International Trade, Exchange Rates, and Macroeconomic Policy

International Trade

• Introduction
  – Open economy macroeconomics
  • International trade in goods and services
  • International capital flows
    – Purchases & sales of foreign assets by domestic residents
    – Purchases & sales of domestic assets by foreign residents
  – Important component of economic activity
    • Net exports are part of GDP
    • Capital flows can be important source of financing government budget deficit
    – and investment

International Trade

• Introduction (continued)
  – Imbalances must be corrected
    • Flexible exchange rates
    • Macroeconomic adjustments
  – Overview
    • Introduction to the Balance of Payments
      – Consequences of persistent surpluses or deficits
    • Foreign exchange value of the dollar
    • Adding an open economy to the IS-LM model

International Trade

• Foreign Trade, the Balance of Payments, and International Indebtedness
  – Introduction
    • Balance of Payments
      » Record of the economy’s international transactions
        – Current Account
          » exports and imports of goods and services
          » receipts and payments of investment income
          » transfer payments
        – Capital Account
          » purchases and sales of foreign assets by US residents
          » purchases and sales of US assets by foreign residents

International Trade

• Foreign Trade, the Balance of Payments, and International Indebtedness (con’t)
  – Introduction (continued)
    • Balance of payments generates credits and debits
      – Credits (money flows in)
        » exports of goods and services
        » investment income on US assets held abroad
        » transfers to US residents
        » purchases of US assets by foreigners
      – Debits (money flows out)

International Trade

• Foreign Trade, the Balance of Payments, and International Indebtedness (con’t)
  – The Balance of Payments: Surplus or Deficit?
    Balance of Payments
    \[ \text{Current Account Balance} + \text{Capital Account Balance} = \text{Balance of Payments} \]
    – Capital account is how the current account is financed
      – Balance of payments surplus: credits > debits
      – Balance of payments deficit: credits < debits
    – Table 6-1
      – How is the Balance of Payments financed?
International Trade

• Foreign Trade, the Balance of Payments, and International Indebtedness (con’t)
  – Foreign Borrowing & Int’l Indebtedness
    • A current account deficit must be financed:
      – net borrowing from foreign households, businesses, and governments, and/or
      – net borrowing from foreign central banks
  • Change in net international investment position
    \[ \text{current account balance} = \text{change in net international investment position} \]

Exchange Rates

• Exchange Rates
  – Introduction
    • International transactions require the exchange of one nation’s currency for another’s
  – How Exchange Rates are Quoted
    • Table 6-2
      • US dollar is the fixed currency
        – except against the UK pound, Australian dollar, Euro

Exchange Rates

• The Market for Foreign Exchange
  – Flexible Exchange Rates and Foreign Exchange Trading
    • Figure 6-2
  – Supply and Demand for Foreign Exchange
    • Figure 6-3
Exchange Rates

- The Market for Foreign Exchange (con’t)
  - Why People Hold Dollars and Marks
    - Demand created by
      - exports
      - capital inflows
        - to repay previous dollar loans
        - to pay interest and dividends
        - to invest in dollar denominated assets
    - Supply created by
      - imports
      - capital outflows
      - Figure 6-3

Exchange Rates

- Nominal & Real Exchange Rates
  - Nominal (e’) and Real Exchange Rates (e)
    - $e = e’ \cdot \frac{P_f}{P}$
    - Real exchange rate is equal to the nominal exchange rate adjusted for relative inflation rates
    - Real exchange rates are relevant for determining net exports
      - Real appreciation means exports become more expensive
      - Exports, output and employment fall, profits shrink
      - and imports become less expensive
  - The Theory of Purchasing Power Parity
    - Identical goods should cost the same in all countries after adjusting for the cost of transportation and import duties
      - Arbitrage opportunities
        - Implies $e = 1$ or
        - $e’ \cdot \frac{P_f}{P} = 1$
        - $e’ = \frac{P_f}{P}$

