The current account, exchange rates etc
ECON4330 Spring 2010 Lecture 11

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22nd April 2010

Part I

The price specie-flow model (continued)

The model

IS-curve:

$$Y = C\left(Y - i_* \frac{EF_*}{P} - G, -\frac{EF_*}{P} - W_g, i, i_*\right) + G + X\left(\frac{EP_*}{P}, Y, Y_*\right) \quad (1)$$

Phillips-curve:

$$\dot{P} = P\gamma(Y - \bar{Y}) \quad (2)$$

Accumulation of foreign debt:

$$\dot{F_*} = i_* F_* - \frac{P}{E} X\left(\frac{EP_*}{P}, Y, Y_*\right) \quad (3)$$

Note homogeneity: E and P always appear as E/P

Endogenous variables: Y, P and F_*

Initial cond: $P(0) = P_0$, $F_*(0) = F_{*0}$, $W_g(0) = (-M_0 - B_0 + E(0)F_{g0})/P_0$

The temporary equilibrium

$$Y = C(Y - i_* \frac{EF_*}{P} - G, -\frac{EF_*}{P} - W_g, i, i_*) + G + X(\frac{EP_*}{P}, Y, Y_*)$$

IS-equation determines Y given P and F_*.
Solution:

$$Y = Y(P, F_*, x), \quad \mathbf{x} = (i_*, P_*, Y_*, G, i, E, W_g) \tag{4}$$

Increased foreign debt, F_*, reduces consumption demand and output

$$\frac{\partial Y}{\partial F_*} < 0, \quad \frac{\partial Y}{\partial P} < 0$$

$\partial Y / \partial P < 0$ assumes real exchange rate effect dominates over an eventual positive wealth effect.

The dynamic equations

$$\dot{P} = \phi_1(P, F_*, \mathbf{x}) = P\gamma[Y(P, F_*, \mathbf{x}) - \bar{Y}] \qquad (5)$$
$$\dot{F}_* = \phi_2(P, F_*, \mathbf{x}) = i_* F_* - PX(EP_*/P, Y(P, F_*, \mathbf{x}), Y_*)/E \qquad (6)$$

Our assumptions

$\phi_{11} < 0$ follows from $\partial Y/\partial P < 0$

$\phi_{12} < 0$ follows from $\partial Y/\partial F_* < 0$

$\phi_{21} > 0$ assuming that real exchange rate effect dominates if wealth effect is negative

$\phi_{22} < 0$ assuming that effect on trade surplus dominates over effect on interest payments

The stationary equilibrium

$$\dot{P} = \phi_1(P, F_*, \mathbf{x}) = 0 \quad \Leftrightarrow \quad Y = Y(P, F_*, \mathbf{x}) = \bar{Y} \qquad (7)$$

$$\dot{F}_* = \phi_2(P, F_*, \mathbf{x}) = 0 \quad \Leftrightarrow \quad PX(EP_*/P, Y, Y_*) = i_* EF_* \qquad (8)$$

(7) - internal balance - and (8) - external balance - determine F_* and P

Solution is recursive

Y determined by supply (capacity)

W'_* determined by savings behavior

$$C(\bar{Y} - i_* W'_* - G, -W'_* - W_g, i, i_*) + G = \bar{Y} - i_* W'_*$$

R determined by demand for exports and imports

$$i_* W'_* = X(R, \bar{Y}, Y_*)$$

P determined by exchange rate, $P = EP_*/R$

Stability conditions

Jacobian matrix

$$A = \left[\begin{array}{cc} \phi_{11} & \phi_{12} \\ \phi_{21} & \phi_{22} \end{array} \right]$$

Necessary and sufficient conditions for stability:

$$\text{tr}(A) = \phi_{11} + \phi_{22} < 0$$

and

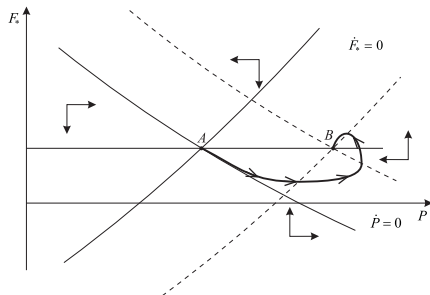$$|A| = \phi_{11}\phi_{22} - \phi_{12}\phi_{21} > 0$$

$$|A| > 0 \iff i_*(1 - C_Y) - C_W < 0$$

Or:

$|A| > 0 \iff$ Foreign debt up $\rightarrow$ savings up (Y constant)

$\phi_{22} < 0$ - Foreign debt up $\rightarrow$ savings up even in the short run when Y is down.

