assume CIBC has a target reserve ratio of 20%. If CIBC receives a new deposit of $50,000, how much does its target reserves change? How much does its excess reserves change?

Change in Target Reserves = Target Reserve Ratio x New Deposit
= 0.20 x $50,000
= $10,000

Change in Excess Reserves = $50,000 - $10,000
(assuming the excess reserves have not been lended out yet)

Q17: Monetary base increased by 25%. As a result, money supply increased by 55%. What is the money multiplier?

Total Change in Money Supply = Money Multiplier x Initial Change in Monetary Base

Money Multiplier = Total Change in Money Supply / Initial Change in Monetary Base

= 0.55% / 0.25%

= 2.2

Q18: The USA and Canada have 1000 units of labour. Using the labour, the USA can produce 100,000 units of burgers and 60,000 units of poutine. Canada can produce 5,000 units of burgers and 10,000 units of poutine. Which country has an absolute advantage?

	Burgers	Poutine
USA	100,000	60,000
Canada	5,000	10,000

The USA has an absolute advantage in both goods.

Q19: Using the previous scenario, calculate the opportunity cost of the USA and Canada of producing burgers and producing poutine. Determine each country's comparative advantage.

OC of Good X = Units of Good Y given up / Units of Good produced

USA OC of Burgers = Units of Poutine / Units of Burgers

= 60,000 / 100,000

= 0.6

USA OC of Poutine = Units of Burgers / Units of Poutine

= 100,000 / 60,000

= 1.67

Canada OC of Burgers = Units of Poutine / Units of Burgers

= 10,000 / 5,000

= 2

Canada OC of Poutine = Units of Burgers / Units of Poutine

= 5,000 / 10,000

= 0.5

The USA has a comparative advantage in Burgers (lower OC for producing burgers than Canada).

Canada has a comparative advantage in poutine (lower OC for producing poutine than the USA).

Q20: Draw the production possibilities curve of both the USA and Canada, and explain how both countries are better off by trading.
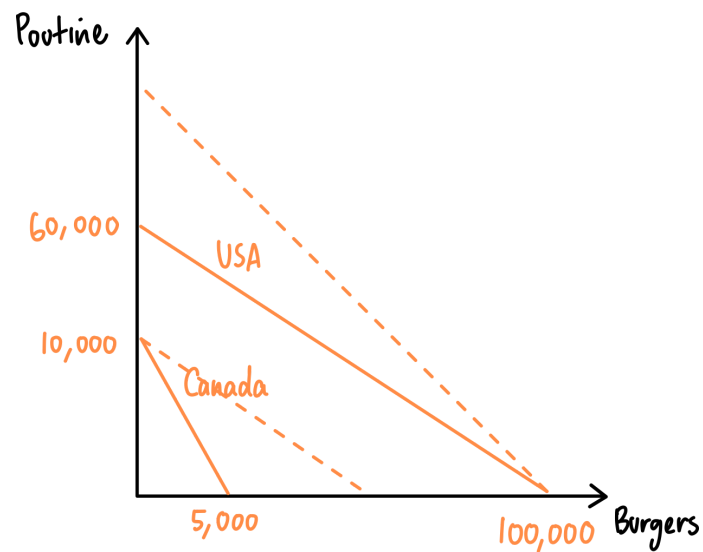
The USA is better off producing burgers and engaging in trade for poutine.

Canada is better off producing poutine and engaging in trade for burgers.