Exchange Rates and the Current Account

Topics to be covered

- Determinants of aggregate demand in the short run
- A short run model of output markets
- A short run model of asset markets
- A short run model for both output markets and asset markets

Introduction

- Long run models are useful when all prices of inputs and outputs have time to adjust.
- In the short run, some prices of inputs and outputs may not have time to adjust, due to labor contracts, costs of adjustment, or imperfect information about willingness of customers to pay at different prices.
- We examine short run and long models of exchange rates to explain how output is related to exchange rates in the short run.
  - It shows how macroeconomic policies can affect production, employment, and the current account.

Determinants of Aggregate Demand

- Aggregate demand is the aggregate amount of goods and services that individuals and institutions are willing to buy:
  1. consumption expenditure
  2. investment expenditure
  3. government purchases
  4. net expenditure by foreigners: the current account

GDP Growth Components, 1940-2010

GDP Growth Components, 2004-2010
Determinants of Aggregate Demand

- Determinants of consumption expenditure include:
  - Disposable income: income from production (Y) minus taxes (T).
  - More disposable income means more consumption expenditure, but consumption typically increases less than the amount that disposable income increases.
  - Real interest rates may influence the amount of saving and spending on consumption goods, but we assume that they are relatively unimportant here.
  - Wealth may also influence consumption expenditure, but we assume that it is relatively unimportant in this model.
    - Though, in the current economic crisis, the “negative wealth effect” is thought to be central.

Determinants of Aggregate Demand (cont.)

- Determinants of the current account include:
  - **Real exchange rate**: prices of foreign products relative to the prices of domestic products, both measured in domestic currency: \( \frac{SP}{P} \)
    - As the prices of foreign products rise relative to those of domestic products, expenditure on domestic products rises, and expenditure on foreign products falls.
  - **Disposable income**: more disposable income means more expenditure on foreign products (imports).

How Real Exchange Rate Changes Affect the Current Account

- The current account measures the value of exports relative to the value of imports: \( CA = EX - IM \).
  - When the real exchange rate \( \frac{SP}{P} \) rises, the prices of foreign products rise relative to the prices of domestic products.
    1. The volume of exports that are bought by foreigners rises.
    2. The volume of imports that are bought by domestic residents falls.
    3. The value of imports in terms of domestic products rises: the value/price of imports rises, since foreign products are more valuable/expensive.

How Real Exchange Rate Changes Affect the Current Account (cont.)

- If the volumes of imports and exports do not change much, the **value effect** may dominate the **volume effect** when the real exchange rate changes.
  - For example, contract obligations to buy fixed amounts of products may cause the volume effect to be small.
  - However, evidence indicates that for most countries the volume effect dominates the value effect eventually.
  - Let’s assume for now that a real depreciation leads to an improvement in the current account: the volume effect dominates the value effect.
    - These assumptions are known as the Marshall-Lerner conditions.
Determinants of Aggregate Demand

- Determinants of the current account include:
  - Real exchange rate: an increase in the real exchange rate (depreciation of the domestic currency) increases (improves) the current account.
  - Disposable income: an increase in the disposable income decreases (deteriorates) the current account.

Determinants of Aggregate Demand (cont.)

- For simplicity, we assume that exogenous political factors determine government purchases $G$ and the level of taxes $T$.
- For simplicity, we currently assume that investment expenditure $I$ is determined by exogenous business decisions.
  - A more complicated model shows that investment depends on the cost of spending or borrowing to finance investment: the interest rate.

Aggregate demand is therefore expressed as:

\[ D = C(Y - T) + I + G + CA(\text{SP}/P, Y - T) \]

- Or more simply:
  \[ D = D(Q, Y - T, I, G) \]

Determinants of Aggregate Demand (cont.)

- Determinants of aggregate demand include:
  - Real exchange rate: an increase in the real exchange rate increases the current account, and therefore increases aggregate demand of domestic products.
  - Disposable income: an increase in the disposable income increases consumption expenditure, but decreases the current account.
    - Since consumption expenditure is usually greater than expenditure on foreign products, the first effect dominates the second effect.
    - As income increases for a given level of taxes, aggregate consumption expenditure and aggregate demand increase by less than income.

