The IS-LM-BP Model
Agenda

• The Balance of Payments
  ➢ Policy Analysis with Partial Capital Mobility
  ➢ Currency Crises
  ➢ International Capital Flows & Indebtedness

The IS-LM-BP Model

• Policy Analysis with the BP Curve
  ➢ The intersection of the IS-LM curves establishes internal equilibrium.
  ➢ The BP curve establishes external equilibrium.
  ➢ If joint internal and external equilibrium does not exist, then either:
    • The currency must appreciate or depreciate, or
    • The central bank must intervene to stabilize the currency

Capital Mobility

• The slope of the BP line indicates the degree of capital mobility in a country
  ➢ Horizontal: perfect capital mobility
    • Domestic R = World R
  ➢ Vertical: complete capital immobility
    • Domestic R completely independent of world R
  ➢ Upward sloping: partial capital mobility
    • Domestic R differs from the world R

Policy Analysis with Partial Capital Mobility

• Expansionary fiscal policy, fixed exchange rates
  ➢ IS curve shifts right, Y and R increase.
  ➢ Higher R increases foreign capital inflow.
  • Creates BP surplus and upward pressure on currency.
  ➢ Central bank intervenes in the foreign exchange market.
    • Buys excess foreign currency.
      ➢ Increases foreign exchange reserves.
    • Sells domestic currency.
      ➢ Increases the domestic money supply.
      • That is, non-sterilized intervention.
      ➢ LM curve shifts right, Y increases, R decreases to its original level.
  ➢ Result is higher Y and R.

Expansionary Fiscal Policy, Fixed Exchange Rates

\[ \text{Expansionary Fiscal Policy, Fixed Exchange Rates} \]

\[ Y_0 \quad Y \quad R_0 \quad R \]

\[ \text{IS}_0 \quad \text{LM}_0 \quad \text{BP}_0 \]

\[ \text{IS}_1 \quad \text{R}_1 \quad \text{LM}_0 \quad \text{BP}_0 \]

\[ Y_0 \quad Y_1 \quad R_0 \quad R_1 \]

\[ \text{IS}_0 \quad \text{LM}_0 \quad \text{BP}_0 \]
Expansionary Fiscal Policy, Fixed Exchange Rates

Policy Analysis with Partial Capital Mobility
- Expansionary fiscal policy with fixed exchange rates is powerful because it forces monetary policy to be fully accommodating.

- Expansionary monetary policy, fixed exchange rates
  - LM shifts right, Y increases and R decreases
  - Lower R decreases foreign capital outflows
    - Creates BP deficit and downward pressure on currency.
  - Central bank intervenes in the foreign exchange market.
    - Sells foreign exchange reserves.
    - Buys excess domestic currency.
    - Decreases the domestic money supply.
    - That is, non-sterilized intervention.
    - LM curve shifts left, Y decreases and R increases to its original level.
  - Result is same Y and R.

Expansionary Monetary Policy, Fixed Exchange Rates
Policy Analysis with Partial Capital Mobility

• Expansionary monetary policy with fixed exchange rates is completely ineffective, i.e. there is no independent monetary policy.

Policy Analysis with Partial Capital Mobility

• Expansionary fiscal policy, flexible exchange rates
  ➢ IS curve shifts right, Y and R increase
  ➢ Higher R increases foreign capital inflows.
    • Creates BP surplus and currency appreciates.
    • Stronger currency reduces net exports.
      ➢ Lower exports, higher imports.
  ➢ IS curve and BP line shift left.
  ➢ Result is higher Y and R.

Expansory Fiscal Policy, Flexible Exchange Rates

- LM0
- BP0
- IS0
- R0
- Y0
- Y

Expansory Fiscal Policy, Flexible Exchange Rates

- LM0
- BP0
- IS0
- R0
- Y0
- Y1
- Y

Expansory Fiscal Policy, Flexible Exchange Rates

- LM0
- BP0
- IS0
- IS1
- R0
- R1
- Y0
- Y2
- Y1
- Y

Policy Analysis with Partial Capital Mobility

• Expansionary fiscal policy with flexible exchange rates is partially effective.
  ➢ Exchange rate effects partially offset fiscal policy changes.
Policy Analysis with Partial Capital Mobility

- Expansionary monetary policy, flexible exchange rates
  - LM curve shifts right, Y increases and R decreases.
  - Lower R reduces foreign capital inflows.
    - Creates BP deficit and downward pressure on currency.
    - Currency depreciation stimulates net exports.
      - Higher exports, lower imports.
      - IS curve and BP line shift right.
  - Result is higher Y and lower R.