Exchange Rates

- The Market for Foreign Exchange (con’t)
  - Determination of the Foreign Exchange Rate
    - Equilibrium in the foreign exchange market
    - Disequilibrium dynamics

Exchange Rates

- Nominal & Real Exchange Rates (con’t)
  - The Theory of Purchasing Power Parity
    - Identical goods should cost the same in all countries after adjusting for the cost of transportation and import duties
      - Arbitrage opportunities
        - Implies $e = 1$ or
        - $e’ \cdot \frac{P_f}{P} = 1$
        - $e’ = \frac{P_f}{P}$
Exchange Rates

- Nominal & Real Exchange Rates (con’t)
  - PPP and Inflation Differentials
    
    \[
    \text{Growth rate of nominal exchange rate} = \text{growth rate of foreign price level} - \text{growth rate of domestic price level}
    \]

  • Currency appreciates (depreciated) if inflation differential is positive (negative)

Exchange Rates

- Exchange Rate Systems
  - Flexible versus Fixed Exchange Rates
    
    • Flexible exchange rate system
      - Exchange rate is free to change every day
      - Exchange rate would adjust to the balance of payments surplus or deficit
    
    • Fixed exchange rate system
      - Exchange rate is fixed for long periods of time
      - Central banks financed any balance of payments surplus or deficit
        - through changes in foreign exchange reserves

Exchange Rates

- Nominal & Real Exchange Rates (con’t)
  - Why PPP Breaks Down
    
    • Absolute advantage in some good and/or service
    • Preferences for certain currencies
      - US dollar, Swiss francs
    • Government policies
    • Viewpoint is too narrow
      - Traded goods sector
      - Capital flows ignored

Exchange Rates

- Exchange Rate Systems (continued)
  - Workings of the Fixed Exchange Rate System
    
    • Devaluations and revaluations

  - The Breakdown of the Bretton Woods System
    
    • Fixed exchange rate system
    • International reserves were held as gold or dollars
    • US persistent current account deficit toppled the Bretton Woods System in 1973

Exchange Rates

- Exchange Rate Systems (continued)
  - Characteristics of the Flexible Exchange Rate System
    
    • Flexible exchange rates with central bank intervention
    • Clean versus dirty or managed flexible exchange rate system
      - Motivations of central banks

Exchange Rates

- The Exchange Rate of the Dollar since 1970

  • Figure 6-4
  • Figure 6-5
Net Exports

- Determinants of Net Exports
  - Endogenizing Net Exports
    - Net exports will depend on:
      - income
      - exchange rates
  - Exchange rate will depend on:
    - interest rates
  - The Foreign Trade Surplus and Deficit
    » Figure 6-6

Net Exports (continued)

- Net Exports and the Foreign Exchange Rate
  - Effect of Real Income
    \[ NX = NX(0) - nx \times Y \]
  - Effect of the Foreign Exchange Rate
    » Figure 6-7
    \[ NX = NX(0) - nx \times Y - u \times e \]
Macroeconomic Policy

- The Real Exchange Rate & Interest Rate
  - The Demand for Dollars
    - To buy American goods and services
      - Generally changes slowly over time
  - To buy dollar denominated assets
    - Main source of instability in exchange rate
    - Dependent on interest rate differentials
      - US interest rates less foreign interest rates

- Real Exchange Rate & Interest Rate (con't)
  - The Real Exchange Rate and the Monetary-Fiscal Policy Mix
    - Figure 5-5
  - Different monetary and fiscal policies will influence interest rates which will, in turn, influence exchange rates
    - Figure 6-8
  - Changes in real interest rates capture most of the important changes in exchange rates