A devaluation (Assuming $F_{g0} = 0$)

Long run: R and F_* not affected

Current account improves, curve for external balance shifts to the right

Output increases, curve for internal balance shifts to the right

Shifts equal in size (only E/P matters)
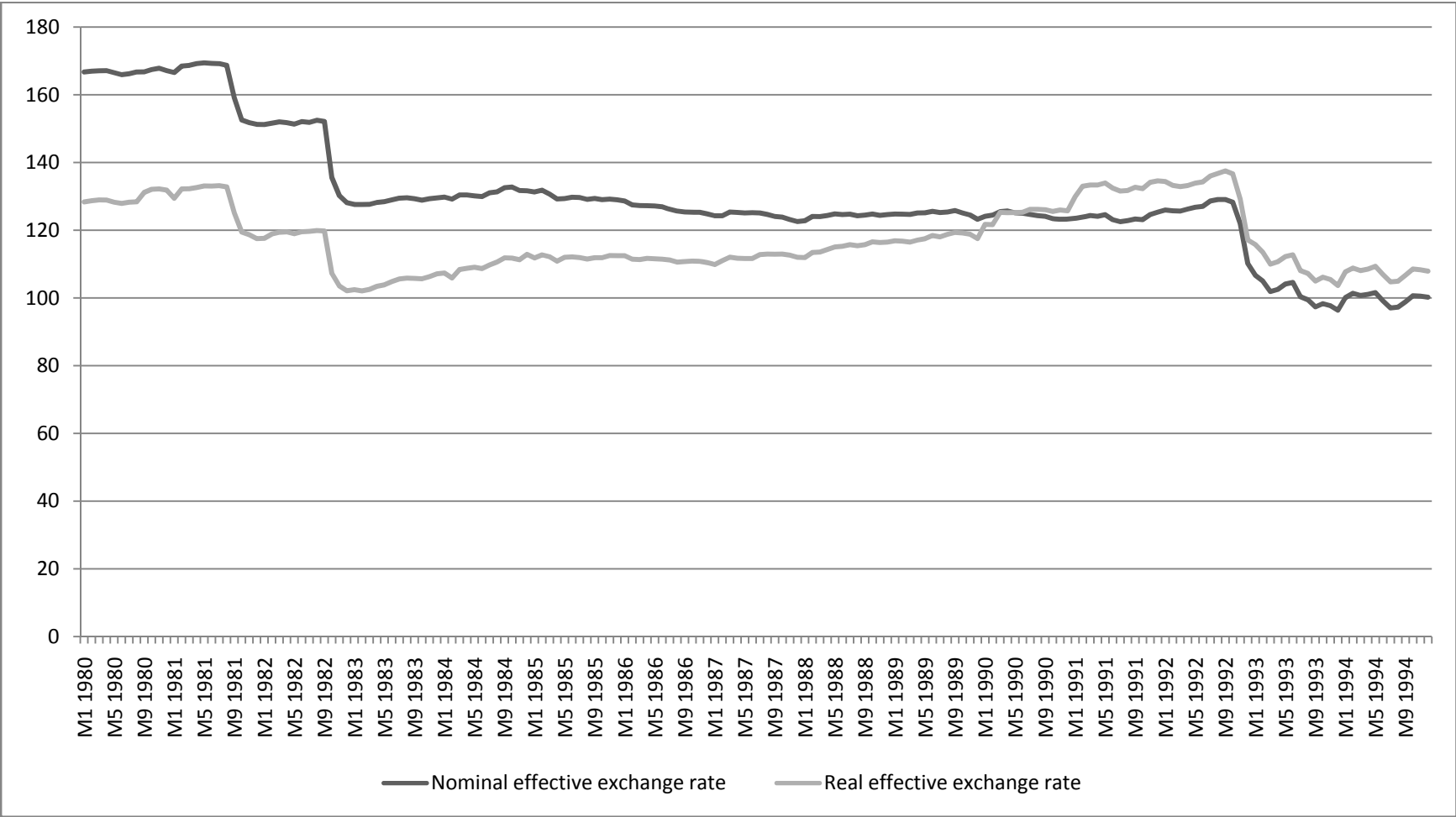
First boom, then recession

Devaluation cycles

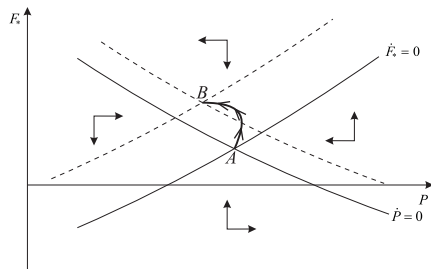Norway's devaluation decade 1977-86

Devaluation cycle. On blackboard

Real and nominal exchange rates Sweden 1980-1994

Source: IMF Financial Statistics. Higher index means appreciation

Nominal effective exchange rate — Real effective exchange rate

The effect of easier access to credit

Positive shift in domestic demand

Internal balance requires higher prices
External balance requires lower prices

First boom, then recession
Prices increase first, then fall below initial level

Approach may be cyclic

Devaluation as response to negative shift in savings propensity. On blackboard.

