# ECO 209Y MACROECONOMIC THEORY AND POLICY

### LECTURE 16: THE AD-AS MODEL IN AN OPEN ECONOMY

### **TRADE BALANCE AND THE PRICE LEVEL**

- In a *closed economy*, an increase in the price level (P) reduces the real supply of money (M/P)
  - In the IS-LM model, the increase in P only affects the position of the LM curve
- In an open economy, the increase in P not only affects the real supply of money (M/P) but also the real exchange rate (eP<sup>f</sup>/P)
  - In the IS-LM model, the increase in P affects the position of both the LM and the IS curves
- Recall the expression for the IS curve: i = AE/b (1/bα<sub>AE</sub>)Y where

$$\overline{AE} = \overline{C} + c\overline{TR} - c\overline{T} + \overline{I} + \overline{G} + \overline{X} - \overline{Q} + (x + s) (eP^{f}/P)$$

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### THE EFFECT OF AN INCREASE IN P ON THE IS AND LM CURVES

IS: i =  $\overline{AE}/b - (1/b\alpha_{AE}) Y$ LM: i =  $-(\overline{M}/\overline{P})/h + (k/h) Y$ LM LM IS IS'  $Y_3$  $Y_2$  $Y_1$ 

In a closed economy, the real money supply would decrease and Y would fall to  $Y_2$ .

In an open economy, the real exchange rate would also decrease and Y would fall further to  $Y_3$ .

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# THE EFFECT OF AN INCREASE IN P ON EXPORTS AND IMPORTS

Initially, NX = 0 at  $Y = Y_1$ .  $X = \overline{X} + x(eP^{f}/P)$ Х 0  $Q = \overline{Q} - s(eP^{f}/P) + mY$ The increase in P  $Q(P_2)$ causes exports to decrease and imports  $Q(P_1)$ to increase. Therefore, now NX < 0 at Y =  $Y_1$ .  $X(P_1)$ Therefore, there is a  $X(P_2)$ deterioration in the current account and now NX = 0 at Y =  $Y_2$ . γ  $Y_2$  $Y_1$ 

# FIXED EXCHANGE RATE AND NO CAPITAL MOBILITY

- In the absence of *capital mobility*, the balance of payments (BP) is equal to the balance in the current account (NX)
- Under *fixed exchange rates*, the external sector doesn't need to be in equilibrium in the short run (i.e., BP ≠ 0)
  - But the Bank of Canada will have to buy or sell foreign currency to keep the exchange rate unchanged
- However, the external sector could also be in equilibrium, and thus NX = 0
- What we will do now is to derive a relationship between
  P and Y for which NX = 0

# THE RELATIONSHIP BETWEEN P AND Y WHEN NX = 0



### POINT OFF THE NX CURVE



### THE AS-AD-NX DIAGRAM



### POLICY OPTIONS TO ACHIEVE INTERNAL AND EXTERNAL BALANCE



# **OPTION 1: CLASSICAL ADJUSTMENT PROCESS**



AS: 
$$P = P_{-1} [1 + \lambda(Y - Y^*)]$$

One option would be to do nothing and let the market achieve both internal and external balance.

Under fixed exchange rates, the Bank of Canada must sell foreign currency to eliminate the excess demand in the exchange market. Therefore, the money supply decreases and the AD curve shifts down.

The decrease in the price level causes the AS curve to shift down the following period.

A trade deficit arises again and the Bank of Canada sells foreign currency. The money supply decreases and the AD curve shifts down once again.

#### This approach is called *Internal Devaluation*.

# **OPTION 2: DEVALUATION**



# **OPTION 2: THE IMPACT OF A DEVALUATION ON NET EXPORTS**



### **OPTION 2: DEVALUATION AND CONTRACTIONARY POLICY**



### **TRADE SURPLUS – CHINA CLASSICAL ADJUSTMENT PROCESS**



### **TRADE SURPLUS – CHINA REVALUATION**



#### EXPANSIONARY FISCAL POLICY WITH FIXED EXCHANGE RATES AND PERFECT CAPITAL MOBILITY Under fixed exchange rates and perfect



### EXPANSIONARY MONETARY POLICY WITH FIXED EXCHANGE RATES AND PERFECT CAPITAL MOBILITY



### EXPANSIONARY FISCAL POLICY WITH FLEXIBLE EXCHANGE RATES AND PERFECT CAPITAL MOBILITY Under flexible exchange rates and



#### EXPANSIONARY MONETARY POLICY WITH FLEXIBLE EXCHANGE RATES AND PERFECT CAPITAL MOBILITY Under flexible exchange rates and perfect capital mobility monetary policy is effective