---

Macroeconomic Policy

- Real Exchange Rate & Interest Rate (con’t)
  - Interest Rates and Capital Mobility
    - Interest rates affect exchange rates because of capital inflows and outflows between countries
  - Perfect capital mobility
    - Foreign & domestic financial assets are perfect substitutes
    - Purchases can be done
      - Immediately
      - In unlimited amounts
      - With low transactions cost
    - Interest rate differentials would disappear
Macroeconomic Policy

• Real Exchange Rate & Interest Rate (con’t)
  – Is Perfect Capital Mobility Relevant?
    • Small open economies (SOE)
      – Domestic capital market is small relative to international capital flows
      – Difficult/impossible to maintain interest rate differentials
    • Large open economies (LOE)
      – Domestic capital market is large relative to international capital flows
      – Interest rate differentials can persist but lead to steady capital inflow or outflow

Macroeconomic Policy

• The IS-LM Model in a Small Open Economy (SOE)
  – The BP Schedule
    • Perfect capital mobility implies that interest rate differentials must remain at zero.
      – Domestic interest rate must equal foreign interest rate
        \[ r = r(f) \]
      – Balance of payments is zero at \( r(f) \)
        - Figure 6-9
        - Current account in balance
        - Capital account in balance

Macroeconomic Policy

• The IS-LM Model in a SOE (continued)
  – The Analysis with Fixed Exchange Rates
    • Monetary expansion
      - Figure 6-9
      - The impotence of domestic monetary policy
    • Fiscal expansion
      - Figure 6-10
      - Fiscal policy becomes very effective because monetary policy must become completely accommodating

Macroeconomic Policy

• The IS-LM Model in a SOE (continued)
  – The Analysis with Flexible Exchange Rates
    • Monetary expansion (Figure 6-11)
      - Capital outflows cause depreciation of exchange rate which boosts net exports
      - At equilibrium the current account is in balance
    • Fiscal expansion (Figure 6-11)
      - Capital inflows cause appreciation of exchange rate which leads to complete international crowding out.
      - Higher fiscal deficit exactly offset by lower net exports
      - Higher fiscal deficit financed entirely by foreign borrowing
Macroeconomic Policy

• The IS-LM Model in a SOE (continued)
  – Conclusions
    • With fixed exchange rates
      – Fiscal policy is highly effective because of a forced accommodative monetary policy
      – Monetary policy is totally ineffective
    • With flexible exchange rates
      – Monetary policy is highly effective because of exchange rate depreciation
      – Fiscal policy is totally ineffective but leads to higher foreign borrowing

Macroeconomic Policy

• Capital Mobility and Exchange Rates in a Large Open Economy (LOE)
  – How a LOE Differs from a SOE
    • Domestic capital markets are large relative to international capital flows
    • Capital mobility is imperfect
    • Domestic interest rates can differ from foreign interest rates

Macroeconomic Policy

• Capital Mobility, Exchange Rates in a LOE
  – How a LOE Differs from a SOE (cont’t)
    • The BP schedule is now positively sloped
      » Figure 6-12
      – With positive interest rate differential continuing capital inflow, i.e., capital account surplus
        » Capital account surplus means current account deficit
        » Need high level of income to draw in imports
      – With negative interest rate differential continuing capital outflow, i.e., capital account deficit
        » Capital account deficit means current account surplus
        » Need low level of income to minimize imports

Macroeconomic Policy

• Capital Mobility, Exchange Rates in a LOE
  – Monetary and Fiscal Policy
    • With fixed exchange rates
      – Monetary policy ineffective (as with a SOE)
      – Fiscal policy effect but less so than in SOE
        » Interest rates rise
    • With flexible exchange rates
      – Fiscal policy is totally ineffective
      – Net export response offsets fiscal stimulus
      – Monetary policy is highly effective
        » Higher rates crowd out investment so more exchange rate depreciation needed to boost net exports
Macroeconomic Policy

• Conclusion: How should Policymakers React to Exchange Rate Movements?
  – Domestic versus International Considerations
    • The United States
    • Europe
    • Brazil, Thailand, etc.