Expansionary Monetary Policy, Flexible Exchange Rates

\[ R \]
\[ Y0 \]
\[ Y \]
\[ LM0 \]
\[ LM1 \]
\[ BP0 \]
\[ IS0 \]

Expansionary Monetary Policy, Flexible Exchange Rates

\[ R \]
\[ R0 \]
\[ R1 \]
\[ R2 \]
\[ Y0 \]
\[ Y1 \]
\[ Y2 \]
\[ Y \]
\[ IS0 \]
\[ IS2 \]

Policy Analysis with Partial Capital Mobility

- Expansionary monetary policy with flexible exchange rates is very powerful because it forces net exports to be fully accommodating.
  - Exchange rate effects compliment monetary policy adjustment.

Expansionary Fiscal Policy, Fixed Exchange Rates, sterilized FX intervention, alternative FX policies

- IS curve shifts right, Y and R increase.
- Higher R increases foreign capital inflow.
  - Creates BP surplus and upward pressure on currency.
  - Central bank intervenes in the foreign exchange market.
    - Buys excess foreign currency.
      - Increases foreign exchange reserves.
      - Sells domestic currency and simultaneously buys government securities in open market.
    - Results in no change in the domestic money supply.
      - That is, sterilized intervention.
      - LM curve shifts does not shift.
Policy Analysis with Partial Capital Mobility

- Expansionary fiscal policy, fixed exchange rates, sterilized FX intervention, alternative FX policies
  - Government MUST pursue alternative FX policies to re-establish joint equilibrium.
    - Restrict (autonomous) exports.
      - Which will also shift the IS curve to the left.
    - Encourage (autonomous) imports.
      - Which will also shift the IS curve to the left.
    - Encourage (autonomous) capital outflows.
    - Restrict (autonomous) capital inflows.
    - These will shift the BP line to the left.

- Expansionary fiscal policy, fixed exchange rates, sterilized FX intervention, alternative FX policies
  - Y is lower and R is higher than with non-sterilized FX intervention.

Currency Crises

- Countries that experience currency crises typically have a similar economic environment.
  - Small economies with fixed exchange rates.
  - Large budget and current account deficits.
  - Limited foreign exchange reserves.
  - Reliance on bank financing and short-term international capital inflows.
  - Highly leveraged companies.
Currency Crises

• Currency Crises generally begin with a massive outflow of foreign capital, triggered by political uncertainty (Mexico, 1994) or poor economic policies (Thailand, 1997)
  - BP lines shifts left.
    - Creates BP deficit and downward pressure on currency.
    - Central bank intervenes in the foreign exchange market.
    - Sells foreign exchange reserves.
    - Simultaneously buys domestic currency and buys government securities in open market.
      - Results in no change in the domestic money supply.
        - This is sterilized intervention.
        - LM curve shifts does not shift.

• Government is rapidly losing its limited foreign exchange reserves; this generally accelerate the foreign capital outflows.
  - Central bank eventually abandons the fixed exchange rate regime and sterilized foreign exchange intervention.
    - Exchange rate plummets.
    - The LM curve shifts left as the domestic money supply contracts sharply.
    - The foreign capital outflow continues while the central bank has stopped buying government securities in the open market.
    - This results in sharply lower Y and sharply higher r.

• Because most borrowing is done in international capital markets in a foreign currency, the currency devaluation greatly increases the debt burden of banks, corporations, and the government.
  - Many banks and corporations go bankrupt and stop their investment activities.
    - The IS curve shifts left.
  - The government budget deficits explodes, forcing the government to cut spending and/or raise tax rates.
    - The IS curve shifts left.
    - This results in lower Y and lower r.
    - The central bank must reduce the money supply in order to maintain joint equilibrium.
Currency Crises

- Eventually, the contractionary effects of the foreign capital outflow will slow (stop). Then the effects of the lower exchange rate take over.
  - Because the exchange rate is sharply lower, exports increase and imports decrease.
  - This allows the central bank to begin increasing the money supply again to maintain joint equilibrium.
  - This results in higher Y and lower r.

Currency Crises

- Currency Crises cause wrenching adjustments to the domestic economy.
  - Economic activity falls sharply.
  - Unemployment rises sharply.
  - Interest rates rise sharply.
- Eventually, the lower exchange rate generates an export-led economy recovery.

International Capital Flows

- International imbalances must be corrected
  - Flexible exchange rates
  - Macroeconomic adjustments

- Capital flows can be an important source of financing
  - Government budget deficit
  - Investment

International Indebtedness

- A current account deficit must be financed by:
  - Net borrowing from foreign households, businesses and governments and/or
  - Net borrowing from foreign central banks.
- The current account balance equals
  - The change in the net international investment position
- Net international investment position equals
  - The cumulative current account balance
International Indebtedness

- What are the implications for growth in an economy’s standard of living of persistent current account deficits?