Devaluation as response to negative shift in savings propensity

▷ Current account improved in the short run

▷ Later deficit will be larger, total change in F_* the same

▷ Transition takes place with more inflation and less unemployment

▷ May leave legacy of increased inflation expectations

▷ Policies designed to break inflationary expectations may create unemployment later

Extended model

Phillips-curve augmented with expected consumer price inflation

$$\dot{P}/P = (\dot{P}_C/P_C)^e + \gamma(Y - \bar{Y})$$

Model consistent expectations

Floating exchange rate

▷ Same dynamics for foreign debt and for the real exchange rate

▷ Replace P by $1/R$ on the horizontal axis

▷ Initial R not given, but determined by monetary policy and expectations

▷ Once initial exchange rate has been determined, expected future dynamics are as with fixed rate

Floating exchange rate, target for producer price inflation

Assumptions

i is used to keep keep P constant by keeping $Y = \bar{Y}$

Perfect capital mobility

The effect of easier access to credit

▷ Long run equilibrium: Higher foreign debt, depreciated real *and nominal* exchange rate

▷ Short run: Higher interest rate, appreciated exchange rate, current account deficit

▷ The path between: Gradual depreciation, gradual increase in foreign debt, equilibrium output

▷ Consumer prices first fall, then increase gradually, end up higher than initially

Summing up on current account imbalances 1

▷ Persistent imbalances are caused by real factors, mainly saving and investment behavior

▷ Imbalances tend to self correct towards sustainable levels without need for policy intervention

▷ Government action is required if imbalance stems from government deficit

▷ Correction of persistent imbalances usually requires change in real exchange rate. Price level or nominal exchange rate must change.

▷ During the adjustment to long-run equilibrium countries may have to go through a period of unemployment

Summing up on current account imbalances 2

▷ Devaluations affect the timing of deficits, but not the sum of deficits over time

▷ Surprise devaluation may ease transition, but encourage future speculation and inflation

▷ Devaluation best suited when home country in recession, rest of the world in boom

▷ Floating exchange rate: Level is determined in asset market, not in market for exports and imports

▷ Impact of shocks on exchange rate depends on monetary policy

▷ Temporary supply shocks and domestic demand shocks affect output in the same direction, trade balance in opposite direction

US is special

▷ Foreign debt mainly in domestic currency
▷ Foreign assets often in foreign currency
▷ Depreciation of the US dollar reduces US debt burden
▷ Less need for saving in US
▷ Higher current account deficits?

Part II

Fixed versus floating exchange rates

Traditional comparison: Fixed exchange rate versus fixed money supply

Assume (close to) perfect capital mobility in both cases (no interventions, no exchange controls)

Model reference: Mundell-Fleming-Tobin, supplemented by Dornbusch

◇ Floating dampens the output effects of demand shocks

  Positive demand shock → interest rate up and appreciation

◇ Floating makes money demand shocks have output effects

  Positive money demand shock → higher interest rates and appreciation

◇ Floating amplify the output effect of cost-push shocks

  Positive wage shock → prices up → interest rate up → appreciation

Fixed exchange rate versus fixed money supply, continued

$\diamond$ Floating may speed up output response to productivity and resource shocks

Increased labor supply $\rightarrow$ increased $\bar{Y}$ $\rightarrow$ Immediate depreciation $\rightarrow$ output up, and this is what we want (but response to productivity shocks may go to far)

$\diamond$ Shocks from exchange rate expectations / risk premium - opposing output effect

▶ *fixed - flight from currency $\rightarrow$ higher interest rate $\rightarrow$ output down*
▶ *floating - flight from currency $\rightarrow$ depreciation $\rightarrow$ output up*

The exchange rate as shock absorber

And inflation targeting?

Difference from money supply targeting:

- ▷ avoids influence from money demand shocks
- ▷ possible to fine-tune interest rate response to each kind of shock (but also to err)

Comparison depends on exactly how inflation targeting is practiced

Do the level of noise depend on the regime?

Potential causes of different volatility:

 ▷ Different credibility of the regimes

 ▷ Different disciplining effect on other parties (government, unions, employer's organizations)

 ▷ Inflation targeting more demanding on policy maker's forecasting abilities

 ▷ Floating rates more demanding on investor's forecasting abilities

Fixing to whom?

 ▷ Price stability

 ▷ Representativeness

 ▷ Covariation over the cycle

 ▷ Common shocks

Is fixing really an option?

▷ Speculative attacks
▷ Capital controls
▷ Mutual fixing