Short Run Equilibrium for Aggregate Demand and Output

- Equilibrium is achieved when the value of income from production (output) $Y$ equals the value of aggregate demand $D$.

\[ Y = D(Q, Y - T, I, G) \]
The Determination of Output in the Short Run

Aggregate demand is greater than production: firms increase output

Production is greater than aggregate demand: firms decrease output

Intercept is not at zero because even with no income there will be some consumption

Output Effect of a Currency Depreciation with Fixed Output Prices

For each level of output, the demand for domestic products is higher after a depreciation because imports are more expensive

Short Run Equilibrium and the Exchange Rate: DD Schedule

• How does the exchange rate affect the short run equilibrium of aggregate demand and output?
• With fixed domestic and foreign levels of average prices, a rise in the nominal exchange rate makes foreign goods and services more expensive relative to domestic goods and services.
• A rise in the nominal exchange rate (a domestic currency depreciation) increases aggregate demand of domestic products.
• In equilibrium, production will increase to match the higher aggregate demand.

Deriving the DD Schedule

1. Changes in G: more government purchases cause higher aggregate demand and output in equilibrium. Output increases for every exchange rate: the DD curve shifts right.
Government Demand and the Position of the DD Schedule

Shifting the DD Curve (cont.)

2. Changes in T: lower taxes generally increase consumption expenditure, increasing aggregate demand and output in equilibrium for every exchange rate: the DD curve shifts right.

3. Changes in I: higher investment expenditure is represented by shifting the DD curve right.

4. Changes in P relative to P*: lower domestic prices relative to foreign prices are represented by shifting the DD curve right.

5. Changes in C: willingness to consume more and save less is represented by shifting the DD curve right.

6. Changes in demand of domestic goods relative to foreign goods: willingness to consume more domestic goods relative to foreign goods is represented by shifting the DD curve right.

Short Run Equilibrium in Asset Markets

• We consider two sets of asset markets:
  1. Foreign exchange markets
     ♦ interest parity represents equilibrium: \( i = i^* + (S^e - S)/S \)
  2. Money market
     ♦ Equilibrium occurs when the quantity of real monetary assets supplied matches the quantity of real monetary assets demanded: \( M/P = L(i, Y) \)
     ♦ A rise in income from production causes the demand of real monetary assets to increase.

Output and the Exchange Rate in Asset Market Equilibrium

Short Run Equilibrium in Asset Markets (cont.)

• When income and production increase, demand of real monetary assets increases, leading to an increase in domestic interest rates, leading to an appreciation of the domestic currency.
  ♦ Recall that an appreciation of the domestic currency is represented by a fall in S.
  ♦ When income and production decrease, the domestic currency depreciates and S rises.
Short Run Equilibrium in Asset Markets: AA Curve

- The inverse relationship between output and exchange rates needed to keep the foreign exchange markets and the money market in equilibrium is summarized as the AA curve.

Shifting the AA Curve

1. Changes in $M^p$: an increase in the money supply reduces interest rates in the short run, causing the domestic currency to depreciate (a rise in $S$) for every $Y$: the AA curve shifts up (right).

2. Changes in $P$: An increase in the level of average domestic prices decreases the supply of real monetary assets, increasing interest rates, causing the domestic currency to appreciate (a fall in $S$): the AA curve shifts down (left).

3. Changes in the demand of real monetary assets: if domestic residents are willing to hold a lower amount of real money assets and more non-monetary assets, interest rates on non-monetary assets would fall, leading to a depreciation of the domestic currency (a rise in $S$): the AA curve shifts up (right).
Shifting the AA Curve (cont.)

4. Changes in $i^*$: An increase in the foreign interest rates makes foreign currency deposits more attractive, leading to a depreciation of the domestic currency (a rise in $S$): the AA curve shifts up (right).

5. Changes in $S$: if market participants expect the domestic currency to depreciate in the future, foreign currency deposits become more attractive, causing the domestic currency to depreciate (a rise in $S$): the AA curve shifts up (right).

Putting the Pieces Together: the DD and AA Curves

• A short run equilibrium means a nominal exchange rate and level of output such that:
  1. equilibrium in the output markets holds: aggregate demand equals aggregate output.
  2. equilibrium in the foreign exchange markets holds: interest parity holds.
  3. equilibrium in the money market holds: the quantity of real monetary assets supplied equals the quantity of real monetary assets demanded.

Putting the Pieces Together: the DD and AA Curves (cont.)

• A short run equilibrium occurs at the intersection of the DD and AA curves
  ◆ output markets are in equilibrium on the DD curve
  ◆ asset markets are in equilibrium on the AA curve

Short-Run Equilibrium: The Intersection of DD and AA

How the Economy Reaches Its Short-Run Equilibrium

- Exchange rates adjust immediately so that asset markets are in equilibrium.
- The domestic currency appreciates and output increases until output markets are in equilibrium.